Capital structure decisions: research in Estonian non-financial companies

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Abstract

Purpose – To investigate the relations between company-specific financial factors and the capital structure decisions of Estonian non-financial companies and to examine behavioral differences between companies of different sizes.

Design/methodology/approach – Totally 260 Estonian non-financial companies are divided into small-, medium- and large-companies, each sample being analysed by correlation-regression method in two aspects – impact of financial factors on static capital structure and capital structure dynamics. Companies' financial statements of 2002/2003 or 2003/2004 are used. Finally, capital structure adjustments in extreme boundaries are analyzed.

Findings – Capital structure decisions among Estonian non-financial companies are driven by the pecking order theory, the evidences supporting optimal capital structure choices in long run remain weak. The robustness of the pecking order behavior significantly differs between smaller and bigger companies.

Research limitations/implications – Limited number of companies surveyed due to hard manual work required to adjust financial accounts. Implication of findings is somewhat limited as the study covers a single country.

Originality/value – The paper helps to identify financial drivers and to understand motivations behind capital structure decisions of emerging market companies and it supplements earlier studies. Quasi-equity debt distorts the observed capital structures. Capital structure is adjusted for operating leases and quasi-equity debt to identify true amount put at risk and its mix between owners and external lenders.

Keywords Capital structure, Decision making, Estonia

Paper type Research paper

Introduction

The subjects related to companies' capital structure have belonged to a range of the main reasearch topics among scholars and practitioners for a long time. The fundamental question is whether the companies manage their capital structure knowingly (trade-off theory) or the observed capital structure is a result of random process determined by historical profitability, investment options, dividend policy and capital market conditions (pecking order and market timing theories). There is no consensus and, as argued by many scholars, neither traditional pecking order nor trade-off theory provide satisfactory description of capital structure choices in practice (Gaud *et al.*, 2004; Graham and Harvey, 1999). Several studies conclude that companies do have a target leverage ratio which they pursue in long run, but pecking-order behavior seems to dominate over short-run capital structure decisions (recent studies include Mayer and Sussman, 2004; Tucker and Stoja, 2004; Farhat *et al.*, 2006). This notion assumes that companies will gradually reduce the gap between observed and

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target capital structure once they are pushed away from the target level. Partial adjustment behavior contributes to trade-off theory if adjustment speed is high, otherwise the other determinants, mostly related to pecking-order theory, remain dominant. Again, empirical studies give contradictory results, perhaps due to different methods and leverage specifications used. For example, in recent studies, Flannery *et al.* (2004) document the adjustment speed of one-third per year, but Huang and Ritter (2007) suggest that firms adjust slowly toward their target leverage (speed varies between 11.0 and 21.1 percent per year for book leverage, and between 16.1 and 22.3 percent for market leverage). The results of the extensive study by Farhat *et al.* (2006) show the adjustment speed varying between 19 and 48 percent. However, the puzzle remains and one of the reasons for contradictory results might be seen in differences in country- and company-specific factors.

The goal of this study is to research relations between company-specific financial factors and capital structure decisions among Estonian non-financial companies and to track behavioral differences between the companies of different size. There is no effort made to calculate target leverage ratios but the analysis on capital structure dynamics gives some insight into targeting behavior among Estonian companies. The study is unique because of adjusted financial accounts – traditional accounts may not reveal the true picture about employed capital and its proportion between owners and lenders. Biases are mostly resulted from accounting of operating leases and owners' debt. The latter appears to significantly distort the observed capital structures of Estonian companies. Quasi-equity debt consideration contributes to the originality of the study as it has not been considered in earlier studies known to author. The study captures the financials of 260 Estonian non-financial companies in period 2002/2003 or 2003/2004. Two-period time horizon does not allow to investigate the impact of earnings volatility on capital structure choices – the relation which has widely been investigated in earlier works (Lööf, 2003.; Bradley *et al.*, 1983; Graham and Harvey, 1999; Titman and Wessels, 1988). Company size has a significant impact on capital structure choices and the author argues that, apart from the commonly accepted reasons (business diversification, flexibility, adjustment and bankruptcy costs), smaller companies have also lower managerial quality to rise debt. Therefore, companies are divided into three groups by their turnover in order to examine the predicted differences in capital structure development.

The remaining part of the paper is structured as follows – the first part of the paper covers earlier studies in Estonia and in other Central and Eastern European (CEE) countries, followed by quasi-equity discussion. Empirical study on capital structure choices of 260 Estonian non-financial companies is conducted in the second part of the paper. It comprises the correlation-regression analysis on static capital structure and capital structure dynamics, as well as the analysis on behavior of low and highly levered companies. The paper ends with conclusions.

