The Impact of Debt Ratios on Corporate Financial Performance: the Case of Baltic Listed Companies

The study reviews the different debt ratios used in empirical research papers; assesses the financial ratios of the Baltic listed companies; and empirically tests the regression between profitability and capital structure. Keywords: debt ratio, financial management, financial ratios, profitability.

Introduction

Financial management as a science has a complicated structure. Financial analysis is an important part of financial management and is based on data from accounting and a probable estimate of future operating activity. From the perspective of the outlook, it is becoming more important to turn greater attention to the use of the results of the financial analysis in the decision-making process, to the improvement of its quality and to the economic interpretation of analytical data. In the changeable conditions of market conjuncture, it is topical to evaluate the financial ratios of Baltic companies.

Although capital structure has been researched for several decades by now, there is still no consensus regarding the best debt ratio to use. Many studies use liabilities against total assets or total capital; however the authors of this study argue that this ratio is not applicable. Both interest bearing debt and non-interest bearing debt is included in the liabilities. Two companies can have the same liabilities/total assets ratio, but the structure of the liabilities can
be different. The use of total liabilities can overestimate the company financial leverage. The study uses capital structure ratios, where total assets and total capital is used as a denominator, while only interest bearing debt is used for the numerator. This study uses not only the total debt ratios, but also the long-term debt ratios and the short-term debt ratios, since any analysis of leverage based on total liabilities may miss the important differences between long-term and short-term debt.

The aim of the study is to assess the financial ratios of the Baltic listed companies and analyze the impact of debt ratios on profitability. Based on empirical results, the authors of the paper put forward recommendations for financial management.

The tasks of the research are as follows:
- To overview the application of debt ratios in textbooks and empirical studies;
- To analyze financial ratios, including debt ratios, of Baltic listed companies;
- To evaluate relationship between debt ratios and company performance using regression analysis;
- To make conclusions and work out recommendations for improvement of financial management of Baltic listed companies.

The analysis is conducted on sample of 55 listed companies (Baltic Stock Exchange) over the period from 2005 to 2013. The authors have used generally accepted quantitative and qualitative methods of research in economic science, including analysis of the scientific theoretical literature, comparative analysis, graphical method and panel data regression analysis. The research is based on published papers on the financial ratios and capital structure, as well as information provided by the Baltic Stock Exchange. Panel data regression is performed in STATA.

The paper is organized as follows: the following section provides the review on debt ratios; then the methodology and sample of the study is discussed; after the methodology section, empirical results are described; the final section concludes the paper.

Debt Ratios: an Overview

In empirical capital structure studies, a variety of different debt ratios are used. In Latvia, it is common to use a debt ratio, where the sum of liabilities is divided by the total assets. Table 1 includes the main debt ratios, which are calculated by the Central Statistical Bureau of Latvia (2015). The main approach is to use all liabilities against total assets or equity. There is no detailed information on the proportion of financial debt and non-financial liabilities. The same general approach is used by Statistics Lithuania (2015) and Statistics Estonia (2015), as well.

| Capital structure ratios calculated by the Central Statistical Bureau of Latvia |
|-------------------------------|-----------------------------------|
| Ratio | Calculation                                  |
| Share of liabilities in the balance sheet = | all creditors/balance sheet assets |
| Share of current liabilities in the balance sheet = | current creditors/balance sheet assets |
| Ratio of liabilities against equity = | all creditors/equity |

Source: Central Statistical Bureau of Latvia, 2015.
It must be emphasized that the usage of all liabilities in debt ratio calculation can overestimate the financial leverage. Not only financial debt (borrowed resources from banks, other companies, individuals, etc.) and leasing liabilities (regular interest payments must be made) are included in total liabilities, but also such items as payables, prepayments, tax debt and other (interest payments are not done). Therefore, if total liabilities are used when capital structure indicator/debt ratio is calculated, then it is most likely that such indicator/ratio will overestimate the financial leverage and will not present the correct information on company performance and solvency. In result, if such ratios are used in financial analysis without further and detailed analysis, then financial analysis can provide incorrect conclusions.

For example, companies A and B have the same ‘total liabilities / total assets’ ratio. However, in the case of the company A all liabilities are interest bearing debt, whereas company B has no interest bearing debt and liabilities consist only of payables, prepayments, and tax debt. Therefore, it is not correct to state that both companies have the same capital structure, solvency risk, etc. Of course, a more detailed analysis might be still required even in the case of company B (since these liabilities can be overdue and company might face insolvency issues, etc.), however the consensus would be that company B is less risky than company A. Therefore, it is crucial, on both company and economy level, to decipher in more detail the structure of liabilities. It is advisable to divide all liabilities into interest bearing debt and non-financial liabilities.

