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BUDAPEST UNIVERSITY OF TECHNOLOGY AND ECONOMICS

FACULTY OF ECONOMIC AND SOCIAL SCIENCES

Doctoral School of Economic and Management Sciences

PÉTER HERNÁDI

**Theory and practice of capital structure
in Central and Eastern Europe**

Doctoral thesis

Supervisor: Dr. Mihály Ormos

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I. INTRODUCTION

Financing, or capital structure decisions is one of corporate finance's major fields that dates back to the era of Miller and Modigliani's pioneering propositions (1958, 1963).

Academic research focusing on the determinants of capital structure has led to numerous theoretic models in the last 50 years. These models show both similarities and differences in the way they explain corporate financing behaviour therefore, there are multiple ways to classify them. For giving a clear definition, in this thesis I differentiate between (1) the models focusing on the cost-benefit optimum of indebtedness, called the *static tradeoff theory* in general; (2) the models concentrating on the problem of asymmetrical information, or the *pecking order theory*¹; and (3) the models explaining the capital structure by agency considerations, namely the *agency theory*.²

As my main field of interest is the corporate financing behaviour and related preferences in the Central and Eastern Europe where the traditional agency costs between shareholders and debt holders, and between shareholders and managers are difficult to identify and measure, in the followings I put the main emphasis on testing the theoretical implications of the static tradeoff and pecking order theories; however, during the discussion of results, I may occasionally refer to the considerations of the agency theory too.

As per the static tradeoff theory (STT), there is an optimum capital structure for each firm at which the value of firm can be maximized. The increase in value is driven by the tax savings on interests paid (stemming from the use of debt) that is added to shareholder value. However, limitless use of debt is restrained, as increasing leverage creates its own costs deriving from everyday financial encumbrances and the growing present value of bankruptcy

¹ Harris and Raviv (1991) classify the models based on signalling effect as belonging to the hierarchy story, based on the asymmetrical information as common element. The theory based on signalling effect advocates that the capital structure optimum is a function of the reactions of market participants with lack of special knowledge on the firm to signals that insider sends to them about the firm. In the meantime, in the hierarchy theory of Myers and Majluf (1984), the main conceptual element is the interconnection of investment and financing decisions and the intention of the firm to avoid sub-optimal investment scheme.

² It should be noted that all such classification of models are discretionary, and should be regarded rather as an individual way of thinking of the author. These models and assumptions are often overlapping and might not be sharply separated. Furthermore, it is also discretionary to the researcher what model or approach he considers to be 'independent' enough to be regarded as a distinct theory. One of the most cited review papers is by Harris and Raviv (1991), for example, who subsume their knowledge on capital structure theories by differentiating empirical models based on the following driving forces: agency approach, asymmetric information approach, impact of firm's input/output and corporate control contests. Others summarise differently. Krénusz (2007) in her doctoral thesis interprets the theories classified as either 'traditional theories' (before Miller and Modigliani and based on the assumption of perfection), the original Miller and Modigliani theory on the border (the perfection of the market is still assumed), or 'modern theories' that derive from one of the imperfections of the market. The latter category is further segmented in function of the nature of imperfection: asymmetrical taxation and distress costs (tradeoff theory), corporate governance and agency issues, and asymmetrical information, etc.

costs. The two effects counteract, and at a given level of leverage the marginal benefit and the marginal cost of an incremental debt equalize: at this point the firm is not interested in any further increase, nor in decrease of debt, say, it operates with an optimum capital structure. The two cornerstones of the theory are the advantage of tax savings and the costs of financial distresses, in reference to which empirical researches have tested the impact of a large number of financial and other firm-specific determinants³.

If the STT prevails in financing behaviour of the companies, then one can expect a continuous adjustment towards a predefined target leverage, either in negative or in positive sense, as well as a strong correlation between relevant capital structure determinants, e.g. profitability, tangibility of assets, tax rate, etc., and the firms' debt-equity ratio. While both phenomena have been widely documented in the recent decades, yet it seems there is an at least as large literature challenging the absolute dominance of the tradeoff theory.

Alternatively, the pecking order theory (POT) gained ground in the 1980s thanks to, among others, the pioneering contribution of Myers (1984) and Myers and Majluf (1984). The theory challenges the existence of a leverage optimum, instead it considers the observable debt-equity mix as the cumulative result of historical financing transactions, assuming a firm that in every decision opts for minimizing the costs of financing⁴. The choice between financing alternatives is determined by the costs related to asymmetrical information between insiders (management) and outside investors (shareholders, creditors, other investors) of the company. Following the POT, the 'least expensive' fund for managers are the retained earnings which are entirely consumed before they have recourse to the next cheapest fund, the external debt. The debt-equity ratio increases thus when the firm's cash flow is not sufficient to cover its all cash-out items (dividend, Capex, etc.), while it decreases when this relation is inverse. Consequently, the pecking order theory assumes a hierarchy of funds that originates from asymmetrical information and the information effect of financing decisions. In this hierarchy, internal funds are always preferred to external ones, while among these ones debt is preferred to equity.

The purpose of my thesis, in brief, is to test the relevance of the two capital structure theories discussed above, as well as to discuss their application in practice in Hungary and the

³ Some researchers consider the static tradeoff theory in a broader sense, and involve in the search of the optimum the personal taxes (Miller (1977)), agency costs (Myers (2001)) and also some input and output variables of the firm, however, that makes the empirical testability of the model more complicated.

⁴ We note that in the simple form of the theory, as originally laid down, firms tend to assess the asymmetrical costs of financing alternative in each situation on an individual basis. Later, Fama and French (2002) extended the theory by implying firms that not only optimise the asymmetrical costs of financing in the present, but also those expected in the future, and then choose the appropriate fund based on that complex optimum.

regional countries, with a particular focus on the sector of small and medium-sized enterprises (SMEs).

With our investigations we have set two goals. *In the first place*, we intended to ease the relative scarcity of empirical evidence on capital structure determinants that is characteristic to the Central and Eastern European (CEE) region. This is explained by the fact that the regional countries do not operate large and active stock and debt markets; and therefore, they got less attention in international researches since 1990. Furthermore, even the little evidence published so far is rather related to the few listed companies. In consequence, as main scope of research, we have analysed the determinants of capital structure adjustment behaviour among a comparatively large sample of closely-held companies that are the most representative ones in the region's economic structure.

In the second place, in addition to testing a merely quantitative model as widely seen in similar researches, we wished to contribute to a deeper understanding of capital structure of CEE firms with an alternative, qualitative approach. A questionnaire addressed to the management allows to by-pass the serious difficulties of defining proxy variables and to ask directly the makers of financing decisions about their background and preferences. The collected answers not only provide basis to directly investigate the theoretical implications of capital structure theories, but also to assess whether financial managers effectively decide according to their explicit preferences.

I.1. Performance of the theories

Some early tests of the static tradeoff theory have furnished support to the optimum capital structure idea, mostly based on the relative homogeneity of leverage within industries, and the observable serious heterogeneity across industries (e.g. Schwartz and Aronson (1967)). Bradley et al. (1984) provided evidence on the inverse relationship of leverage ratio and financial distress costs, while Miller (1977) integrated the aspects of personal taxation in its equilibrium model. Besides, Bradley et al., Long and Malitz (1985) and Titman and Wessels (1988) found proofs to the inverse relationship of future growth opportunities, that is to say, the relative intangibility of company's assets, and leverage. In the meantime, conventional cross-sectional analyses have failed to answer adequately to the most fundamental implication of the STT, which can be summarized this way: how do firms with sub-optimal capital structure behave? With simple models, there is no way to assess to which extent the observable differences in leverage ratios represent different firm-level equilibria, and to which extent they show deviation from a firm-level optimum amid an on-going

convergence process, highlighted Myers (1984) the dynamic aspect of the tradeoff idea. To answer this question properly, one must make additional assumption either on the optimum level of leverage or the speed of adjustment.

To lift this issue, among the earliest studies Marsh (1982) estimated the target (optimum) leverage with its historical mean of the company, and pointed out the mean-reversion of leverage ratios that he interpreted as a confirmatory evidence for the tradeoff theory. Opler and Titman (1994) followed an alternative way by estimating the leverage optimum with a multi-variable model, and concluded similarly to Marsh (1982). Auerbach (1985) extended the analysis by allowing time-varying leverage optimum, and provided further argument for the adjustment of capital structure.

In spite of the validation of the optimum capital structure theory by a number of empirical analyses, in the 1970s and 1980s some alternative financing hypotheses⁵ emerged, to start with the pecking order theory of Myers (1984). Myers together with Majluf (1984) challenged the overall relevance of the STT in corporate financing behaviour by highlighting the facts that (1) firms, on average, operated with much lower debt/value ratio than would theoretically be their optimum; and furthermore, (2) a large number of highly profitable US firms operated with zero or very little debt at all while they paid huge amount of taxes every year into the federal budget. They also questioned that the wide dispersion of leverage ratios that was observable simultaneously in a given industry could effectively be explained by the adjustment costs of capital structure, which were much lower in value than the loss stemming from sub-optimal financing policies.

On the contrary, Myers and Majluf (1984) underline that a firm might pass up an otherwise positive-NPV project if the necessary new equity issuance can only be done with such a large discount on the actual share price - due to asymmetry in knowledge - that the expected gain of new shareholders, once the asymmetry eases, can surpass the whole NPV of the promising project which would lead to deterioration of "old" shareholders' value⁶. The sub-optimal investment problem can be alleviated with reliance on funds that do not at all, or only hardly suffer from the special knowledge of the management, and thus, are undervalued by market participants to a lesser degree. The least affected funds are internally-generated flows that are closely followed by risk-free (low risk) external debt, then riskier (subordinate) debt, then the hybrid funds, all preceding new external equity as a last resort. The authors

⁵ Many of them had been summarised in an excellent review paper by Harris and Raviv (1991).

⁶ The costs of informational asymmetry are to be derived from the knowledge gap between the firm's managers having private information on the company's prospects, earnings and value and the (outsider) market participants not having information in such a depth and details.

argue that overall behaviour of managers and investors justify at least as much or even more the relevance of the POT as the STT, for instance with widely observable price reactions to stock and debt issuance signals, the ratio of aggregate volumes of internal and external financing, or sticky dividend policies.

More than a decade later Shyam-Sunder and Myers (1999) set a numerically testable model to justify the POT by defining the funds flow deficit variable and assuming a statistical relationship between new debt issuance and the size of deficit. Their results strongly support the pecking order theory on the basis of 157 listed companies in the US whose shares were traded continuously between 1971 and 1989.

Frank and Goyal (2003) replicate the test of Shyam-Sunder and Myers with extended research plan and enlarged firm sample, but conclude mixed results. They show that the growth rate of equity issuance was much faster than the growth rate of debt issuance over the period 1971 to 1998, as well as that the correlation between net equity issuance and financing deficit was unexpectedly high in the meantime. The authors clearly reject the implication of the pecking order theory about the non-reliance of firms on fresh external equity after their IPO took place. Separating their sample period into two sections, namely (1) 1971 to 1989 in line with Shyam-Sunder and Myers (1999), and (2) 1990 to 1998, Frank and Goyal point out a strong correlation between financing deficit and net debt issuance with high overall R^2 for the first period⁷, whereas they experience a much weaker coefficient of determination in the subsequent period. Classifying firms by size, it seems that even during the 1970s and 1980s a pecking-order consistent financing was noticeable only among the largest listed companies, as medium-sized firms were somewhat pecking order-like, and the smaller ones, which were theoretically the most impacted by asymmetrical information, did not behave according to the theory.

Fama and French (2002) investigate capital structure and dividend decisions in a joint model, and also reach ambiguous conclusions on the relevance of both theories. They show that, controlling for investment opportunities, more profitable firms operate with lower leverage both in terms of book and market value, which is a clear failure of the tradeoff hypothesis. Mean-reversion of leverage ratios is noticeable, nonetheless, the speed of adjustment is very slow so it is questionable whether the STT prompts the firms' behaviour. Short-term reactions to variance in investments and profitability are rather consistent with the POT both in case of dividend-paying and non-dividend-paying companies: as dividends are

⁷ The authors – based on a sample of 768 firms – found coefficient estimates and a goodness-of-fit ratio similar to Shyam-Sunder and Myers (1999).

sticky, companies cover their deficit of funds with new debt. In the meantime, the POT performs poorly among non-dividend-paying firms, where the ones most concerned by large new equity issuances are the least-leveraged companies, dominantly small firms with significant growth opportunities, which have relatively low collateral value of assets in place.

Therefore investigating the strength of the two theories, Fama and French do not find an indisputable winner. This is in part because from many points of view the static tradeoff and the complex pecking order theories⁸ yield similar implications in spite of their different background, and therefore simple cross-sectional analyses of determinants are not suitable to demonstrate the absolute relevance of any of them in dividend and capital structure decisions.

Researches focusing on cross-country and European firm samples followed relatively late the publication of theoretical fundamentals, which is in part explained by the time needed to set up adequate models to test, furthermore by relative difficulties in gathering sufficient and reliable financial data on an international scale. Rajan and Zingales (1995) show for the first time by analysing the capital structure theories in the G7 countries that determinants of leverage in other countries (size, growth rate, profitability, tangibility of assets) coincide with those previously found relevant in the US. In addition, they show that despite the differences in their financial institutions, the average leverage ratios of individual G7 countries (after necessary adjustments made) are closer to each other than it was previously thought. They argue that their unconventional conclusion is mainly thanks to recent development of data quality and depth, with which necessary cross-country adjustments are feasible to make international analyses more reliable.

Booth et al. (2001) investigate the strength of capital structure theories on a sample of public firms from ten countries in Africa, Asia and Latin-America, and extend the theories to the developing countries. They find that the capital structure determinants previously found relevant in the US and developed Europe (size, profitability, tangibility of assets) have a similar impact on the leverage ratio in the investigated countries, although the strength of these impacts is different in function of leverage definition. As long as the market leverage is to be predicted, the conventional factors have enough power to predict leverage without controlling for the firm's nationality, while the book leverage ratio seems to be largely impacted by country-specific factors.

⁸ Fama and French (2002) consider the tradeoff theory and the pecking order theory in its complex form under which it is possible that a firm operates with a 'soft' target leverage ratio in the present in order to keep its capacity of additional borrowing during future long-run investment programs; that is to say, it optimises the asymmetrical information costs both in the present and the future.

In the developed Europe, Mulkey and Sassenou (1995) find supporting evidence for a pecking order consistent behaviour among SMEs in France, whereas Michaelas et al. (1999) do so in the UK and Sanchez-Vidal and Martin-Ugedo (2004) in Spain. As opposed to them, but in line with the latest results from the US, Seifert and Gonenc (2008) underline Frank and Goyal's (2003) conclusion on the decreasing relevancy of the pecking order theory by testing listed US, Japanese, German and UK firms with the financing deficit model of Shyam-Sunder and Myers (1999). Hogan and Hutson (2005) investigate Irish SMEs in the software industry with a questionnaire technique and show that new external equity is preferred to debt among highly innovative, R&D driven firms, which they explain by the reversal of informational asymmetry concerns.

The CEE region was, obviously, out of scope of any capital structure research before the 1990s. As a result, empirical evidence for the region is quite scarce compared with other parts of the world. A progress in research focusing on the region is noticeable only in recent years, which work is further complicated by these countries' special situation, namely that the ongoing transition of economic structure has an impact on the development of capital markets.

Delcours (2007) investigates 129 listed firms in four CEE countries over the period 1996 to 2002 and finds that their financing preferences can be described with a modified hierarchy in which retained earnings are the most preferred source, but the external equity is ahead of all kind of long-term debts (bond and bank loan). Managers have a preference toward external equity vis-à-vis debt as they consider it non-compulsory and "free of charge". Moreover, in the investigated CEE countries, use of short-term debt in financing plays a more important role than in countries with developed capital markets, whereas, at the same time, use of long-term debt is less popular. Nivorozhkin (2002 and 2005) conclude similar findings by showing very low reliance on long-term debt financing in Hungary and other regional countries in the years following the change of regime. Balla (2006) and Krénusz (2007), focusing on unlisted Hungarian manufacturing firms during the '90s, confirm the negative nexus between tangibility of assets and the total leverage ratio, but in the meantime, a positive coefficient is found between the level of tangibles and long-term loans.⁹ Focusing also on the capital structure of closely-held firms instead of listed ones, Crnigoj and Mramor (2009) provide evidence on conservatism among owner-managers by pointing out the inverse relationship between the degree of manager/employee ownership in the firm and the level of

⁹ The main reason behind this outcome, argue the authors similarly to Nivorozhkin (2004), is that the collateralisability of fixed assets just started to work as banks were extremely cautious in lending due to weak law enforcement in bankruptcy, illiquid secondary markets of liquidated assets, as well as to lack of competences in fair value and liquidity value measurement of assets.

leverage. Avarmaa et al. (2011) find lower use of debt among Baltic subsidiaries of multinational companies with lower profitability and theoretically lower credit constraints.¹⁰

Despite the large set of evidence discussed, pro and con, empirical literature seems yet to be inconclusive in pointing out the dominance of one theory over the other; therefore, the focus of capital structure researches has recently been more and more put on the applicability of theories in exact context and circumstances.

With our analyses, we intend to assess the extent to which the static tradeoff theory and the pecking order theory can describe the financing decisions of SMEs in the CEE region in the 2000s by applying testable models that are based on widely-used capital structure determinants susceptible to be customized for regional characteristics. We also investigated the time-consistency of the theories.

1.2. The debt-equity choice

We analysed debt-equity choice with a dynamic model over the period 2002 to 2007 covering eleven CEE countries. Our approach concentrates on the adjustment towards an estimated target leverage ratio instead of the relationship between explanatory variables and observed leverage. That is to say, we test whether SMEs behave according to theoretical assumptions when they decide to increase or decrease a given fund, or on the contrary, they follow other preferences in their capital structure decisions. The analysis of adjustment process requires the determination of target level of leverage, which we estimated with a technique similar to Hovakimian et al. (2001). Such an approach results in a two-stage estimation method¹¹. We considered the CEE region as one homogeneous block of countries, for which we apply a common model.

At the first stage, we regressed capital structure determinants on leverage ratios to determine the ones that could be used to estimate the optimum leverage ratio. As among the competing theories only the STT hypothesises a fixed debt-to-equity ratio, we selected the determinants significant and consistent with the tradeoff theory (applying TOBIT regression) to use them subsequently for constructing the estimator of target leverage. On the contrary, those explanatory variables that were found to be contradictory to the STT and/or consistent with the POT were allocated to the equations of debt and equity transactions (in the second stage regressions).

¹⁰ This finding contradicts the positive relationship evidenced between total leverage ratio and the degree of foreign ownership, as made it apparent earlier Balla (2006) and Krénusz (2007) on the basis of Hungarian firms.

¹¹ We define the target leverage ratio as the optimum leverage ratio a firm would choose if there were no asymmetrical information, transaction costs, and the adjustment were costless.

After having estimated a time-variant leverage optimum with the restricted set of tradeoff-consistent factors, a leverage deviation could be easily calculated for all firm-year observations. The deviation, which is the difference of observed and optimum leverage ratios, was our most important regressor in explaining the increase and decrease of financing funds. The model was supplemented with the variables expected to impact the debt-equity choice of firms according to the POT that were not relevant for estimation of the target leverage. In the second stage, independent variables in period t were applied for explaining significant events of financing in period $t+1$. Realised transactions of debt and equity were chosen to be the dependent variables of LOGIT regressions¹². When defining these events we took into account the specificities of financing SMEs, so we considered increase and decrease of subscribed capital (representing external equity transactions), engagement and repayment of short-term bank loan (low-risk debt), engagement and repayment of long-term bank loan (riskier debt), and increase and decrease of non-subscribed capital.

Our results show that, similar to numerous earlier tests, size and asset tangibility are significantly positively correlated with the leverage ratio in the CEE region, but the other explanatory variables of the STT do not support the theory of leverage-optimising firms. To start with, we reject the positive relationship between profitability and leverage, as well as that between effective tax rate and leverage. Similarly, we do not find evidence for the negative impact of non-debt tax shields and business risks on the leverage. On the contrary, there is a clear signal that country-effects count in leverage decisions of CEE firms, although their impact is weaker than in the sample of Booth et al. (2001), say, the decision-making of regional SMEs seems to be more homogeneous than that of other developing countries.

In spite of the general weakness of tradeoff-consistent factors (we effectively rejected the most fundamental proxies controlling for the costs and benefits of indebtedness), we found the outstanding steadiness of relevant capital structure determinants over the period 2002 to 2006, both for the total and the long-term leverage ratios. Our model exhibits a special time-varying characteristic in which conventional explanatory variables become systematically stronger between 2002 and 2006, whereas dummies controlling for country effects weaken in the meantime. The calculated R^2 increases from 30.5% (2002) to 54.4% (2006). Based on the above, we conclude accordingly:

¹² We restricted the analysis of financing to events where the transaction volume reached at least 5% of the total assets (significant events).

Capital structure decisions among the regional small and medium-sized enterprises rely on similar theoretical bases as in the most developed economies. Conventional capital structure determinants become stronger in function of time in explaining leverage, whereas country-specific effects weaken. As a whole, the predictive power of capital structure models continuously increases.

Regression analyses of the second stage provide further evidence against the static tradeoff theory resulting from the controversies found between the sign of leverage deviation and the occurrence of financing transactions. Companies with leverage below the optimum do not clearly intend to increase their debt as suggest the STT. On the contrary, we find a positive relationship between the level of profitability and the probability that the firm repays its loans, which is an outcome that is strongly expected in the pecking order theory. By assessing the dominance of financing with retained earnings over external debt, we find further support on side of the POT. Furthermore, we show a spectacular weakness of the impact of corporate tax, one of the most conceptual elements of the STT, in both the estimation of optimum leverage and the debt-equity choice of firms, which clearly questions the consideration of corporate tax aspects at all in the capital structure decisions.

Nevertheless, while also consistent with the complex interpretation of the POT our results do not invalidate the static tradeoff theory in all the ways, as we can confirm among the SMEs a previously documented attitude about that currently overleveraged firms yet try to repay their debt. That implies that companies with a leverage ratio over the optimum exhibit a reaction in the same direction as the STT predicts, say, they decrease their loans, although we see that this intention to adjust is asymmetrical and not noticeable in the opposite direction. As it might be seen consistent with insiders' and outsiders' knowledge gap on the firm, we also document a 'learning effect' among external creditors and managers based on their historical partnership that manifests in the positive relationship of historical and current reliance on new short-term debt. In opposition to this, we find that underleveraged firms, which should theoretically have higher additional debt capacity prefer to engage new debt for a long- rather than short-term that contradicts somewhat the strict hierarchy of funds as suggest the POT. To sum up, we conclude as follows:

The intention to adjust leverage towards its optimum is weak among the regional small and medium-sized companies; consequently, we reject the relevance of the static tradeoff theory as

a general rule. We find evidence that the pecking order theory is widely relevant among these companies being subject to serious asymmetrical information concerns.

Despite the weakness of intention to adjust towards the optimum leverage, small and medium-sized companies strongly respect an upper bound of leverage unilaterally.

I.3. The practice of financing

The drawback of relying on accounting-based proxies for analysing capital structure is that they could only poorly capture the preferences, and hence the personal viewpoint of the decision-makers apropos of the theories. This is explained by the fact that the competing theories are not easy to be sharply separated in every aspect based on financial metrics of the firm, see for instance the voluntary upper bound of leverage, which may be consistent both with the logic of the STT and the POT. Thus observable trends and relationships in financial statements do not always clearly identify the theoretical background of financing decisions. The other pain of this technique, as highlighted Brounen et al. (2006), is that the relevance of any theory can only be tested via the use of financial variables to such extent that those variables, as independent proxies, can capture properly the assumptions of the theory.

These inconveniences can be eased with a survey technique in which one interrogates directly the person(s) responsible for or involved in the decision-making about their theoretical considerations. This less broadly used survey approach is part of our analyses, in course of which we notably rely on the questionnaire of Graham and Harvey (2001)¹³ directed originally to US listed and private companies, but what we customise to the extent necessary to reflect relevant aspects of financing in the regional countries (e.g. the role of leasing and factoring). Interviews were effectively undertaken by a professional research company whose experts surveyed 498 companies by phone from 10 countries in 2008. The questionnaire we compiled in English was translated into the native language of all ten countries, and the interview was held with the CFOs in their mother tongue. The sample was construed so as to represent the whole CEE region; therefore its structure mirrored the relative economic weight of the countries within the region. This way the sample allows formulating some general

¹³ In course of compiling our questionnaire, we took into consideration that our questions and answers could be compared, even directly, to findings of previous studies based on different company samples, by reserving though the possibility that our conclusions could be different from those ones'. Our questionnaire, as part of a larger academic research program undertaken at the BUTE, closely follows the survey of Graham and Harvey (2001) that was first addressed to US listed and private firms. Besides the findings of Graham and Harvey for a sample of 392 firms, Brounen, de Jong and Koedijk (2006) also applied this survey and furnished evidence relying on a sample of 313 firms from four Western European countries, both to which we can directly compare our survey findings.

conclusions about the relevance of capital structure theories in the region as one entity, assuming a homogenous behaviour within the block; however, there are not enough observations for drawing country-specific conclusions except for the largest countries.

