THE EFFECT OF FIRM SIZE ON SME's CAPITAL STRUCTURE

UTJECAJ VELIČINE PODUZEĆA NA STRUKTURU KAPITALA MALIH I SREDNJIH PODUZEĆA

ABSTRACT

One of the key determinants of leverage is firm size. Larger firms are usually more established in their markets, diversified and less likely to fail. Therefore, it has been argued that size can be seen as an inverse measure of bankruptcy risk. The aim of this paper is to investigate the relationship between firm size and the capital structure of Croatian small and medium-sized enterprises. Most of previous studies have shown a positive relationship between firm size and leverage. But, several empirical studies found negative relationship between firm size and leverage. This study has been conducted on a sample of 500 Croatian SMEs for the period between 2005 and 2010. The data used for the empirical analysis were taken from companies annual reports. The Pearson Correlation Coefficient is applied in order to examine the relationship between firm size and leverage measures. The results of this research indicate negative relationship between firm size and leverage. But, firm size differently affect short-term and long-term leverage. The relationship between firm size and short-term leverage is negative but not statistically significant in all observed years. The relationship between firm size and long-term leverage is positive in all observed years but is not statistically significant, except one year. These results suggests that larger Croatian SME's are mostly more profitable and use more retained earnings to finance their business. This finding is consistent with the packing order theory which predicts a negative relationship between firm size and the leverage.

Key words: capital structure, firm size, leverage, small and medium-sized enterprises

SAŽETAK

Jedna od ključnih determinanti strukture kapitala poduzeća je veličina poduzeća. Veća poduzeća uglavnom su bolje pozicionirana i prepoznatljivija na tržištu, raznolika i manji su im izgledi da propadnu. Stoga, u literaturi je determinanta veličine poduzeća prepoznata kao pokazatelj ili obrnuta mjera rizika propadanja poduzeća. Cilj ovog rada je istražiti utjecaj veličine poduzeća na strukturu kapitala malih i srednjih poduzeća u Hrvatskoj. Većina prethodnih istraživanja pokazala je pozitivnu vezu između veličine poduzeća i strukture kapitala, no neki autori utvrdili su i negativnu vezu između veličine poduzeća 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 finansijski izveštaji poduzeća u obliku računa dobiti i gubitka te bilance. Da bi se ispitala veza između veličine poduzeća i strukture kapitala korišten je Pearsonov koeficijent korelacije. Rezultati istraživanja potvrđili su negativnu vezu između veličine
poduzeća i strukture kapitala hrvatskih poduzeća. No, s obzirom kako je mjerena struktura kapitala poduzeća, veličina poduzeća različito utječe na kratkoročnu i dugoročnu zaduženost poduzeća. Ukoliko je struktura kapitala mjerena odnosom kratkoročnih obveza i ukupne imovine poduzeća tada su te veze između veličine poduzeća i zaduženosti poduzeća negativna, no nije statistički značajna u cijelom promatranom razdoblju. Ukoliko je struktura kapitala mjerena odnosom dugoročnih obveza i ukupne imovine poduzeća tada su te veze između veličine poduzeća i strukture kapitala je pozitivna i nije statistički značajna u cijelom promatranom razdoblju, osim u prvoj godini. Takvi rezultati ukazuju na zaključak da su veća poduzeća i profitabilnija te koriste zadržanu dobit za financiranje poslovanja. Veća poduzeća se manje zadužuju. Rezultati istraživanja u potpunosti podupiru hijerarhiju financiranja teorije postupke slaganja.

Ključne riječi: struktura kapitala, veličina poduzeća, zaduženost, mala i srednja poduzeća

1. Introduction

Capital structure can be define as the proportional relationship between equity and debt. Decisions concerning capital structure and its way of financing is the most important issue for managers and owners of the enterprises. However, it is not an easy job because it involves the wise proportional selection of debt and equity which includes different costs and benefits in balancing between debt and equity. A wrong decision in the selection between the funds may lead the firm to financial distress and eventually to bankruptcy (Andrei, 2013) 1. The process of financing takes a very important place in firm management because it must ensure financial continuity necessary for growth and maintaining competitiveness in their environment. This is especially evident in transition economies, where due to underdeveloped capital markets debt remains the main source of financing.

Capital structure theories offer a number of determinants that are responsible for various impacts on capital structure, while the empirical literature tend to find evidence that firms behave in accordance with the theoretical predictions (Shamsur, 2010) 2. Mostly they focus on those determinants which are more likely to have a major role on leverage decisions. Although there have been various studies analysing capital structure, it is still debated what the determinants of capital structure are and how they impact capital structure decisions. Since Modigliani and Miller published their seminal paper in 1958, the issue of capital structure has generated great 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 implies that a company's capital structure decisions involve a trade-off between the tax benefits of debt financing and the costs of financial distress. The pecking order theory points out that a company's capital structure decisions involve a trade-off between the tax benefits of debt financing and the costs of financial distress. The 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 the 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 the country they are analysing. Many studies are focused on providing empirical evidence on the relationship between firm's specific determinants and capital structure. This study is focused on providing empirical evidence on the relationship between firm size and capital structure of Croatian small and medium enterprises. Firm size has been used as a determinant of firm's capital structure in

