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# HOW DOES CAPITAL STRUCTURE AFFECTON PROFITABILITY OF SME's

# UTJECAJ STRUKTURE KAPITALA NA PROFITABILNOST PODUZEĆA

***ABSTRACT***

*This paper aims to determine how does profitability affects capital structure of Croatian small and medium size companies. Most of previous studies have shown an inverse relationship between profitability and leverage, but also the positive correlation is claimed by some authors.. A survey has been conducted on a sample of 500 Croatian small and medium size companies for the period 2005. to 2010. The data used for the empirical analysis were derived from companies' annual reports. Pearson correlation coefficient is applied in order to examine the relationship between profitability and leverage measures. The results of this research indicate negative relationship between profitability and leverage. But, profitability differently affect short-term and long-term leverage. The relationship between profitability and short-term leverage is negative and statistically significant in all observed years. The relationship between profitability and long-term leverage is not negative in all observed years and is not statistically significant. These results suggests that Croatian SME's use profits to reduce their debt level or becoming less levered when they are profitable. This finding is consistent with the packing order theory which argues that firms prefer internal financing from external.*

***Key words:*** *capital structure, profitability, leverage, small and medium-sized enterprises*

***SAŽETAK***

*Cilj ovog rada je istražiti utjecaj profitabilnosti na strukturu kapitala malih i srednjih poduzeća u Hrvatskoj. Većina prethodnih istraživanja pokazala je negativnu vezu između profitabilnosti i strukture kapitala, no neki autori utvrdili su pozitivnu vezu između profitabilnosti i strukture kapitala. Istraživanje za ovaj rad provedeno je na uzorku od 500 malih i srednjih poduzeća u Hrvatskoj u razdoblju od 2005. do 2010. godine. Za poduzeća u uzorku na raspolaganju su bili godišnji financijski izvještaji poduzeća u obliku računa dobiti i gubitka te bilance. Da bi se ispitala veza između profitabilnosti i strukture kapitala korišten je Pearsonov koeficijent korelacije. Rezultati istraživanja potvrdili su negativnu vezu između profitabilnosti i strukture kapitala hrvatskih poduzeća. No, s obzirom kako je mjerena struktura kapitala poduzeća, profitabilnost različito utječe na kratkoročnu i dugoročnu zaduženost poduzeća. Ukoliko je struktura kapitala mjerena odnosom kratkoročnih obveza i ukupne imovine poduzeća tada je veza između profitabilnosti i zaduženosti poduzeća*

*negativna i statistički značajna u cijelom promatranom razdoblju. Ukoliko je struktura kapitala mjerena odnosom dugoročnih obveza i ukupne imovine poduzeća tada veza između profitabilnosti i strukture kapitala nije negativna i statistički značajna u cijelom promatranom razdoblju. Takvi rezultati ukazuju na zaključak da je hrvatskim malim i srednjim poduzećima profit u funkciji smanjivanja zaduženosti, odnosno da se profitabilnija poduzeća i manje zadužuju. Rezultati istraživanja u potpunosti podupiru hijerarhiju financiranja teorije postupke slaganja.*