In the first section of the survey, we put questions on some general firm attributes, like among others the degree of managerial ownership, the origin of dominant management culture, or the most important goals of the shareholders and the managers. The focus of second section's twelve questions is put on the practice of financing and its underlying managerial preferences. We consider this the most straightforward way to test whether financing decision-makers in the region rely effectively on theoretical implications of the capital structure theories. The questions and answers many times follow the concept of "*How important are...*" and "*What would you do if...*", which is a particularly appropriate way to capture the hierarchy of motivations and to describe the CFOs' preferences in predefined situations, exactly the way as the STT and the POT suggest.

In course of our investigation, we go further than simply surveying the practice of financing as we also examine with quantitative tools whether the aspects and preferences verbally expressed by the management are in fact consistent with their subsequent decisions.

CFOs confirm the second-order importance of tax concerns, non-debt tax shields and business risks in debt decisions, that is to say, the weakness of conventional tradeoff considerations. The answers suggest instead that investments and financing decisions are not independent from each other in the everyday practice of the analysed firms, as debt-positive decisions are first of all dependent on the expected cash flow from the asset to be financed. This finding seems to be valid throughout the whole region; nevertheless, there are minor divergences in the strength of tradeoff aspects among the largest countries. In line with these preferences we show that only 27% of the firms report to have a target leverage ratio, out of which 40% consider the target as a strict anchor; meaning that altogether around 10% of companies are characterized by a strict target-setting and adjusting behaviour. Furthermore, our answers also make it apparent that firms take retained earnings as primary source of funding new investments, which result supports the POT. Next in the hierarchy, firms weigh the option of restructuring the asset portfolio in place to free up cash, and then engage new external debt before issuing new external equity. The role of convertible funds is broadly considered as unimportant. The hierarchy of financing funds we find evidence for is in line with the assumptions of Myers and Majluf (1984), and contradicts the earlier empirical results of Delcours (2007) and Nivorozhkin (2002, 2004) about the reversal of the order of funds in favour of external equity caused by severe credit shortage. To sum up:

By the mid-2000s, the problem of credit rationing in the region has considerably eased; and as a consequence, the anomaly of reversal of external debt and equity in the financing hierarchy, which had been previously thought to be driven by weak institutions and underdeveloped debt markets (Nivorozhkin (2002), Delcoursé (2007)), has dissolved.

Having created sub-samples from the collected questionnaires we analysed whether the companies admitting to have a fixed leverage ratio reported stronger tradeoff considerations in their debt decisions than the ones not having fixed level of leverage. Our regression results show that such an impact exists, but it is rather weak. Through creation of sub-samples we show also that the connection/separation of managerial and shareholder roles has a decisive impact on financing policy, while there is no similar proof for the origin of dominant management culture (local or international). We find evidence for the negative relationship between the interconnection of managerial and shareholder roles and the managerial intention to set a fixed leverage ratio, including the discipline of adjustment towards the target. In the meantime, we show a rather positive relationship between this interconnection and the probability of entering the external debt market. On the contrary, managers with low or zero ownership follow a more conservative financing policy, which is not only characterized by lower probability of entering into the external markets, but also by a higher likelihood of passing up an otherwise promising investment opportunity if a substantial restructuring of the firm's balance sheet is required. Based on the above mentioned,

We find that only about one quarter of the companies set a predefined leverage ratio in the CEE region, which companies are more likely managed by non-owner managers, as opposed to firms not setting fixed leverage ratio in which managerial ownership is significantly higher. We find that the separation of ownership and management roles has a strong positive impact on the extent to which firms keep to a predefined capital structure.

In the following sections of the thesis I present our detailed research results with my supervisor, Dr. Mihály Ormos, closely following the structure of the papers in which these results were accepted for publication. The large sample debt-equity choice analysis has been accepted by *Acta Oeconomica* in March 2012 under the title “*Capital structure and its choice in Central and Eastern Europe*”. Previous versions of the working paper were presented to participants at the 2010 INFINITI Conference at the Trinity College, Dublin, Ireland and at the EuroConference 2010, organised by the Society for the Study of Emerging Markets, in Milas, Turkey.

Our survey-based analysis of capital structure has been accepted for publication in the *Baltic Journal of Economics* in 2012, under the title “*What managers think of capital structure and how they act: Evidence from Central and Eastern Europe*”. The working paper version of the study was presented to the participants at the 3rd ECEE Conference in Tallinn (2011), Estonia.

While I keep very much of the original text of the two papers above, it is possible that amendments are made and supplements are added which I think worthwhile and useful for easing the understanding of the results. In addition, I have also revised and modified some terms, abbreviations, the way of quotations and literature references of the two papers to provide consistency within this document.

II. THE CAPITAL STRUCTURE AND ITS CHOICE IN CENTRAL AND EASTERN EUROPE¹⁴

II.1. Introduction

We will analyse capital structure and its choice by small and medium-sized enterprises (SME) in the Central and Eastern European (CEE) countries. We will test the relevance of three rival capital structure theories: the static tradeoff theory (STT) (Rajan and Zingales (1995), Michaelas et al. (1999)), the agency theory (AT) (Graham and Harvey (2001); Brounen et al. (2006)) and the pecking order theory (POT) (Shyam-Sunder and Myers (1999); De Haan and Hinloopen (2003)).¹⁵ We will use a standardised model for all countries to test the relevance of these models for the investigated region, which consists of 9 new EU members (Bulgaria, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania and Slovakia) and two candidate countries (Croatia and the Republic of Serbia). We examine whether this block of countries has a corporate financial behaviour similar to developed countries using a firm-level dataset similarly to Hovakimian et al. (2001) and Booth et al. (2001). The explanatory power of the theories for specific countries will not be investigated here because it is assumed that the institutional and legal framework and the background of former socialist countries share many common characteristics. We will examine whether the capital structure determinants that have previously proven to be good predictors in developed countries will increase or decrease their relevance over time for the CEE countries. In addition to the total financial leverage, we also examine the long-term leverage.

The homogeneity of CEE countries is often assumed at different policy levels such as development, cohesion and lending. Despite the fact that common roots of the economic structure of these countries date back before 1990, the development of their economic and financial systems over the last 20 years has been subject to different institutional and legal regulations. While capital structure theories have been set primarily for developed markets (see for instance Rajan and Zingales (1995); Graham and Harvey (2001); Frank and Goyal

¹⁴ Hernadi, P., Ormos, M. (2012). 'Capital Structure and its Choice in Central and Eastern Europe.', *Acta Oeconomica*, 62, pp. 229–263.

¹⁵ The STT argues that a firm increases leverage until it reaches its target debt ratio that represents the optimum between the benefits of interest tax shield and the costs of distress. The AT suggests that the debt can be used as solution for solving conflicts of interests between managers, shareholders and creditors of the company. The POT advocates that there is a hierarchy in financing (from internal financing to equity) originated from asymmetrical information as managers know more about their companies' prospects, risks and internal value than outside investors.

(2003); Brounen et al. (2006)), we have very limited knowledge regarding their validity for emerging European countries with less developed financial markets. Chen (2004), Fan and So (2004), and Lin et al. (2008) concentrate on emerging countries; however, their regional scope is mainly Pacific Asia or listed companies (Booth et al. 2001) without any regional restriction.

Post-communist European countries have received less attention in academic papers.¹⁶ Our paper concentrates on SMEs, which are socially and economically very important, as they represent over 99% of all enterprises in the EU, and provide around 65 million jobs. We use the Amadeus database for the period 2002 to 2007.

We apply a model similar to Hovakimian, Opler and Titman (2001), consisting of two stages. In the first stage, we set up a preliminary model with the total leverage ratio as dependent variable and the full set of explanatory variables to identify the factors that determine the capital structure and to estimate the optimum (target) level of leverage. In the second stage, we analyse the extent to which firms follow a strict level of target leverage; and if the deviation from that level requires an adjustment, we explore the form of funds the companies prefer to issue or repurchase.

II.2. Summary of empirical findings

Our study focuses on capital structure decisions in CEE countries and tests whether they are similar to decisions made in the most developed economies. Cross-country analyses have a less broad literature than country-specific empirical studies. One of the few exceptions is the paper by Rajan and Zingales (1995). The authors compare the capital structure choices of firms in the most industrialised countries to that of US firms. They not only find that the relevant factors in other G6 countries are fairly similar to those found in the US, but also that the level of leverage, after relevant adjustments are made, is more similar across G7 countries than had been previously thought. Booth et al. (2001) also analyse the leverage choice using a firm-level database composed of emerging Asian, African and Latin American companies. Similarly to Rajan and Zingales (1995), they confirm that the factors relevant in the US and developed Europe play a determinant role in explaining capital structure in less developed regions also. Delcoure (2007) investigates the determinants of leverage in Russia, the Czech Republic, Slovakia and Poland in the midst of their transition process (1996 to 2002). Focusing on the largest listed companies, she finds that only a few assumptions of the conventional theories are characteristic to regional firms, while none of them could

¹⁶ A few notable exceptions are Klapper et al. (2002); Nivorozhkin (2002, 2004, 2005); de Haas and Peeters (2006); Delcoure (2007) and Crnigoj and Mramor (2009).

exclusively describe the firms' leverage choice. As a best approximation, the companies' attitude can be described by a modified financing hierarchy in which they prefer to use internal capital to external funds, and only after the financial slack is entirely used are they motivated to engage external equity rather than bank debt. The study by Gaud et al. (2007), using a dynamic model, sought to determine whether the leverage choice of companies in 13 western European countries could be simplified to a common European model.

Unlike previous studies, Brounen et al. (2006) conduct an international survey on capital structure choices among European CFOs in Germany, France, the Netherlands, and the UK. Testing robustness of the POT they reveal that, similarly to the findings of Graham and Harvey (2001) for US firms, a pecking order consistent behaviour is apparent among managers. However, in their opinion, this hierarchy is not driven by the costs of asymmetrical information as initially suggested Myers (1984) and Myers and Majluf (1984). Moreover, the STT also holds partly as it is supported by the pronounced importance of the target leverage ratio. In opposition to Delcours (2007), the differences in institutional systems and financial orientation among countries are not found to substantially influence the choice of financial objectives.

Bartholdy and Mateus (2008) found that profitability acted against leverage for a large sample of European SMEs, while firm growth impacted leverage positively that both support the POT. Other recent studies focusing on SMEs revealed that companies showed rather a pecking order driven behaviour (Chittenden et al. (1996); Berger and Udell (1998); Michaelas et al. (1999); Berggren et al. (2000)): small firms are more constrained to rely on internally available funds and, thus, to follow a pecking order consistent behaviour, as banks are more cautious in their lending policy, in particular for long-term, when their ability to control the adverse selection problem is more limited (see Beck et al. (2009) on the role of law enforcement). As Szerb and Ulbert (2009) summarise, small businesses are not scaled down versions of large firms because they differ in organizations, style of management and the way of competition. When sources of debt are scarce and their cost increases, external equity financing may become a viable alternative.

II.3. Data

We use Bureau van Dijk's Amadeus database, one of the most comprehensive pan-European firm-level data sources often used in similar researches (e.g. Desai et al. (2003); Hutchinson and Xavier (2006)). Our geographic scope covers nine countries that joined the

EU in 2004 (the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland and Slovakia) or 2007 (Bulgaria, Romania), and two candidate countries (Croatia, Republic of Serbia).

Keeping to our goal of investigating the class of small and medium-sized companies, we follow the official EU Recommendation regarding the definition of SMEs in the construction of our sample. The Recommendation 2003/361/EC states that one can consider a company with 10 to 49 employees and a turnover of EUR 2 to 10 million, or total assets of EUR 2 to 10 million as small, whereas a company with employees of 50 to 249 and a turnover of EUR 10 to 50 million, or total assets of EUR 10 to 43 million is considered to be a medium-sized company.¹⁷

The data include full-length balance sheet and income statements as well as additional information on industry, ownership structure and creditworthiness for all SMEs that have a complete financial history for the period from 2002 to 2006. We apply the common method of excluding firms that belong to the financial and utilities sector. Following our selection criteria and based on 2006 data, 54,612 company records could be initially sorted. As a next step, we eliminated companies that did not have a complete and meaningful financial history for the entire period. Eliminating meaningless data consisted of removing companies that recorded, at least once in the investigated period, an asset or liability item (except other shareholder funds) with a value higher than 100% of the total assets or an asset item with negative value. We also excluded firms whose shareholder funds or subscribed capital was negative in at least one year between 2002 and 2006, and we eliminated from all annual subsamples the companies reporting, in the given year, a debt-to-equity ratio higher than 400%. This technique serves to mitigate the potential bias linked to firms in very serious financial distress which are not expected in any sense to set up their capital structure based on the financial theories¹⁸. After all adjustments, we could build our analysis on a sample of 26,868 firms. Further selection has been required so that analyses could be built on a more homogenous sample with the full set of explanatory variables available (we introduce these

¹⁷ We have restricted the identification of SMEs to simple financial criteria, and have not carried out any selection beyond this quantitative framework. Albeit this simplification undisputedly distorts to some extent the sample analysed throughout the inclusion of firms that are not necessarily SMEs in technical sense (e.g. member of larger firm groups or holdings), our sample size makes the individual judgment of firm status impossible.

¹⁸ By admitting that with this voluntary exclusion of firms with signs of extremity in capital structure we slightly influence the constitution of our sample in favour of the 'average' or ordinary companies, which are more likely to survive and operate in the long run, we believe that the risk of losing valuable observations and, therefore, that of biased conclusions is limited. Both the STT and the POT are explicitly based on the idea of sustainable shareholder value creation, and emphasis the dynamic nature of capital structure. Seriously distressed firms, which are on the brink of dissolution, or under administration, or threatened permanently by their creditors are expected to add very little, if any, to our understanding of prevailing capital structure determinants in the broad spectrum of industry players,

variables later). The sample of data we use slightly changes from year to year, as a firm may have a full record on all explanatory variables for a given period, but a missing record for another one. On average, between 22,000 and 24,000 companies compose an annual dataset, except for 2002, for which we have around 19,000 records.

II.3.1. Summary of balance sheets

Before running our regressions, we put emphasis on the examination of aggregated balance sheet data (see Table 2.1).

Table 2.1 Aggregate balance sheet data

2006	Bulgaria	Czech Rep.	Estonia	Croatia	Hungary	Lithuania	Latvia	Poland	Romania	Serbia	Slovakia	Total
Fixed assets	36.1	34.7	40.5	38.8	36.9	38.6	36.4	40.9	39.5	45.6	43.6	39.2
Intangible assets	0.8	0.7	0.4	0.8	0.7	0.5	0.3	0.9	0.4	0.6	0.5	0.6
Tangible assets	29.6	31.4	33.8	34.5	34.0	33.8	33.5	36.6	36.8	42.1	40.6	35.3
Other / Financial fixed assets	5.7	2.6	6.3	3.5	2.3	4.2	2.7	3.5	2.4	2.9	2.5	3.2
Current assets	63.9	65.3	59.5	61.2	63.2	61.4	63.6	59.0	60.5	54.4	56.4	60.6
Inventories	23.0	18.8	21.1	17.8	20.4	23.9	26.4	17.6	19.7	21.4	15.9	19.6
Accounts receivable / Debtors	27.3	27.3	24.0	30.2	26.0	28.4	29.1	27.9	29.3	27.9	24.9	28.1
Other current assets	1.0	7.6	1.6	6.7	9.4	2.0	0.1	2.5	1.7	1.0	5.2	3.5
Cash & short term investments	12.5	11.6	12.7	6.4	7.4	7.1	8.0	11.1	9.6	4.1	10.3	9.5
Total assets	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Shareholders' equity	43.4	50.7	52.1	41.2	41.4	45.7	37.2	53.0	38.0	49.2	52.8	46.3
Subscribed capital	8.4	18.1	6.4	16.4	9.5	15.5	12.5	23.5	6.8	25.4	21.9	15.9
Other shareholders funds	35.0	32.6	45.7	24.9	31.9	30.2	24.7	29.5	31.3	23.8	30.8	30.3
Long term liabilities	11.5	8.4	11.6	14.8	9.4	12.9	15.7	6.7	11.5	9.5	9.7	10.3
Long term debt	11.1	4.4	10.1	n/a	n/a	12.0	14.8	4.3	n/a	6.5	6.0	n/a
Other long term liabilities	0.4	3.9	1.5	n/a	n/a	0.9	0.9	2.4	n/a	3.1	3.7	n/a
Current liabilities	45.1	40.7	36.4	43.9	49.4	41.5	47.1	41.0	50.5	41.3	37.6	43.5
Current loans	5.8	5.6	7.6	6.7	11.9	10.7	10.9	5.8	n/a	7.5	5.0	n/a
Accounts payable / creditors	25.0	22.8	21.3	26.9	22.1	24.2	28.3	22.1	n/a	29.9	21.3	n/a
Other current liabilities	14.4	12.3	7.5	10.3	15.4	6.5	8.0	13.2	n/a	3.9	11.3	n/a
Total liabilities and equity	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Average Employees	78.6	87.9	63.0	61.8	73.4	86.9	86.8	93.8	74.5	76.1	89.3	80.4
Number of firms	1 035	3 683	1 018	2 587	1 398	980	830	4 927	4 243	1 895	685	23 281

Notes: Table 2.1 shows standardised balance sheet data for each country investigated. Columns with national figures give the simple arithmetic average. The column Total gives the simple arithmetic average of pooled company data. Reported figures are based on accounting data as of 2006 FYE. The standardisation of data is provided by the Amadeus. We eliminated meaningless records so as to avoid biased representations. Accordingly, current asset and current liabilities figures for the Czech Republic and Hungary are based on a restricted sample of 3,175 and 717 companies, respectively. This adjustment may cause minor inconsistencies in the sum of percentage numbers. Detailed data on the structure of long-term liabilities is entirely missing for Croatia, Hungary and Romania. Current liabilities are not detailed for Romania. Slovenian firms are excluded from the analyses due to their incomplete dataset.

Figures show significant differences in the companies' asset structure across the regional countries, with the Czech Republic having the lowest average proportion of fixed assets followed by Bulgaria, Latvia and Hungary. In the late years of transition none of the countries can be considered as having an Anglo-Saxon type financial system; therefore the finding of Rajan and Zingales (1995) about the higher proportion of tangible assets in market-based economies is hardly testable. However, it seems admissible that regional SMEs have about as much current assets as listed firms have in the most industrialized bank-based European countries, and much more than the US, UK and Canadian companies have¹⁹. The internal structure of fixed assets presents a higher homogeneity in the region than it was found for listed companies in the G7 countries. The proportion of tangible to total assets (30 to 37 per cent on average) remains reasonably close to the ratio measured earlier in Continental European countries, but lags behind the US and UK firms. Two notable exceptions are Slovakia and Serbia where it exceeds 40 per cent. Similarly, the structure of current assets is quite homogenous: the largest share uniformly consists of debtors, closely followed by the inventories. In the meantime, the ratio of cash and equivalents exhibits high relative heterogeneity across countries as compared with other assets.

The side of liabilities is expected to reveal much more evidences on firms' capital structure differences. The ratio of book equity to total assets ranges from the lowest 37.2 per cent in Latvia to the highest 53.0 per cent in Poland. These values are significantly higher than the similar ratio calculated for listed G7 companies except Canada and the UK. At the same time, the composition of equity presents a significant heterogeneity across the countries, with Serbia being the only one that uses more subscribed capital than other equity funds.

Consistently with Demircuc-Kunt and Maksimovic (1999), our sample supports one of the sharpest differences between the capital structure of developing and developed countries, that is to say, the relative underuse of long-term debt. Rajan and Zingales (1995) report a long-term debt ratio far above 20 per cent for US and Canada, 19 per cent for Japan and a ratio between 10 and 16 per cent for the European economies. Among CEE countries, the average ratio of all long-term liabilities to assets in 2006 remains close to 10 per cent only. Baltic firms are ahead of Bulgarian companies in use of long-term debt, whereas firms in the biggest Central European countries use more extensively other long-term liabilities such as lease or inter-company loans. The magnitude of difference in current liabilities across countries is quite similar to that of shareholders' equity: Romanian and Hungarian firms

¹⁹ Comparisons should be interpreted with caution regarding the 15-years' time difference between the two studies.

operate with the highest proportion of current liabilities (close to 50 per cent), while Estonian, Slovakian, Czech and Polish firms barely reach 40 per cent. Surprisingly not only long-term debt, but short-term loans are also less used by the majority of CEE companies than their counterpart in the most developed Anglo-Saxon economies.

Table 2.2 Leverage statistics

Total Leverage ratio						
	2002			2006		
	Mean	Std. Dev.	Firms w/o debt (%)	Mean	Std. Dev.	Firms w/o debt (%)
Bulgaria	0.241	0.257	31.4	0.287	0.260	14.6
Czech Rep.	0.219	0.225	27.1	0.223	0.224	17.5
Estonia	0.268	0.237	18.2	0.258	0.239	18.1
Croatia	0.311	0.250	15.8	0.345	0.245	10.4
Hungary	0.153	0.191	29.0	0.226	0.226	20.9
Lithuania	0.282	0.222	12.5	0.325	0.243	11.3
Latvia	0.375	0.238	6.1	0.402	0.241	1.8
Poland	0.213	0.234	29.5	0.187	0.216	28.7
Romania	0.275	0.253	22.3	n/a	0.233	20.9
Serbia	0.185	0.210	15.2	0.274	0.229	7.0
Slovakia	0.201	0.217	14.4	0.224	0.217	0.9
Total	0.243	0.240	22.6	0.249	0.237	17.6

Long-term Leverage ratio						
	2002			2006		
	Mean	Std. Dev.	Firms w/o debt (%)	Mean	Std. Dev.	Firms w/o debt (%)
Bulgaria	0.171	0.231	43.5	0.206	0.237	22.6
Czech Rep.	0.147	0.196	38.1	0.138	0.182	25.6
Estonia	0.174	0.207	30.8	0.175	0.206	26.6
Croatia	0.214	0.231	31.8	0.262	0.232	19.0
Hungary	0.136	0.178	30.1	0.155	0.187	27.0
Lithuania	0.156	0.192	30.2	0.215	0.221	19.2
Latvia	0.239	0.225	13.9	0.280	0.222	2.8
Poland	0.107	0.178	49.5	0.103	0.165	42.9
Romania	0.159	0.217	43.4	0.229	0.233	20.9
Serbia	0.102	0.160	32.8	0.172	0.198	20.9
Slovakia	0.148	0.198	19.7	0.159	0.188	1.0
Total	0.150	0.204	38.1	0.178	0.211	25.5

Table 2.2 presents the total and the long-term leverage ratio statistics for the investigated countries in 2002 and 2006. The total leverage ratio is calculated as the sum of long-term liabilities plus current loans divided by the sum of book equity, long-term liabilities and current loans. The long-term leverage ratio is calculated by dividing the year-end value of long-term liabilities by the sum of book equity and long-term liabilities. The Mean column reports the simple arithmetic average at the financial year-end. The Std. Dev. shows the standard deviation of leverage ratios. The column Firms w/o debt (%) shows the share of companies with zero total debt (panel Total Leverage ratio) or zero long-term liabilities (panel Long-term Leverage ratio). Total figures represent statistics for pooled observations. For Romania, the structure of current liabilities is missing for 2003 to 2006; consequently, the total leverage ratio is incomputable in 2006.

Table 2.2, Figures 2.1 and 2.2 provide detailed information on the evolution of financial leverage from 2002 to 2006. Leverage figures reveal a much greater distinctness among the countries than what one can expect based on the average balance sheet records. In 2006, the total leverage ratio spreads between 18.7 per cent in Poland and 40.2 per cent in Latvia with a sample average of 24.9 per cent. Compared to 2002, full-sample average hardly changed until 2006, while national averages shifted more considerably, a fact which corresponds well to the earlier finding of Nivorozhkin (2005). The phenomenon although is apparently not due to the mean reversion of leverage ratios as thought earlier. On the contrary, the long-term leverage ratio increased by almost 3 percentage point on average, providing evidence for the relationship between accessible long-term credit facilities and the development of financial markets. As compared to the findings of Nivorozhkin (2005) for the period 1997-2001, the regional average of total book leverage remained practically unchanged in the period of 2002-2006. With regard to comparative book debt to capital ratios of Rajan and Zingales (1995), our figures show that fifteen years after the transition, regional SMEs are still underleveraged compared to G7 countries.