most of empirical studies on capital structure and is not uncommonly among the most significant variables. But, theoretically the relationship between size and leverage is not clear (Panigrani, 2011)\(^3\). The relationship depends how firm size is measured. Most studies use log of sales, total sales or average turnover as the measure for firm size. The trade off theory predicts positive relationship between the firm size and leverage, because size is assumed as a proxy for earnings volatility and by Fama and French (2002)\(^4\) larger firms are more diversified and show less volatility. According to Singh and Kumar (2008)\(^5\), pecking order theory predicts a negative relationship between firm size and leverage because large firms are mostly more profitable and need more retained earnings. Kuhnhausen and Stieber (2014)\(^6\) argued that firm size is one of the key determinants of leverage. Larger firms are usually more established in their markets, diversified and less likely to fail. Therefore, it has been argued that size can be seen as an inverse measure of bankruptcy risk. Singh and Kumar (2008)\(^7\) argued that costs between issuing equity and debt seems to reduce with the firm size. These arguments are reasons why focus of this study is on firm size. It is important to see whether firm size is in function of debt or equity, and whether the hypotheses supports the pecking order theory or the trade of theory.

This paper adds to the existing literature by examining the relationship between firm size and the capital structure of small and medium enterprises in Croatia. These enterprises represent important parts of all economies in terms of both their total number and their job offer and job creation. One of the major topics that has been analysed in previous studies is how SMEs finance themselves. Financing is an essential part of operating any business. Without adequate access to financing potential the growth of a firm is jeopardized. In reality, obtaining finance and other banking services has never been easy for small and medium sized enterprises.

According to Degryse et al. (2010)\(^8\) large companies are more aware of better financing methods, since they employ more financial and administrative staff and may have a stronger bargaining position towards lenders. Croatia is a country in transition and a new member of the European Union, and as such it is an interesting case study. In a country like Croatia private equity market is poor and the financial system is bank-based, so the role of debt is fundamental. It is important to analyse whether there is a positive or negative correlation between the capital structure and firm size of Croatian small and medium-sized enterprises.

According to the existing empirical studies and results of the researches, the research hypotheses of this paper is: there is a negative relationship between firm size and leverage. By increasing sales revenue, small and medium size enterprises are more financed by internally generated funds and are less leveraged. Larger companies have larger volume of fixed assets, larger the sinking funds and the bigger self-financing (Riportella, C.C. et al, 2006.)\(^9\)

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\(^{8}\) Degryse, H., Goeij, P., Kappert, P., (2010): The impact of firm and industry characteristics on small firms capital structure, Small Bus Econ, No. 38, pp 431-447

This article is organized as follows: Section 2 reviews the relevant theoretical and empirical literatures how firm size influence capital structure. Section 3 presents a description of the methodology that includes description of data and variables, and methods applied in the research. Sections 4 and 5 present results, discussion and conclusions.

2. Literature review and previous studies

In previous studies firm size is indicated as a significant determinant of capital structure (Mokhova and Zinecker, 2013)\(^{10}\), although theoretically the relationship between firm size and leverage is not clear. Degryse et al. (2010)\(^{11}\) expected firm size to be positively correlated with leverage. They found strong support that larger firms exhibit higher leverage. According to them larger firms are more aware of better financing methods, since they employ more financial and administrative staff and have a stronger bargaining position toward lenders. Their results showed that larger firms rely more on long term finance and less on short term finance. Psillaki and Daskalakis (2008)\(^{12}\) investigated the capital structure of Greek, French, Italian and Portuguese small and medium sized enterprises. They argue that larger firms are more diversified and they are expected to go bankrupt less often then smaller ones. They found a positive relationship between firm size and leverage, but significantly only for France, Greece and Portugal enterprises. Koksal et al. (2013)\(^{13}\) investigated the factors that determine the capital structure choices in Turkey. One of the major findings in their analysis is that what matters most for a firm's capital structure is not firm's age or industrial membership but rather its size. They provide evidence that leverage is positively correlated with size. According to their results, larger firms have higher long-term leverage but lower short-term leverage then small firms. They also concluded that young and small manufacturing firms have the highest level of short-term indebtedness. Cole (2008)\(^{14}\) in his study found problematic to measure the size of privately held firms. He used three alternative variables which are used in the finance and entrepreneurship literature to measure the size of such firms: total assets, annual sales revenues and total employment. His focus was on total assets. He found that firm size is inversely related to firm leverage, in other word, larger firms use significantly less debt in their capital structure. Deari and Deari (2009)\(^{15}\) analysed which determinants influence companies' leverage. They selected two samples. The first one was made up of Macedonian companies registered on Macedonian Stock Exchange, and the second sample consisted of Macedonian small and medium businesses. They found that size has positive impact on leverage but is not significant at listed and unlisted companies. They claimed that because size is not significant, it doesn't have significant role for deciding the capital structure decisions. Song (2005)\(^{16}\) in his paper analysed capital structure determinants of 6000 Swedish firms from 1992 to 2000. He concluded that Swedish firms are on average very highly leveraged