Existing research studies

One of the pioneering papers investigating the capital structure choices in Estonian non-financial companies was made by Sander (1998, 2003). His first paper covered listed companies while the last was conducted among 200 biggest companies, of which 43 replied. Both papers document the evidences that the capital structure choices are consistent with pecking order theory although companies do report to have some target leverage ratios. The results support the notion that the pecking order behavior dominates

in short run and the trade-off behavior in long run capital structure choices. Both Sander's papers covered the limited number of bigger companies and therefore one might argue if those findings are equally applicable to Estonian median companies as well? Another question arising with questionnaires is that a respondent may give intuitive answers, which are not strongly followed in practice. However, the results of the current study strongly contribute to pecking order behavior among Estonian non-financial companies but the robustness significantly differs between the companies of different size.

de Haas and Peeters (2004) and Nivorozhkin (2004) provide further insight into the question of trade-off and pecking order behavior in CEE countries through target leverage models. According to their calculations, the slow adjustment speed toward target leverage among Estonian companies strongly supports the pecking order theory – de Haas and Peeters (2004) found the average adjustment speed to be 17 percent in 2000-2001 and Nivorozhkin (2004) found the average speed of 19.4 percent in 1997-2001. These findings generally support the assumption that Estonian companies have some target leverage ratios, as documented by Sander (2003) but these targets are weakly followed in practice. Jõeveer (2006) study in nine CEE countries shows that the leverage[1] of unlisted companies is mostly explained by industry factors within larger firms and by country-specific factors within smaller firms. She concludes that the smallest unlisted firms are clearly more constrained by their local financial market than the other firms. According to Farhat *et al.* (2006), the civil law countries (including Estonia) tend to have underdeveloped and bank-based financial markets forcing companies toward pecking order behavior. As one of the company-specific factors, Jõeveer (2006) finds that the profitability of unlisted firms leads to lesser credit, which is consistent with pecking-order theory. She also finds that the business size, measured by the logarithm of assets, has a positive impact on observed leverage. In Jõeveer (2006) and Klapper *et al.* (2002) the younger firms are shown to be more leveraged than the older ones, which is inconsistent with de Haas and Peeters (2004). However, the latest includes bigger companies and therefore results are not exactly comparable.

The literature so far provides strong support that behavior consistent with pecking order theory is dominating driver for capital structure choices among Estonian companies. The evidences that the trade-off theory could be followed in long rung remain weak. There might be many reasons for this and often the problem is referred to that of high-adjustment costs of capital re-structuring, which affect the capital structure choices (Leary and Roberts, 2005; Gaud *et al.*, 2004; Titman and Wessels, 1988; Ju *et al.*, 2002). However, the author argues that one of the reasons is a low level of specific knowledge (Jensen and Smith, 2000), in particular the knowledge of corporate finance, which makes it difficult to sufficiently explain the investment projects to credit providers. The lack of specific knowledge is pronounced among small companies (SC) which form a vast majority among Estonian non-financial companies (companies with less than 20 employees formed 90.5 percent of the total number of companies in 2004 (source Estonian Statistics Office).

Quasi-equity debt discussion

The most commonly observed debt contract is the so-called standard debt contract, which calls for non-contingent repayment of principal plus interest. Whenever this repayment does not occur, bankruptcy proceedings are initiated and all resources related are transferred to the lender (Yan, 1996). Estonian companies widely

use debt given by owners. Such a debt do not usually trigger for bankruptcy proceedings if payments are not met in a timely manner. Therefore, owners' debt increases neither the probability of financial distress as such nor the costs of financial distress and do not motivate companies to behave as standard debt contract assumes. Owners' debt often does not carry any regular amortization plan and repayments are made if the company has sufficient cash available. By nature, the discipline of owners' debt repayment is similar to dividend payments and, taking all together, it is appropriate to classify this kind of debt as equity instruments (quasi-equity). The author argues that quasi-equity debt must be treated as third source of capital along with regular debt and equity and its price and risk characteristics remain open to further discussions. In earlier literature the owners' debt is referred to as internal debt (Ayers *et al.*, 2000). The author prefers to use the term quasi-equity debt as not all kind of internal debt carry the characteristics of quasi-equity.

Proportion of quasi-equity debt to observed total debt in Estonian companies is identified by comparing interest expenses. Firstly, a set of average debt interest rates of Estonian industrial companies is calculated by their size, as shown in Figure 1.

The credit risk of SC is higher than the risk of their bigger peers according to the commonly accepted credit risk approach. Therefore, it is not logical to assume that the average debt interest rate for SC is substantially lower than for bigger companies as shown by Figure 1. Yet the rate in 2004 appears to be very close to Euribor[2]. These statistically biased results are caused by quasi-equity debt which usually carries a zero interest rate or the applied rate is significantly below the market level.

Secondly, the capital structure of very SC (1-9 employees) is re-calculated in order to give some hint how significant the bias might be. The author arbitrary assumes that the real interest rate applied by banks to very SC is 0.5 percent points higher than the

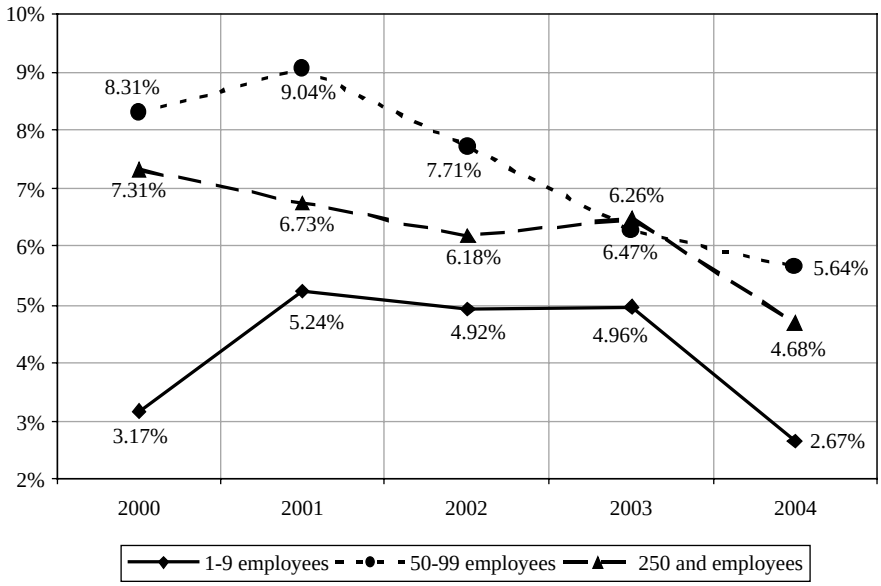


Figure 1.
Average debt interest rate of Estonian industrial companies in 2000-2004