Figure 2.1 Evolution of total leverage ratio

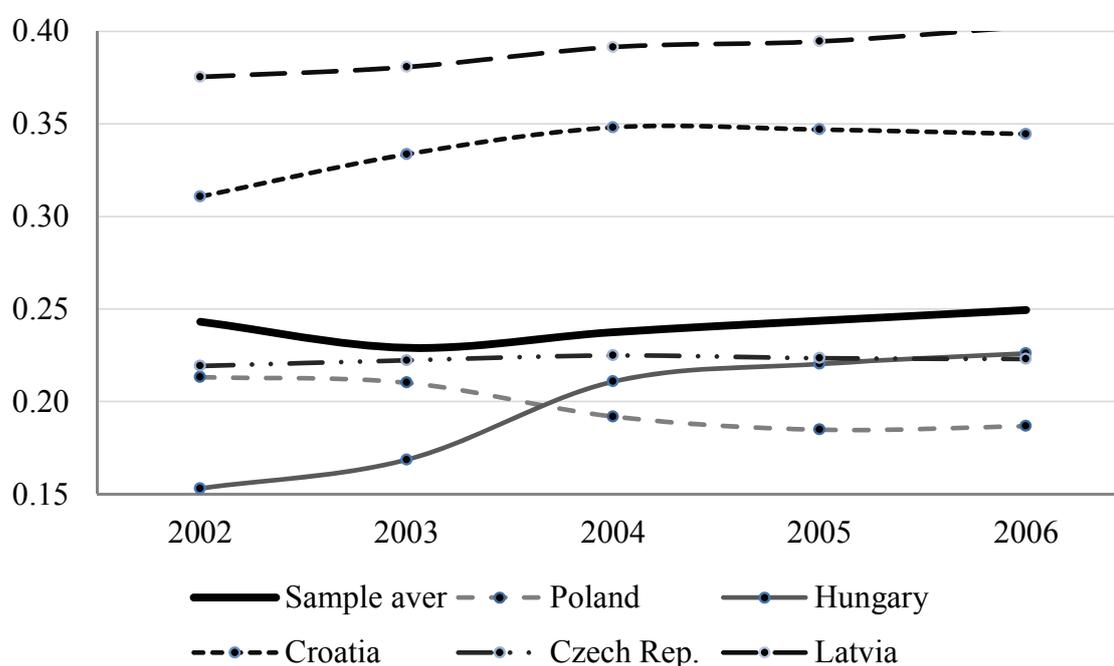


Figure 2.1 presents the evolution of total leverage ratio in the full sample and some countries between 2002 and 2006. The total leverage ratio is calculated as the sum of long-term liabilities plus current loans divided by the sum of book equity, long-term liabilities and current loans.

Similarly to 2002, the use of long-term debt in 2006 remained highly diverse across countries, with the lowest ratio in Poland (10.3 per cent) and the highest in Latvia (28.0 per

cent). While the overall long-term leverage ratio rose significantly, this progress was not led by the most advanced economies, as the average for Serbia and Croatia in 2006 exceeds the ratio measured in some of the EU member countries. Consistently with our findings on the total leverage ratio, only Latvia, Croatia, Lithuania and Romania are indebted as much for long-term as the least leveraged developed countries, namely the UK, Germany and Italy.

Figure 2.2 Evolution of long-term leverage ratio

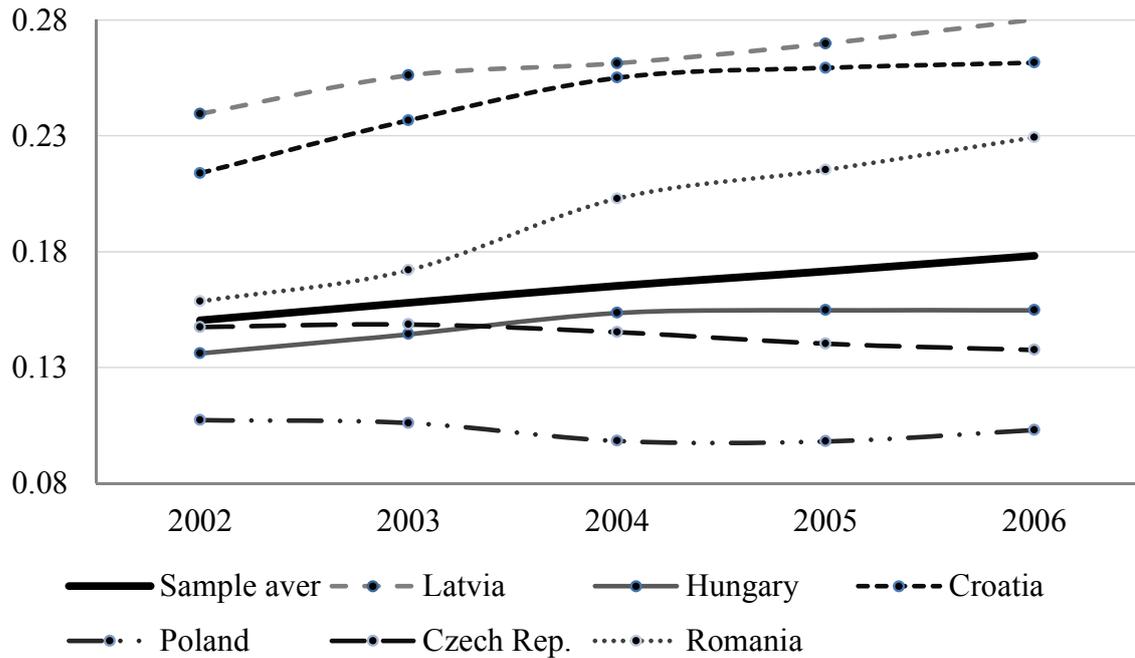


Figure 2.2 exhibits the evolution of long-term leverage ratio in the full sample and some countries between 2002 and 2006. The long-term leverage ratio is calculated by dividing the year-end value of long-term liabilities by the sum of book equity and long-term liabilities.

II.4. Methodology and model specification

We analyse the capital structure through the dynamic attitude the companies follow in their choice of financing. We apply the two-stage model introduced by Hovakimian et al. (2001) and closely followed by Gaud et al. (2007) and Kayhan and Titman (2007). These studies concentrate on the strength of the static tradeoff theory with the analysis of firm's practice in adjusting the capital structure, assuming the firm is currently over- or underleveraged relative to a leverage optimum. The first stage serves to identify the factors that determine the capital structure and also to estimate the optimum leverage. In the second stage, we examine the extent to which firms follow a strict target (optimum), and we also analyse the nature of funds the firms prefer to issue (increase) or repurchase (decrease) if the deviation from its target requires any adjustment.

Including all countries, we set up a preliminary model based on the mid-period data (2004) with the total leverage ratio as dependent variable and the full set of regressors, as follows:

$$\text{Lev}_{i,t} = \alpha_t + \beta_t X_{i,t} + \gamma_t \text{DP}_i + \chi_t \text{DC}_i + \delta_t \text{DI}_i + \varepsilon_{i,t} \quad (1)$$

where $\text{Lev}_{i,t}$ is the book leverage ratio for company i in year t ; $X_{i,t}$ is the vector of explanatory variables; DP_i is a listed company dummy; DC_i and DI_i are vectors of country and industry dummies²⁰, respectively; and α_t is the constant term. The β_t , γ_t , χ_t , and δ_t are the respective coefficients, and $\varepsilon_{i,t}$ is the error term.

The equation above is a preliminary step of the analysis by which we estimate the impact of investigated variables on leverage. By doing so, as the STT, and only the STT assumes an optimum leverage ratio that is cross-sectional dependent on firm attributes, it turns up that we compare the estimated coefficients of variables with our prior expectations on their impact on leverage. Following this, if the estimated impact of a determinant turns to be consistent with the STT, we have an argument that this determinant is most likely to have a non-zero impact on the amount of debt used (either positive or negative); therefore, for analysis purposes we allocate this variable into the equation by which we estimate a leverage optimum for the firm.

On the contrary, those variables whose estimated coefficient is not in line with assumptions of the STT, but theoretically consistent in a pecking order-driven behaviour, go directly into the second stage analysis and will be used to model the debt-equity choice of the firms, directly. This is basically the idea what the POT advocates.

We run the preliminary regression using a TOBIT estimator with a dependent variable left-censored at zero to avoid biased estimation. The Maximum Likelihood Method is applied with heteroscedasticity-consistent standard errors obtained using Huber-White adjusted standard errors.

To sum up, all explanatory variables with a significant non-zero coefficient that are consistent with the STT will be assigned to the target leverage equation. The other variables, either inconsistent or insignificant, will be allocated to the debt-equity equations (second stage). Once the irrelevant variables are eliminated, the model is rerun on the basis of the remaining variables to get an estimated value for the optimum leverage ratio. By doing so, we complete the first stage of our analysis.

²⁰ Industry dummies applied are for manufacturing, construction, retail, wholesale and services.

In the second stage, firms' debt-equity choice is analysed using a LOGIT model. The LOGIT is a proper method of estimating a dependent variable that is not continuous on a metric scale, such as a dummy that represents the occurrence/non-occurrence of an event. Our dependent variables are dummies that control for firms' financing transactions (Hovakimian et al. (2001)). In order to estimate the occurrence of specific financing events, a proxy variable for the deviation from the optimum is applied in the second stage equations, along with other explanatory variables that are found to be either inconsistent or weak to predict the optimum leverage. As discussed above, since the STT assumes that such an optimum ratio exists, we use the variables sorted in the first stage to determine the optimum endogenously. The second stage equation is formulated as follows:

$$Y_{i,t} = \theta_t \text{LevDev}_{i,t-1} + \lambda_t Z_{i,t-1} + v_{i,t} \quad (2.)$$

where $Y_{i,t}$ is a binary variable for occurrence of two different financial transactions in year t , $\text{LevDev}_{i,t-1}$ is the estimated deviation from the target leverage (in percent of the total capital) at the end of year $t-1$, $Z_{i,t-1}$ is a vector of explanatory variables, θ_t and λ_t are the respective coefficient estimates, and $v_{i,t}$ is the error term.

Analysed events represent mutually exclusive choice of funding in a given year. We model firms, for instance, that opt for an increase in borrowing by comparing them to ones that increase instead book equity from external sources. Similarly we investigate what leads firms to retain earnings and use it in financing rather than engage new debt. The choice between loans of different maturity is also examined, just as repayment/divestment decisions.

We expect that if the STT holds in the financing of SMEs, and the variables sorted in the first stage are good proxies of the underlying factors, then we will estimate a highly significant non-zero coefficient for the deviation of leverage variable. Moreover, if the intention of adjustment toward the target drives only the firms' capital structure decisions, while they do not consider any other factor as important, then we can expect zero or quasi zero estimated coefficients for the other independent variables.

On the contrary, if these other factors are influencing the increase or decrease of equity (debt), then their estimated coefficients will likely be significantly non-zero, challenging thus the assumption that firms indeed set any sort of target leverage ratio. This outcome would be the failure of the STT and could probably show a pecking order-like behaviour.

We identify the initial set of explanatory variables based on previous empirical works²¹. The most important factors in testing the trade-off between the tax advantage and the distress cost of leverage constitute a ‘conventional’ set of determinants. We also add a few other variables that we think may influence the leverage decision of SMEs. Some of these variables are deemed to be relevant because, unlike most of previous studies, we concentrate on unlisted firms for which market-based proxies are not observable. The set of investigated proxies is exclusively built up on balance sheet and income statement data, and all are pooled in a common model.

II.4.1. Measures of leverage

As dependent variable, we apply a leverage ratio calculated as the sum of long-term liabilities plus current loans divided by the sum of book equity, the long-term liabilities and the current loans. This measure is hereafter termed the total leverage ratio. We also run the model based on the long-term leverage ratio, computed as the amount of long-term liabilities divided by the sum of book equity plus long-term liabilities. The explanatory variables and their impact on leverage as suggested by the capital structure theories are presented in Table 2.3.

Table 2.3 Capital structure determinants

Variable	Formula	Proxy for	Predicted effect on leverage	
			STT	POT
TAX	effective tax paid / profit before tax	tax shield of debt	+	
ROA	EBIT / total assets	current profitability	+	-
RISK	5-y standard deviation of ROA	financial distress cost (business risk)	-	+
SIZE	log net sales	diversity of operation (business risk)	+	±
D_SIZE	log net sales - log net sales (t-1)	current growth	±	+
OI	5-y average (log total revenue - log net sales)	other revenues	+	
TANG	(tangible fixed assets + stocks) / total assets	asset tangibility	+	-
V_TANG	5-y standard deviation of TANG	instability of operating assets	-	+
CASH	(cash + equivalents) / total assets	accumulated financial slack	±	-
CASH_1	(cash + equivalents) / total assets (t-1)	financial slack (previous)		
V_CASH	5-y standard deviation of CASH	stability of liquidities	-	+
DEPR	depreciation allowances / total assets	current non-debt tax shield	-	±
V_DEPR	5-y standard deviation of DEPR	stability of non-debt tax shield	+	
INTAN	intangibles / total assets	asset intangibility	-	+
V_INTAN	5-y standard deviation of INTAN	instability of operating assets	-	+
ATG	CAGR (net sales / total assets)	position in life cycle	+	±
ICE	CAGR (total revenue / operating costs)	improvement in cost effectiveness	+	-

Notes: Table 2.3 summarises the set of capital structure determinants we investigate in our analyses. Variable is the name of the factor we use as explanatory variable. Formula stands for the method of calculation we apply, and Proxy for describes the investigated characteristic. Based on previous studies, predicted effect on leverage

²¹For instance Myers and Majluf (1984), Titman and Wessels (1988), Rajan and Zingales (1995), Booth et al. (2001) or Gaud et al. (2007)

shows the expected relationship between the variable and the leverage ratio as imply the STT and the POT. Sign ‘+’ represents a positive, while ‘-’ stands for a negative relationship. If any theory is inconclusive on the expected impact, a ‘±’ sign is reported.

II.4.2. Corporate taxation

The static tradeoff theory attributes the highest importance to taxes. Higher corporate tax burdens act in favour of higher leverage when the optimal balance of costs and benefits is to be set.

Tax concerns are assumed to be even more decisive in cross-country analyses where differences might be large among the whole tax systems (e.g. the practice of tax loss carryforwards and carrybacks, tax incentives etc.). We incorporate tax effects in our model (*TAX*) as the income tax effectively paid in the previous financial year divided by the accounting profit before taxation. We consider this measure to be the best proxy for real taxation effects. This is because, on the one hand, even if the annual effective tax rate could be biased, as argue Booth et al. (2001), averaging annual effective tax rates would simply be misleading given that the statutory rates in the CEE countries have shown a regressive trend during the last decade (KPMG’s Tax Rate Survey 2009). On the other hand, income statement data show that SMEs rarely pay as much tax as they should if they were subject solely to rules imposed by their national Corporate Tax Act.

II.4.3. Diversity of operations

Business operations of larger firms are generally more diversified that leads to decreasing risk shareholders and creditors run in the company. One can assume that the degree of diversification is positively correlated with size. Thus, under the STT, the expected impact of size on leverage is positive: larger firms have generally more stable operations, an expanded and more diversified customer base, and, they are often supported on the market by a recognized brand. One can associate hence a higher survivorship rate for larger firms compared to smaller ones. We measure the size variable (*SIZE*) as the natural logarithm of annual net sales, converted into euro (Rajan and Zingales (1995), Gaud et al. (2007)).

Using net sales as size proxy on one hand allows us limiting biases resulting from differences in the companies’ investment policy (capitalizing versus renting assets)²². Using net sales, on the other hand, also helps to avoid underestimating firms, which operate with an elder asset structure. Given the industry distribution of our sample, the selected size measure is not expected to handicap seriously any industry.

²² The issue is often a dilemma in the operational strategy of small and medium-sized enterprises.

II.4.4. Profitability and liquidity

Profitability, as a proxy for internal capacity of financing, plays a pivotal role in both the STT and the POT. We measure profitability (*ROA*) as the ratio of earnings before interest and taxes, say EBIT, to total assets in a given year. Under the STT, EBIT is the appropriate indicator of the income that may be saved through the deductibility of interests (Fama and French (2002)).

We also include cash variables in the model in addition to ROA because we do not adjust our leverage measures for cash which is often considered as negative debt (e.g. Rajan and Zingales (1995)). Moreover, de Haan and Hinloopen (2003) argue that a firm's ample liquidity and high profitability are, together, the indicators of its financial health. Following them and Gaud et al. (2007), we measure the availability of internal funds (or past accumulation of financial slack) by the ratio of cash and equivalents to total assets (*CASH*). Because the year-end amount of cash is most likely affected by the financial transactions undertaken in the given year, we also include the one-period-lagged value of cash variable (*CASH₋₁*) to control for such a bias.

II.4.5. Volatility of earnings

Volatile earnings are often considered as a good indicator of business risk. A financially distressed situation, that is the likely outcome of volatile profitability, has its own costs that can be significant. The most conventional costs of such a situation arise from the renegotiation of supplier and/or debt contracts, or the restructuring of the organization partially or entirely, but one can easily argue that the leaving workforce and skilled management has also a value-deteriorating impact on the business. To control for business risks (*RISK*), we measure the five-year average variability of ROA, as introduced by Booth et al. (2001).

II.4.6. Asset structure

Numerous studies (for example Titman and Wessels (1988)) identify asset structure as a determinant of capital structure. Empirical evidence shows that the proportion of fixed to total assets, used as a proxy for tangibility of assets, positively influences leverage, while intangibility has an opposite effect. We follow Titman and Wessels and we use two asset structure variables (*TANG* and *INTAN*) as proxies for the collateral value of assets. *TANG* is calculated as the ratio of the sum of net tangible fixed assets plus inventories to total assets in the case of regression of the total leverage, while it is calculated without inventories in the

case of regression of the long-term leverage. INTAN is calculated as the ratio of intangible assets to total assets.

II.4.7. Non-debt tax shields

The ratio of depreciation to total assets is a widely used indicator of non-debt tax shields in similar studies²³. We apply the ratio of annual depreciation and amortization to total assets (*DEPR*) as a proxy for non-debt tax shields. We expect that testing non-debt tax shields effects will have, in addition, a particular secondary concern in the leverage decisions of regional SMEs. This is because, unlike listed companies, managers (or owner-managers) of SMEs have many other options to optimise their firm's tax bill than the use of debt and depreciation since these managers are not necessarily interested in impressing the market with profit figures. For their own personal remuneration, corporate spending on personal allowances and perquisites purchased for the shareholder-managers, to some extent, are generally preferred to dividend proceeds that may weaken the expected inverse relation between the leverage ratio and non-debt tax shields.

II.4.8. Position in the lifecycle

Jung, Kim and Stulz (1996) argue that growth opportunities converge managers' interests to those of shareholders, while Jensen and Meckling (1976) and Jensen (1986) suggest that they exacerbate agency problems between debtors and shareholders due to asset substitution and underinvestment problems. To control for growth, Delcoure (2007) follows Chen (2004) by applying the geometric average of five-year sales growth to total asset growth. While we accept and use this proxy in our model too, we consider that this asset turnover growth ratio (*ATG*) is much more characteristic of companies that improve their operational efficiency, which are more likely in the "success" or "maturity" phase of the business lifecycle. Therefore, we use *ATG* as a proxy for the firm's position in the business cycle rather than simply for its growth prospects. Because the asset utilization ratio cannot be indicative in all industries, we also introduce the improvement in cost effectiveness (*ICE*) as an analogous variable for firms involved in the non capital-intensive sector of services and retail. With regard to the straight growth ratio, and based on the assumption that the present rate of growth is sustainable in the near future too (Fama and French (2002)), we also incorporate the *D_SIZE* variable into our model as proxy for growth rate, calculated as log net sales in period t minus log net sales in period $t-1$.

²³ See among others DeAngelo and Masulis (1980), Fama and French (2002), de Haan and Hinloopen (2003), Delcoure (2007) and Gaud et al. (2007).

II.4.9. Additional factors

We also incorporate in the regression the other income (*OI*) variable, computed as the five-year-average of annual log total revenue less log net sales, which serves as a proxy for extra accounting revenues to shield from. We expect *OI* to be positively related to leverage as it increases the firm's taxable accounting income. The variability of tangible (*V_TANG*) and intangible assets (*V_INTAN*) are both considered to control for the instability of assets, and hence, of the business activity. Their expected impact on leverage varies under the static tradeoff and the pecking order theory. Harris and Raviv (1991) point out that firms with more variable tangible assets have a more serious asymmetrical information problem, therefore, under the POT the variability increases the reliance on external debt. Under the STT and the AT stable operational characteristics imply less exposure to moral hazard and adverse selection concerns between debt holders and shareholders. Consequently, the predicted effect of these variables on leverage is rather negative.

The variability of CASH (*V_CASH*) is a proxy for the instability of liquid assets. In the POT, all other things being equal, volatile liquid assets imply that a company more likely has to involve new external funds, which theoretically leads to use more debt (except the case when the firm is badly leveraged, but much of these observations are automatically eliminated from our sample). In contrast with the above, in the STT volatile liquidity does not have a beneficial role on borrowing due to lenders' credit scoring aspects. And at last but not least, the variability of DEPR (*V_DEPR*) shows the extent to which the firm could rely on non-debt tax shields as a substitute for debt in optimisation of the tax bill. A positive relationship is therefore assumed with leverage.

II.5. Determinants of capital structure

We summarise the results of the preliminary regressions in Table 2.4 for the total leverage ratio in 2004 (Panel A). Once the initial regression has been performed, we eliminated the insignificant variables one by one as long as at least one of the Akaike Information Criterion (AIC) and the Hannan-Quinn Criterion (HQC) value decreases.

Panel B shows the coefficient estimates for the remaining significant variables, as well as the TAX and ICE variables²⁴. In the meantime, among the remaining variables, there are still a number of strong, but inconsistent ones with the STT. As such, all of them are excluded from the final equation that is shown in Panel C. The remaining financial variables with the

²⁴ Our reason to keep the tax and operational efficiency variables in Panel B is illustrative and relies on the common financial knowledge that pays considerable attention to these factors.

significant dummies are only the ones whose estimated effect is in line with the static tradeoff theory and, consequently, may be used to estimate the target leverage ratio.

Table 2.4 Regression of the total leverage ratio for the year 2004

Regression of Total Leverage ratio								
2004								
Variable	Panel A			Panel B		Panel C		
	Mean	z-stat		Mean	z-stat	Mean	z-stat	
C	-0.247	-6.24 ***		-0.233	-5.99 ***	-0.166	-4.36 ***	
TAX	0.003	0.98		0.003	1.00			
ROA	-0.232	-12.70 ***		-0.234	-12.84 ***			
RISK	-0.003	-0.18						
SIZE	0.032	13.04 ***		0.031	12.89 ***	0.029	11.87 ***	
D_SIZE	0.057	7.99 ***		0.058	8.14 ***	0.039	6.27 ***	
OI	-0.064	-2.29 **		-0.075	-2.74 ***			
TANG	0.081	7.06 ***		0.078	7.07 ***	0.083	7.58 ***	
V_TANG	0.433	9.66 ***		0.441	9.91 ***			
CASH	-0.498	-16.73 ***		-0.499	-16.79 ***	-0.561	-18.74 ***	
CASH_1	-0.210	-7.12 ***		-0.209	-7.08 ***	-0.225	-7.60 ***	
V_CASH	-0.623	-9.64 ***		-0.621	-9.68 ***	-0.468	-7.48 ***	
DEPR	0.214	4.10 ***		0.241	4.84 ***			
V_DEPR	0.066	1.88 *						
INTAN	0.020	0.26						
V_INTAN	0.094	0.58						
ATG	-0.116	-7.04 ***		-0.116	-7.08 ***			
ICE	0.097	1.58		0.102	1.68 *			
D_P	-0.087	-8.38 ***		-0.086	-8.33 ***	-0.083	-8.07 ***	
D_HR	0.064	5.77 ***		0.060	7.14 ***	0.069	8.94 ***	
D_CZ	-0.028	-2.86 ***		-0.033	-4.66 ***	-0.046	-7.14 ***	
D_HU	-0.106	-9.37 ***		-0.112	-12.09 ***	-0.110	-12.57 ***	
D_PL	-0.111	-11.63 ***		-0.115	-17.03 ***	-0.126	-20.12 ***	
D_SK	-0.005	-0.42						
D_BG	0.018	1.32						
D_EE	0.024	1.86 *		0.019	1.72 *			
D_LV	0.129	10.59 ***		0.124	11.90 ***	0.107	10.35 ***	
D_RS	-0.127	-11.97 ***		-0.132	-16.06 ***	-0.130	-16.47 ***	
D_MANU	0.029	4.97 ***		0.028	5.21 ***	0.025	4.77 ***	
D_CONS	0.048	5.85 ***		0.045	5.94 ***	0.050	6.56 ***	
D_WHOLE	0.047	6.91 ***		0.046	7.38 ***	0.039	6.33 ***	
D_RET	0.043	5.27 ***		0.041	5.39 ***	0.039	5.21 ***	
D_SERV	0.006	0.64						
Mean Leverage		0.245						
OLS R-square		20.8%			20.8%		18.9%	
McFadden R-square		42.1%			42.0%		38.3%	
Akaike info criterion		0.381			0.380		0.404	
HQ criterion		0.385			0.384		0.406	
Number of observations		18 645						
Left-censored observations		3 538						

Notes: The dependent variable (Lev) is the total leverage ratio, calculated as the sum of long-term liabilities plus current loans divided by the sum of book equity, long-term liabilities and current loans. Independent variables are described in Table 2.3 and completed with a number of dummies: D_P is a public company dummy; D_HR D_CZ D_HU D_PL D_SK D_BG D_EE D_LV D_RS are country dummies and D_MANU, D_CONS, D_WHOLE, D_RET and D_SERV are industry dummies. FY 2004 has been selected as basis of the preliminary regression. Lithuania is selected as base country. Due to missing short-term loan data from 2003 to 2006, Romanian companies are excluded from regression of the total leverage ratio. Coefficient estimates are subject to a two-sided statistical test. *, **, *** indicate significant coefficients at 10%, 5% and 1%, respectively. Explanatory variables are tested for multicollinearity. Correlation coefficient matrix of independent variables is not reported. OLS R-square and McFadden R-square indicate the goodness-of-fit of the estimated model. The Akaike info criterion and Hannan-Quinn (HQ) criterion are used for purposes of model simplification. Panel A shows the estimated coefficients and their z-stat based on the full set of analysed explanatory variables. Panel B reports the re-estimated coefficients and their z-stat after the elimination of insignificant variables, with the exceptions of TAX and ICE. The variables in Panel B are further filtered according to theoretical predictions of the STT. In the Panel C, the remaining variables are only the ones estimated to be consistent and significantly related to the leverage ratio (at 1 percent level). Estimation of the target leverage ratio is based on the variables retained in Panel C.