In addition, it must be mentioned that equity can be negative and such situation is quite common for small and medium

### Debt ratios in corporate finance textbooks

| Author | Ratio |
|--------|-------|
| R. A. Brealey et al. (2001) | Long-term debt / (long-term debt + equity)  
Long-term debt / equity  
Total liabilities / total assets |
| R. Pike, B. Neale (2005) | Long-term liabilities / equity  
Long-term liabilities / (long-term liabilities + equity) |
| R. Pike, B. Neale (2005) | Long-term financial debt / equity  
Long-term financial debt / (long-term financial debt + equity)  
Financial debt / (financial debt + equity) |
| E. F. Brigham, J. F. Houston (2009) | Total debt / total assets |
| A. Damodaran (2011) | Financial debt / (financial debt + equity) |
| D. Watson, A. Head (2013) | Long-term financial debt / total capital  
Long-term financial debt / equity |
| J. Berk, P. DeMarzo (2014) | Financial debt / equity  
Financial debt / (financial debt + equity) |

*Source: prepared by the authors.*
companies in Latvia. In the case of negative equity, formula ‘total liabilities / equity’ will not provide correct results, and therefore, it will not be possible to make accurate conclusions on capital structure.

In corporate finance textbooks, more debt ratios can be found (Table 2).

First, it must be noted that liabilities are used only in three cases (3, 4, 5 from Table 2); in other cases, only the financial debt (all or long-term financial debt) is taken into consideration, which is interest-bearing debt. Second, authors (Table 2) emphasize the application of the long-term debt, since in many available formulas only long-term debt is used. Third, only in two cases total assets are used in the denominator (3, 9 from Table 2). Alternatively equity or total capital (the sum of equity and financial debt) is used.

Therefore, it can be concluded that there is no consensus regarding debt ratios. The same situation can be found in empirical studies (Table 3).

It can be concluded that there is no consensus regarding the best debt ratio to use in empirical studies. The authors of this study consider this issue as a significant gap in the scientific literature, because random application of debt ratio can give incorrect results and conclusions. In addition, if various debt ratios are used in different empirical research, then the results of these studies are not comparable.

I. Welch (2006) also points out the shortcomings in capital structure empirical studies, where inadequate debt ratios are used. This author also emphasizes that in many capital structure empirical studies the ratio ‘(long-term financial debt + short-term liabilities) / total assets’ is used. This ratio closely represents ‘total liabilities / total assets’ and is not good to use in order to show the correct capital structure of the company, since non-interest bearing debt is included in short-term liabilities. Once again, it can be stated that the application of this ratio will lead to an overestimated financial leverage.

The authors of this paper put forward the division of all liabilities into interest bearing debt and non-interest bearing debt. In the empirical part of this study the following guidelines are used, as well:

### Most common debt ratios in empirical studies

| Debt ratio                     | Study (author, publication year)                                                                 |
|-------------------------------|---------------------------------------------------------------------------------------------------|
| Financial debt / total capital| И. А. Белозеров et al. (2011); S. Mukherjee and J. Mahakud (2012); M. Kokoreva and A. Stepanova (2012) |
| Financial debt / total assets | H. D. Kaya (2012); S. Wu and J. P. Ogden (2011); L. Bulan and Z. Yan (2010); A. Gill et al. (2011); N. Abu-Rub (2012); R. Kajananthan and P. Nimalthasan (2013); A. Cekrezi and A. Kukeli (2013) |
| Total capital / total assets  | D. Mohammed (2013); C. Aybar-Arias et al. (2012); E. Guo and G. Leinberger (2012); A. S. King and I. Mohammed (2011); A. Gill and J. Obredovich (2012); V. Mojtahezadeh (2011) |
| Total capital / equity        | S. O. Collins et al. (2013); N. Abu-Rub (2012); R. Kajananthan and P. Nimalthasan (2013)           |

Source: prepared by the authors.
Interest bearing debt is further divided into long-term financial debt and short-term financial debt. This can be justified with the fact that the management of company usually has different reasons to raise long-term debt vs. short-term debt. Long-term debt is usually raised in order to finance long-term investment projects, whereas short-term debt is used to maintain day to day activities;

- It is common to use total assets or total capital or equity in the denominator. However, taking in consideration that equity can be negative (and this is the case for many small and medium companies in Latvia and other Baltic countries), then the authors of this study use only total assets and total capital in the denominator;

- In addition, non-financial liabilities against total assets are analyzed. Since in all previously mentioned ratios only financial debt is included, therefore it is also necessary to review the non-financial liabilities. Non-financial liabilities are not divided into long-term vs. short-term, because usually non-financial liabilities are short-term. Long-term non-financial liabilities are found in a relatively small number of cases and their proportion in total assets is not significantly high.