Source: Author

average rate applied to big companies (BC) (250 and more employees). Then the new debt amount is calculated backward based on interest expenses, difference is treated as quasi-equity debt, which is subtracted from accounting debt and added back to equity portion. As shown on Figure 2, the difference between accounting and recalculated financial leverage is significant – the true debt level of SC fluctuates between 20 and 30 percent of total capital as opposed to about 40 percent reflected by accounting figures.

In the current study accounting capital structures are adjusted for quasi-equity debt. However, this impact is very likely to biase the results of previous research studies like Jõeveer (2006), Nivorozhkin (2004) and Klapper *et al.* (2002). Moreover, the quasi-equity problem is not relevant only among Estonian companies as the author assumes the same tendency to occur in other countries as well.

Methodology

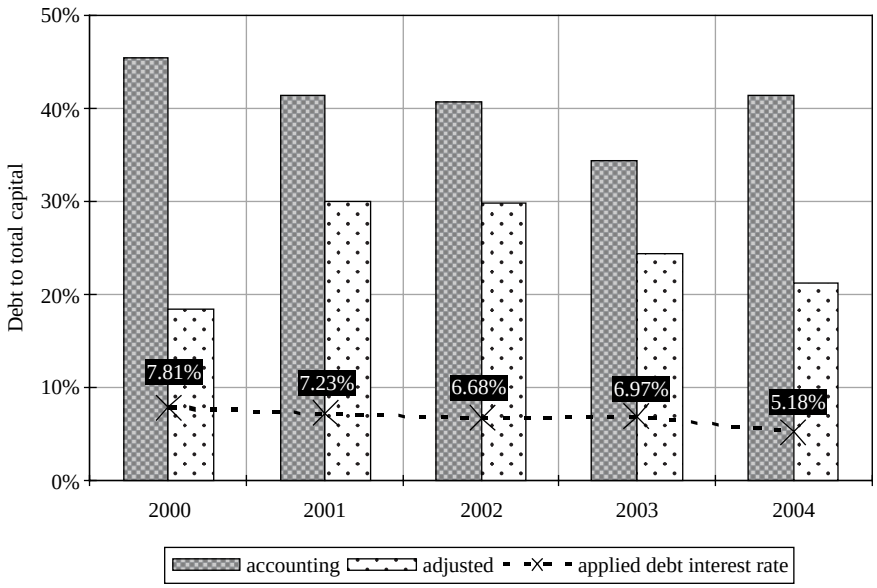
The companies are divided into three samples according to their revenues in period *t:*

(1) companies with turnover below 12 million EEK (€0.8 million, small companies, SC);

(2) companies with turnover between 12 and 60 million EEK (mid-size companies, MC); and

(3) companies with turnover above 60 milllion EEK (€3.8 milllion, big companies, BC).

The companies are randomly selected so that each Estonian company had an equal chance to be selected. However, the certain industry sectors are excluded due to their



Source: Author

Figure 2.
The comparison of accounting and recalculated financial leverage of small Estonian industrial companies (1-9 employees) in 2000-2004

companies engaged in real-estate (highly levered) and agricultural (subsidized by state) activities and regulated public utilities. The impact of profitability as proxy to internal funds, the tangibility and size of business are considered in the study. Unfortunately it is not possible to analyze an impact of earnings volatility due to short time horizon of the base data. The earnings volatility could be a very interesting variable as its relation with leverage has mixed results in previous literature. Company-specific non-financial factors are not included. However, the factors like company age, ownership structure and management structure remain subjects for further research studies.

Relations between capital structure and financial factors are analyzed in static (capital structure at the end of period t) and dynamic (capital structure changes during period t) way using correlation- and regression-analyse methods. Variables are presented in Appendix 1 and their choice is explained below.

Relying on previous studies that companies follow the pecking order theory, the negative relation between leverage and availability of funds is predicted. Proxy to internal funds is profitability – earnings before interest and taxes ($EBIT_{(t,t-1)}$) and return on investments (ROI_t) are included into original regression as they have different economical meaning. In addition, amortization ($AMORT_{(t,t-1)}$) is included as it has cash flow impact. Amortization is predicted to strongly correlate with volume of tangible fixed assets ($TANG_t$) but the purpose is to check its explanatory power.

The volume of tangible fixed assets is found to have positive relation with leverage in developed countries (Titman and Wessels, 1988) but is negative or weak in transition countries (Nivorozhkin, 2004). The latter argues that tangible assets in these countries provide poor collateral values due to underdeveloped and inefficient legal systems and illiquid secondary market. The author argues that Estonian legal system is fairly efficient and together with improving secondary market conditions provide solid collateral values. Hence, the positive relation between volume of tangible fixed assets and leverage is predicted. Moreover, the level of intangible assets ($IMMAT_t$) and net working assets (NWA_t) are included in order to obtain further insight into financing choices and credit market constraints.