The Panel B exhibits the re-estimated model without the irrelevant determinants. These are RISK (business risks), INTAN (intangibility of assets), V_INTAN (variance of intangibles), V_DEPR (variance of non-debt tax shields), and also TAX and ICE (improvement in effectiveness), and some dummies. One can expect lower leverage optimum for firms with more volatile earnings as they run a higher risk of liquidity problems, argue among others Fama and French (2002). While we measure a negative impact between RISK and the total leverage ratio, the test statistic does not confirm that this impact is significantly different from zero. This result is even more striking if we consider that the investigated sample covers companies, which are much smaller and much less diversified on average than those for which the capital structure theories have been originally developed, so we cannot argue that concerns of lack of transparency and hidden risks are not on the table in capital structure decisions. Similarly low z-statistics are obtained for intangibility of assets and its variability, which is a much less surprising outcome given the intangibles' second-order role in the balance sheet of regional SMEs.

Regression results reveal also that the effective tax rate (TAX) is directly related to leverage, as expected, however its estimated coefficient is close to zero and not significant at 10 percent level. The weakness of TAX acts strongly against the static tradeoff theory overall, and would be easily interpreted as the failure of the theory in a more steady business environment like the US, but it is to keep in mind that in the CEE region there is a continuous competition between the investigated countries targeting capital attractiveness, or direct investments, which results in dynamically changing tax systems at national level (see KPMG's Tax Survey 2009). Hence, it is difficult for local firms, and mainly SMEs, to base their capital structure decisions on a Tax Act that seems not to be unchanged for longer time. In the meantime, it remains true that, as opposed to listed firms, managers of SMEs have very

often more options to optimise their tax bill than through interests paid, therefore the relative irrelevance of tax rate in the amount of debt chosen can be endogenously valid and subsist in time.

The weakness of TAX is in sharp contrast with profitability, which strongly and inversely relates to the leverage ratio. Since the conventional assumption of the STT about the motivation for higher borrowing by more profitable firms is challenged, the ROA variable cannot be attributed to the equation estimating the target leverage ratio.

The variability of tangibles also shows a strongly inconsistent relationship with the STT, as it is contrary to our expectations that the instability of asset structure acts in favour of higher borrowing, taken into account the lenders' concerns raised on weaker collateralizability of assets²⁵. The estimated direct relationship corresponds much better with the POT as firms with more volatile tangibles have a greater exposure to asymmetrical information problem that contributes to increasing cumulative debt (Harris and Raviv (1991)).

Our results also do not confirm the expected impact of non-debt tax shields proxied by DEPR, as we find a positive relationship with the leverage²⁶. Similarly, the proxy for other incomes assumed to positively influence the leverage does not prove to be in line with the theory. Consequently, the TAX, ROA, V_TANG, DEPR and OI variables are all excluded from the equation to estimate the target leverage ratio (see Panel C).

In the meantime, we find that the impact of SIZE, D_SIZE (growth rate) and TANG (asset tangibility) support the static tradeoff theory. Larger firms generally tend to be more diversified which reduces the costs (probability) of entering a distressed situation, and thus allowing a company to borrow more. Tangible assets have higher collateral value in liquidation, and hence, can significantly diminish the implied risk run by the lenders. Higher tangibility therefore allows a higher borrowing rate. And at last, based on the underlying assumption that the current growth of sales may be sustained in the future, the D_SIZE variable is included as a proxy for near-future growth prospects. Coefficient estimates make it apparent that growing firms are not only willing but also able to borrow from banks, which can be interpreted according to the STT, given that additional debt serves as additional tax shield in the present, and also in the future. These variables are directly assigned to the equation of target leverage.

²⁵ We note that V_TANG's correlation with TANG is close to zero.

²⁶ What we have noted earlier concerning the relative irrelevance of effective tax rate in capital structure decisions remains true for DEPR, that is, closely-held companies might have in general more alternatives to lower their corporate tax burdens since their earnings figures are not under permanent monitoring of the market.

As per the other determinants, we estimate a highly significant negative relationship between CASH and leverage that is rather a support for the POT. In the STT, CASH is expected to positively influence the leverage ratio because ample cash reserves allow firms to leverage up thanks to their higher collateral value in liquidation. Nevertheless, in the case of SMEs, one may consider that not all cash and equivalents is an operational asset, as manager-owners of closely-held companies may have limited or no interest in paying out accumulated dividends. In such a case, one part of liquidities may also be regarded as a negative debt, predicting an inverse relationship with leverage. Therefore, we retain all cash-related variables in the equation for estimating the optimum leverage.

Coefficient estimates for business-cycle variables provide a rather ambiguous result for their relationship with leverage. Assuming that increasing asset turnover ratio (ATG) is likely a characteristic of mature companies, the resulting negative coefficient is inconsistent with the STT, while improving cost effectiveness (ICE) is directly related to leverage and is significant at 10 percent. After elimination of insignificant variables, however, only the ATG remains significant at 1%, but its estimated impact better fits a pecking order driven behaviour and is therefore also excluded from the equation of target leverage.

Similar to the total leverage ratio, regressions for estimating the long-term leverage ratio have been undertaken too to verify the relevance of the described factors on firms' long-term borrowing decisions, and our results are strongly confirmatory²⁷.

On the one hand, we find partial support for the finding of Nivorozhkin (2002, 2004) on the under-use of long-term debt in the early years of transition in the CEE countries. On the other hand, we found that SMEs aimed to gradually increase the weight of long-term debt within their financing structure which can be considered as a consequence of developing financial markets throughout the region analysed. What is surprising, nonetheless, that this progress appears not to be led by the theoretically more transparent and less credit constrained listed companies because, just as for the total leverage, the negative coefficient of D_P shows that listed companies operate with lower long-term and total leverage than the average SME. Our result contradicts the conclusions drawn from previous analyses on the major differences between developed and developing financial markets, say, the unavailability of long-term loans for small, non-transparent firms with high asymmetrical information while there is a relatively sufficient supply of loans for listed firms.

²⁷ Results are not reported here but available upon request.

As per our dummy variables, our objective of setting up a common capital structure model can be compiled only with some compromises. While a number of determinants that have already survived many tests in developed countries also found to be strongly and consistently related to the leverage in the block of CEE countries, most of the country dummies have yet a significant non-zero coefficient. Fifteen years after the study of Booth et al. (2001), our results imply some similar conclusions: knowing the country to which the company belongs to is usually as important as the value of its relevant financial variables. Running a simple country dummy regression, coefficients range between -0.13 for Poland and 0.13 for Latvia; implying a total leverage ratio spread of approx. 26% based on 18,645 observations.

In the meantime, it is also important to assess that how much out of the variance of leverage ratios can be due to (or explained by) the pure country effects. Having run the equation exclusively on the country dummies, we got an OLS R^2 of only 6.5% that is substantially lower than the resulted R^2 of the full equation (20.8%). To have a clearer picture on these numbers, we make reference here to the strength of country dummies that Booth et al. (2001) found: the authors measured in their sample of ten developing countries a much larger leverage spread (43%) and an adjusted OLS R^2 of 43.2%.

The leverage spreads in our sample reach 28%, 27%, 27% and 28% in 2002, 2003, 2005 and 2006, respectively²⁸. On the whole, despite the undoubted relevance of country effects, small and medium-sized enterprises in the CEE countries appear to behave much more homogeneously than do firms in more distant emerging countries, as show Booth et al. (2001). The industry dummies also prove to be significant with the sole exception of services.

II.5.1. Analysis of robustness

To verify the relevance of the model in time we performed further regressions based both on the full and the restricted set of explanatory variables for each annual sub-sample for the period 2002 to 2006 (Table 2.5). Reported coefficients in Table 2.5 confirm a remarkable time-consistency of the relevant factors throughout the whole period. The variables found in 2004 to determine the total leverage ratio in line with the STT, such as size, growth rate and tangibility of assets, are positively related to the leverage in each annual sub-sample. Similarly, all cash variables are found to negatively impact the leverage from 2002 to 2006.

²⁸ The full list of results is available upon request.

Table 2.5 Regression of the total leverage ratio for the period 2002-2006

Variable	Regression of Total Leverage ratio									
	2002		2003		2004		2005		2006	
	Mean	z-stat	Mean	z-stat	Mean	z-stat	Mean	z-stat	Mean	z-stat
C	-0.191	-4.15 ***	-0.171	-4.30 ***	-0.233	-5.99 ***	-0.196	-4.99 ***	-0.218	-5.52 ***
TAX	-0.004	-1.61	0.003	1.51	0.003	1.00	0.002	0.81	-0.001	-0.37
ROA	-0.110	-5.61 ***	-0.192	-10.64 ***	-0.234	-12.84 ***	-0.314	-16.93 ***	-0.388	-19.10 ***
SIZE	0.027	9.53 ***	0.026	10.54 ***	0.031	12.89 ***	0.029	11.92 ***	0.030	12.45 ***
D_SIZE	0.036	5.91 ***	0.074	10.59 ***	0.058	8.14 ***	0.070	9.25 ***	0.070	9.55 ***
OI	-0.004	-0.14	-0.056	-2.09 **	-0.075	-2.74 ***	-0.109	-4.21 ***	-0.109	-4.02 ***
TANG	0.058	4.44 ***	0.081	7.17 ***	0.078	7.07 ***	0.091	8.30 ***	0.112	10.37 ***
V_TANG	0.233	4.65 ***	0.304	6.69 ***	0.441	9.91 ***	0.571	13.17 ***	0.649	14.99 ***
CASH	-0.530	-13.40 ***	-0.412	-13.20 ***	-0.499	-16.79 ***	-0.465	-15.59 ***	-0.408	-15.02 ***
CASH_1	-0.302	-8.01 ***	-0.271	-9.13 ***	-0.209	-7.08 ***	-0.267	-9.29 ***	-0.315	-11.41 ***
V_CASH	-0.708	-9.81 ***	-0.674	-10.67 ***	-0.621	-9.68 ***	-0.507	-8.31 ***	-0.404	-6.63 ***
DEPR	0.336	5.15 ***	0.193	3.14 ***	0.241	4.84 ***	0.244	3.55 ***	0.068	1.04
ATG	0.006	0.30	-0.121	-7.10 ***	-0.116	-7.08 ***	-0.158	-9.43 ***	-0.198	-11.36 ***
ICE	-0.044	-0.63	0.023	0.40	0.102	1.68 *	0.196	3.38 ***	0.386	5.15 ***
D_P	-0.101	-10.24 ***	-0.099	-10.00 ***	-0.086	-8.33 ***	-0.089	-8.57 ***	-0.089	-8.15 ***
D_HR	0.054	5.52 ***	0.069	8.05 ***	0.060	7.14 ***	0.044	5.68 ***	0.041	5.34 ***
D_CZ	-0.023	-2.56 **	-0.010	-1.43	-0.033	-4.66 ***	-0.046	-6.74 ***	-0.047	-6.97 ***
D_HU	-0.139	-13.14 ***	-0.125	-13.63 ***	-0.112	-12.09 ***	-0.120	-12.95 ***	-0.121	-12.94 ***
D_PL	-0.055	-6.31 ***	-0.054	-7.55 ***	-0.115	-17.03 ***	-0.130	-19.83 ***	-0.127	-19.49 ***
D_EE	0.051	4.53 ***	0.029	2.94 ***	0.019	1.72 *	-0.010	-0.87	-0.015	-1.58
D_LV	0.142	11.63 ***	0.135	12.60 ***	0.124	11.90 ***	0.111	10.84 ***	0.119	12.13 ***
D_RS	-0.110	-11.87 ***	-0.098	-11.79 ***	-0.132	-16.06 ***	-0.081	-9.94 ***	-0.071	-8.82 ***
D_MANU	0.043	6.99 ***	0.034	6.23 ***	0.028	5.21 ***	0.035	6.72 ***	0.028	5.40 ***
D_CONS	0.058	6.48 ***	0.040	5.17 ***	0.045	5.94 ***	0.056	7.70 ***	0.056	7.62 ***
D_WHOLE	0.071	9.55 ***	0.052	8.01 ***	0.046	7.38 ***	0.046	7.45 ***	0.040	6.55 ***
D_RET	0.061	6.83 ***	0.041	5.33 ***	0.041	5.39 ***	0.047	6.23 ***	0.030	4.14 ***
Mean Leverage		0.236		0.242		0.245		0.250		0.254
OLS R-square		16.5%		17.7%		20.8%		23.0%		24.7%
McFadden R-square		30.5%		34.2%		42.0%		48.3%		54.4%
Akaike info criterion		0.525		0.456		0.380		0.329		0.278
HQ criterion		0.529		0.459		0.384		0.333		0.282
Number of observations		15,270		18,682		18,645		18,744		18,987
Left-censored observations		3,466		3,768		3,538		3,377		3,208

Notes: The dependent variable (Lev) is the total leverage ratio, calculated as the sum of long-term liabilities plus current loans divided by the sum of book equity, long-term liabilities and current loans. Independent variables are described in Table 2.3 and completed with a number of dummies: D_P is a public company dummy; D_HR D_CZ D_HU D_PL D_SK D_BG D_EE D_LV D_RS are country dummies; and D_MANU, D_CONS, D_WHOLE, D_RET and D_SERV are industry dummies. Lithuania is selected as the base country. Due to missing short-term loan data from 2003 to 2006, Romanian companies are excluded from regression of the total leverage ratio. Coefficient estimates are subject to a two-sided statistical test. *, **, and *** indicate significant coefficients at 10%, 5% and 1%, respectively. Explanatory variables are tested for multicollinearity. The correlation coefficient matrix of independent variables is not reported. OLS R-square and McFadden R-square indicate the goodness-of-fit of the estimated model. The Akaike info criterion and Hannan-Quinn (HQ) criterion are used for purposes of model simplification.

The tax proxy is inconsistent and weak, having no clear impact on leverage, while profitability is negatively related to leverage in all annual sub-samples. That means that both variables contradict the STT, and these findings are time-consistent.

Based on the strength of the estimated coefficients in each year of the period 2002 to 2006, we find clear evidence that the set of capital structure determinants identified shows a remarkable steadiness. Although this set of variables does not perfectly fit any of the theories analysed, the stability of the model relies on a number of particularly strong determinants that consistently exhibit their importance over the period of 2002 to 2006.

II.5.2. Increasing explanatory power

Having introduced the set of country and industry dummies to control for exogenous effects, by examining their coefficient estimates and their significance in time, a weakening role of the institutional and legal background in the explanation of leverage is observable. In the meantime, most of the conventional capital structure determinants exhibit to have an increasing impact on the leverage ratio. To start with, the size, growth rate and all cash variables remain strongly significant during the whole period. Other variables, such as profitability and tangibility of assets show a monotone increase in significance. Certain other variables, such as non-debt tax shield present an unexpectedly weak influence on leverage, while the “maturity” variables show increasing strength over the period analysed. Although the negative impact of asset turnover growth proxy is not consistent with the theoretical assumptions of the STT, the direct relationship between the improvement in cost effectiveness and leverage seems to be in line with the expectations. The strength of country and industry dummies declined somewhat between 2002 and 2006.

The estimation model with the limited set of regressors (Panel B) provides, therefore, a decent and continuously increasing goodness-of-fit ratio between 2002 and 2006. The McFadden R^2 is continuously increasing from 30.5% to 54.4%. As a whole, we conclude that this outcome provides a steady support for the use of the theoretically consistent variables (Panel C) in the estimation of the optimum leverage ratio that each company is assumed to target.

II.6. The adjustment of capital structure

In the second stage, once the target leverage ratio is approximated, we analyse the relationship between the firm’s measured deviation from this target leverage and its capital structure adjustment process, if any. Following the method initiated by Hovakimian et al. (2001), we investigate the companies’ debt-equity choice by focusing on the significant events of financing. To identify such significant events, we take the financial statements of the firms from the Amadeus and derive a financing cash flow for each firm in an indirect way²⁹. An analysis of events is conducted for the period of 2003 to 2007 that take place in each subsequent year following the financial year ends for which target leverage has been estimated. The model to estimate is as follows:

²⁹ The fact that we apply an indirect way to estimate cash flows definitely reduces somewhat the accuracy of our estimations, as this way we can take only the aggregates if multiple events occur in the same year, which would even have an inverse impact on the capital structure, e.g., a debt raise and a debt repurchase in the same period. However, direct cash flow data were not available for analysis.

$$Y_{i,t} = \theta_t LevDev_{i,t-1} + \lambda_t Z_{i,t-1} + v_{i,t} \quad (2.)$$

where $Y_{i,t}$ is a binary variable for occurrence of two different financial transactions in year t , $LevDev_{i,t-1}$ is the estimated deviation from the target leverage (in percent of the total capital) at the end of year $t-1$, $Z_{i,t-1}$ is a vector of explanatory variables, θ_t and λ_t are the respective coefficient estimates, and $v_{i,t}$ is the error term.

For each Y , instead of directly taking the transactions common for listed companies, such as the issuance of new shares or convertible bonds, the repurchase of equity or the change in dividend payments, we redefine these categories so as to better reflect the specificities of the business environment regional small and medium-sized enterprises operate in. Altogether eight types of event are distinguished accordingly. We consider the raise (and decrease) in subscribed capital as a proxy for the issuance (repurchase) of external equity, ranked as a last resort in the POT. Since issuing corporate bonds is not a viable alternative for our sample of firms, an increase (and decrease) in the amount of bank debt represents the engagement (repayment) of external interest-bearing liabilities, whatever their origin is.

Dividend data were also not available in Amadeus; therefore, to construct a variable that controls for the use of internal funds, we consider the raise (and decrease) of equity funds other than subscribed capital as an increase (decrease) in the retained earnings. These transactions correspond the most to internal equity financing, ranked first in the POT. And at last, but not least we differentiate between the use of long- and short-term debt in the analysis of companies' debt-equity choice to better understand their motivation. For all events of financing, we commonly apply the conventional 5 percent cut-off criterion based on the book value of total assets at the end of previous year, in order to restrict our set of observations exclusively to significant changes in the debt-equity mix.

Analysed transactions represent mutually exclusive choice of funding in the given year. By doing so, we model firms that opt for increase in borrowing ($Y=1$) by comparing them to those that increase instead book equity ($Y=0$) from external sources. We also investigate what leads firms to retain profits ($Y=0$) internally, and what leads them to engage new debt ($Y=1$) rather. The choice between additional use of long-term ($Y=1$) and short-term debt funding ($Y=0$) is also examined. At last, we analysed the motivations behind repaying bank debt ($Y=1$), and external capital ($Y=0$).

The calculated deviation from the optimum, or target leverage is proxied by the *LevDev* variable and can be considered as the cornerstone in testing the static tradeoff theory. In our model, its positive value represents a negative leverage gap, or under-leverage relative to the

estimated target. As a consequence, a negative LevDev value shows that the firm is currently overleveraged.³⁰ Based on the cross-sectional analysis of leverage determinants (Table 2.4, Panel C), we keep the size, growth rate, tangibility of assets and all cash variables, along with the significant dummies to fit the target value of leverage ratio. The estimated target is varying both across firms and time periods.

II.6.1. Additional explanatory variables in the second stage

In addition to LevDev, the remaining independent variables are tested in the second stage regressions due to their elimination from the equation of target leverage (Table 2.4). As such, tax and business risk proxies did not have a significant impact on the leverage ratio; therefore, they were eliminated. Similar reasons explained the exclusion of intangibility of assets and its variability. At the same time, other variables, such as the profitability turned out to be relevant, although their estimated impact was strongly inconsistent with the STT (and consistent with the POT). Similarly, V_TANG's positive impact did not correspond to the assumption that the invariable asset structure increases the capacity of borrowing, while the estimated opposite result can be interpreted under the simple POT by pointing out that for a firm with heavy investment portfolio large external financing need should be primarily fulfilled with debt. The negative impact of other income proxy is similarly difficult to interpret under the STT, and, consequently, it is also included in the second stage regression along with the inconsistent non-debt tax shield proxy.

Based on recent theoretical implications (Hovakimian et al. (2001) and Gaud et al. (2007)) supplemental proxies are also introduced into the second stage analysis in order to control for the most important agency and pecking order considerations not captured elsewhere.

Among the above mentioned variables, we use a proxy (*LEV_DIFF*) for the projected difference between the resulting absolute leverage deviations if the firm decides to transact, with either an undivided equity or an undivided debt transaction, in an amount that significantly exceeds the extent of its current leverage deviation. Based on Hovakimian et al. (2001), in order to calculate the projected absolute deviation from the target, let's denote it with $|\text{Lev}_D - \text{Lev}_t|$ for a debt and $|\text{Lev}_E - \text{Lev}_t|$ for an equity transaction, a specific transaction

³⁰ The use of such a target to calculate the deviation implies the risk of measuring the variable with an error that can also bias the coefficient estimation for the LevDev variable. Pagan (1984) shows, however, that the LevDev coefficient is consistently measured if the error terms in the two stages are not correlated. If they are, a correction procedure must be applied. The other way is to apply variables in the second stage which are not used to estimate the target leverage (first stage) which is supposed by Gaud et al. (2007). Our variables used in the second stage regressions are not correlated with those applied in the first stage.

volume must be defined as “significant transaction”. To do so arbitrarily, we define for each company in the sample this threshold level of financing as being the subsequently observed amount of the newly raised funds during the year (either in equity or debt). But what does this variable effectively control for?

Imagine a company that is slightly underleveraged currently and needs to fund a relatively large new project in the near future. It would be obvious to think that the company will increase its debt if we assume it follows the STT and acts reasonably, but, as its relative underleverage is fairly small while the funding need is quite large and we assume that the firm is not intended to divide the new financing between debt and equity, it can easily happen that at the end of the day, an undivided new debt raised in such an amount may push the resulted leverage further from the firm’s optimum than would do an equity increase in the equal amount (could result, for instance, in very high and unhealthy leverage ratio).

As a result, one can expect that if the companies indeed behave according to the tradeoff theory, they not only consider their current deviation from the optimum, but also the projected deviation from this optimum if, and when, for whatever reason they need to decide on an undivided source of capital in a comparatively large volume. We consider that *LEV_DIFF* is positive if the company would land further from its optimum for the assumed debt increase (decrease) than for a similar equity issue (repayment)³¹.

Furthermore, we apply in the regressions a short-term loan proxy (*STL*) that accounts for the proportion of short-term loans due in one year to total financial debt. Our concern with this variable is driven by the approach of institutional lenders that often try to control the firm’s observable risks by substituting long-term credits for shorter maturity. In their eyes, as the agency theory suggests, short-term debt serves to mitigate problems of asset substitution and moral hazard (Stiglitz and Weiss (1981), Barclay and Smith (1995)).

We also have the *STL* variable interacted with a profitability dummy that is equal to one if the firm posted negative EBIT on average in the previous two financial years. The *STL_D* variable, being non-zero only in case of the financially most distressed firms, controls for exogenously constrained situations that can significantly modify the debt-equity choice of the companies.