In the end, one can conclude that issues related to debt ratios in empirical capital structure studies originate from the lack of consensus and common methodology. This, in its turn, makes it difficult to carry out and compare empirical studies.

Sample and Research Methodology

The study is based on the financial data collected from financial statements of 55 Baltic listed companies over the period from 2005 to 2013. The sample consists of 22 companies from the Baltic Main List and 33 companies from the Baltic Secondary List. Distribution by countries is as follows: 28 companies from Latvia, 7 – from Estonia and 20 – from Lithuania.

All companies had all the necessary data for the whole period analyzed, therefore a balanced panel of data is achieved. The financial companies were excluded, because their characteristics are different due to the specific balance sheet structure. Data are obtained from the NASDAQ OMX Baltic. Total number of observations is 495.

Table 4

| Variable                  | Abbreviation |
|---------------------------|--------------|
| Short-term debt to assets | STD/A        |
| Short-term debt to capital| STD/C        |
| Long-term debt to assets  | LTD/A        |
| Long-term debt to capital | LTD/C        |
| Total debt to assets      | TD/A         |
| Total debt to capital     | TD/C         |

Source: prepared by the authors.
Total assets, total capital or equity is usually used as a denominator. Since in the Baltic countries equity might be negative due to the accumulated losses, the authors of this study do not use these ratios. Capital structure variables, which are used in this study, are shown in Table 4. Only interest bearing debt is used for the numerator and total capital is calculated as the sum of equity, long-term interest bearing debt and short-term interest bearing debt.

This study uses not only total debt ratios, but also long-term debt ratios and short-term debt ratios, since any analysis of leverage based on total liabilities may miss the important difference between long-term and short-term debt (Sogorb-Mira, 2005).

In order to estimate the panel regression model, two alternative methods were used: the fixed effects model and the random effects model. The pooled regression may distort the true picture across companies. The two most prominent models are the fixed effects model (FE) and the random effects model (RE). In FE, the intercept in the regression model is allowed to differ among individuals in recognition of the fact that each company may have some special characteristics of its own. Models are also evaluated by their R-squared, F-statistics, p-values, White test for heteroscedasticity and Breusch-Godfrey test for autocorrelation.

Profitability of companies is a major objective the managers set, and is particularly watched by company stakeholders. That’s why the rates of return are among the most important measures the companies target during a financial year. Profitability is influenced by a lot of factors, both internal and external. Simply by watching the dynamics of profitability, one cannot say for sure, which factors have had a major impact on the return and in what proportion. Yet, by studying the levels of some important rates of return during a period of several consecutive years marked by a severe downturn in the economy, one can draw some useful conclusions regarding the impact of the crisis on the return of companies.

Even though, for the last couple of decades, there is a paradigm shift towards growth and value indicators as the best ones to use in order to describe the company performance (Matsumoto et al., 1995), some studies still show the frequent use of profit and profitability ratios (Graham, Harvey, 2002). The use of profitability ratios is justified using several arguments. First, there are tremendous number of different ratios and indicators, however shareholders need a simple and clear ratio, which shows the company performance and is easy to interpret and compare with other companies. Profitability ratios, in particular ROE, comply with the afore mentioned. Second, profitability ratios are widely covered in media. Third, since the whole company performance is described by one number, it is relatively simple to perform forecasting.

Therefore, in the empirical part of the study, regression analysis between a profitability ratio (return on equity) and different debt ratios is applied.

Empirical Analysis and Discussion of Results

The authors of this study at first analyzed several financial ratios of Baltic listed companies – return on equity, current ratio and market-to-book ratio. The analysis of financial ratios was done in order to identify the trends and differences in all three
Baltic countries. Different debt ratios were analyzed in the second step. In total seven debt ratios were reviewed. Finally, the impact of debt ratios on profitability was analyzed.

ROE for all three Baltic countries included in the study is illustrated in Figure 1. ROE dynamics can be sub-divided into three periods: pre-crisis (up to and including 2007), economic recession (2008 and 2009), and recovery (from 2010 onwards). In the first period, ROE was positive and relatively high in the case of Estonia, compared to other two Baltic countries. A different situation can be found for the second period, when ROE turned negative (except ratio of Estonia in 2008). In the third period, ROE was once again positive for all three Baltic countries. Companies from Estonia have the highest ROE; however the gap between Estonia and other Baltic countries has decreased compared to the first period.