Proxy to business size ($SIZE_t$) is the logarithm of turnover. It is preferred to total assets as it eliminates likely booking problems related to business assets[3]. The author makes no prediction about the relation between size and leverage as previous studies show contradictory results. However, there may be no significant relations as such but it must be noted that the goal of the study is to analyse behavioral differences among companies of different size. The author predicts differences to exist, grounding this on assumptions that smaller companies have the lower level of specific knowledge (Jensen and Smith, 2000). Smaller companies are also seen more risky due to lower business diverisification and higher earning volatility which altogether limits their access to capital markets. Bigger companies have also lower adjustment and bankruptcy costs which should motivate them toward higher leverage.

The trade-off theory is put to the test by the analysis on dynamics of capital structure in extreme boundaries. Target leverage is not calculated but the descriptive statistics of adjustment from low and high leverages gives an insight whether the trade-off behavior could be followed in long run or not.

Base data adjustments

Regular financial accounts are adjusted to capture true structure and volume of capital put into a company. There are two adjustments:

(1) operating leases are treated as debt; and

(2) debt from owners is treated as equity.

Interest portions of operating leases are added back to operating profit (EBIT) but this effect is insignificant. Of more relevance is the effect of adjusted operating leases on capital structure and asset volume – the sum of all future operating lease payments are added back to debt and tangible assets. Of course, the sum of discounted future payments should be used to reach the correct figure but the difference is insignificant and do not deteriorate the findings of the study. A total of 151 companies (58 percent of total number of companies) reported operating leases and the sum of future operating lease payments formed on average 29.8 percent (median 6.3 percent) of total traditional capital booked in balance sheets.

Owners debt is transfigured to equity capital if it involves one of the following characteristics:

- debt has no amortization plan or maturity; or
- applied interest rate is zero or unreasonably low as compared to market average.

There were 52 companies to be adjusted which is 20 percent of the total number of companies surveyed. It also became evident that the question of quasi-equity debt is important not only within SC but also within big ones. The remaining part of the study treats the equity as accounting equity plus quasi-equity debt and the debt is treated as accounting debt minus quasi-equity debt. Disbursements from the equity are therefore the dividends plus quasi-equity debt repayments while the issue of shares and increase in quasi-equity debt are treated as equity issues.

Static capital structure

Significant and negative correlation between leverage and ROI_t within all three samples is in compliance with pecking order theory (Table I). Hence, the author regards ROI_t to be more relevant indicator of internal funds than $EBIT_{(t;t-1)}$ as it effectively captures investment needs[4]. In contrast to earlier results in CEE countries, there is significant positive correlation between leverage and tangible assets ($TANG_t$).

Correlation does not reveal how significantly and extensively the independent variables affect the capital structure choices and if there are any differences between samples.

Sample	$AMORT_{(t,t-1)}$	$EBIT_{(t,t-1)}$	ROI_t	$TANG_t$	NWA_t	$SIZE_t$
SC	0.314**	−0.018	−0.366**	0.504**	−0.151	0.265*
MC	0.146	−0.027	−0.304**	0.351**	−0.291**	0.283
BC	0.293**	−0.297**	−0.454**	0.310**	−0.090	0.124
Total	0.266**	−0.085	−0.355**	0.382**	−0.137*	0.140*

Notes: *Correlation is significant at the 0.05 level (two-tailed); **correlation is significant at the 0.01 level (two-tailed)
Source: Author

Table I.
Correlation between dependent ($DEBT_t$) and independent variables. Static capital structure

Regression shows that at 0.95 significance level ROI_t and $TANG_t$ are significant in all samples except BC where $TANG_t$ is substituted with $AMORT_{(t,t-1)}$ (Table II). However, positive correlation between $AMORT_{(t,t-1)}$ and $TANG_t$ still refers to the relevance of tangible assets for BC as amortization expenses and the volume of tangible assets are in strong correlation. It can be concluded that financial leverage significantly and positively correlates to volume of tangible assets which confirms the author's earlier prediction that Estonian legal system imposes no substantial constraints on collateral values.

Business size ($SIZE_t$) appears to have weak relation with leverage being a significant variable only for SC. The result is consistent with Nivorozhkin (2004) but inconsistent with Klapper *et al.* (2002) and Jõeveer (2006). At the same time, BC do have higher financial leverage as reflected by mean values of debt to total capital (SC – 30.1 percent, MC – 31.6 percent and BC – 38.4 percent). It could be explained by the tendency that business size is an important determinant for SC and loses its relevancy as size increases. It is in compliance with common understanding that, due to higher credit risk, smaller companies have limited access to debt market and their financial leverage is generally lower. Alternative explanation could be that the smaller a company the relatively more capital can be provided by owners. Estonian SC are often one-man companies and the available funds from the owner's point of view comprise the company's internal funds plus owner's capital he is willing to put at risk. After that a regression model (formula (1)) is composed and analyzed to test for behavioral differences between the samples:

$$DEBT_t = \alpha_0 + \beta_1(ROI_t) + \beta_2(TANG_t) + \varepsilon_0$$

ROI_t and $TANG_t$ are selected as independent variables as they best describe behavior of the dependent variable[5]. The results are presented in Table III. Low-descriptive power (R^2) of the formula for all samples suggests that non-financial factors play significant role in capital structure decisions. The candidates include company age (de Haas and Peeters, 2004; Klapper *et al.*, 2002), ownership origin and structure (Nivorozhkin, 2004), as well as industry- and country-specific factors (Jõeveer, 2006).