And finally, a ready-to-use proxy in the Amadeus database for the implied creditworthiness (*CR_DEF*) accounts for the probability of default as a percentage number at

³¹ To illustrate this with a formula, in that case $|\text{Lev}_D - \text{Lev}_i| > |\text{Lev}_E - \text{Lev}_i|$

each financial year end³². We consider this explanatory variable as the broadest measure of overall short-term risk, incorporating many factors influencing a firm's ability to fulfil its debt-related obligations, and is therefore presumed to be partly correlated with analogous variables in the model.

II.7. Results of the second stage regressions

II.7.1. Increase of financing

Our main goal is to assess whether small and medium-sized enterprises in the CEE region in fact fix a target leverage ratio toward which they tend to move in the short to medium term. To start with, the firms' choice between the increase of subscribed capital (issuance of book equity, $Y=0$) and the increase of new debt ($Y=1$) is analysed in Table 2.6. If our estimation for the optimum level of leverage is correct, then the resulted negative coefficient for the leverage deviation proxy in the debt-equity choice regression proves to be strongly inconsistent with the concept of optimum leverage and rejects at a high confidence level the prior expectation that currently underleveraged firms seek primarily to increase their level of borrowing when they need to find new external funds. Moreover, the negative relationship between the leverage deviation and the intention to increase borrowing is quite robust across the whole period investigated, except for the year 2003. The resulting low goodness-of-fit and the high constant term in each annual sub-sample suggest, in the meantime, that our variables have a relatively poor predictive power as a whole on regional firms' choice between external debt and equity.

Our results are in sharp contrast with the findings of Hovakimian et al. (2001), which support an observable tradeoff consistent behaviour among the investigated US firms whenever they decide to involve new external funds. Very similarly, Gaud et al. (2007) conclude that, although Western European listed companies most likely step up on the external financial markets for reasons other than simply adjusting their capital structure, when they do accordingly, they consider their current leverage deviation as a relevant determinant of the amount of issuance (repayment) of funds. As opposition to our findings, both studies provide thus a rather steady support for the static tradeoff theory, but in the context of publicly listed firms, and in developed countries.

³² Creditworthiness is calculated using a unique model that references the company's financial data to create an indication of the financial risk level. It estimates the probability of default and provides a level of confidence by the value of size, years in business, average number of suppliers, liquidity of the company and the comparison with its sector, the funds dedicated to be paid to suppliers and the likelihood that a company may pay its debts in the next 12 months.

In the meantime, even the above studies point out, in line with our findings the lack of obvious signs of adjustment toward an upper barrier when the firms are currently underleveraged and have no need to seek external funds.

Table 2.6 Logit regression of the increase in debt vs. subscribed equity (2003-2007)

Logit Regression of Increase in Debt versus Subscribed Capital										
Panel A										
Variable	2003		2004		2005		2006		2007	
	Mean	z-stat	Mean	z-stat	Mean	z-stat	Mean	z-stat	Mean	z-stat
C	1.768	12.00 ***	0.275	3.24 ***	1.243	10.26 ***	1.857	14.30 ***	1.953	13.23 ***
LevDev	0.218	0.86	-0.921	-3.50 ***	-1.352	-3.40 ***	-2.150	-4.96 ***	-2.668	-5.18 ***
TAX	-0.019	-0.24	0.060	1.54	0.037	0.94	-0.043	-2.33 **	0.129	1.90 *
ROA	0.538	1.02	3.080	7.49 ***	1.306	2.42 **	1.736	2.71 ***	2.656	4.68 ***
RISK	-0.973	-0.96	-0.024	-0.56	0.347	0.40	2.033	1.78 *	0.814	0.97
OI	0.070	0.09	-1.877	-4.93 ***	-1.165	-2.16 **	-1.372	-2.94 ***	-0.714	-1.13
V_TANG	1.468	1.19	3.153	4.21 ***	4.579	4.32 ***	1.188	1.12	2.952	2.38 **
DEPR	0.697	0.52	-0.405	-0.33	-0.853	-0.67	-3.964	-3.77 ***	-6.188	-4.31 ***
V_DEPR	1.867	0.63	5.992	1.85 *	6.490	2.03 **	4.437	2.69 ***	4.183	1.55
INTAN	2.066	1.25	-3.192	-3.01 ***	-0.069	-0.06	0.813	0.39	-3.076	-2.20 **
V_INTAN	-5.898	-2.14 **	-0.634	-0.22	-7.200	-3.07 ***	-3.379	-0.94	-1.017	-0.37
ATG	-0.762	-1.85 *	-0.965	-3.50 ***	-0.551	-2.09 **	-0.574	-2.26 **	0.404	1.12
ICE	-2.908	-1.38	-0.690	-0.77	-3.868	-2.81 ***	1.059	0.75	-10.511	-6.16 ***
D_SK	0.147	0.38	0.421	2.61 ***	0.923	3.19 ***	-0.954	-6.26 ***	0.203	0.65
D_BG	0.373	1.84 *	1.319	5.87 ***	0.389	1.85 *	0.049	0.23	0.126	0.53
D_EE	1.295	3.89 ***	1.903	6.53 ***	1.997	3.91 ***	1.316	3.10 ***	1.756	4.11 ***
D_SERV	-0.235	-1.07	-0.647	-5.51 ***	-0.838	-5.61 ***	-0.629	-3.65 ***	-0.856	-4.71 ***
STL	0.109	0.77	0.213	2.45 **	0.580	4.53 ***	0.524	3.79 ***	0.169	1.11
STL_D	-0.462	-1.74 *	-0.958	-6.03 ***	-0.625	-2.74 ***	-0.992	-4.23 ***	-0.694	-2.76 ***
LEV_DIFF	-0.002	-0.57	2.525	6.15 ***	0.210	0.39 *	0.314	0.53	0.275	0.42
CR_DEF	-3.027	-2.32 **	1.549	1.44	0.074	0.05	-5.290	-3.84 ***	-3.881	-2.19 **
Mean Y		0.873		0.714		0.876		0.884		0.897
Average Log Likelihood		-0.368		-0.513		-0.347		-0.320		-0.297
McFadden R-square		3.3%		14.3%		7.2%		10.9%		10.5%
No. of obs Y=0		407		1,660		619		607		479
No. of obs Y=1		2,797		4,139		4,392		4,615		4,168

Notes: The dependent variable (Y) is binary representing a financial transaction. Y is equal to 1 if the company raises only net debt, while Y is equal to 0 when the company raises only new subscribed equity. For all transactions, the 5% cut-off criterion of book assets is applied. Debt financing comprises both long-term and short-term financial debts. Analysed observations are mutually exclusive. One part of the independent variables is allocated to the second-stage regressions through the preliminary analysis of the leverage ratio (see Table 2.4 Panels A, B, C). Additional independent variables are introduced. LevDev is the current deviation from the estimated target leverage at the end of year t-1. STL accounts for the share of short-term loans, due in one year, to total debt. STL_D is computed by the interaction of STL with a profitability dummy that is valued to be 1 if the company posted negative EBIT on average in the two financial years preceding the investigated transaction. LEV_DIFF is a proxy that accounts for the projected difference between the absolute leverage deviations if the firm decides to fulfil a significant financing need with either an undivided equity or an undivided debt transaction. CR_DEF represents the implied credit default probability as a percentage, as provided by Amadeus. Due to missing short-term loan data from 2003 to 2006, Romanian companies are excluded from the analysis. Coefficient estimates are subject to a two-sided statistical test. *, **, and *** indicate significant coefficients at 10%, 5% and 1%, respectively. Average Log Likelihood and McFadden R-square both indicate the goodness-of-fit of the estimated LOGIT model.

While the estimated coefficient of the deviation proxy is not consistent with theoretical expectations, some other factors seem to have a definite impact on the firms' intention to finance externally. ROA, that is our profitability measure, is in a strong positive relationship with the increase of debt, suggesting that SMEs intend to engage new external loans rather than equity from existing or new shareholders if they operate profitably. Interestingly, when we examined the cross-sectional determinants of total leverage ratio in the first stage, a strongly negative relationship was shown with profitability that we have interpreted as a clear evidence against the STT.

Therefore, we can argue that the positive relationship between profitability and the intention to borrow rather than injecting fresh external equity in the business is not primarily driven by the idea of optimizing the benefits and costs of borrowing even if the resulting outcome of these transactions pushes firms automatically to a higher leverage. While the STT seems to be inconclusive in explaining the preference for reliance on debt instead external equity, this phenomenon is strongly expected under the pecking order theory. In the POT, for any level of profitability, due to asymmetrical information debt is preferred to equity.

In addition to pecking order concerns, an alternative explanation may be derived from the so-called supply-side constraints of borrowing. In case of bank lending, the formal prudential rules and the more and more sophisticated risk assessment process of credit institutions generally imply gradually stricter credit default analysis on behalf of the lender. As Beck et al. (2009) point out, both lending policies and the underlying institutional structure have notably changed in the lending of SMEs during the recent years: the former relationship-based lending began to dissolve as more foreign institutions stepped up on the credit market of developing countries and introduced their professional standards in credit scoring and credit limits.

Such assessments are mainly based on historical accounting data. As credit institutions are basically the only source of external debt to SMEs, the impact of their complex credit rating process, in which profitability plays a decisive role, can be mirrored in firm's debt-equity choice. While this is just a hypothesis, it remains to justify the extent to which these supply-side constraints hold.

The proxies for the implied credit risk, to start with, mostly support the existence of these concerns in borrowing/lending decisions. With its significantly negative coefficient, our short term loan measure of loss-maker firms (STL_D) confirms the impossibility of additional borrowing for the most distressed companies. An analogous effect is found for CR_DEF which controls for the implied credit default probability, as computed by Amadeus: while its impact proves to be significant in 2003 and 2006–2007, but not in 2004–2005, once the model

is re-estimated excluding similar variables (ROA, STL_D and RISK), a continuously significant parameter estimate is given.

The firm's position in business cycle is controlled for by two variables, the improvement in cost effectiveness (ICE) and asset turnover growth (ATG). Coefficient estimates suggest that more mature and stable firms are reluctant to engage new debt, and they prefer to engage new subscribed equity when they seek external financing. This result contradicts both the tradeoff theory and the pecking order theory in its simple form, but can be justified if we assume that companies follow a complex pecking order hypothesis. This complex consideration of asymmetrical information is based on a multi-period optimization theory that allows for a temporary commutation of external debt and external equity in the hierarchy if and when the firm intends to keep additional debt capacity for future credit application. Thus, if managers deem the economic context favourable to inject new equity in the business with limited disadvantage, then they might prefer to use equity today so as not to consume all borrowing capacity of tomorrow. The temporary nature of this commutation is emphasized by the lack of robustness of the described behaviour over time.

And at last but not least, we find that the dummy of service industry (D_SERV) is one of the most coherent proxies in debt-equity increase decisions, having a highly significant negative coefficient estimate for the whole period, except 2003. This result confirms the primary role of equity-based external financing in less asset-intensive sectors.

II.7.2. Decrease of financing

Divestment transactions, such as the choice between reduction of the subscribed capital (repayment of book equity) and the repayment of financial debt, are analysed in Table 2.7. These decisions are tested on the same set of independent variables. The coefficient estimate for the leverage deviation variable is systematically negative in the whole period, which implies that SMEs carrying out a reduction in their debt ($Y=1$) are primarily those firms whose current leverage is above the estimated optimum and, conversely, firms carrying out a reduction in subscribed capital ($Y=0$) are rather underleveraged. The observed behaviour corresponds well to the STT, but we know at the same time that the theory fails spectacularly when we try to explain the inverse direction, that is when the increase of external debt is analysed in function of the leverage deviation.

Similar to the estimated equation for increase of debt and equity transactions, the estimated coefficients are robust in time, with the sole exception of 2006. We note however

that the calculated pseudo R^2 of the debt-equity repayment regressions is apparently higher than that measured for the regression of increase transactions.

Based on the finding above about the predictive power of our independent variables, there is evidence suggesting that the deviation from the target leverage is a quite important determinant in the choice of funds to be repaid, but it is only marginally important in the choice of fund to be raised. Moreover, for transactions in 2003 we report an insignificant constant term and a particularly high estimated coefficient for the deviation proxy, which suggest that our independent regressors are sometimes strongly determinant, whereas the role of exogenous factors in firms' repayment decisions, which are not controlled for in our model could be very weak.

As being positive if the assumed debt repayment pushes leverage further from the target than does an equity transaction in an equal amount, the LEV_DIFF variable shows robust negative coefficients and behaves consistently with the static tradeoff theory.

Concerning the TAX variable, which once again fails to have a decisive impact on the repayment decision too, we find a series of evidence emphasising that corporate tax rate is not only an irrelevant issue in the determination of optimum capital structure, if any, but it is also in the decisions made to adjust the current capital structure. Therefore, we can conclude that one of the cornerstones of the static tradeoff theory is definitely a soft spot in the CEE region challenging heavily its general relevance among the small and medium-sized companies.

We also find that more profitable firms are more likely to pay back debt than subscribed capital, which result is strongly consistent with the pecking order theory. As it is seen in the Table 2.6 that more profitable firms also more likely to engage new external debt than new external equity, one might have the feeling that the two outcomes contradict each other and weaken the POT. We argue, however, differently.

The positive impact of ROA on the repayment of debt versus equity is not the opposite outcome of the increase of debt versus equity. For whatever reason, firms occasionally need to take up external financing. Whatever their profit margins are this time, the asymmetrical information problems related to debt funding will likely be lower, resulting in an interest towards the use of debt. In the meantime, when they make profit and do not need to finance promising new projects, they will likely pay back debt first. Since we do not compare the external debt transactions with internal equity transactions, both explanations above are in line with the assumptions of the POT.

Table 2.7 Logit regression of the repayment in debt vs. subscribed equity (2003-2007)

Logit Regression of Repayment in Debt versus Subscribed Capital										
Variable	2003		2004		2005		2006		2007	
	Mean	z-stat	Mean	z-stat	Mean	z-stat	Mean	z-stat	Mean	z-stat
C	-0.064	-0.42	2.617	10.39 ***	1.041	5.85 ***	2.420	9.57 ***	1.632	8.13 ***
LevDev	-8.226	-11.52 ***	-2.533	-2.06 **	-4.256	-6.14 ***	-0.905	-1.08	-6.096	-7.25 ***
TAX	0.111	1.17	0.112	1.44	0.131	1.78 *	-0.047	-0.53	-0.038	-0.65
ROA	4.754	5.19 ***	3.299	3.80 ***	4.815	6.61 ***	2.293	2.00 **	0.571	0.82
RISK	8.531	4.33 ***	-1.824	-1.04	3.771	2.75 ***	5.177	2.72 ***	1.112	0.73
OI	-0.245	-0.36	-3.674	-3.73 ***	-4.091	-5.66 ***	-2.443	-2.69 ***	0.492	0.66
V_TANG	0.447	0.34	-1.502	-0.94	-3.912	-3.13 ***	-4.151	-2.62 ***	-0.538	-0.37
DEPR	1.137	0.71	3.772	1.78 *	2.928	2.19 **	1.360	0.59	-2.281	-1.07
V_DEPR	-0.911	-0.28	1.519	0.88	0.912	0.77	0.908	0.39	12.952	2.64 ***
INTAN	-5.076	-2.97 ***	3.628	1.04	4.279	1.29	0.302	0.11	-0.174	-0.07
V_INTAN	0.990	0.18	-14.546	-3.02 ***	-10.634	-2.88 ***	-4.236	-1.11	-12.641	-2.28 **
ATG	-0.443	-0.92	0.158	0.29	-1.532	-3.31 ***	0.206	0.41	0.302	0.80
ICE	3.225	1.56	-0.309	-0.15	-0.387	-0.22	-2.772	-1.29	-4.261	-2.15 **
D_SK	1.969	4.12 ***	0.682	1.14	1.693	3.98 ***	0.189	0.45	-0.009	-0.04
D_BG	1.561	3.09 ***	-0.179	-0.40	1.096	2.35 **	1.284	2.16 **	1.021	2.06 **
D_EE	2.369	3.62 ***	0.686	1.03	2.938	2.68 ***	1.825	1.80 *	0.654	1.40
D_SERV	-0.710	-3.64 ***	-0.379	-1.11	0.609	2.25 **	-0.231	-0.76	-0.506	-2.61 ***
STL	0.436	2.79 ***	0.873	3.05 ***	0.703	4.06 ***	0.777	2.97 ***	1.325	5.79 ***
STL_D	-0.472	-1.74 *	-1.116	-2.95 ***	-1.685	-6.86 ***	-1.168	-2.97 ***	-0.435	-1.17
LEV_DIFF	-3.972	-4.69 ***	-7.004	-4.85 ***	-5.821	-5.06 ***	-6.493	-5.14 ***	-1.686	-43.82 ***
CR_DEF	-5.128	-2.96 ***	-2.853	-0.77	-2.695	-1.32	-3.577	-1.83 *	-7.538	-3.77 ***
Mean Y		0.713		0.931		0.799		0.938		0.865
Average Log Likelihood		-0.306		-0.161		-0.291		-0.178		-0.207
McFadden R-square		49.0%		35.5%		41.9%		23.5%		47.6%
No. of obs Y=0		874		166		574		153		415
No. of obs Y=1		2,167		2,257		2,287		2,312		2,661

Notes: The dependent variable (Y) is binary representing a financial transaction. Y is equal to 1 if the company significantly decreases its level of debt, while Y is equal to 0 when the company decreases only the subscribed equity. Debt repayment comprises both long-term and short-term financial debt. Other variables and test statistics are similarly to the ones presented in the notes to Table 2.6.

The proxy for the ratio of short-term loans, or STL, remains significantly positive throughout the period investigated, which is strongly in line with prior expectations given the high degree of correlation between the amount, maturity and repayment of loans. For this reason, we do not want to draw much conclusion out of this, but we note that STL also influences positively the increase of debt versus equity. These evidences suggest anyway that small and medium-sized enterprises with higher ratio of short-term loans not only repay but also more likely apply for new loans. Even if the relationship-based lending is fading as a whole, as suggested Beck et al. (2009), this outcome is a support for the existence and positive role of loyalty-based partnerships between firms and the credit institutions.

In these relationships, corporate history may be a fundamental issue in the assessment of client and project risks, and there is a positive “learning effect” on behalf of both the lender and the borrower. For the latter, it is important that the client also gains positive experience on the external financial market, which can contribute to additional demand for borrowing. Seifert and Gonenc (2008) reported similar findings in the most developed European countries.

II.7.3. Internal versus external financing

The Table 2.8 reports regression coefficients of the choice between the increase in total financial debt ($Y=1$) and the increase in retained earnings ($Y=0$). Descriptive statistics suggest that, contrary to external increase and repayment transactions in which debt transactions largely dominate equity transactions in number, internal equity adjustments occur about twice as frequently as ordinary external debt transactions. Since our objective is to estimate the choice between two mutually exclusive financing alternatives, our analysis excludes those firms that change their capital structure by adjusting simultaneously on both sides in a given year. This elimination results in a significantly reduced number of ordinary debt transactions as compared to the number of debt transactions examined previously.

If we assume a proportionately equal number of underleveraged and overleveraged firms in our sample, the lower number of simple debt adjustments does immediately show an inconsistent sign with the concept of target leverage ratio. At the same time the dominance of internal equity ‘investments’ that have the lowest asymmetrical information cost represents a steady support for a pecking order-like financing hierarchy.

Accordingly, the leverage deviation variable is a poor and inconsistent predictor of the analysed financial decisions. Based on the STT, one would expect a significantly positive coefficient for the deviation variable, although our results support this relationship only in

2003 and marginally in 2005. As opposed to LevDev, the estimated negative coefficient of profitability is strongly significant and shows a remarkable robustness over time. This finding together with the preference of profitably operating SMEs for relying on external debt rather than external equity suggest that regional firms are not at all indifferent to a hierarchy of financing alternatives. The confirmatory outcome for such an implied hierarchy is theoretically consistent with the assumptions of the pecking order theory that denies the commutability of internal and external equity.

Coefficient estimates of other variables also provide support for the existence of financing hierarchy. The business risk proxy systematically yields a negative sign which supports the POT as firms with more volatile earnings try to accumulate an internal cash reserve with which to finance their expected future investments rather than with new external debt. The negative coefficient of non-debt tax shield (DEPR) may be explained similarly. The more depreciable assets a firm has, the more it is interested in accumulating a sufficient amount of reserves for purpose of renewing these assets, taking into account that internal funds have the lowest asymmetrical information cost. It should be noted, however, that the negative impact of DEPR on additional borrowing may also be consistent with the STT. Except in 2007, the short-term loan proxy is significantly positively related to the increase in debt, suggesting that firms operating with more short-term loans or revolving credit lines in place are more willing to apply for additional debt instead of building internal cash reserve. In line with our previous results, the projected leverage difference (LEV_DIFF) is positively related to the increase of debt that directly rejects the existence of a target leverage ratio.

Table 2.8 Logit regression of the increase in debt vs. retained earnings (2003-2007)

Logit Regression of Increase in Debt versus Retained Earnings											
Variable	2003		2004		2005		2006		2007		
	Mean	z-stat	Mean	z-stat	Mean	z-stat	Mean	z-stat	Mean	z-stat	
C	0.735	7.54 ***	-0.314	-3.80 ***	-0.161	-1.97 **	0.119	1.37	-0.055	-0.64	
LevDev	1.510	6.77 ***	0.035	0.19	0.313	1.67 *	-0.030	-0.16	-0.690	-3.52 ***	
TAX	-0.049	-0.72	-0.034	-0.83	-0.055	-1.13	-0.040	-1.15	-0.158	-2.19 **	
ROA	-5.245	-12.47 ***	-6.676	-15.47 ***	-5.274	-11.88 ***	-5.327	-11.90 ***	-4.369	-7.34 ***	
RISK	-7.614	-8.62 ***	-4.433	-4.85 ***	-4.871	-5.44 ***	-6.832	-7.27 ***	-2.777	-3.11 ***	
OI	1.067	2.03 **	-0.603	-1.57	0.179	0.49	1.199	3.31 ***	-2.042	-4.44 ***	
V_TANG	-1.192	-1.79 *	2.608	4.86 ***	2.659	5.21 ***	1.631	3.06 ***	1.575	3.09 ***	
DEPR	-3.310	-3.79 ***	-0.123	-0.16	-1.307	-2.31 **	-1.858	-2.74 ***	-3.245	-4.19 ***	
V_DEPR	6.922	3.80 ***	0.891	0.57	-0.113	-0.28	-0.056	-0.21	2.944	3.41 ***	
INTAN	-1.367	-1.20	-0.469	-0.48	2.908	2.19 **	-1.396	-1.08	0.118	0.11	
V_INTAN	2.084	0.87	2.136	1.05	-0.551	-0.29	4.224	1.88 *	-0.223	-0.11	
ATG	-0.653	-2.34 **	-0.799	-3.52 ***	-0.757	-2.98 ***	-1.124	-4.39 ***	-0.138	-0.77	
ICE	-7.178	-4.66 ***	-3.627	-3.24 ***	-4.767	-4.14 ***	-13.175	-6.74 ***	0.513	0.51	
D_SK	-0.664	-3.29 ***	-0.035	-0.27	0.159	1.21	-0.639	-4.52 ***	0.047	0.31	
D_BG	-0.065	-0.53	0.318	2.80 ***	0.125	1.17	-0.118	-1.01	-0.501	-4.14 ***	
D_EE	-0.799	-6.38 ***	-0.407	-3.21 ***	-0.349	-2.64 ***	-0.453	-3.38 ***	-0.161	-1.35	
D_SERV	-0.372	-2.57 **	-0.292	-2.48 **	-0.510	-4.52 ***	-0.480	-4.07 ***	-0.538	-4.43 ***	
STL	0.278	3.32 ***	0.342	4.99 ***	0.317	4.67 ***	0.239	3.41 ***	0.106	1.46	
STL_D	-0.227	-1.17	-0.111	-0.68	-0.106	-0.60	0.260	1.37	0.116	0.59	
LEV_DIFF	3.343	8.70 ***	1.741	5.71 ***	2.377	7.45 ***	2.714	8.23 ***	1.868	6.08 ***	
CR_DEF	-0.866	-0.80	-1.008	-1.08	3.276	2.54 **	0.254	0.23	-1.555	-1.50	
Mean Y		0.419		0.312		0.360		0.357		0.348	
Average Log Likelihood		-0.610		-0.564		-0.590		-0.566		-0.595	
McFadden R-square		10.2%		9.2%		9.7%		13.1%		7.9%	
No. of obs Y=0		2,613		5,063		4,582		4,697		4,375	
No. of obs Y=1		1,881		2,299		2,577		2,606		2,332	

Notes: The dependent variable (Y) is binary representing a financial transaction. Y is equal to 1 if the company raises only net debt, while Y is equal to 0 when the company retains internal profit in a significant amount. Debt financing comprises both long-term and short-term financial debt. Other variables and test statistics are similar to the ones presented in the notes to Table 2.6.