Current ratio dynamics showed no significant changes during the period from 2005 to 2013 (Figure 2). Average ratio for all

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**Fig.1.** Return on equity for Baltic listed companies, 2005–2013, %

*Source: prepared by the authors.*

**Fig.2.** Current ratio for Baltic listed companies, 2005–2013, %

*Source: prepared by the authors.*
three Baltic countries fluctuated between 3 and 4. Companies from Estonia and Lithuania have similar current ratio, albeit ratio of Estonian companies is slightly higher. Companies from Latvia have the highest current ratio for all analyzed period. Low current ratio can be an indicator for short-term solvency issues, when companies do not have enough current assets to cover their current liabilities. On the other hand, high current ratio (especially in the case of Latvia) might indicate that management is not using assets effectively with the aim to maximize company value.

Average market-to-book ratio for Baltic listed companies did not fluctuate significantly during the analyzed period (Figure 3). Lowest point is reached in 2008 (1.48), and the highest ratio is achieved in 2006 (5.01). However, if countries are analyzed separately, then it can be stated that companies from Estonia have a relatively high market-to-book ratio, compared to Latvia and Lithuania. Average market-to-book ratio for companies from Estonia in the analyzed period is 8.43, while for companies from Latvia and Lithuania this ratio is 3 and 2, respectively. High market-to-book ratio can be an indicator that company’s assets are overvalued and low ratio can indicate that assets are undervalued and that company’s value might increase in future.

To sum up, companies from Estonia have high ROE and market-to-book ratios and a moderate current ratio, whereas companies from Lithuania can be characterized by moderate profitability, current ratio and market-to-book ratio. Companies from Latvia have high current ratio and moderate profitability and market-to-book ratio. Overall, it could be advisable that companies from Latvia slightly decrease their current ratios, which might result in higher profitability ratios. At the same time it might be the case that companies from Latvia want to preserve their financial flexibility and therefore deliberately have decided to retain a high current ratio.

Figure 4 includes dynamics of TD/A ratio (total debt to assets) and Figure 5 depicts TD/C ratio (total debt to capital). Both average ratios for all Baltic listed companies show similar trends. From 2005 until 2008 (including), there is an increase in both TD/A and TD/C ratios, then
during the economic recession both ratios decreased, and in the recent years these ratios are stable, albeit slightly lower if compared to the pre-crisis years. It means that before economic recession companies increased their financial debt, which was decreased during the recession, and now companies are still reluctant to increase leverage and borrow more debt.

If each country is analyzed separately, then companies from Latvia can be characterized by the lowest debt ratios. Both Estonia and Lithuania have high TD/A ratio, while companies from Estonia have the highest average TD/C ratio of almost 54% (the same ratio for companies from Lithuania and Latvia is 40% and 31%, respectively). These conclusions correspond to the previous data on profitability and current ratio. Companies from Latvia have low debt ratios and high current ratios, which results in relatively low profitability ratios. On the contrary, companies from Estonia have moderate current ratios, high debt ratios and relatively high profitability ratios, as well. This is in line with the
widespread notion that an increased financial leverage can enhance profitability.

TD/A and TD/C ratios include only financial debt (or interest bearing debt), however the authors of this study think that in financial ratio and capital structure analysis there must be also a ratio which shows the portion of non-financial liabilities in the total assets. Non-financial liabilities can be calculated as the difference between all liabilities and financial debt (or interest bearing debt). Company is not required to make interest payments for the non-financial liabilities, since they include such items as payables, prepayments, tax debt, etc. On average, company might be considered as less risky if more non-financial liabilities and less financial debt can be found in total liabilities. Nevertheless, even non-financial liabilities must be analyzed in more detail, since they might contain some overdue payments to suppliers, government, employees, etc., which in turn might affect solvency.

The data on Baltic listed companies is included in Figure 6.

Average NF/A ratio for Baltic listed companies did not fluctuate much in the period from 2005 to 2013. In recent years, this ratio has increased slightly on average and the main reason behind it might be that companies from Lithuania have increased their portion of non-financial liabilities in the last three years.

In addition, some differences regarding the short-term and long-term debt can be recognized. In the case of Estonia, most debt is long-term (Figure 7 and Figure 8), and one must also emphasize that companies from Estonia were able to increase their long-term debt proportion against total assets and total capital in early post-recession period (year 2011). If one presumes that long-term debt is raised and allocated to the long-term investment projects, then this data can indicate that companies from Estonia have a very different financing policy compared to Latvia and Lithuania. The robust use of long-term debt might indicate that company has good investment projects and is willing to raise the necessary long-term financing, and not to preserve short-term financial flexibility. Once again, taking into consideration the high profitability ratios of companies in Estonia, it testifies that companies with more long-term debt are most likely to have good investment projects,
which overall translates into higher profitability, as well.