***Ključne riječi:*** *struktura kapitala, profitabilnost, zaduženost, mala i srednjapoduzeća*

## 1. Introduction

The subject of the capital structure decisions of firms has been properly studied and theoretically and empirically. Capital structure can be define as the mixture of firm's capital with debt and equity.Many theories have been developed in the literature for examining determinants of capital structure. Mostly they focus on which determinants are more likely to have a major role on leverage decisions. Although there have been various studies analyzing capital structure, it is still debated what are the determinants of capital structure and how they impact capital structure decisions.Myers (1984.) called them *the capital structure puzzle.*
Since Modigliani and Miller published their seminal paper in 1958, the issue of capital structure has generated unforeseen interest among researchers. From the theoretical point of view, existing empirical studies widely used two models of capital structure: the trade-off theory and the pecking order theory. Trade-off theory imply that company's capital structure decisions involve a trade-off between the tax benefits of debt financing and the costs of financial distress. Pecking order theory points out that there is a certain order in financing starting from retained earnings as a primary source of internal financing, then moving to debt and using equity only as a last resort. Each of these theories suggests how certain determinants affect capital structure. According to theories, researchers found various impacts of determinants on capital structure depending on country which they analyze.
The aim of this paper is to investigate how does profitability affects capital structure of Croatian small and medium-sized enterprises (SME's).These enterprises represent important parts of all economies in terms of both their total number and their job offer and job creation. Literature expresses different views at the correlation between profitability and capital structure. Most of previous studies have shown an inverse relationship between profitability and leverage which is closely related to the packing order theory.Butalso the positive correlation is claimed by some authors which is consistent with the trade-off theory. In the light of previous studies this paper address following question: Are Croatian SME's more or less levered when they are profitable? It is also important to find, relating to profitability, are Croatian SME's more short-term or long-term indebted. And finally to conclude does empirical results of this paper supports packing order theory or trade-off theory.
According to existing empirical studies and results of the researches, the research hypothesis of this paper is: profitability is negatively related to leverage. Profitable companies which possess their own financial resources do not need to borrow larger amounts of money. It assumes that businesses in the first place, rely on their retained earnings with debt being a secondary source of financing (Myers, 2001.)[60].
This article is organized as follows: Section 2 introduces previous studies which are used in this paper. Section 3 presents description of the methodology that includes description of data

[60]Myers, S. C.(2001.): Capital structure, Journal of Economic Perspectives, Vol. 15, No. 2, pp. 575-592,

and variables, and methods applied in research. Sections 4 and 5 presents results, discussion andconclusions.

## 2. Literature review and previous studies

Empirical studies generally concentrate on identifying determinants that managers should consider in making capital structure decision. In a study of companies from five developed countries Wald (1998.)[61]concluded that profitability is single most important determinant of leverage. According to Gaudet al. (2003.)[62]one of the main theoretical controversies concerns the relationship between leverage and profitability of the companies. The packing order theory states that companies will prefer internal funds rather then external financing. As a result, companies that are profitable will use their internal funds (retained earnings) to finance them selves and thus they will borrow relatively less then companies with low profitability. Therefore, relationship between profitability and leverage is negative. But, in a trade-off theory when companies are profitable they should prefer debt to benefit from the tax shield. Under this circumstances relationship between profitability and leverage is positive.
Table 1 presents summarized empirical studies in which researchers analyzed different determinants of capital structure in different countries on different pattern and their influence on capital structure. In order to examine the relationship between profitability and capital structure, positive or negative relationship between profitability and capital structure is emphasized in last row.

Table 1 Past empirical studies used in research

| Researcher: | Period of research: | Focus: | Sample size: | Determinants: | Relationship between profitability and leverage: |
|---|---|---|---|---|---|
| Akdal, S. (2011.) | 2002. - 2009. | Publicly listed companies in UK | 202 | Profitability, size, non-debt tax shield, growth, tangibility, liquidity and volatility | Negative |
| Gaud, P., Jani, E., Hoesli, M., Bender, A. (2003.) | 1991. - 2000. | Swiss companies listed in the Swiss stock exchange | 106 | Profitability, size, growth, tangibility and risk | Negative |
| Deari, F., Deari, M. (2009.) | 2005. - 2007. | Macedonian listed and unlisted companies from the Pollog region | 32 | Profitability, size, non-debt tax shield, growth and tangibility | Negative/Positive |

[61]Wald, John K. (1998.): How Firm Characteristics Affect Capital Structure: An International Comparison, http://ssrn.com/abstract=6763 (accessed 20 January 2014.)
[62] Gaud P., Jani E., Hoesli M., Bende A. (2003.): The capital structure of Swiss companies: an empirical analysis using dynamic panel data, http://onlinelibrary.wiley.com/doi/10.1111/j.1354-7798.2005.00275.x/ (accessed 20 January 2014)