II.7.4. Long- versus short-term borrowing

To examine preferences of SMEs in choosing the appropriate debt term, a LOGIT regression has been performed to analyse the choice between the increase in long-term debt ($Y=1$) and the increase in short-term debt ($Y=0$). The Table 2.9 summarises our findings.

Almost the same number of simple long-term and short-term debt transactions has been identified in the investigated period. Although the overall fit of the model turns out to be permanently weak, the reported results allow us to take some fundamental insights into the debt decisions of SMEs. First of all, despite the relevance of debt term structure one would expect in a pecking order driven environment (see e.g. Michaelas et al. (1999)), our set of independent variables is barely able to capture these underlying factors motivating the preferences of firms. In the second time, it is noticeable that even the occasionally relevant determinants are hardly consistent in time. The finding of the relative irrelevance of explanatory variables could be interpreted as a quite indirect support for the static tradeoff theory that puts much less emphasis on the maturity structure of debt (Barclay and Smith (1995)), as the competing theories are more concerned with the asymmetrical information and asset substitution problems which could be influenced by an appropriate choice of debt term (Myers (1984), Barclay and Smith (1995)). We argue however that this outcome alone is a weak and indirect support for a theory.

One notable exception is the strength of the deviation variable which suggests that relatively underleveraged companies prefer to contract new loans for a longer term. For underleveraged firms additional long-term debt has lower relative bankruptcy costs compared to short-term borrowing; so this result shows somewhat consistency with the static tradeoff theory and the agency theory. The impact seems, however, to be only periodically valid.

Table 2.9 Logit regression of the increase in long-term debt vs. short-term debt (2003-2007)

Logit Regression of Increase in Long-term Debt versus Short-term Debt										
Variable	2003		2004		2005		2006		2007	
	Mean	z-stat	Mean	z-stat	Mean	z-stat	Mean	z-stat	Mean	z-stat
C	0.123	1.23	0.097	1.14	0.197	2.31 **	0.150	1.64	-0.380	-4.27 ***
LevDev	0.467	2.73 ***	0.025	0.17	0.440	3.03 ***	0.226	1.53	-0.020	-0.12
TAX	-0.004	-0.08	0.000	-0.02	-0.069	-2.03 **	0.019	0.48	0.020	0.48
ROA	0.042	0.11	-0.233	-0.70	0.158	0.49	-0.317	-0.94	0.238	0.67
RISK	-2.312	-2.76 ***	-1.081	-1.54	-1.533	-2.29 **	0.258	0.42	0.068	1.82 *
OI	2.189	3.73 ***	1.377	3.14 ***	1.145	2.53 **	1.723	3.79 ***	3.319	5.42 ***
V_TANG	-0.575	-0.78	1.541	2.58 ***	0.058	0.10	0.170	0.31	0.711	1.22
DEPR	2.903	2.79 ***	2.294	1.60	1.670	1.78 *	1.982	1.61	5.508	5.85 ***
V_DEPR	4.593	2.13 **	2.744	0.70	2.561	1.28	0.653	0.76	-0.111	-0.85
INTAN	0.794	0.65	-1.617	-1.25	-0.870	-0.75	-2.610	-1.99 *	1.210	0.91
V_INTAN	-5.299	-2.10 **	-1.143	-0.54	-0.140	-0.07	3.691	1.60	-2.182	-0.88
ATG	-0.080	-0.26	-0.501	-2.13 **	-0.516	-2.42 **	-0.789	-3.74 ***	-0.591	-2.64 ***
ICE	1.308	0.97	1.047	1.21	0.880	1.04	2.738	2.99 ***	3.584	2.74 ***
D_SK	-0.126	-0.53	0.130	0.78	-0.067	-0.43	-0.147	-0.89	0.036	0.16
D_BG	0.395	2.90 ***	0.407	3.13 ***	0.323	2.75 ***	0.412	3.18 ***	0.636	4.75 ***
D_EE	0.137	0.94	0.210	1.51	0.451	2.86 ***	0.357	2.22 **	0.157	1.16
D_SERV	0.129	0.76	0.133	0.95	-0.085	-0.61	-0.001	0.00	0.250	1.69 *
STL	-0.193	-2.03 **	-0.815	-10.20 ***	-0.519	-6.41 ***	-0.621	-7.48 ***	-0.434	-4.83 ***
STL_D	0.293	1.42	0.487	2.71 ***	0.313	1.76 *	0.075	0.39	0.524	2.52 **
CR_DEF	0.860	0.77	-1.392	-1.40	0.373	0.36	0.681	0.60	-0.882	-0.74
Mean Y		0.540		0.500		0.514		0.521		0.472
Average Log Likelihood		-0.675		-0.669		-0.678		-0.676		-0.671
McFadden R-square		2.2%		3.4%		2.1%		2.3%		3.0%
No. of obs Y=0		1,476		2,360		2,276		2,268		2,195
No. of obs Y=1		1,730		2,364		2,406		2,466		1,960

Notes: The dependent variable (Y) is binary representing a financial transaction. Y is equal to 1 if the company increases only the amount of long-term debt, while Y is equal to 0 when the company opts for increasing the amount of short-term debt. Any observation should be considered as representative of either an exclusive long-term, or an exclusive short-term debt transaction. Other variables and test statistics are similar to the ones presented in the notes to Table 2.6.

The results also suggest that past experience gained in short-term borrowing creates a positive ‘learning effect’ that apparently contributes to a further application for short-term loans, while it seemingly does not lead companies to diversify the maturity structure of their liabilities. More than surprisingly, regional SMEs consider neither the current profitability, nor the business risk as decisive factors when they choose the structure of their new loans. Similarly, the creditworthiness (CR_DEF) has no significant impact on the choice of debt term that challenges the role of short-term debt as a tool to dissolve conflicts of interest between creditors and shareholders. The results also reveal that firms with a more variable asset structure do not unambiguously prefer either long-term or short-term debt financing.

II.8. Concluding remarks

We find that the size and tangibility of assets, which survived numerous empirical tests for the developed countries, are strongly and consistently related to the leverage ratio in the CEE countries, while most of the other conventional variables challenge the existence of an optimum leverage. We reject the positive relationship between leverage and profitability just as between leverage and corporate tax. These results contradict the static tradeoff theory on a cross-sectional basis, while we show some evidence supporting the pecking order theory. Analogously, we reject the explanatory power of business risk and non-debt tax shields on the level of leverage. Despite the relevance of country-specific factors, small and medium-sized firms behave more homogeneously than the sample of firms in more diverse developing countries, examined by Booth et al. (2001). The negative impact of the public company dummy is unexpectedly powerful, and is found to be a factor that strongly contradicts our prior expectations regarding the importance of transparency and market presence in borrowing (De Haan and Hinloopen (2003)). Based on the strength of the estimated coefficients, and despite the failure of some major pillars of the conventional tradeoff theory, we argue that the set of relevant capital structure determinants shows remarkable stability.

Our results show a time-varying behaviour over time, in which the well-known determinants become stronger, while most of the country-specific factors present weakening effects. The goodness-of-fit ratio of the whole model becomes continuously stronger in the investigated period, reaching 30.5% in 2002 and 54.4% in 2006. These results show that SMEs in the CEE countries are gradually bringing their financial decision-making process in line with that of the developed countries. We find similar results if the capital structure determinants are tested based on the long-term leverage ratio.

Second stage analyses show that the proxy to measure the deviation from the optimum leverage fails to justify the financing decisions of companies, while other explanatory variables are permanently relevant. The negative relationship between underleverage and the intention to increase debt is strongly inconsistent with the STT. In the meantime, results confirm that small and medium-sized enterprises that carry out a reduction in debt are primarily overleveraged, which fact corresponds to the theory. Altogether, we conclude that companies respect a one-sided upper threshold rather than converging to a fix target on both sides. Unlike underleverage, profitability has a positive impact on the increase of debt versus an increase of equity, as well as on its decrease. Our coefficient estimates confirm the results of first stage on the effective tax rate that is neither a matter of concern in the choice of the target leverage, nor in the adjustment towards it. The above evidences altogether raise serious doubts about the validity of the static tradeoff theory among regional SMEs.

On the contrary, by analysing firms' preferences between internal equity and external debt, a strong support is found for the existence of a financing hierarchy. When the determinants of choice between long-term and short-term debt is analysed, we show that underleveraged firms contract new loans for the long- rather than the short-term. Our findings indicate that the past experience gained in short-term borrowing creates a positive 'learning effect' that lead firms to return to debt markets, although does not induce the diversification of the structure of loans. Companies' credit default probability, however, has no significant impact on the choice of debt maturity. This outcome challenges the idea that short-term debt is able to alleviate the risk associated with long-term lending.

To summarise, we find strong evidence for the existence of an implied hierarchy of financing which is theoretically consistent with the pecking order theory.

III. WHAT MANAGERS THINK OF CAPITAL STRUCTURE AND HOW THEY ACT: EVIDENCE FROM CENTRAL AND EASTERN EUROPE³³

III.1. Introduction

We analyse the capital structure and choice of financing alternatives across a broad sample of small, medium (SME) and large-sized Central and Eastern European (CEE) companies from Poland, Hungary, the Czech Republic, Romania, Slovakia, Bulgaria, Slovenia, Lithuania, Latvia and Croatia. We contribute to the existing literature with a deeper understanding of the firms' motivations in the selection of their financing practices by building our investigation on two methods: the first examines regional firms' capital structure decisions through quantitative information; whereas the second technique extends the quantitative analysis with qualitative information about the explicit and latent preferences behind financing policies and practices. For the quantitative analysis, we collect a firm-level database from BvD's Amadeus database, and we run panel regressions using well-known accounting proxies (see Rajan and Zingales (1995), Booth et al. (2001) and Delcours (2007)) to test the strength of both the pecking order theory and the static tradeoff theory.

The drawbacks of a quantitative approach can be partly mitigated by using a more selective questionnaire technique that allows us analysing not only the accounting track of financing decisions, but also the firms' motivational background and the specific logic followed in course of the decision-making. Brounen et al. (2006) argue that the validity of any capital structure theory can be tested more reliably by minimizing potential biases arising from the use of proxy accounting variables. Focusing on the practice of firms' financial decision-making, we compiled a questionnaire that was administered to a random sample of 498 firms. These firms fairly represent size classes and countries by weight of their economic performance. With survey answers given by firms' executives, we have the opportunity to create a parallel investigation that allows testing the implementation of theoretical aspects exhibited by the CFOs.

The questions in our questionnaire can be divided into two sets: the first set of questions addresses general information about the company, such as managerial ownership in the firm, the dominant management culture, the firm's most important goals and the shareholders' most important goals. The remaining questions focus on the financing practices and underlying preferences governing the decision-making of companies. Use of this detailed questionnaire

³³ Hernádi P., Ormos M., What Managers Think of Capital Structure and How They Act: Evidence from Central and Eastern Europe, *Baltic Journal of Economics* 12(2) (2012) 47-71.

allows directly testing the relevance of capital structure theories, in particular the static tradeoff theory (STT) and the pecking order theory (POT). Questions such as “How important are...” and “What would you do if...” are particularly appropriate to capture preferences behind financing policies, and to provide an opportunity to contrast the executives’ statements with their firms’ observable record of financing decisions.

By linking these two techniques for the same sample of CEE companies we have the unique opportunity to test (1) whether CFOs’ preferences reflect the theoretical implications of the aforementioned theories (which can be concluded through the survey), and; (2) that their financing decisions (which can be assessed through financial metrics) effectively coincide with their declared preferences. Conventional one-stage analyses do not allow testing specifically either the relationship between theory and motivation, or the relationship between motivation and decision-making.

Regression results confirm that there are not strong tradeoff considerations in financing decisions of the sample companies. This result coincides well with the CFOs’ preferences we reveal in our survey. Based on our questionnaire, we find that the most important factor affecting the amount of borrowing is the series of cash flows generated by the asset being financed, whereas corporate tax, non-debt tax shields and the potential costs of bankruptcy are only moderately important. These answers suggest as a whole that a strong pecking order consistent attitude drives leverage decisions. We also find that country sub-samples exhibit only a minor diversity in the strength of tradeoff considerations on the choice of debt.

Survey answers make it apparent that the majority of CEE firms (73%) do not set a target leverage ratio. In the meantime, the answers suggest that a deviation exists among countries, with the highest proportion of firms having target leverage in Poland and the lowest proportion in the Czech Republic. CFOs clearly express that, when financing new assets, they attribute the highest importance to internally generated funds. As many as 73% of the firms consider internally generated funds as an “important” or “very important” fund of financing, far ahead of the restructuring of assets, ordinary debt, new external common equity and convertible debt. These outcomes provide a confirmatory support for the pecking order theory.

Using the survey answers, we divide our sample into sub-samples based on different firm attributes. First of all, we examine whether the CFOs, which report to have a predefined leverage target, give significantly different answers to the questions compared to the ones, which do not have such a target. We find that a larger proportion of firms with target leverage are managed by non-owner managers, whereas firms without such a fixed target seem to be

more probably managed by owner-managers. Unlike the impact of the mixed manager-shareholder role as discussed above, we do not find any evidence that origins of the dominant management culture have a similar impact on the existence of target leverage. Our results point out that managers with a mixed shareholder-manager objective function are not only less intended to keep the firm's capital structure fixed, but also consider the target, if any, a less strict anchor. Meanwhile, firms with low or zero managerial ownership are more likely to follow a target leverage ratio strictly. In addition to the above, firms operated by owner-managers were active on the debt market in a substantially higher proportion than in the other sub-sample. We also make it apparent that non-owner managers have a higher willingness to forgo an attractive investment opportunity than do insider managers if the investment cannot be undertaken without restructuring the firm's balance sheet.

III.2. Summary of recent empirical findings

Since the pioneering propositions of Miller and Modigliani (MM, 1958, 1963), a large number of studies have addressed the question of corporate financing. The MM propositions constitute the basis of modern thinking on capital structure by proving that, in the absence of all market imperfections, no optimum capital structure exists for a given firm. The irrelevance proposition has been later challenged by MM admitting that asymmetrical tax systems, information and transaction costs likely lead firms to favour a specific structure of financing over the others. Researchers realized that risk of a company was assessed differently by the market depending on firm's profitability (e.g., Jensen and Meckling (1976)), size (Rajan and Zingales (1995)), activity (Fama and French (2002)), age, market exposure, growth options (Myers (1977)) and the structure of assets (Titman and Wessels (1988)). Furthermore, neither firms, nor international investors are subject to a uniformised tax system as conceived originally by MM; as a consequence of which, different tax systems supplemented with heterogeneous firm profiles could ultimately harm the irrelevance idea of financing (Miller (1977)).

In the 1970s and 1980s, two competing capital structure theories were developed on the basis of the MM propositions and the empirical evidence found about financing decisions. The first theory is the static tradeoff theory (STT), which aims to explain the leverage ratio by focusing on the cost-benefit function of borrowing. The function is supposed to be mostly dependent on observable firm attributes. The other family of theories, called preference theories, such as the pecking order theory (POT) or agency theory, emphasise the role of transaction costs in the choice of financing funds. These costs are associated with factors such

as transaction timing, informational asymmetry among stakeholders, or the prevailing market expectations. Although these theories differ from each other in the way they explain the firms' capital structure, they all suggest an optimal strategy of financing to follow under some conditions.

Most of the empirical analyses about capital structure concentrated on developed markets (e.g. Rajan and Zingales (1995), Hovakimian et al. (2001)) so that developing countries have not been taken into consideration for a long time. Later, by analysing a sample of Asian, African and Latin American firms, Booth et al. (2001) conclude that knowing the firm's nationality alone is less helpful when explaining leverage decisions than knowing it together with some firm-specific attributes. These attributes are mostly the ones that prove to be relevant in the developed countries (profitability, asset tangibility, growth). However, these variables alone fail to reliably predict leverage, indicating that in less developed countries one should expect much stronger country effects than in developed countries. The origins of these effects are not completely evident in this highly diverse international sample, nor are they clear in a more geographically proximate environment like Central and Eastern Europe (Nivorozhkin, 2004, 2005) among countries with common institutional and legal roots. Nevertheless, besides these differences, many firm-specific factors remain internationally relevant. Booth et al. (2001) find a consistently positive relationship between tangibility and long-term debt, as suggest Rajan and Zingales (2001), and emphasise the increased importance of the collateral value of fixed assets in borrowing when financial markets are underdeveloped. The negative correlation between profitability and leverage ratio also seems to be experienced internationally. In underdeveloped financial markets, the costs of external financing, including both transactional and asymmetrical information costs, are higher. This implies that firms' reliance on internal funds tends to be even stronger (Rajan and Zingales (1998), Demirgüç-Kunt and Maksimovic (1998)).

In recent years, while the aforementioned papers provided answers to several fundamental questions about firms' financing preferences, they also raised new questions to be answered. Nivorozhkin (2002) shows, for instance, that Hungarian listed firms used excessively low debt compared to Western standards in the early '90s. Later, Nivorozhkin (2005) and Delcours (2007) both find that, despite the considerable progress CEE countries have made in their financial markets and institutions from 2000 to the present following the change of regime, debt is still relatively underused. Moreover, following Chen (2004), Delcours (2007) shows that external debt comes only as a last resort after equity in the hierarchy of financing because managers prefer not to constrain themselves with fixed debt

service at the expense of ‘costless’ equity. Interestingly, Avarmaa et al. (2011) find in the Baltic States that firms with a foreign (multinational) background have lower leverage ratio than their local peers in spite of their lower profitability and lower perceived credit constraints.

Crnigoj and Mramor (2009) approach capital structure issues by modifying the conventional shareholder value maximization concept, and by putting owner-managers and employees (insider shareholders) in control of capital structure decisions. They find that corporate governance is strongly conservative, with a negative correlation between leverage and the extent to which firms are characterized by an employee-governed behaviour. The authors show also that, despite the tendency for a lower leverage ratio in these firms, debt is still preferred to equity when external finance is desirable; that is to say, these firms likely follow the POT. Crnigoj (2010) later argues that the probability of using debt in general drops in CEE firms when the largest shareholders are managers (employees). Capital structure choice, in particular the use of debt in such a mixed corporate governance framework dominant in developing countries with weak law enforcement such as Eastern European countries (dominantly with German/French legal roots) is an issue to be further analysed.

The recent studies exhibit mixed evidence on the extent to which smaller, less developed firms follow the POT. Based on the argument of Myers (1984) and Myers and Majluf (1984), one would expect the SMEs to rely heavily on the least controlled funds, the retained earnings, because these firms likely have the highest degree of informational asymmetry vis-à-vis external stakeholders. Moreover, SMEs are facing higher relative transaction costs than larger companies in their issuance decisions. Numerous recent studies (see Berger and Udell (1998), Berggren et al. (2000), Chittenden et al. (1996), Michaelas et al. (1999) and Hernadi and Ormos (2012)) found the POT to be followed among SMEs.

On the other hand, investigating this field by directly surveying financial executives in the US, Graham and Harvey (GH, 2001) perceive a pecking order-driven behaviour among firms but conclude that this is not primarily due to conventional theoretical factors such as size or growth, both of which should influence the implied informational asymmetry. Brounen et al. (2006) also survey CFOs with a questionnaire in four developed European markets and find a pecking order consistent behaviour among them but, similarly to GH, also argue that this behaviour is not driven by asymmetrical information costs. In addition to the above, corporate taxation also seems to raise new questions. GH show that US firms tend toward a predefined target level of leverage; however, CFOs report that the tax concerns are only moderately important in their debt policy. More specifically, larger firms tend to be more

interested in tax issues than smaller ones. On average, European firms are somewhat less concerned by corporate tax issues than their US counterparts, but Brounen et al. (2006) find relatively strong support for the existence of a target leverage ratio among European firms. While the corporate tax system is currently, in fact, one of the critical policy tools of competition among CEE countries, it seems that evidences are contradictory about the extent to which the diverse and country-specific corporate tax systems influence firms' everyday financing practices.

III.3. Data

Similarly to Desai et al. (2003) and Hutchinson and Xavier (2006), we use Bureau van Dijk's Amadeus firm-level database. Amadeus proves to be a valuable tool in the constitution of representative samples (country, size). The geographic scope initially covered ten countries that had either recently joined the EU, or had been candidates (Poland, Hungary, the Czech Republic, Romania, Slovakia, Bulgaria, Slovenia, Lithuania, Latvia and Croatia). The number of firms selected in the sample reflects each country's economic weight within the total output of the block, estimated by their nominal GDP value (2006). By considering each country's relative weight, we can formulate general implications regarding the capital structure choice that are representative of the region as a whole, but cannot draw specific conclusions for many smaller countries that have lower populations and less economic power. Based on this method, Poland represents the biggest share of the sample with 180 firms, followed by Hungary (73), the Czech Republic (72) and Romania (68). Slovakia, Bulgaria, Croatia, Slovenia and Latvia count 30, 25, 22, 16 and 12 firms, respectively. Due to unanticipated difficulties in the course of surveying Lithuanian firms, we were constrained to exclude Lithuania from the analysis. Other than limiting the sample to exclude the smallest companies, each firm in the Amadeus had an equal chance of being selected for the preliminary country samples (stratified sampling). These samples were created by randomly selecting a large number of firms, classified into five categories based on their number of employees (25-50, 51-250, 251-375, 376-650 and over 650). Altogether we surveyed a random sample of 498 firms with given weights by country and size, exactly the ones for which we collected later all the necessary accounting data from the Amadeus database. Collected data include the complete balance sheet and the income statement, as well as supplemental information on the industry, ownership structure, and firms' creditworthiness.

The questionnaire we analyse is composed of 17 questions. Some of the questions address general company information, such as managerial ownership in the firm, the

dominant management culture, the firm's most important goals, as well as the shareholders' most important goals and consideration of stakeholders, whereas the remaining section focuses on the everyday financing practice and underlying preferences that govern firms' decision-making process. Most of the questions inquiry directly the personal opinion of the interviewee, while in many cases, the answers must be given by ranking multiple proposed alternatives. The ranking by importance/probability has to be done on a scale from 1 (not important, less likely) up to 4 (very important, most likely). For surveying the executives, the questionnaire which we compiled in English, was translated into all the official languages represented in the sample, and to minimize any data bias arising from language problems, the CFOs were interviewed on phone in their native language.

III.4. Quantitative analysis of capital structure

III.4.1. Model specification

We analyse quantitative aspects of capital structure through an unbalanced panel dataset covering the sample firms for the period from 2005 to 2008. The panel consists of firms that have available balance sheet data for each year in the period investigated. Firms with an incomplete set of explanatory variables have been automatically removed from the regression; however, a missing variable for a given period does not cause ultimate rejection of the firm from the sample. Unfortunately, the Amadeus database exhibits numerous missing financial metrics for the firms in the test period that deteriorated the number of total observations in our regression analyses. As a whole, our sampling method resulted in a panel composed of 918 observations for the regression of the total leverage ratio (with 299 cross-sections, unbalanced).

In course of our analysis, we rely on the recent studies that identified the most relevant and most widely accepted capital structure determinants. Our tests are based on an asymmetric panel structure, that is to say, on observations for a relatively large number of cross-sections with few time periods. We note that the joint significance of the period effects can be rejected by an F-test in both estimations. As a consequence, we apply only cross-section effects, for which the Hausman test result shows that the consistency of the estimator with random effects could be rejected at the 5 percent significance level, but not at the 1 percent. If the Hausman test does not reject the null hypothesis, then both fixed and random effect estimators are consistent, but the latter is efficient. Therefore, we estimate the following model with both cross-section fixed and random effects (FE and RE, respectively) included:

$$\text{Lev}_{i,t} = \alpha + \beta X_{i,t} + \gamma D_i + \delta_i + \varepsilon_{i,t} \quad (3.)$$

In the equation above, $Lev_{i,t}$ is the book leverage ratio for firm i in year t , $X_{i,t}$ is the vector of explanatory variables, δ_i are cross-section specific effects (fixed or random), D_i are time-invariant country, industry and public company dummies, α is the constant term, β and γ (only in RE estimation) are the respective coefficient vectors, whereas $\varepsilon_{i,t}$ is the error term. Unequal variance in residuals is tested in both dimensions. Reported t-statistics are robust to heteroskedastic standard errors, as White diagonal standard errors are applied in FE estimation and White cross-section standard errors are reported for RE estimation.

As dependent variable we use the leverage ratio calculated as the sum of long-term liabilities plus current loans divided by the sum of book equity, long-term liabilities and current loans. All figures are in book value. We refer to this ratio as the total leverage ratio (*LEV*).

We incorporate the tax effects in our model (*TAX*), calculated as the income tax effectively paid in the previous financial year divided by the accounting profit before taxation. We consider this measure to be the best proxy for taxation for two reasons. First of all, we argue that even if the annual effective tax rate could be biased (Booth et al. (2001)), averaging annual effective rates would be misleading in the given context, since the statutory rates in the CEE countries have shown a regressive trend during the last decade (KPMG Tax Rate Survey, 2009). In the second time, historical income statements show that firms in the CEE region rarely paid as much tax as they should if they were only subject to statutory tax rules.