On the contrary, companies from Lithuania have decreased their long-term debt ratios, whereas the ratio of Latvian companies has remained relatively stable during the analyzed period.

If long-term debt ratios did not change significantly from 2005 until 2013 then the same cannot be stated regarding the short-term debt ratios of Baltic listed companies (Figure 9 and Figure 10). Average STD/A ratio increased from 6.8 % in 2005 to 11.9 % in 2009 and then decreased below 10 percent and has not changed significantly during recent years. A similar statement can be achieved if STD/C ratio is analyzed. During the economic recession (2008 and 2009), almost 20 % of total raised capital was short-term. Usually, short-term debt consists mainly of short-term proportion of debt borrowings and/or leases. However, the authors of this study believe that the main reason for the

Fig.7. LTD/A ratio for Baltic listed companies, 2005–2013, %

Source: prepared by the authors.

Fig.8. LTD/C ratio for Baltic listed companies, 2005–2013, %

Source: prepared by the authors.
increase of short-term debt in 2008 and 2009 was the usage of bank loan products such as overdrafts and credit lines. These loans can be classified as short-term, and it is most likely that these loans were granted before the economic recession, however, the companies tapped into these resources during the recession in 2008 and 2009.

In summary, companies from Estonia have high profitability ratios and market-to-book ratios, moderate current ratios and their capital structure is dominated by long-term debt. Companies from Latvia have high current ratio, but have relatively low profitability ratios and market-to-book ratios. These companies use less financial debt compared to Estonia and Lithuania. Therefore, it is advisable for listed companies in Latvia to increase financial debt and decrease current ratio; it might lead to higher profitability. Listed companies in Lithuania have moderate profitability ratios, current ratios and market-to-book ratios. Long-term debt is used very little, and these companies have relatively high proportion of short-term debt compared to
the other two Baltic countries. Therefore, it might be recommended that Lithuanian companies decrease their short-term debt position and increase their long-term debt proportion if they have good investment projects to implement.

Table 5 presents the results of regression models. The results from the TD/A regression models denote that total debt to total assets explains the variance of the degree of return on equity at the level of 4.9 % (fixed effects model and random effects model). TD/A regression coefficients are statistically significant at 1 % significance level. It can be concluded that if total debt to total assets ratio increases by one percentage point, one can expect a decrease in ROE by 0.89 (FE) or 0.46 (RE) percentage points.

Overall, results of the ROE regression indicate that if company increases financial debt or non-financial liabilities, one can expect a decrease in return on equity. One exception might be the LTD/C ratio. Pooled regression data show positive and statistically significant relationship at 5 % significance level, and random effects model also indicates a positive and

| Debt ratio | Model type | Hausman test | Coefficient | P-value | R-squared |
|------------|------------|--------------|-------------|---------|-----------|
| TD/A       | FE         | 0.000        | -0.8871997*** | 0.000   | 0.0490    |
| TD/A       | RE         |              | -0.461755*** | 0.000   | 0.0490    |
| TD/A       | Pooled     | 0.0050       | -0.2496798** | 0.013   | 0.0015    |
| TD/C       | FE         |              | -0.115939     | 0.830   | 0.0015    |
| TD/C       | RE         |              | 0.0539795     | 0.385   | -0.0005   |
| LTD/A      | FE         | 0.4874       | -0.2621194*   | 0.065   | 0.0082    |
| LTD/A      | RE         |              | -0.1918368*   | 0.054   | 0.0082    |
| LTD/A      | Pooled     |              | -0.1641209**  | 0.046   | 0.0061    |
| LTD/C      | FE         | 0.9279       | 0.1257532     | 0.194   | 0.0103    |
| LTD/C      | RE         |              | 0.1192299*    | 0.064   | 0.0103    |
| LTD/C      | Pooled     |              | 0.1173915**   | 0.025   | 0.0082    |
| STD/A      | FE         | 0.5074       | -0.3341731**  | 0.017   | 0.0256    |
| STD/A      | RE         |              | -0.3792734*** | 0.002   | 0.0256    |
| STD/A      | Pooled     | 0.0014       | -0.410763***  | 0.000   | 0.0236    |
| STD/C      | FE         |              | -0.4335868*** | 0.000   | 0.0046    |
| STD/C      | RE         |              | -0.2194857*** | 0.007   | 0.0046    |
| STD/C      | Pooled     |              | -0.1041467    | 0.132   | 0.0026    |
| NF/A       | FE         | 0.0404       | -0.4725759*** | 0.006   | 0.0031    |
| NF/A       | RE         |              | -0.2189397*   | 0.064   | 0.0031    |
| NF/A       | Pooled     |              | -0.1194414    | 0.216   | 0.0011    |

Note: ***, ** and * indicate significance at the 1 %, 5 % and 10 % confidence level.