| Researcher: | Period of research: | Focus: | Sample size: | Determinants: | Relationship between profitability and leverage: |
|---|---|---|---|---|---|
| Cole, R. A. (2008.) | 1987.,1993., 1998., 2003. | Privately held U.S. firms | 5000000 | Size, age, profitability, liquid assets, tangible assets, growth and creditworthiness | Negative |
| Bas, T., Muradoglu G., Phylaktis, K. (2009.) | 2002. - 2005. | Small and private firms in 25 developing countries | 11125 | Profitability, size, tangibility, GDP/ Cap, growth, infation, interest and tax | Negative |
| Ramlall, I., (2009.) | 2005. - 2006. | Non-listed firms in Mauritius | 450 | Profitability, size, growth, tangibility, non-debt tax shield, liquidity, investment and age | No influence |
| Psillaki, M., Daskalikis, N. (2008.) | 1998. - 2002. | Small and medium-sized enterprises of Greek and French firms | 16290 | Profitability, size, growth and tangibility | Negative |
| Degryse, H., Goeij, P., Kappert, P. (2010.) | 2003. - 2005. | Dutch small and medium-sized enterprises | 99031 | Size, collateral, profitability and growth | Negative |
| Song, H.S. (2005.) | 1992. - 2000. | Swedish firms | 6000 | Profitability, size, growth, tangibility, non-debt tax shield, uniqueness and income variability | Negative |
| Buferna, F., Bangassa, K., Hodgkinsin, L. (2005.) | 1995. - 1999. | 32 public i 23 private companies from Libyan | 55 | Profitability, size, growth, and tangibility, | Positive |

Akdal(2011.)[63]in his study examined the capital structure determinants of 202 listed companies in UK in the period of 2002-2009. He came to the conclusion that profitability is negatively related to leverage. Gaud et al. (2003.)[64]analyzed determinants of the capital structure for panel of 106 Swiss companies listed in the Swiss stock exchange. They found

[63]Akdal, S. (2011): How do firm characteristics affect capital structure? Some UK evidence, http://ssrn.com/, (accessed 20 January 2014)

[64] Gaud P., Jani E., Hoesli M., Bende A. (2003): The capital structure of Swiss companies: an empirical analysis using dynamic panel data, 2003., http://onlinelibrary.wiley.com/doi/10.1111/j.1354-7798.2005.00275.x/, (accessed 20 January 2014)

that profitability is negatively associated with leverage. Deari andDeari (2009.)[65]in their research used two different samples. First sample was based on 32 Macedonian listed companies covering the period of 2005-2007. Second sample was based on 30 Macedonian small and medium businesses covering the period of 2005-2007. On the sample of listed companies they found out that profitability is negatively associated with leverage. While unlisted companies showed inverse relationship. Cole (2008.)[66]in his study, which was based on a sample of privately held U.S. companies concluded that profitability is consistent negative related with leverage. Bas et al. (2009.)[67]in their study used data for small and private companies from 25 countries in different stages of financial development from different regions. They argued that profitability is inversely related to leverage, long-term debt and short-term debt.Ramlall (2009.)[68]in his study explored capital structure on 450 non listed companies from Mauritius. Interestingly, results showed that profitability not statistically affect leverage. DaskalakisandPsillaki (2008.)[69]in their study investigate the capital structure determinants of small and medium sized enterprises using a sample of Greek and French companies. The results showed that the SMEs in both countries exhibit similarities in their capital structure choices. They found negative relationship between leverage and profitability in both countries.Degryse et al. (2010.)[70]in their study, which was based on a sample of Dutch small and medium-sized enterprises (SMEs) pointed that profitability is negatively related to leverage. Song (2005.)[71]in his study investigated capital structure determinants of Swedish companies. The results showed that profitability is negatively correlated with all three leverage measures. Buferna et al. (2005.)[72]based their study on 32 public and 23 private Libyan companies. The results in their study showed positive relationship between profitability and leverage in Libyan companies.

## 3. Methodology

For purposes of this research a data sample consisting of Croatian firms was selected. The sample contains small and medium-sized enterprises as defined in the Accounting law. They are randomly selected from the database Financial Agency.The sample is consisted of 500 Croatian SME's for the period 2005. to 2010.

Descriptive statistics consist of mean, standard deviation and median. In order to examine the relationships between variables and to test the hypothesis set out in the study, Pearson correlation coefficient which determines the degree to which two variables covary, is used.