We measure the size variable (*SIZE*) as the natural logarithm of annual net sales, converted into Euros (e.g. Rajan and Zingales (1995), Gaud et al. (2007)). Using net sales as a size proxy instead of the value of assets helps limiting the biases that would emerge from the significant differences between firms' investment policies and business models, and also limits the risk of underestimating the importance of firms operating with an older portfolio of assets.

The proxy variable for profitability (*ROA*) is measured as the earnings before interest and taxes, or EBIT, to total assets. We also include the amount of cash in the regression equation along with ROA, because de Haan and Hinloopen (2003) suggest that ample liquidity and high profitability are together the indicators of financial health. Following Gaud et al. (2007), we measure the availability of internal funds (past accumulation of financial slack) by the ratio of cash and equivalents to total assets (*CASH*).

Volatile earnings are often considered to be good indicators of business risk. A financially distressed situation is the likely outcome of volatile profitability and has its own costs (e.g. renegotiating a supplier or debt contract, restructuring the organization in entirety

or in part, loss of key persons etc.), which most likely influences the firm's decisions on borrowing. In controlling for risk concerns (*RISK*), we calculate the four-year average variability of ROA, as introduced Booth et al. (2001).

Numerous studies (e.g. Long and Malitz (1985), Friend and Lang (1988)) identify the structure of assets as a key determinant of leverage. Some empirical evidences show that the proportion of fixed to total assets (tangibility of assets) positively influences leverage, whereas the intangibility of assets has the opposite effect on leverage. We follow Titman and Wessels (1988) by using two asset structure variables, namely *TANG* and *INTAN*, as proxies for the collateral value of assets. The *TANG* variable is calculated as the sum of net tangible fixed assets plus inventories to total assets, while *INTAN* is calculated as the ratio of intangible assets to total assets.

Since some operating expenditure items might fulfil the same favourable role in decreasing corporate tax burden as do the interest payments, we expect that a firm incurring higher depreciation costs, for instance, is less motivated to increase borrowing. Therefore, following Fama and French (2002) and de Haan and Hinloopen (2003), we apply the ratio of annual depreciation and amortization to total assets, or *DEPR*, as a proxy for non-debt tax shields.

The present and future growth opportunities are commonly considered as key determinants of leverage by each capital structure theory. With regard to the current growth rate, based on the assumption that present growth is to hold in the near future (Fama and French (2002)), we apply the *D_SIZE* variable, which is a proxy for the growth rate of the firm, calculated as the difference of log net sales between period *t* and period *t-1*. Along with the financial proxies described above, we include in the regression a public company dummy and also dummies that control for country and industry effects (manufacturing, utilities, construction, wholesale, transportation and services).

III.4.2. Results

Table 3.1 summarises the results of the panel regression of total leverage ratio. At the leverage optimum, the marginal benefit of an incremental portion of debt should equalise the marginal cost of increased financial distress and probability of bankruptcy. To make sure of the relevance of the selected proxies on leverage, we take and compare the results obtained from both the FE and RE estimators. Assuming that the independence of the explanatory variables and the unmodeled individual effects does not hold (only FE is consistent), we find that profitability (ROA), liquid assets (CASH) and non-debt tax shields (DEPR) are

negatively correlated with leverage, while asset structure proxies (INTAN and TANG) seem to impact leverage positively. All parameter estimates are significant at 1% level except for CASH.

Table 3.1 Regression of the total leverage ratio

Variable	Fixed Effect		Random Effect	
	Mean	t-stat	Mean	t-stat
C	0.453	1.02	0.376	2.00 **
TAX	-0.002	-0.17	-0.002	-0.54
ROA	-0.212	-2.47 **	-0.252	-4.72 ***
RISK			-0.013	-0.04
SIZE	-0.017	-0.64	-0.008	-0.83
D_SIZE	0.023	1.03	0.029	1.58
TANG	0.326	3.94 ***	0.239	2.94 ***
CASH	-0.146	-1.71 *	-0.238	-3.79 ***
DEPR	-1.414	-3.36 ***	-1.070	-8.10 ***
INTAN	0.871	2.65 ***	0.932	7.91 ***
Mean Leverage		0.270		0.270
Adj. R-square (within)		83.0%		
Adj. R-square (overall)				12.3%
Number of observations		918		918

Table 3.1 reports results for the panel regression of the total leverage ratio with cross-section fixed and random effects for years 2005 to 2008. The estimation is controlled for public company, country and industry dummies; these results are available upon request. Coefficient estimates are subject to a two-sided statistical test. *, **, *** indicate significant coefficients at 10%, 5% and 1%, respectively.

Since the independence of the omitted individual effects and the explanatory variables could not be rejected at 1% level (Hausman test), we repeated the regression with cross-section random effects by including proxies such as RISK, public company, industry and country dummies. This regression yields very similar coefficient estimates: all the estimated variables have the same impact on leverage and are significant. RISK, our time-invariant business risk proxy, does not play a decisive role in explaining the level of leverage. Neither size, nor the growth rate (D_SIZE) is statistically significant in either of the estimation models. The RE regression also makes it apparent that many country dummies, when they are estimated separately from the unmodeled effects, have an economically significant impact on leverage. Unlike the country dummies, our results do not furnish evidence on the relevance of industry dummies in the explanation of leverage differences among firms, with the only exception of utilities.

To sum up, regression results do not provide a straight support on behalf of the static tradeoff theory. We find that the tax rate (TAX) does not impact leverage in the expected

sense, furthermore, business risk is quasi irrelevant to the leverage ratio. It is clear that the profitability proxy is much rather consistent with the pecking order theory, supplemented with the strong negative relationship between the amount of liquidities and the leverage ratio. Only tangibility of assets and the proxy of non-debt tax shields seem to be in line with assumptions of the STT.

Overall, the calculated R^2 for the fixed effect estimator is high indicating that the combination of selected proxies and the unmodeled firm-specific heterogeneity are sufficiently powerful to predict the leverage ratio. The RE estimation provides support for the robustness of coefficient estimates that are in line with FE estimation. We find a valuable correlation between explanatory variables and leverage equally within a cross-sectional unit and across different individuals. As expected, the overall R^2 of RE estimation is found to be substantially lower; however, the figure is still in line with the goodness-of-fit ratio of similar regressions performed in previous studies.

III.5. Qualitative analyses of capital structure

When interpreting the questionnaire, we attempt to uncover the motivations of the CFOs that govern their capital structure decisions in a tradeoff-, a pecking order-driven or a mixed framework. Our questionnaire has separate questions on corporate governance and agency (stakeholder) issues. These additional information is used to divide the sample along stakeholder- and ownership-related attributes. The separation of the full sample of firms allows gaining particular insights into the specific financing pattern of different firm classes. In our opinion, the identification of sub-samples could help to better understand the diversity of some previous empirical results, and could also push us a little closer to answer why one and only theory cannot hold for a broadly diverse sample of firms.

From MM's extended framework, we know that a capital structure optimum can create shareholder value in presence of market imperfections. As a direct consequence, one of the most analysed questions in modern corporate finance is whether firms make financing decisions so as to keep a fixed leverage ratio where the cost of capital can be minimized or, alternatively, financing decisions are rather the outcome of customized cost-benefit analyses that lead cumulatively to firms' observed capital structure without any preconception about how this structure should look like.

Table 3.2 exhibits the survey questions and answers for the full sample of firms and country sub-samples. The figures show how CFOs answered the question "What factors affect how you determine the appropriate amount of debt for your firm?" by indicating the absolute

importance of each given alternative.³⁴ Our results point out that the most important factor the firms consider in their decisions on borrowing is the level of cash flow generated by the asset to be financed (mean is 2.98). Given that 73.7% of firms considered this factor to be important, it is a much more decisive factor in borrowing than any other one. Corporate tax rate, the cornerstone of the STT, is only the fourth most important factor and only moderately important, as around 50% of CFOs assigned it a score '3' or higher (mean is 2.44). The potential costs of bankruptcy/financial distress get a very similar attention, with a slightly higher mean (2.55) and 55% share of answers as "important." As long as the STT holds and firms look to optimally balance the distress costs and tax benefits of incremental borrowing, these two factors are expected to be highly and equally important. This assumption is not confirmed by the executives.

The measured importance of other alternatives further challenges the STT. As depreciation, amortization and other non-debt-related costs can also decrease firms' tax bill, they should impact the decision on the appropriate amount of debt. The CFOs say, however, that this aspect is just as important as either the corporate tax rate, or the potential costs of bankruptcy; that is to say, none of them seems to play a decisive role in debt policy.

Graham and Harvey (2001) find a similar pattern for the relative importance of debt-related factors.³⁵ CFOs in the US consider the most important goal in borrowing to keep financial flexibility. They report that nearly 60% of firms considered financial flexibility as important or very important, suggesting strongly that the pecking order theory prevails in the leverage decisions. In their sample, the tax advantage of debt is only the fourth most important factor, while the volatility of cash flow and potential costs of bankruptcy, separately, rank third and seventh.

³⁴ We note that when we asked the CFOs, the importance was originally given on a scale from 1 (not important) to 4 (very important). For saving space and easing the interpretation, in this paper we show our results only after aggregation of answers '1' and '2' collectively as "low" importance, and answers '3' and '4' as "high" importance. This way of presentation is applied in the remaining of the paper.

³⁵ We note that the questionnaire of Graham and Harvey (2001) was far more comprehensive than the one we surveyed both in terms of the number of questions and the number of alternatives per question. They had the opportunity, hence, to assess the order of preferences more expansively.

Table 3.2 Summary of survey answers (part 1)

	CEE			CZ			HU			PL			RO		
Number of observations	498			72			73			180			68		
What percent of equity is owned by the top three officers?															
<5%	67.8			77.1			71.2			87.3			23.9		
5-10%	4.2			2.9			0.0			4.9			1.5		
10-20%	5.8			1.4			3.0			1.4			14.9		
>20%	22.2			18.6			25.8			6.3			59.7		
How important are the following goals for your firm?															
	Importance		Mean												
	Low	High		Low	High		Low	High		Low	High		Low	High	
Maximize accounting profits	14.7	85.3	3.36	23.6	76.4	3.13	12.3	87.7	3.36	18.0	82.0	3.24	4.4	95.6	3.66
Maximize dividends	44.4	55.6	2.65	33.3	66.7	2.92	53.5	46.5	2.41	58.6	41.4	2.37	29.9	70.1	2.78
Maximize market value of equity	16.0	84.0	3.36	22.2	77.8	3.22	15.1	84.9	3.42	13.6	86.4	3.40	7.5	92.5	3.52
Maximize growth in sales	9.9	90.1	3.56	29.6	70.4	3.10	8.2	91.8	3.55	3.4	96.6	3.71	4.4	95.6	3.69
Stability of performance (production and operation)	3.8	96.2	3.71	2.8	97.2	3.72	2.7	97.3	3.84	3.4	96.6	3.69	1.5	98.5	3.69
Maximize growth of assets	24.9	75.1	2.95	31.9	68.1	2.78	40.3	59.7	2.61	18.0	82.0	3.08	20.6	79.4	3.01
Optimize solvability, liquidity	5.3	94.7	3.68	6.9	93.1	3.67	2.7	97.3	3.85	5.1	94.9	3.57	7.4	92.6	3.69
Management culture dominance															
Foreign (international)	41.564			43.662			53.425			35.593			38.806		
Local	58.436			56.338			46.575			64.407			61.194		
Which of the following sources of long-term funds are / would be important for financing new investments?															
	Importance		Mean												
	Low	High		Low	High		Low	High		Low	High		Low	High	
Retained earnings	26.9	73.1	2.97	47.8	52.2	2.55	34.3	65.7	2.79	19.6	80.4	3.18	22.1	77.9	3.01
Restructuring assets	43.1	56.9	2.56	53.0	47.0	2.39	59.2	40.8	2.15	41.9	58.1	2.65	40.0	60.0	2.55
Straight debt	50.0	50.0	2.51	73.5	26.5	1.91	35.7	64.3	2.94	57.2	42.8	2.30	35.3	64.7	2.87
Convertible bond	86.8	13.2	1.48	95.5	4.5	1.21	98.6	1.4	1.16	85.9	14.1	1.48	79.4	20.6	1.75
External common equity	66.3	33.7	2.04	78.3	21.7	1.71	77.5	22.5	1.75	63.5	36.5	2.17	61.8	38.2	2.10
Does your firm have a target value for the leverage ratio?															
yes	26.7			14.1			27.7			38.1			18.2		
no	73.3			85.9			72.3			61.9			81.8		
If „Yes”															
We usually/permanently depart from it (flexible)	16.4			28.6			29.4			6.6			30.0		
We occasionally dep. from it (somewhat tight)	44.0			28.6			11.8			45.9			50.0		
We strictly respect it	39.7			42.9			58.8			47.5			20.0		
What is this target value (book debt/total assets)?	37.8			44.4			18.3			45.6			16.9		
Does your firm take advantage of operating lease?															
yes	46.7			50.7			34.2			54.8			25.0		
no	53.3			49.3			65.8			45.2			75.0		

Notes: Table 3.2 presents the survey questions and answers for the full sample and the country sub-samples. Figures show the mean score of importance/likelihood for each question and the distribution of answers ‘1’ and ‘2,’ classified as ‘low,’ and ‘3’ and ‘4,’ classified as ‘high’.

Table 3.2 Summary of survey answers (part 2)

	CEE			CZ			HU			PL			RO		
Number of observations	498			72			73			180			68		
In periods when the firm's investment is low, does your firm retain a part of its free cash-flows?															
yes	42.7			46.5			52.9			36.5			57.4		
no	57.3			53.5			47.1			63.5			42.6		
During the last three years, did your firm apply for new loans or capital leases?															
yes	69.2			59.7			72.2			64.4			86.8		
no	30.8			40.3			27.8			35.6			13.2		
If „Yes”, these applications were															
always approved	94.1			90.7			92.3			93.0			96.6		
always denied	1.2			0.0			3.8			0.9			1.7		
sometimes approved and sometimes denied	4.7			9.3			3.8			6.1			1.7		
What factors affect how you determine the appropriate amount of debt for your firm?															
	Importance		Mean												
	Low	High		Low	High		Low	High		Low	High		Low	High	
Projected cash-flow from the assets to be financed	26.3	73.7	2.98	30.8	69.2	2.86	44.6	55.4	2.57	25.0	75.0	2.94	22.1	77.9	3.28
The debt levels of other firms in the industry	57.5	42.5	2.27	39.3	60.7	2.54	76.9	23.1	1.68	64.9	35.1	2.18	50.0	50.0	2.52
The potential costs of bankruptcy or financial distress	44.9	55.1	2.55	50.8	49.2	2.46	61.8	38.2	2.12	46.2	53.8	2.47	20.9	79.1	3.15
The corporate tax rate	49.9	50.1	2.44	61.7	38.3	2.20	76.1	23.9	1.79	51.6	48.4	2.46	30.9	69.1	2.82
The level of depreciation and other non-debt tax shields	44.0	56.0	2.57	59.7	40.3	2.16	55.2	44.8	2.28	34.6	65.4	2.78	41.8	58.2	2.63
Given an investment that could not be taken without modifying the actual balance sheet structure, what action would you take?															
	Likelihood		Mean												
	Low	High		Low	High		Low	High		Low	High		Low	High	
Deviate from the actual capital structure	51.2	48.8	2.45	53.0	47.0	2.36	31.9	68.1	2.88	66.7	33.3	2.09	29.2	70.8	2.97
Cut the dividends	44.5	55.5	2.59	68.7	31.3	1.91	52.2	47.8	2.45	38.8	61.2	2.78	28.8	71.2	2.92
Restructure assets	42.9	57.1	2.56	39.7	60.3	2.54	47.1	52.9	2.37	44.3	55.7	2.56	43.9	56.1	2.59
Forgo the investment opportunity	66.7	33.3	2.11	62.7	37.3	2.10	75.4	24.6	1.87	59.2	40.8	2.32	84.8	15.2	1.86
If you forwent this attractive investment opportunity, which of the following reasons would be relevant?															
in order to hold independence	42.6	57.4	2.69	62.5	37.5	2.08	52.9	47.1	2.35	39.2	60.8	2.81	40.0	60.0	2.60
in order to keep moderate level of leverage	32.1	67.9	2.87	28.0	72.0	2.92	16.7	83.3	3.06	36.0	64.0	2.79	10.0	90.0	3.00
in order to keep the senior shareholders' value	54.5	45.5	2.35	50.0	50.0	2.38	68.8	31.3	1.81	55.9	44.1	2.40	50.0	50.0	2.60
external equity financing is unavailable	50.0	50.0	2.41	56.5	43.5	2.30	70.6	29.4	2.00	50.0	50.0	2.46	10.0	90.0	3.20
borrowing is impossible	58.1	41.9	2.25	72.0	28.0	1.92	93.8	6.3	1.44	52.1	47.9	2.41	10.0	90.0	3.20
debt service is not expected to be satisfied	50.6	49.4	2.42	53.8	46.2	2.35	52.9	47.1	2.12	55.7	44.3	2.39	20.0	80.0	3.10

Notes: Table 3.2 presents the survey questions and answers for the full sample and the country sub-samples. Figures show the mean score of importance/likelihood for each question and the distribution of answers '1' and '2,' classified as 'low,' and '3' and '4,' classified as 'high'.

Getting back to our sample, examining the four biggest CEE countries for which our sample allows a reliable analysis (the Czech Republic, Hungary, Poland and Romania), the answers depict a fairly homogenous picture of debt-related factors. Hungarian CFOs, for instance, attribute on average the lowest importance to the factors in question, indicating the level of non-debt tax shields (2.28) and the potential costs of financial distress (2.12) as the second and third most important concern. Romanian firms seem to follow more rigorously the theoretical aspects of corporate financing by attributing relatively high importance to both the potential costs of financial distress (3.15) and the corporate tax rate (2.82). Consequently, Romania proves to be the only country where the executives' priorities are more explicitly in line with the conventional implications of the STT. Between these two extremes, Czech and Polish firms report a similar average relevancy for the factors concerned.

The answers given to the question "Does your firm have a target value for the leverage ratio?" underline our presumption that the majority of CEE firms do not set a target leverage ratio indeed. We got this answer from 73% of the firms surveyed. Out of the firms which report definite target leverage (about 27%), only 16% respond that they treat this ratio as a flexible anchor, while 44% consider the target as a tighter goal that the firm can only occasionally depart from; whereas another 40% indicate that strictly respect this target. Looking at the figures on country level, there is a larger share of firms with fixed target in Poland (38%) than in Hungary (28%), while the share of leverage-setting companies is smaller in Romania (18%) and the Czech Republic (14%). Such large differences in the number of leverage-targeting firms are more than surprising, in particular, if we take into account the homogeneity of preferences the CFOs declared vis-à-vis the tradeoff-related debt factors. Managers in Hungary have an average commitment to keeping the firm's capital structure fixed. However, when they are asked for their underlying motivations, they do not attribute high importance to any of conventional factors of the STT. On the contrary, Romanian firms, for instance, consider all these factors as more important, but in the meantime, most of them do not have a leverage target set. It is to note, however, that results in all countries strongly suggest that firms reporting to have a fixed leverage ratio try to hold the predefined leverage strictly, while only few report flexibility in their targets.

To conclude, answers regarding the debt policy reveal a fairly high conservatism in the use of debt in each country. The main motivation for borrowing seems not to be the firm-level optimisation of tax burdens, but rather relates directly to a class of assets that is financed by and likely used as collateral for the loan. We see further evidence of conservatism by interpreting answers given to the question "Which of the following sources of long-term

funds are/would be important for financing new investments?” With this question, we indirectly investigate whether managers are concerned with asymmetrical information issues. If they are, we expect that their preferences will be consistent with the pecking order theory, in other words, CFOs find external funds less desirable than internal funds, and among external funds they prefer ordinary debt to convertible debt and convertible debt to new external equity.

Our results show clearly that, when financing new assets, the highest importance is attributed to internally generated funds, with 73% of firms reporting it as important or very important. The mean of 2.97 is significantly higher than the second most important “new funds”, the restructuring of asset portfolio (2.56), which, in turn, is ranked ahead of new external debt (2.51), new external common equity (2.04) and, as a last resort, convertible debt (1.48). Convertible debt has a low mean, and only 13% of the CFOs consider it important in financing. The order of preferences above provides very strong support for the POT, as it is closely in line with the theoretical order of funds. The only exception is that we find evidence of a minimal role for convertible bonds in the CEE countries, which is not a surprising outcome at all.

It is more interesting to conclude that the order (importance) of financing funds contradicts many earlier conclusions, and raises important implications. Ang (1991) proposes a modified POT for SMEs in which new external equity raised from existing owners ranks in second place just behind retained equity and ahead of debt. Ang (1991) argues that it is difficult to draw a sharp distinction between “real” internal funds and the latent contribution of “old” owners of the firm when shareholder and managerial roles are not separated. Very similarly, Chen (2004), Nivorozhkin (2005) and Delcours (2007) all find that, due to lack of long-term borrowing instruments caused by a combination of a missing corporate bond market and an immature banking system, managers in developing countries prefer external equity to external debt because it is not compulsory, and also because share capital often appears to be a long-term and “free” source compared to debt.

Our findings partially contradict the previous studies on emerging markets as CFOs explicitly rank funds in a way, which is theoretically in line with the POT. Contrary to earlier findings, at the end of the 2000s CFOs firmly declare that long-term borrowing has become an accessible and viable option, and hence the revealed hierarchy of funds matches that of the more developed and mature economies. Table 3.2 shows that nearly 70% of the firms answered the question “During the last three years, did your firm apply for new loans or capital leases?” positively, a remarkably high ratio even if we take into account that a

substantial number of these firms wanted to engage, of necessity, short-term loans. It seems that the business environment in the CEE countries has substantially developed since the era of Nivorozhkin studies (that cover the '90s), a period when even the largest listed companies suffered from severe credit rationing problems that restrained their development. The presence of a more mature banking system and the availability of external credit are underpinned further as, based on our survey, 94% of all debt and capital lease applications were approved between 2005 and 2008. Contrary to the findings of Nivorozhkin (2002, 2004), which suggest that even with serious asymmetrical information problems between insiders, creditors and shareholders, firms do not necessarily follow the POT, we find that this reversion in the theoretical order of funds is no longer noticeable among the firms in the CEE region.

As our sample consists of both small, medium and large-sized firms, with local and multinational background equally, we argue that the above conclusion is based on a representatively broad class of firms. In the meantime, the analysis of underlying firm attributes, which we present in a following section of the paper, is expected to contribute to a better understanding of why some firms follow the theoretical scheme more closely than others.

By questioning CFOs' motivation in their borrowing decisions, Graham and Harvey (2001) find that the most important out of all aspects is keeping financial flexibility, which is likely driven by managers' desire for financial comfort rather than the goal of optimising present and future costs of financing, as proposed Fama and French (2002). Similarly to GH, Brounen et al. (2006) argue also that, in Europe, despite the pecking order-consistent behaviour, which is widely observable in the everyday financing practice, this behaviour is not caused by pure asymmetrical information concerns as first proposed by Myers (1984).

Furthermore, we find another common specificity in the CEE region. An unexpectedly high importance is attributed by firms to the restructuring of assets (mean of 2.56 in the full sample), which we defined during the survey as being any kind of transaction targeting the pool of assets to free potential internal cash reserves. The answers given suggest that executives are clearly aware that their firms could temporarily operate with endogenous inefficiencies in the asset structure, and they occasionally attempt to use this sub-optimal investment status as an opportunity to solve funding problems. While this kind of asset restructuring, theoretically, might not even exist in an efficiently managed firm in an ideal world; the answers imply that executives effectively consider this option as much important as the possibility of external debt financing.

One of the crucial elements in the POT is the management's intention to keep the maximum amount of liquidity under control. From a managerial point of view, retained equity is cheaper than debt because there is no interest on it, and it is more easily accessible than external equity because even senior ('old') shareholders have to be persuaded to inject fresh equity into new projects. Consequently, for managers not having an ownership interest in the firm (non-owner managers) equity looks like the cheapest fund, but only if it is available internally. Table 3.2 exhibits that 43% of the CFOs responded "yes" to the question: "In periods when the firm's investment is low, does your firm retain a part of its free cash-flows?" This result is significant because managers of cash-rich firms may be motivated to waste some part of the firm's excess cash on negative-NPV projects, such as perquisite assets and value-deteriorating ('empire-building') investments. However, the ratio of these reserve-keepers changes significantly between countries: only 36% of the Polish managers build internal cash reserves, while Romanian and Hungarian firms report similar ratios of 57% and 53%. Interestingly, the above findings are somewhat ambiguous, since, while retained equity represents the primary source of financing in all large countries, Polish CFOs assess the importance of internal equity (3.18) as the highest relative to other alternatives. On the contrary, Hungarian and Romanian CFOs are more willing (and probably more able) to retain internal equity, whereas the answers exhibit much lower lead in its importance over debt.