Value of $TANG_t$ is highest for SC (0.480) and lowest for BC (0.230) representing two-time difference and yet the significance of $TANG_t$ is questioned for BC. It is to

Independent variables	β	Sig.
Sample SC		
ROI_t	−0.184	0.001
$TANG_t$	0.434	0.000
$SIZE_t$	0.023	0.006
Sample MC		
ROI_t	−0.213	0.000
$TANG_t$	0.196	0.035
NWA_t	−0.189	0.042
Sample BC		
$AMORT_{(t,t-1)}$	1.356	0.030
ROI_t	−0.711	0.000

Source: Author

Table II.
Significant independent variables. Dependent variable $DEBT_t$

Independent variable	R^2 (percent)	β	Sig.
Sample SC	55.1		0.000
ROI_t		−0.189	0.003
$TANG_t$		0.480	0.000
Sample MC	43.7		0.000
ROI_t		−0.198	0.000
$TANG_t$		0.281	0.000
Sample BC	48.8		0.000
ROI_t		−0.681	0.000
$TANG_t$		0.230	0.067

Source: Author

Table III.
Values of independent variable. Formula 1

remind that BC has higher financial leverage on average than SC does. Consequently, the relative importance of tangible fixed assets decreases with increasing size of business, there are two possible explanations for that:

(1) Credit quality of SC is much determined by tangible collaterals (asset-based lending). BC have better bargaining power to rise debt against soft collaterals like inventories and trade receivables.

(2) SC have less financial competence. Therefore, they either avoid to rise debt against soft collaterals or they cannot sufficiently substantiate investment project to creditors. It refers to the lack of specific knowledge discussed earlier in this study.

The absolute value of ROI_t is about 3.5 times higher for BC (−0.681), as compared to other samples. It effectively shows that all companies do follow pecking order theory but this behavior is dominating within BC and sharply decreases as business size goes down.

Dynamic capital structure

Negative correlation between dependent variable and $\Delta EQUITY_t$ (Table IV) in all samples is not surprising, however, one cannot assume that the equity change leads to the correlative change in capital structure in the same extent. The fact that $\Delta TANG_t$ appeared to not significantly correlate with dependent variable for BC confirms the previous finding that tangibility is not a substantial factor to rise debt for BC and this conclusion is further affirmed by positive correlation with ΔNWA_t.

Sample	$EBIT_t$	ROI_t	$\Delta TANG_t$	ΔNWA_t	$\Delta EQUITY_t$
SC	−0.296**	−0.360**	0.288**	−0.010	−0.361**
MC	−0.150	−0.099	0.352**	−0.048	−0.516**
BC	−0.116	−0.240*	0.173	0.663**	−0.285**
Total	−0.209**	−0.258**	0.275**	0.268**	−0.385**

Notes: *Correlation is significant at the 0.05 level (two-tailed); **correlation is significant at the 0.01 level (two-tailed)
Source: Author

Table IV.
Correlation between dependent ($\Delta DEBT_t$) and independent variables. Dynamic capital structure

Somewhat surprisingly the correlation with profitability variables ($EBIT_t$, ROI_t) did not appear significant for MC and is weak for BC.

Next a regression model (formula (2)) is composed and analysed to test for behavioral differences between samples. Independent variables ROI_t, $\Delta TANG_t$, ΔNWA_t and $\Delta EQUITY_t$ are selected as they appeared significant in the original regression analysis:

$$\Delta DEBT_t = \alpha_0 + \beta_1(ROI_t) + \beta_2(\Delta TANG_t) + \beta_3(\Delta NWA_t) + \beta_4(\Delta EQUITY_t) + \varepsilon_0$$

The regression results are presented in Table V. The sizeable differences between the samples are identified in $\Delta EQUITY_t$ and ΔNWA_t. The interpreting these results one can conclude that the issue of new equity by, lets say, 10 percent decreases the financial leverage on average by 1.3 percent-points for BC (between 1.7 and 1.0 percent-points at 0.95 probability level) and by 0.4 percent-points for BC and MC. It means that small and MC rise new debt simultaneously with new equity significantly more than big ones do. Again, the results suggest that only bigger companies rise (or are able to rise) debt against soft collaterals as indicated by positive relation between ΔNWA_t and leverage. Correlation-regression results of ΔNWA_t for MC are contradictory what might probably be explained by the fact that the sample captures the companies with characteristics of both small (lower range turnover companies) and BC (higher range turnover companies).

Substantially higher descriptive power (R^2) compared to static model suggests that financial factors play much more important role in short run capital structure decisions than non-financial factors. In sum, the results of the dynamic model provide further support to pecking order behavior.