[65]Deari F., Deari M. (2009): The determinants of capital structure: evidence from Macedonian listed and unlisted companies, http://ideas.repec.org/a/aic/journl/y2009v56p91-102.html, (accessed 20 January 2014)

[66] Cole, Rebel, A.(2008.): What do we know about the capital structure of privately held firms? Evidence from surveys of small business finance,http://papers.ssrn.com/, (accessed 20 January 2014)

[67] Bas, T., Muradoglu, G., Phylaktis, K. (2009): Determinants of capital structure in developing countries, http://citeseerx.ist.psu.edu/.../download?doi=10... , (accessed 20 January 2014)

[68]Ramlall, I.( 2009): Determinants of capital structure among non-quoted Mauritian firms under specificity of leverage:looking for a modified pecking order theory, International research journal of finance and economics, No. 31, http://www.eurojournals.com/finance.htm, (accessed 20 January 2014)

[69]Daskalakis, N., Psillaki, M. (2008): Do country of firm explain capital structure? Evidence from SMEs in France and Greece, Applied financial economics, No. 18, pp. 87-97

[70]Degryse, H.,Goeij, P., Kappert, P., (2010): Small Bus Econ, No. 38, pp 431-447

[71] Han-Suck Sock (2005): Capital structure determinants: an empirical study of Swedish companies, CEIS Electronic working paper series, http://papers.cesis.se/CESISWP25.pdf, (accessed 20 January 2014)

[72]Buferna F., Bangassa K., Hodgkinson L. (2008): Determinants of capital structure: evidence from Libya,http://citeseerx.ist.psu.edu/viewdoc/summary?doi=10.1.1.136.5311,(accessed 20 January 2014)

Profitability as variable is defined in similar ways in research papers. In most cases it is understood as the financial result of a given period divided by total assets. Deari andDeari(2009), Bas et al. (2009.) and Ramlall(2009.)in their study measured companies profitability as the ratio of earnings before tax (EBT) scaled by total assets. Cole (2008.)also measured profitability as net income divided by total assets (ROA). Following Akdal (2011.) and Degryse et al. (2010.)for purposes of this paper profitability is defined as earnings before interest, taxes and depreciation (EBITDA/total assets) scaled by total assets.

Different measures of leverage are used in past papers and each leverage measure is defined in different way. In general, two most common proxies of leverage exist such as calculated at book value of equity and at market value of equity (Loof, 2004.)[73] The most commonly used measure for leverage is defined as total debt over total assets. I also consider the short-term and long-term debt ratio separately. Debt is measured by its book value. Market values are not known for SME's in this sample. Following Akdal (2011.) I calculated leverage of the company as the ratio of total debt to total assets, long-term debt to total assets and short-term debt to total assets.

**4. Results**

Descriptive statistics of the used ratios are given in Table2. Numbers in *mean* column represent mean values of each ratio calculated for all 500 firms in the sample. Numbers in *standard deviation* column represent *standard deviation* values of each ratio calculated for all 500 firms in the sample. Numbers in *median* column represent *median* values of each ratio calculated for all 500 firms in the sample.

Table 2 Descriptive statistics of financial ratios use in research

| *Ratio* | *Year* | *Mean* | *Median* | *Standard deviation* |
|---|---|---|---|---|
| *Profitability* | *2005.* | *0,06* | *0,05* | *0,12* |
| | *2006.* | *0,06* | *0,06* | *0,12* |
| | *2007.* | *0,09* | *0,06* | *0,15* |
| | *2008.* | *0,08* | *0,07* | *0,16* |
| | *2009.* | *0,07* | *0,04* | *0,18* |
| | *2010.* | *0,04* | *0,03* | *0,1* |
| *Total debt/total assets* | *2005.* | *0,74* | *0,8* | *0,36* |
| | *2006.* | *0,74* | *0,8* | *0,39* |
| | *2007.* | *0,72* | *0,77* | *0,42* |
| | *2008.* | *0,7* | *0,75* | *0,4* |
| | *2009.* | *0,69* | *0,71* | *0,41* |
| | *2010.* | *0,7* | *0,72* | *0,42* |
| *Long-term debt/total assets* | *2005.* | *0,06* | *0* | *0,12* |
| | *2006.* | *0,13* | *0* | *0,26* |
| | *2007.* | *0,13* | *0* | *0,25* |
| | *2008.* | *0,13* | *0* | *0,27* |
| | *2009.* | *0,13* | *0* | *0,26* |
| | *2010.* | *0,13* | *0* | *0,24* |
| *Short-term debt/total assets* | *2005.* | *0,58* | *0,57* | *0,39* |