Source: results calculated by the authors of the paper, using Baltic Stock Exchange data.
statistically significant relationship at 10 % significance level. Fixed effects model generated no statistically significant results.

In addition, one must emphasize that coefficients for short-term debt ratios are larger compared to long-term debt ratios. Therefore, it can once again indicate that long-term debt is better for the long-term prospects of return on equity.

Table 6 presents the results of regression models if companies are divided by their country. Only statistically significant results (at 1 %, 5 % and 10 % confidence level) are included in this and the following tables.

Regarding results of the ROE regression divided by country one can make several conclusions:

- The highest $R^2$ can be found in the case of companies from Estonia and for the STD/A ratio. The results of this regression denote that short-term debt to total assets ratio explains the variance of the degree of ROE at 15.6 % (fixed effects model and random effects model) and at 14.2 % (pooled regression data). The value of the coefficient (-0.85 FE, -0.93 RE, -1.02 Pooled) indicates a very strong and inverse relationship between profitability and short-term debt;

### Table 6

| Debt ratio | Model type | Coefficient | P-value | R-squared | Country |
|------------|------------|-------------|---------|-----------|---------|
| TD/A       | FE         | -0.7908858*** | 0.000   | 0.0206    | Latvia  |
| TD/A       | RE         | -0.2594608**  | 0.017   | 0.0206    | Latvia  |
| TD/A       | Pooled     | -0.2290567**  | 0.023   | 0.0167    | Latvia  |
| TD/C       | FE         | -0.2675719*   | 0.096   | 0.0031    | Latvia  |
| STD/C      | FE         | -0.6413587*** | 0.001   | 0.0004    | Latvia  |
| NF/A       | FE         | -0.6364561*** | 0.004   | 0.0013    | Latvia  |
| TD/A       | FE         | -2.102291***  | 0.000   | 0.0726    | Estonia |
| TD/A       | RE         | -1.221851***  | 0.000   | 0.0726    | Estonia |
| TD/A       | Pooled     | -0.3646874**  | 0.033   | 0.0574    | Estonia |
| TD/C       | FE         | -0.4922085*   | 0.082   | 0.0013    | Estonia |
| LTD/A      | FE         | -1.829984***  | 0.000   | 0.0164    | Estonia |
| LTD/A      | RE         | -0.7515423*** | 0.004   | 0.0164    | Estonia |
| STD/A      | FE         | -0.8473453*** | 0.009   | 0.1560    | Estonia |
| STD/A      | RE         | -0.9342009*** | 0.002   | 0.1560    | Estonia |
| STD/A      | Pooled     | -1.018611***  | 0.001   | 0.1422    | Estonia |
| TD/A       | FE         | -0.7338396*** | 0.000   | 0.1324    | Lithuania |
| TD/A       | RE         | -0.6219655*** | 0.000   | 0.1324    | Lithuania |
| TD/A       | Pooled     | -0.5106721*** | 0.000   | 0.1274    | Lithuania |
| STD/A      | RE         | -0.352568**   | 0.027   | 0.0607    | Lithuania |
| STD/A      | Pooled     | -0.5290158*** | 0.001   | 0.0553    | Lithuania |
| STD/C      | FE         | -0.3299368*** | 0.008   | 0.0129    | Lithuania |
| STD/C      | RE         | -0.265521**   | 0.015   | 0.0129    | Lithuania |

*Note:* *** and ** indicate significance at the 1 %, 5 % and 10 % confidence level.

*Source:* results calculated by the authors of the paper, using Baltic Stock Exchange data.
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- High $R^2$ can be found also in the case of TD/A for companies from Lithuania. Total debt to total assets ratio explains the variance of the degree of ROE at 13.24% (fixed effects model and random effects model);
- In some cases, an increase in the debt ratio by one percentage point leads to a decrease in profitability ratio by more than one percentage point. This situation is specific to companies from Estonia (TD/A, LTD/A, and STD/A).

Table 7 presents the results of regression models if companies are divided by their size (natural logarithm of total assets).