Testing pecking order theory

The principal outcome of the correlation-regression analyses is that Estonian companies do follow pecking order theory while making capital structure decisions

Independent variable	R^2 (percent)	β	Sig.
Sample SC	63.1		0.000
ROI_t		−0.223	0.000
$\Delta TANG_t$		0.206	0.000
ΔNWA_t		0.042	0.446
$\Delta EQUITY_t$		−0.041	0.000
Sample MC	71.6		0.000
ROI_t		−0.214	0.000
$\Delta TANG_t$		0.218	0.000
ΔNWA_t		0.190	0.003
$\Delta EQUITY_t$		−0.040	0.000
Sample BC	83.6		0.000
ROI_t		−0.227	0.000
$\Delta TANG_t$		0.276	0.000
ΔNWA_t		0.196	0.000
$\Delta EQUITY_t$		−0.129	0.000

Source: Author

Table V.
Values of independent variable. Formula 2

and that the behavior is robust among BC. As an alternative test this finding is controlled by solving the next formula:

$$\Delta\text{DEBT}_t = \alpha + \beta_0(\Delta\text{DEF}_t) + \varepsilon$$

where:ΔDEF_t – deficit of internal funds in period t.

The similar tests were used by Shyam-Sunder and Myers (1999) and Kisgen (2006). The deficit or supply in funds (ΔDEF_t) is calculated as net result of operating cash flows, investment activities and dividend payments[6]. The dividend payments consist of net decreases in equity adjusted for current year net profit (loss) plus quasi-equity debt repayments. Only the companies with negative cash result (deficit of internal funds) are included. Highly levered companies are also excluded, which are identified as companies with gearing above 70 percent at the end of period $t - 1$. The reason is that highly levered companies are less likely to obtain new debt and such would bias the regression results. To obtain comparability between samples the variables ΔDEBT_t and ΔDEF_t are measured as percentage to total capital at the end of period $t - 1$.

The pecking order theory predicts that the value for β_0 is close to 1 and the value for α is close to 0. The findings of the current study predict that β_0 is greater for bigger (BC) and smaller for SC, while parameter value for α is expected to appear opposite. The regression results are presented in Table VI.

The values of β_0 are significant for all selections but are substantially below 1, which affirms that Estonian companies have debt capacity concern while following pecking order theory. Parameter values for different samples confirm previous finding that pecking order theory is dominating behavior among BC and declines as business size goes down. For example, one can conclude with 0.95 confidence that 10 percent deficit in internal funds will create 6.0-7.8 percent of new debt, measured to total capital at the end of period $t - 1$, for BC, while the range is much wider for SC (SC, 1.4-5.1 percent) and average parameter value is about twice as less (3.3 percent compared to 6.9 percent). The result is unambiguously similar if we run the test where the dividend payments are not included in ΔDEF_t calculation.

The study reveals behavioral differences between companies of different size but it is not clear whether it is a true economic peculiarity or caused by constraints forced by capital markets. de Haas and Peeters (2004) argue that most CEE firms have less debt than they would like to have. Sub-findings of this study support the prediction that credit quality of SC is much determined by the quality of collaterals.

				Unstandardized coefficients			95 percent confidence interval for β	
Sample	N	R^2	Model sig.	α	β_0	Sig.	Lower bound	Upper bound
SC	47	0.462	0.001	0.065	0.326	0.001	0.138	0.513
MC	47	0.574	0.000	0.051	0.436	0.000	0.250	0.623
BC	43	0.925	0.000	0.052	0.691	0.000	0.601	0.781

Source: Author

Table VI. Dependent variable ΔDEBT_t, independent variable ΔDEF_t

Low versus high-financial leverage

In order to investigate companies behavior in extreme boundaries, low- and high-levered companies at the end of period $t-1$ are identified and their capital structure changes in period t are analyzed. Low-levered companies include companies with ratio of debt to total capital below 10 percent and for high-levered companies the ratio is above 60 percent, results are presented in Table VII.

Low-levered companies tend to stick to the chosen strategy as majority of those companies do not change or even decrease their financial leverage (64 percent of total sample). The result is consistent with model of Kurchev and Strebulaev (2006) predicting that zero-leverage policy is more likely to be followed by SC. High-levered companies re-balance their capital structure toward more conservative mixture affirmed by negative median and mean values and there is a number of companies with negative $\Delta DEBT_t$ (69 percent of total sample). It is in compliance with Leary and Roberts (2005) and Gaud *et al.* (2004) who found that companies are more concerned about high rather than about low-financial leverage. While Leary and Roberts (2005) and Gaud *et al.* (2004) concluded that excessive leverage is reduced by debt repayments, current research shows that introducing owners' capital also plays some role to ease financial leverage. As shown in Table VIII, the 29 percent of total high-levered companies increased equity with average increase of 14.5 percent. Equity and debt changes are measured as percentage to total capital at the end of period $t-1$.

	Low	High
Number of companies	73	48
Mean	0.0590	−0.0985
Median	0.0000	−0.0518
1 quartile	−0.0044	−0.1518
3 quartile	0.0361	0.0063
Negative $\Delta DEBT_t$ (financial leverage decreased)	21	33
Positive $\Delta DEBT_t$ (financial leverage increased)	26	15
Zero $\Delta DEBT_t$ (financial leverage did not change)	26	0

Source: Author

Table VII.
$\Delta DEBT_t$ descriptives for low and high levered companies

	Low leverage		High leverage	
	ΔE	ΔD	ΔE	ΔD
N	73		48	
Mean	−0.0471	0.1743	0.1451	0.0549
Median	0.0000	0.0000	0.0000	−0.0576
SD	0.5605	0.5662	0.5192	0.3942
Number of increased[a]	10	25	14	17
Number of decreased[a]	29	8	6	28
Number of unchanged	34	40	28	3

Note: [a]Changes less than 1.0 percent are equalized to zero
Source: Author

Table VIII.
Descriptive statistics of equity (ΔE) and debt (ΔD) changes for low and high leveraged companies

However, debt repayments remain dominating way of capital structure re-balancing but the adjustment speed is low (refer to mean and median values in Table VII). The current findings provide no or weak support to the notion that optimal capital structure (trade-off theory) is followed in long run which is consistent with earlier studies in CEE countries. Companies may have some target plans as documented by Sander (2003) but those plans are not strictly followed in practice.