In Hungary and Romania funds potentially available through restructuring are ranked only in third place, while in Poland and the Czech Republic the restructuring of assets in place is preferable to debt. The ratio of loan applications supports these country-specific patterns, with Romanian (87% with a 97% approval rate) and Hungarian firms (72% with a 92% approval rate) significantly ahead of Czech and Polish firms. This outcome suggests in general that sufficiently tight and sustainable lending conditions are, in addition to a mature financial system, apparently a prerequisite to follow the pecking order theory.

As a next step, we asked the CFOs about "what action would they take if a given investment could not be taken without modifying the actual balance sheet structure of the company." We offered them options related to both the assets' and the liabilities' structure, just as the choice of foregoing this attractive investment opportunity for any reason.

Overall, executives are the most prepared to cut dividends back, as 57% of them consider that building cash reserves internally with the consent of old shareholders is the easiest and probably the cheapest way of funding a promising future investment. This is consistent with the original hypothesis of Myers (1984) and Myers and Majluf (1984) about dividends that, are to some extent sticky, but still can be lowered with relatively small informational effect if

the projected NPV is appealing enough. The mean answer of 2.59 is consistent with CFOs' preferences, expressed in line with a pecking order-like hierarchy of financing funds. The second likeliest action, which is the restructuring of assets with a mean of 2.56 is consistent with the answers collected throughout the survey. The score again provides support for the POT; it is enough to have a look at the dominance of asset restructuring and retained cash, which, once again, demonstrate a salutary consistency in CFOs' answers.

While CFOs report themselves to be quite flexible in adjusting dividends and fixing under-optimal balance sheet problems, they are less inclined to deviate from the firm's actual capital structure when they are questioned about it directly. Even if any dividend adjustment similarly influences the firm's debt-to-equity ratio, their impact is seemingly indirect, unlike any direct decision about the structure of debt and equity. The mean of 2.45 indicates that such direct transactions are less preferred than internal actions; nevertheless, the score points out that CFOs still consider these actions as a feasible alternative. And at last but not least, very much in line with favourably loose lending conditions, we find that, when managers see an attractive opportunity, they do not usually forgo it (2.11), instead try to find ways to finance it by either the restructuring of assets, or the extension of the balance sheet.

Among the countries analysed we find larger differences in the importance of actions. In all countries but Poland it is less likely that a CFO would forego a promising investment, whereas more likely that he/she changes anyhow the actual capital structure of the company. Rejecting the opportunity ranks third in Poland, and the measured mean of 2.32 is well above the mean of other countries. Preferences of Polish executives are in line with their Czech homologues by seeing an important opportunity in shifting the composition of assets and, hence, creating free liquidities. On the contrary, Hungarian and Romanian managers, which exhibit a greater willingness to retain free cash flows and to borrow from external creditors when necessary, are more likely to deviate from the actual capital structure and cut back dividends if necessary to supply enough new funds. In both Hungary and Romania, the likelihood of foregoing the positive-NPV opportunity in question is very low compared to Poland and the Czech Republic.

III.6. Analyses of sub-samples

In order to understand how much of the described heterogeneity is derived from simple country-specific factors and how much of it might be explained by non-quantitative firm attributes, we divide the full sample into sub-samples along some qualitative attributes, throughout which pure country effects can be eliminated. Results are presented in Table 3.3.

The first attribute we use to differentiate firms is whether they have target leverage or not. We find that out of the 116 firms being operated with a fixed target, the top 3 executives own less than 5 per cent of the shares in 75% of the companies, and in only 16% of the firms the top 3 executives together hold more than 20 per cent of the shares. These ratios are fairly different in the complementary sub-sample. Firms without a defined target ratio are more commonly managed by managers that also have shareholder role ('owner-managers'): we find 26% where the first 3 executives jointly hold more than 20 per cent of the shares. To justify that such a difference is more than simply random effect of the sampling, we performed a Chi-square test for the observed distribution of answers, and we find that the two distributions are indeed significantly different at 5% significance level.

In the meantime, we do not find any evidence that the origin of dominant management culture is correlated with the existence of leverage target. Given the fact that the theory of optimal capital structure mainly gained ground in the most developed countries, one would expect to find relatively more firms with foreign management culture among leverage-targeting firms than among those not having such a target. Contradicting this theoretical relationship, in the two complementary sub-samples the proportion of firms dominated by foreign culture is equally around 40-42%, that is to say, we could not evidence that more firms with international background set a target leverage ratio than the ones without it.

Like management origins, CFOs express an unexpected homogeneity with regard to other policy issues in the two sub-samples. We find no evidence, for example, that firms with fixed target leverage apply for new loans/capital leases more frequently than the firms without fixed target. Likewise, only a moderate gap exists in the proportion of firms building cash reserves in low-investment periods, with a 43-47% share in both samples. The difference is not significant at 10% level.

Table 3.3 Summary of sub-sample answers (part 1)

	Target leverage		Management Ownership				Management Culture					
	Yes	No	High		Low		Foreign	Domestic				
Number of observations	116	318	120		308		202	284				
What factors affect how you determine the appropriate amount of debt for your firm?	Importance											
	Low	High	L	H	L	H	L	H	L	H	L	H
Projected cash-flow from the assets to be financed	25.7	74.3	27.1	72.9	18.0	82.0	27.9	72.1	28.5	71.5	25.4	74.6
The debt levels of other firms in the industry	59.6	40.4	56.3	43.8	55.9	44.1	58.6	41.4	60.1	39.9	56.4	43.6
The potential costs of bankruptcy or financial distress	41.8	58.2	48.2	51.8	33.9	66.1	48.3	51.7	49.7	50.3	41.0	59.0
The corporate tax rate	44.5	55.5	53.9	46.1	47.7	52.3	52.2	47.8	50.6	49.4	49.0	51.0
The level of depreciation and non-debt tax shields	34.9	65.1	48.9	51.1	48.2	51.8	43.4	56.6	44.4	55.6	43.8	56.3
Does your firm have a target value for the leverage ratio?	no	yes	no	yes	no	yes	no	yes	no	yes	no	yes
	0	100	100	0	81.1	18.9	70.0	30.0	73.6	26.4	72.2	27.8
If „Yes” We usually/permanently depart from it (flexible)	15.9				35.0		12.5		19.5		15.1	
If „Yes” We occasionally dep. from it (somewhat tight)	43.9				45.0		38.8		43.9		43.8	
If „Yes” We strictly respect it	40.2				20.0		48.8		36.6		41.1	
What is this target value (book debt/total assets)?	37.8				22.9		39.6		34.5		39.9	
Which of the following sources of long-term funds would be important for financing new investments?	Importance											
	Low	High	L	H	L	H	L	H	L	H	L	H
Retained earnings	23.5	76.5	30.1	69.9	22.6	77.4	28.9	71.1	28.6	71.4	25.4	74.6
Restructuring assets	40.7	59.3	46.2	53.8	41.6	58.4	44.0	56.0	43.2	56.8	43.3	56.7
Straight debt	50.4	49.6	50.3	49.7	31.3	68.7	58.1	41.9	53.4	46.6	48.0	52.0
Convertible bond	84.0	16.0	87.9	12.1	83.0	17.0	89.3	10.7	89.2	10.8	85.8	14.2
External common equity	63.0	37.0	68.0	32.0	70.1	29.9	65.4	34.6	67.9	32.1	66.2	33.8
During the last three years, did your firm apply for new loans or capital leases?	no	yes	no	yes	no	yes	no	yes	no	yes	no	yes
	29.3	70.7	31.4	68.6	13.7	86.3	37.9	62.1	34.8	65.2	28.5	71.5

Notes: Table 3.3 presents the survey questions and answers for the attribute-based sub-samples. Figures show the mean score of importance/likelihood for each question and the distribution of answers ‘1’ and ‘2’, classified as ‘low’, and ‘3’ and ‘4’, classified as ‘high’.

Table 3.3 Summary of sub-sample answers (part 2)

	Target leverage		Management Ownership				Management Culture					
	Yes	No	High		Low		Foreign		Domestic			
Number of observations	116	318	120		308		202		284			
What percent of equity is owned by the top three												
<5%	75.2	63.5	0.0		94.2		73.8		64.5			
5-10%	4.0	4.0	0.0		5.8		4.1		4.0			
10-20%	5.0	6.9	20.8		0.0		5.8		5.2			
>20%	15.8	25.6	79.2		0.0		16.3		26.2			
Management culture dominance	Foreign	Local	F	L	F	L	F	L	F	L	F	L
	40.0	60.0	41.7	58.3	32.8	67.2	44.1	55.9	100	0	0	100
Does your firm take advantage of operating lease?	no	yes	no	yes	no	yes	no	yes	no	yes	no	yes
	47.0	53.0	54.6	45.4	55.9	44.1	53.8	46.2	50.5	49.5	56.4	43.6
In periods when the firm's investment is low, does your firm retain a part of its free cash-flows?	no	yes	no	yes	no	yes	no	yes	no	yes	no	yes
	52.2	47.8	57.1	42.9	48.7	51.3	58.1	41.9	57.9	42.1	57.0	43.0
Given an investment that could not be taken without modifying the actual BS what action would you take?	Likelihood											
	Low	High	L	H	L	H	L	H	L	H	L	H
Deviate from the actual capital structure	56.4	43.6	49.3	50.7	36.3	63.7	55.7	44.3	50.8	49.2	51.7	48.3
Cut the dividends	39.8	60.2	46.2	53.8	31.9	68.1	49.3	50.7	43.4	56.6	46.0	54.0
Restructure assets	41.3	58.7	43.1	56.9	40.0	60.0	42.6	57.4	45.6	54.4	40.8	59.2
Forgo the investment opportunity	66.7	33.3	67.9	32.1	78.3	21.7	62.6	37.4	69.9	30.1	64.9	35.1
If you forwent the investment opportunity, why?												
in order to hold independence	43.6	56.4	44.0	56.0	32.0	68.0	47.8	52.2	50.0	50.0	39.8	60.2
in order to keep moderate level of leverage	25.6	74.4	34.7	65.3	16.0	84.0	36.6	63.4	35.6	64.4	31.6	68.4
in order to keep the senior shareholders' value	55.3	44.7	52.7	47.3	50.0	50.0	57.4	42.6	58.6	41.4	53.8	46.2
external equity financing is unavailable	55.3	44.7	49.0	51.0	30.8	69.2	50.9	49.1	56.9	43.1	45.7	54.3
borrowing is impossible	46.2	53.8	63.2	36.8	34.6	65.4	61.1	38.9	64.4	35.6	53.8	46.2
debt service is not expected to be satisfied	57.9	42.1	49.5	50.5	34.6	65.4	51.4	48.6	55.9	44.1	46.8	53.2

Notes: Table 3.3 presents the survey questions and answers for the attribute-based sub-samples. Figures show the mean score of importance/likelihood for each question and the distribution of answers '1' and '2', classified as 'low', and '3' and '4', classified as 'high'.

On the contrary, there is a larger difference in the number of firms taking advantage of operating leases, as firms with a target leverage ratio turn more frequently to this tool (slightly above 53% versus 45%). This outcome is consistent with our expectations, as operating lease provides an important advantage for a firm that tries to strictly keep a pre-defined capital structure. The effect is, however, weak in statistical sense.

There are both similarities and discrepancies between the sub-samples regarding the factors of borrowing. On the one hand, projected cash flow from the asset to be financed is the most important factor in both sub-samples, while the least important one is the debt level of rival firms. On the other hand, leverage-targeting companies assess conventional tradeoff aspects as more important in their debt decisions than firms without target leverage. These CFOs give more weight to corporate tax and non-debt tax shield considerations, which is in line with the basic principle of the STT.

While we see a shift toward more tradeoff-driven debt decisions among leverage-targeting firms, interestingly, our results do not confirm that these firms are less concerned by factors of the pecking order theory. Executives, for instance, treat retained equity in both samples as the most important source of financing, ahead of asset restructuring and external debt. In addition to this, external equity is widely considered as one of the least preferred alternatives. This is an outcome to highlight: the preference suggests clearly that despite the fact that the STT does not explicitly differentiate between internal and external equity in setting the optimum capital structure, even leverage-targeting firms do not reject a POT-like hierarchy of funds.

Once the sub-samples based on the presence of target leverage are examined, we created two complementary ones based on the degree of managerial ownership. There are 120 firms where the top 3 executives hold more than 10 per cent of the shares – we can say that these firms are managed by owner-managers or ‘insiders’ –; whereas there are 308 firms, in which the top 3 executives together own less than 10 per cent of the equity. As expected, we find a higher proportion of firms having local management culture among the firms managed by owner-managers (67%) than in the complementary sub-sample (56%). It is a more surprising outcome that, in absolute terms, a relatively high local management influence has been developed in all firm classes by the end of the 2000’s.

We find that managers with a mixed (employee-ownership) interest not only feel less constrained to keep the firm’s capital structure fixed than non-owner managers (19% versus 30%), but also consider this target more flexible. Unlike firms with low managerial ownership where the existing target is strictly respected by half of the managers, only 20% of insider

CFOs report a strictly predefined ratio. Parallel to this, the number of firms using target leverage ratio as flexible anchor only equals to 12.5% of the firms in the first sample, which significantly falls short of the 35% measured in the complimentary sample.

Despite the fact that owner-managers do not like high and pre-set leverage, they enter the external debt market quite frequently. A substantially higher proportion of firms operated by insiders applied for a new loan/capital lease in the preceding 3 years (86%) than firms in the other sub-sample (62%). Figures are strongly significant at 1% level.

There is a notable discrepancy in how CFOs treat external borrowing when their managerial and shareholder interests are connected as against when they are not. As to the importance of financing funds, CFOs of firms managed by owner-managers firmly declare that ordinary debt and retained earnings are about equally important. This outcome contrasts strongly with the other sub-sample where non-owner managers have a clear preference for retained earnings ahead of restructuring of assets and straight debt. Just like the frequency and reliance on using debt differs considerably, so do the factors that determine the appropriate amount of borrowing. In firms managed by owner-managers, CFOs assign particularly high importance to cash flows from the asset to be financed, as opposed to other firms where this average is much lower. In addition to the above, there is also a noticeable gap regarding the potential distress costs in favour of firms managed by owner-managers, which meets our prior expectation that financing decisions made under a mixed interest more vigorously represent shareholder-specific interests.

Overall, our results suggest that non-owner managers operate firms in a more disciplined way, which better adheres to theoretical considerations, than do owner-managers. The latter class of firms not only could, but in fact seems to deviate more likely from the theoretical rules in their decisions. There is a higher probability that executives with low ownership are required to adjust towards a fixed leverage ratio, and it is also more likely that they are constrained in and have to provide a reasonable argument before turning to bank debt in financing. Moreover, we find that non-owner managers have a higher willingness to forgo an attractive investment opportunity than do owner-managers if this investment cannot be undertaken without restructuring the firm's balance sheet. Non-owner managers are also less likely to deviate from the actual capital structure and to cut dividends back, which contrasts with insider managers who evidently have more flexibility in these issues.

Further analysing complementary sub-samples, two samples were created based on the attribute of the origin of management culture, with 202 foreign and 284 local firms, respectively. Our survey results point out, somewhat unexpectedly, that the presence of

foreign influence (dominantly western) in regional firm's management methods, strategy and policies adds relatively little to our knowledge about the relevance of capital structure theories as against the case when this influence is not present in the management culture. With regards to the two sub-samples, there is no significant gap, among others, in the proportion of firms with fixed target leverage; even, there is no gap in the proportion of firms opting for retaining free liquidities when investment demand is temporarily low. On the contrary; however, there are some differences in the relative number of firms applying for loans in favour of companies with local management culture, and as opposition to this, the companies with foreign culture are more likely to take advantage of operating leases.

III.7. Discussion

Results of the quantitative analysis (Table 3.1) confirm that conventional tradeoff factors are not strongly present in financing decisions of the broad sample of firms. This is an outcome that coincides spectacularly well with CFOs' verbal preferences. The TAX variable, which should positively relate to the leverage ratio, and is denoted by half of the respondents as not important, is indeed not correlated with the leverage ratio. RISK, which is a time-invariant risk proxy representing volatility of earnings, does neither play a determinant role in firms' financing decisions. Similarly to the tax rate, and according to our survey (Table 3.2), about half of CFOs report that the costs of getting into a distressed situation are a decisive factor in borrowing. This is another result that does not support the STT, taking into account that a firm with more volatile operating profitability will target a lower debt-to-equity ratio to avoid potential problems in debt service. Our size proxy (SIZE) also fails to show a positive relationship with the leverage ratio. Hence, coefficient estimates make declared preferences credible about that the majority of firms rejecting target ratio (73%) in fact do not optimise their capital structure by analysing the tax savings and distress costs of debt.

After rerunning the panel regression only on the sample of leverage-targeting firms (see Table 3.4), we find that, although the tax proxy (TAX) becomes slightly positive, it remains insignificant, just like RISK. The irrelevance of these factors on leverage is confirmed further by each sample-specific regression based on attributes of the managerial ownership and dominant culture.

The strong irrelevance of business risk and the unexpected sign of size factor yield important implications that go well beyond the relevance of the STT, since both variables are explicitly considered to be important factors in the widely reported supply-side constraints of debt. For any credit application, all else being equal, one would expect that firm size

correlates positively with transparency and negatively with the implied informational asymmetry, while business risk correlates negatively with the projected future debt service. The missing correlation with leverage may involve three possible explanations.

(1) Using widely applied log net sales as size, and the standard deviation of ROA as risk proxy is not an appropriate choice in the CEE countries. We note that this possibility is less likely if we take into account the numerous previous studies (e.g., Booth et al. (2001)) using these proxies.

(2) Lenders, regardless of their identity, might not strictly follow the conventional rules in risk assessment, which most capital structure theories consider to be fundamental. This explanation is not as improbable as is seen at first sight, and can be supported to some extent by the idea that local companies can use a number of alternative forms of borrowing, among which the way of inter-company and personal lending often bypass the conventional credit scoring system. When the managerial ownership is high and/or there is a substantial foreign economic interest in the firm (all CEE countries are relatively small, except Poland, and open economies), one could argue that there is more likely a shift between the party who engages the external debt and, therefore, is subject to external risk assessment, and the party who finally consumes the funds.

(3) Finally, the last argument originates from the economic cyclicity, which, in general, largely influences the banking sector's willingness to lend. In an economic period when historically high lending activity was further fuelled by impressive economic growth region-wide, the growing risk appetite eased the well-known constraints of bank financing (Avarmaa et al. (2011)). Our survey supports the belief that the majority of firms in fact did not encounter difficulties in course of their loan applications during the period investigated.

Unlike TAX and RISK, asset tangibility (TANG) shows a strong positive relationship with leverage (Table 3.1 and 3.4), which emphasises the fact that fixed tangible assets could still serve as primary collateral, and that lending decisions are closely related to the nature of assets. This consideration is also dominant among the CFOs given that, out of the factors influencing the appropriate amount of debt, the highest importance is attributed to cash flow generated from the assets to be financed. Although TANG is undoubtedly a strong positive determinant of leverage, its impact can vary to a significant extent between the sub-samples. TANG has a stronger impact on leverage in firms managed by owner-managers than in firms managed by non-owner managers, as well as it plays a more decisive role in firms operated with a local management culture.

Table 3.4 Regression results of the attribute-based sub-samples

	Target leverage				Management Ownership				Management Culture			
	Yes		No		High		Low		Foreign		Domestic	
Observations	116		318		120		308		202		284	
	Coeff.	t stat	Coeff.	t stat	Coeff.	t stat	Coeff.	t stat	Coeff.	t stat	Coeff.	t stat
C	0.39	1.80	0.49	2.89	0.13	0.31	0.46	3.63	1.18	3.02	0.06	0.20
TAX	0.00	0.62	0.00	-0.78	-0.03	-1.32	0.00	0.55	-0.04	-1.17	0.00	0.47
ROA	0.05	0.59	-0.28	-2.62	-0.06	-0.52	-0.44	-8.16	-0.27	-2.66	-0.21	-5.70
RISK	-0.09	-0.16	-0.16	-1.09	-0.38	-1.22	0.28	0.97	-0.25	-0.72	0.08	0.21
SIZE	0.00	-0.43	-0.02	-2.17	0.01	0.33	-0.01	-1.83	-0.05	-2.24	0.01	0.87
D_SIZE	-0.02	-1.24	0.06	2.08	0.04	1.02	0.03	1.11	0.07	2.66	0.00	-0.12
TANG	0.18	6.75	0.29	2.85	0.38	7.12	0.16	1.45	0.12	1.40	0.31	4.63
CASH	-0.38	-1.79	-0.21	-3.26	-0.14	-0.69	-0.32	-6.68	-0.29	-2.93	-0.22	-4.61
DEPR	-1.81	-3.11	-0.91	-3.39	-0.46	-0.99	-1.17	-5.66	-1.45	-8.06	-0.89	-3.19
INTAN	1.10	2.12	1.01	5.88	-1.32	-2.48	1.00	6.92	0.01	0.02	1.14	3.39
Adj. R-square	0.06		0.14		0.13		0.12		0.10		0.17	

Notes: Table 3.4 reports results of the random effect panel regression of the total leverage ratio for attribute specific sub-samples. Dummies are not reported.

The role of non-debt tax shields (DEPR) in borrowing decisions is ambiguous. Regression results (Table 3.1) show that it is negatively correlated with leverage, which we a priori expected assuming that the STT holds. Still, little more than half of the CFOs denote this factor to be important when we explicitly ask them about this issue. Besides DEPR whose impact is only moderately supported by the survey, TANG is the one and only conventional factor, which is consistent with the STT, as neither profitability nor firm's growth prove to be in accordance with the theory. Though profitability is significantly correlated with leverage, the estimated relationship is negative, which fails to prove that the main driver behind borrowing decisions is the goal of minimising corporate tax. Firms with higher profitability are more likely to use equity to finance their operations, which directly supports the POT; what is more, it is consistently backed by survey responses. The negative coefficient of liquid assets (CASH), in line with the preferences for retained earnings, also underpins the basic principle of the POT.

A moderate support for the STT is only found in attribute-based regressions (Table 3.4). The coefficient estimate of profitability (ROA) becomes non-negative only for firms with target leverage; however, the estimation is not significant at 10%. Still, this result contrasts sharply with all the other samples for which we estimate a strongly significant negative ROA. Moreover, CASH and DEPR show a considerably weaker and stronger negative effect, respectively, in case of the leverage-targeting firms.

While estimated coefficients of ROA, TAX and RISK do not support the STT, this does not mean that optimisation for tax is of secondary importance among the objectives. Private companies are often given more flexibility in adjusting their cost structure and optimising taxes than are listed companies, whose actions are under permanent market control. Unlike listed firms, private firms can often find alternative ways to minimise their tax bill without recourse to additional borrowing.

The positive coefficient estimate of asset intangibility (INTAN) raises an interesting issue. Titman and Wessels (1988) consider intangible assets as negative tangibility, which behaves like an inverse proxy for the collateral value of assets; therefore, a negative correlation could be expected with leverage. Our results do not confirm this assumption.

The growth proxy we use is positively related to leverage. This relationship emphasises the fact that creditors were willing to finance the growth of corporate sector during the period analysed. Our findings are consistent with banking sector statistics and also with answers of CFOs, indicating that the majority of loan applications were approved. The D_SIZE variable provides rather support for the POT by showing that expanding firms are willing to borrow externally if they are not profitable enough to build cash reserves.

III.8. Concluding remarks

We test the capital structure theories with two distinct methods in ten CEE countries. The first method we apply is a panel regression of total financial leverage for the period from 2005 to 2008. The second method is a questionnaire-based test where CFOs of the same firm sample are questioned on their motivation and preferences in financing decisions. Furthermore, we create sub-samples based on the full sample to determine whether the results are robust in groups of firms with specific attributes.

As the most important, we find that CFOs present strong pecking order-driven behaviour, with a limited role for target leverage. A tradeoff-driven behaviour is more perceivable among firms having fixed target leverage. We do not find that the two rival theories are mutually exclusive. Among firm-specific attributes, the extent of managerial ownership has a strong impact on executives' preferences and leads towards less theoretically disciplined financial management; whereas results do not confirm that a foreign influence in firms' management culture has a strong impact on the financing decisions.

One of the main conclusions we can draw is that the two independent methodologies give similar results; therefore, a robust picture can be drawn of the underlying motivations and preferences of managerial behaviour. Panel regression yields a reliable predictive power for

firms' financing behaviour in the CEE countries. We conclude that investigation of capital structure choices of firms throughout the creation of samples based on firm-level attributes may be a promising direction for future research. In our opinion, our survey technique justifies the belief that a more qualitative approach could deliver useful extra information for a better understanding of capital structure decisions. From this analysis, we learn that the impact of country dummies might cover much more than the simple fact of belonging to a given country.

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