[73]Loof, H., (2004.): Dynamic optimal capital structure and technical change, Structure Change and Economic Dynamics, Vol. 15, No. 4, pp. 449-468

| Ratio | Year | Mean | Median | Standard deviation |
|---|---|---|---|---|
| | 2006. | 0,6 | 0,61 | 0,39 |
| | 2007. | 0,59 | 0,56 | 0,42 |
| | 2008. | 0,57 | 0,55 | 0,4 |
| | 2009. | 0,57 | 0,51 | 0,43 |
| | 2010. | 0,57 | 0,5 | 0,42 |

Source: Authors' calculation

It is interesting to notice that Croatian SME`s have more short-terms loans than long-term loans (they are high short-term leveraged around 58%). Contrary, Degryse et al. (2010.)in their study found that Dutch SMEs have more long-term loans (63% of total debt is long-term debt). But generally Croatian SME`s are high leveraged (around 70% in observed period). After 2007. profitability of the companies is in decreasing line mostly because of global economic crisis which started in 2007.Many of Croatian SMEs after 2007. finished their financial year with negative results. Low profitability is the result of illiquidity, low economic activity and low growth potential of companies in observed period.

The aim of this paper was to examine whether high profitability means less leverage or vise versa. Results are presented in Table 3.

Table 3 The correlation coefficients between profitability and leverage ratios

| Variables/year | 2005. | 2006. | 2007. | 2008. | 2009. | 2010. |
|---|---|---|---|---|---|---|
| Total debt/total assets | -0,303 (0,000) | -0,228 (0,000) | -0,295 (0,000) | -0,173 (0,001) | -0,327 (0,000) | -0,316 (0,000) |
| Long-termdebt/total assets | 0,028 (0,591) | -0,068 (0,229) | -0,117 (0,022) | 0,009 (0,850) | 0,062 (0,252) | -0,037 (0,530) |
| Short-termdebt/total assets | -0,202 (0,000) | -0,148 (0,010) | -0,221 (0,000) | -0,133 (0,011) | -0,308 (0,000) | -0,294 (0,000) |

Note: Figures in parenthesis indicate statistical significance of the correlation coefficient
*Source: Authors' calculation*

In order to examine the relationship between profitability and leverage, correlation coefficients between profitability and leverage ratios are calculated. Results in Table 3 show that there is a negative correlation between profitability and total debt over total assets in all observed years. Also there is a negative correlation between profitability and short-term debt over total assets in all observed years. Correlation between profitability and long-term debt over total assets is negative only in three of observed years and statistically significant only in 2007.

Results prove a negative correlation between profitability and the share of debt in capital structure. Debt levels are lower if companies generates profit. Results are consistent with implication of Pecking order theory (the theory of the order of sources of financing).

## 5. Conclusion

Previous studies that were analyzing determinants of capital structure showed a various impacts of profitability on capital structure depending on country which they analyze. This paper adds to existing literature by examining how profitability affect capital structure of small and medium size companies in Croatia. It is important to analyze how small and

medium size companies in Croatia finance themselves, using profit or using debt. Without adequate access to financing potential growth of firm is jeopardized. In reality, for small and medium size companies obtaining finance and other banking services has never been easy.

Results in this study are in line with the predictions of the Pecking order theory. SMEs use profits to reduce their debt level, since they prefer internal funds over external funds. Profits particularly affects short-term debt. Therefore, this suggests that after companies explored internal funds, short-term debt comes next in the order of financing.Some authors (Degryse et al. (2010.)) claimed that short-term debt is more expensive then long-term debt and can be amortized easily. Why are then Croatian small and medium size companies short-term leveraged? It is because short-term debt is easily to obtain because Croatian SMEs has a large tangible asset which they use forcollateral. Furthermore, in companies which preferring retained earnings as a primary source of financing, potential bankruptcy risk becomes lower.Contrary to Akdal (2011.) who argued that total and long-term leverage are more representative of companies capital structure then short-term leverage, this study confirmed that Croatian small and medium size companies are short-term leveraged, thereforetotal and short-term debt are better measures of leverage then long-term debt.

For further studies it might be interesting to focus on countries in region and compare how profitability in their companies affect capital structure and are they short-term or long-term leveraged.

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