Summary conclusions

- The company-specific financial determinants describe about half of the observed leverage supporting the observation that non-financial, country- and industry-specific factors have substantial influence on capital structure choices. Short-run capital structure movements are largely described by financial determinants especially among bigger companies.
- Estonian non-financial companies follow pecking order theory of financial hierarchy while making capital structure choices as they prefer internal funds to external funds. The results provide no or very weak supports that the trade-off theory is followed in long run.
- Preference toward use of internal funds is more robust among BC as compared to small ones. BC also rise significantly more debt if facing deficit in internal funds. Quality of asset collateral is more important for SC to determine their creditworthiness. BC are able to rise debt against less valuable collaterals such as inventories and trade receivables (financing of working assets). Though companies behavior is motivated by similar drivers, the robustness of these drivers differ among companies of different size. However, it is not clear whether it is true behavioral pattern or the finding is biased due to repressive behavior of capital markets toward SC.
- The results show that majority of low-levered companies do not change their conservative financial policy (64 percent of total low-levered companies do not change or even decrease the leverage in the following period). High-levered companies generally re-balance their capital structure toward more conservative level. Though there is the tendency to re-balance capital structure by debt repayments, introduction of owners' capital plays also some role including quasi-equity debt. The preferred source to re-balance capital structure is not unanimously clear.
- Quasi-equity debt is an important source of capital which is to be treated as a third type of capital along with regular debt and equity. However, its risk/return profile is not yet clear and that remains open to further studies.

Notes

1. Jõeveer (2006) uses two leverage ratios – broad (total liabilities to total assets) and narrow (debt to sum of debt and equity). In the following discussion author refers only to narrow leverage as it matches with the leverage definition used in the empirical study.
2. Average 12 months Euribor in 2004 is 2.32 percent (source: www.euribor.org)
3. Assets used under operating lease contracts, major investments during observable period.
4. Selections MC and BC showed strong positive correlation between independent variables $AMORT_{(t,t-1)}$ and $EBIT_{(t,t-1)}$. This suggests that companies might determine accounting

amortization rates based on their profitability level meaning that more profitable companies apply higher amortization rates and on the contrary.

5. Independent variable $AMORT_t$ was not included into the formula due to multicollinearity as there is strong positive correlation between $AMORT_t$ and $TANG_t$ in all selections (SC-0.518** MC-0.440** BC-0.659**) which is higher than the correlation between dependent variable and $TANG_t$ (SC-0.504** MC-0.351** BC-0.310**).
6. Shyam-Sunder and Myers (1999) and Kisgen (2006) included the current portion of long-term debt to calculate the deficit in funds. The current portion of long-term debt is excluded in this study as it was not possible to separate the portion of owner's debt from the bank debt.

References

Ayers, B.C., Cloyd, C.B. and Robinson, J.R. (2000), "The influence of income taxes on the use of inside and outside debt by small businesses", p. 45, available at: http://papers.ssrn.com/paper.taf?abstract_id = 218708

Bradley, M., Jarrell, G.A. and Kim, E.H. (1983), "On the existence of an optimal capital structure: theory and evidence", *Journal of Finance*, Vol. 39 No. 3, pp. 857-78.

de Haas, R. and Peeters, M. (2004), "The dynamic adjustment towards target capital structures of firms in transition economies", EBRD Working Paper No. 87, p. 32, available at: www.ebrd.com/pubs/econo/wp0087.pdf

Farhat, J., Cotei, C. and Abugri, B.A. (2006), "The pecking order hypothesis vs. the static trade-off theory under different institutional environments", preliminary draft, p. 39, available at: http://wehner.tamu.edu/finc.www/seminar/papers/CovFinance31Jan2007.pdf

Flannery, M., Rangan, J. and Kasturi, P. (2004), "Partial adjustment toward target capital structures", AFA 2005 Philadelphia Meetings, p. 50, available at: http://ssrn.com/abstract = 467941

Gaud, P., Hoesli, M. and Bender, A. (2004), "Further evidence on debt-equity choice", Research Paper No. 114, Universite of Geneve, Geneva, p. 38.