### Table 7

| Debt ratio | Model type | Coefficient | P-value | R-squared | Size   |
|------------|------------|-------------|---------|-----------|--------|
| TD/A       | FE         | -0.8699591** | 0.021   | 0.0318    | Small  |
| TD/A       | RE         | -0.3803059** | 0.022   | 0.0318    | Small  |
| TD/A       | Pooled     | -0.306019**  | 0.023   | 0.0258    | Small  |
| NF/A       | FE         | -1.049427*** | 0.003   | 0.0674    | Small  |
| NF/A       | RE         | -0.8379424*** | 0.002  | 0.0674    | Small  |
| NF/A       | Pooled     | -0.8093482*** | 0.001  | 0.0616    | Small  |
| TD/A       | FE         | -1.127051*** | 0.000   | 0.1990    | Medium |
| TD/A       | RE         | -0.7831815*** | 0.000  | 0.1990    | Medium |
| TD/A       | Pooled     | -0.774563***  | 0.000   | 0.1940    | Medium |
| TD/C       | FE         | -0.4361839**  | 0.013   | 0.0083    | Medium |
| LTD/A      | RE         | -0.455222***  | 0.004   | 0.0482    | Medium |
| LTD/A      | Pooled     | -0.455222***  | 0.005   | 0.0423    | Medium |
| STD/A      | FE         | -0.5469496**  | 0.027   | 0.0558    | Medium |
| STD/A      | RE         | -0.6710579*** | 0.002   | 0.0558    | Medium |
| STD/A      | Pooled     | -0.6710579*** | 0.002   | 0.0500    | Medium |
| STD/C      | FE         | -0.5334422*** | 0.001   | 0.0509    | Medium |
| STD/C      | RE         | -0.4157491*** | 0.002   | 0.0509    | Medium |
| STD/C      | Pooled     | -0.3919213*** | 0.004   | 0.0450    | Medium |
| TD/A       | FE         | -0.5354284*** | 0.000   | 0.0120    | Large  |
| TD/A       | RE         | -0.2724918*** | 0.003   | 0.0120    | Large  |
| TD/C       | FE         | -0.1836677**  | 0.030   | 0.0161    | Large  |
| LTD/C      | Pooled     | 0.0803636**   | 0.038   | 0.0204    | Large  |
| STD/A      | FE         | -0.3409244*** | 0.005   | 0.0251    | Large  |
| STD/A      | RE         | -0.3188258*** | 0.005   | 0.0251    | Large  |
| STD/A      | Pooled     | -0.2375964*** | 0.043   | 0.0191    | Large  |
| STD/C      | FE         | -0.3098062*** | 0.000   | 0.0001    | Large  |
| STD/C      | RE         | -0.1570692**  | 0.020   | 0.0001    | Large  |
| NF/A       | FE         | 0.4113457**   | 0.030   | 0.0074    | Large  |

Note: ***, ** and * indicate significance at the 1%, 5% and 10% confidence level.

Source: results calculated by the authors of the paper, using Baltic Stock Exchange data.
All Baltic listed companies were divided into three groups based on their size (natural logarithm of total assets). Overall, one can find statistically significant and negative relationships between profitability ratio and all debt ratios for all types of company. It means that if company increases its debt, one can expect a decrease in return on equity. However two exceptions must be mentioned. NF/A ratio for large companies have a positive regression coefficient of 0.41. At the same time one must note the low $R^2$ and a significance level of 5%. The other exception is LTD/C ratio for large companies – the regression coefficient is positive and has a value of 0.08 ($R^2 = 0.0204$ and the regression coefficient is significant at 5% level).

Overall, three main conclusions can be made regarding regression between profitability and capital structure, if companies are divided by their size:

- An increase in debt leads to a decrease in profitability;
- An increase in short-term debt decreases profitability more than an increase in the long-term debt;
- Negative relationship between debt and profitability decreases as company grows (regression coefficients for small companies are higher than for medium companies, etc.).

Conclusions and Recommendations

The research covered 55 Baltic listed companies during the period from 2005 to 2013. The study analyses return on equity, current ratio and market-to-book ratio of Baltic listed companies. In addition, the study used panel data in order to determine the regression between different debt ratios and profitability. The study finds that:

1. If total liabilities are used when capital structure indicator/debt ratio is calculated, it is most likely that such indicator/ratio will overestimate the financial leverage and will not present correct information on company performance and solvency. In result, if such ratios are used in financial analysis without further and detailed analysis, financial analysis can provide incorrect conclusions.

2. Companies in Estonia have high profitability ratios and market-to-book ratios, moderate current ratios and their capital structure is dominated by long-term debt.

3. Companies in Latvia have high current ratio, but have relatively low profitability ratios and market-to-book ratios. These companies use less financial debt compared to Estonia and Lithuania. Therefore it is advisable for listed companies in Latvia to increase financial debt and decrease current ratio; therefore, it might lead to a higher profitability.

4. Listed companies in Lithuania also have moderate profitability ratios, current ratios and market-to-book ratios. Long-term debt is used very little, yet these companies have relatively high proportion of short-term debt compared to the other two Baltic countries. Therefore it might be recommended that Lithuanian companies decrease their short-term debt position and increase their long-term debt proportion if they have good investment projects to implement.