Graham, J.R. and Harvey, C.R. (1999), "The theory and practice of corporate finance: evidence from the field", AFA 2001 New Orleans, Duke University working paper, p. 48, available at: http://ssrn.com/abstract = 220251

Huang, R. and Ritter, J.R. (2007), "Testing theories of capital structure and estimating the speed of adjustment", p. 46, available at: http://ssrn.com/abstract = 938564

Jensen, M.C. and Smith, C.W. Jr (2000), "Stockholder, manager, and creditor interests: applications of agency theory", *Theory of the Firm: Governance, Residual Claims and Organizational Forms*, Harvard University Press, London, p. 41, available at: http://ssrn.com/abstract = 173461

Jõeveer, K. (2006), "Sources of capital structure – evidence from transition countries", Working Paper Series, p. 29, available at: www.cerge-ei.cz/pdf/wp/Wp306.pdf

Ju, N., Parrino, R., Poteshman, A.M. and Weisbach, M.S. (2002), "Horses and rabbits? Optimal dynamic capital structure from shareholders and managers perspective", p. 45, available at: http://ssrn.com/abstract = 345821

Kisgen, J.D. (2006), "Credit ratings and capital structure", *Journal of Finance*, Vol. 61 No. 3, pp. 1035-72.

Klapper, L.F., Sarria-Allende, V. and Sulla, V. (2002), "Small- and medium-size enterprise financing in Eastern Europe", World Bank Policy Research Working Paper No. 2933, available at: http://ssrn.com/abstract = 636295

Kurchev, A. and Strebulaev, I.A. (2006), "Firm size and capital structure", paper presented at EFA 2005 Moscow Meetings, p. 42, available at: http://ssrn.com/abstract = 676106

Leary, M.T. and Roberts, M.R. (2005), "Do firms rebalance their capital structure", *Journal of Finance*, Vol. 60 No. 6, pp. 2575-619.

Lööf, H. (2003), "Dynamic optimal capital structure and technological changes", Discussion Paper No. 03-06, p. 31, available at: ftp://ftp.zew.de/pub/zew-docs/dp/dp0306.pdf

Mayer, C. and Sussman, O. (2004), "A new test of capital structure", AFA 2005 Philadelphia Meetings, p. 47, available at: http://ssrn.com/abstract = 643388

Nivorozhkin, E. (2004), "Financing choices of firms in EU accession countries", BOFIT Discussion Papers, No. 6, p. 48.

Sander, P. (1998), "Kapitali Struktuuri Valik Ja Laenukapitali Maksueelis", MA dissertation, Tartu Ülikool, Tartu, 130 lk.

Sander, P. (2003), "Capital structure choice in Estonian companies: a survey", *Management of Organizations: Systematic Research*, Vol. 27, pp. 122-35, 15 lk.

Shyam-Sunder, L. and Myers, S.C. (1999), "Testing static tradeoff against pecking order models of capital structure", *Journal of Financial Economics*, No. 51, pp. 219-44.

Titman, S. and Wessels, R. (1988), "The determinants of capital structure choices", *Journal of Finance*, Vol. 43 No. 1, pp. 1-19.

Tucker, J. and Stoja, E. (2004), "Target gearing in UK", p. 40, available at: http://ssrn.com/abstract = 710325

Yan, E.Y. (1996), "Credit rationing, bankruptcy cost, and optimal debt contract for small business", p. 26, available at: http://ssrn.com/abstract = 1246

Appendix

	Icon	Measure
Dependent variable		
Ratio of debt to total capital at the end of period t, adjusted for operating leases and quasi-equity debt	$DEBT_t$	Percentage
Independent variables		
Average ratio of amortization expenses to turnover in periods t and $t-1$	$AMORT_{(t,t-1)}$	Percentage
Average operating profit margin (EBIT) in periods t and $t-1$	$EBIT_{(t,t-1)}$	Percentage
ROI in period t calculated on average capital employed in period t	ROI_t	Percentage
Ratio of fixed assets (net of depreciation) to total assets at the end of period t, fixed and total assets are adjusted for operating leases	$TANG_t$	Percentage
Ratio of financial and intangible assets to total assets at the end of period t, total assets are adjusted for operating leases	$IMMAT_t$	Percentage
Ratio of net working assets (inventories + trade receivables − trade payables)[a] to total assets at the end of period t, total assets are adjusted for operating leases	NWA_t	Percentage
Turnover in period t	$SIZE_t$	In millions of EEK

Note: [a]Cash on hand excluded from the calculation as it would create double counting (profitable companies are more likely to have higher cash positions)

Table AI.
Dependent and independent variables – static capital structure

	Icon	Measure
Dependent variable		
$DEBT_t - DEBT_{t-1}$	$\Delta DEBT_t$	Percentage points
Independent variables		
Amortization expenses to turnover in period t	$AMORT_t$	Percentage
Operating profit margin (EBIT) in periods t	$EBIT_t$	Percentage
ROI in period t calculated on average capital employed in period t	ROI_t	Percentage
Ratio of cash to total assets at the end of period $t - 1$, total assets are adjusted for operating leases	$CASH_{t-1}$	Percentage
Ratio of fixed assets increase (decrease) in period t to total assets at the end of period $t - 1$, fixed and total assets are adjusted for operating leases	$\Delta TANG_t$	Percentage
Ratio of financial and intangible asset increase (decrease) in period t to total assets at the end of period $t - 1$, total assets are adjusted for operating leases	$\Delta IMMAT_t$	Percentage
Ratio of NWA[16] increase (decrease) in period t to total assets at the end of period $t - 1$, total assets are adjusted for operating leases	ΔNWA_t	Percentage
Equity increase (decrease) in period t, adjusted for quasi-equity debt and period t net profit	$\Delta EQUITY_t$	Percentage
Turnover growth (decline) in period t	$\Delta SIZE_t$	Percentage

Table AII.
Dependent and independent variables – dynamic capital structure

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