5. The results of the ROE regression indicate that if company increases financial debt or non-financial liabilities, one can
expect a decrease in return on equity. One exception might be LTD/C ratio. Coefficients for short-term debt ratios are larger compared to long-term debt ratios. Therefore, it can indicate that long-term debt is better for the long-term prospects of return on equity.

6. In some cases, an increase in the debt ratio by one percentage point leads to a decrease in profitability ratio by more than one percentage point. This situation is specific to companies from Estonia (TD/A, LTD/A, and STD/A).

7. If companies are divided in accordance to their size, then one can state that a) an increase in debt leads to a decrease in profitability; b) an increase in short-term debt decreases profitability more than an increase in the long-term debt; c) negative relationship between debt and profitability decreases as company grows.

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SKOLOS SANTYKIO POVEIKIS ĮMONIŲ FINANSINIAMS REZULTATAMS: BALTIJOS ŠALIŲ ĮTRAUKTŲ Į BIRŽOS SĄRAŠĄ BENDROVIŲ ATVEJIS

Santrauka

Finansų valdymo mokslo struktūra yra sudėtinga. Finansinė analizė yra svarbi finansų valdymo dalis, kuri remiasi apskaitos duomenimis ir tikėtinu būsimos veiklos vertinimu. Atsižvelgiant į perspektyvą, reikia skirti daugiau dėmesio ir naudoti finansinės analizės rodiklius priimant sprendimus, kad jie būtų kokybiškesni, o analitiniai duomenys interpretuoti ekonomiškai. Besikeičiančioje rinkos konjunktūros aplinkoje aktualu įvertinti Baltijos šalių įmonių finansinius rodiklius.

Nors kapitalo struktūra analizuojama jau kelis dešimtmečius, vis dar nėra bendro sutarimo, kokį skolos santykį geriausia naudoti. Daug tyrimų analizuojama įspėjimo įmonių ir turto santykį, tačiau šio tyrimo autorės teigia, kad šis rodiklis nėra tinkamas. Skola, už kurią mokamos palūkanos ir už kurią jos nemokamos, įtraukiana į bendrus įsipareigojimus. Dvi įmonės gali turėti tokį pat įsipareigojimų / turto rodiklį, tačiau įsipareigojimų struktūra gali būti skirtinga. Bendrų įsipareigojimų naudojimas gali klausbingai įvertinti įmonės finansinį svertą.

Tyrimo tikslas – įvertinti finansinius Baltijos šalių įtraukų į biržos sąrašą bendrovių rodiklius ir išanalizuoti pelningumo ir kapitalo struktūros

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regresinės analizės rezultatus. Remdamosi empiriniai rezultatais, darbo autorės pateikia išankstines finansų valdymo rekomendacijas.

Analizei atrinktos 55 įtrauktos į biržos sąrašus įmonės (angl. Baltic Stock Exchange) ir pasirinktas 2005–2013 m. laikotarpis. Autorės naudojo visuotiniai priimtus kiekybinus ir kokybinus tyrimo metodus, naudojamus ekonomikoje, taip pat mokslinius literatūros analizės, palyginamąją analizę, grafinius metodus ir regresinę sekinį analizę.

Tyrimas parodė, kad, kapitalo struktūros ir skolos santykio analizei naudojant bendrus įmonės įsipareigojimus, labai tikėtina, kad apskaičiuoti rodikliai neteisingai įvertins finansinį svertą ir pateiks klaidingą informaciją apie įmonės veiklą ir mokumą. Jei tokie rodikliai naudojami finansinėje analizėje be tolimesnės ir išsamesnės analizės, finansinė analizė gali pateikti neteisingas išvadas.

ROE regresinės analizės rezultatai parodė, kad jei įmonė padidina finansinę skolą ar nefinansinius įsipareigojimus, galima tikėtis kapitalo grąžos sumažėjimo. Trumpojo laikotarpio skolos santykio koeficientai yra didesni, lyginant su ilgalaikio laikotarpio skolos santykiu. Todėl tai gali rodytis, kad ilgalaikė skola yra geriau, tikintis ilgalaikės kapitalo grąžos. Kai kuriais atvejais skolos santykio padidėjimas vienų procentinių punktų gali nulemti pelningumo rodiklio sumažėjimą daugiau nei vienų procentinių punktų. Tai specifinė Estijos įmonių situacija. Gali būti, kad įmonės yra padalytos atsižvelgiant į jų dydį, tuomet atsitinka, kad a) skolos padidėjimas lemia pelningumo sumažėjimą; b) trumpalaikės skolos sumažina pelningumą daugiau nei ilgalaikės skolos padidėjimas; c) neigiamas ryšys tarp skolos ir pelningumo mažina įmonės augimo tempus.