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\(^{10}\) Mokhova, N., Zinecker, M., (2013), The determinants of capital structure: the evidence from the European union, Acta Universitatis Agriculturae et Silviculturae Mendelianae Brunensis Vol 59, No 7, pp 2533-2546

\(^{11}\) Degryse, H., Goeij, P., Kappert, P., (2010): The impact of firm and industry characteristics on small firms capital structure, Small Bus Econ, No. 38, pp 431-447

\(^{12}\) 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


and that short-term debt comprises a considerable part of Swedish firm's total debt. His results revealed that size is a significant determinant of leverage. His results showed that size is positively related to total debt and short-term debt ratio, but is negatively correlated with long-term debt ratio. Heyman et al. (2007) examined the determinants of debt-equity choice and the debt maturity choice for a sample of small, privately held firms in a creditor oriented environment of Belgium. They hypothesized a positive relation between firm size and leverage. According to them larger firms have a high debt ratio. But their results contradicts with their hypothesis, because they found that leverage is negatively related to size. Ramlall (2009) analysed the determinants of capital structure for non-listed firms in Mauritius. He found that size have negative impact on leverage. Meaning theta larger firms tend to be self-sufficient in funds. La Rocca et al. (2009) examined the strategic financing choices of small businesses through the lens of the business life cycle. Their results revealed that size is a significant determinant of leverage. The positive relationship between size and debt, according to authors, indicated that the larger the firm the higher the leverage ratio is which they are able to achieve and to maintain. But the effect of size on leverage was greater for young small firms than for older, larger ones. This supports the authors suggestion that the ability of young firms to use debt depends on their size. Forte et al. (2013) researched the determinants of the capital structure of small and medium enterprises over 19000 Brazilian firms and spans 13 years of data. They found weaker evidence that size is positively related to leverage, which they interpreted as evidence that larger firms have more access to outside financing in general and credit market in particular. Kouki and Said (2012) examined the theoretical and empirical determinants of firms’ capital structure choice. Their analysis was conducted on a sample of 244 French listed companies over the period 1997-2007. They found significant negative relation between firm size and leverage. Akdal (2011.) in his study examined the capital structure determinants of 202 listed companies in UK in the period of 2002-2009. Results proved that size is positively related to all forms of leverage ratios. Author's results illustrated that the bigger the company in terms of sales, the larger amount of debt it has in its capital structure. His finding is consistent with trade-off theory.

3. Methodology

For the 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. A small enterprise has an average of up to 50 employees and an annual income of up to HRK 65 million. A medium enterprise has an average of up to 250 employees and an annual income of

up to HRK 260 million. They are randomly selected from the database Financial Agency. The sample consists of 500 Croatian SMEs for the period between 2005 and 2010. The year 2005 is the reference year, and the number of SMEs decreased or stayed the same in other years, depending on whether SMEs survived and submitted financial statements to the Financial Agency every year (in 2006 the number of observed SMEs was 386, in 2007 447 SMEs, in 2008 425 SMEs, in 2009 380 SMEs and in 2010 366 SMEs). Some enterprises appear twice or three times, while others appear for all six years which makes the dataset unbalanced. The sample included enterprises from all industry sectors in accordance with the National Classification of Activities, except enterprises in public administration and defence, the insurance industry and pension funds. Financial statements in the form of balance sheets and income statements were available for all SMEs in the sample. Different measures of leverage are used in past papers and each leverage measure is defined in a 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)\textsuperscript{23}. 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 SMEs. Managers have to base their financing decisions on book values. Following Degryse et al. (2010), in this research the leverage of a company is calculated as the ratio of total debt to total assets, long-term debt to total assets and short-term debt to total assets.

Research papers offer many different measures for size. For instance, log (natural) of sales (revenue), number of people or total assets. Song (2005) used log of sales and log of number of people as a measures for size. Koksal (2013), Psillaki and Daskalakis (2008), Akdal (2011) and Deari and Deari (2009) defined size as natural logarithm of total sales. Cole (2008), Degryse et al. (2010), La Rocca et al. (2009) and Ramlall (2009) measured firm size by the natural logarithm of total assets. According to the authors mentioned before, in this paper firm size is measured as natural logarithm of sales.

Descriptive statistics consist of the mean and the standard deviation. The mean deviation represents the average of the sample. The standard deviation measures the amount of variation or dispersion from the average. In order to examine the relationships between variables and to test the hypothesis set out in the study, the Pearson correlation coefficient, which determines the degree to which two variables covary, is used.

4. Results

Descriptive statistics of the used ratios are given in table 1. Numbers in the mean column represent mean values of each ratio calculated for all 500 firms in the sample. Numbers in the standard deviation column represent standard deviation values of each ratio calculated for all 500 firms in the sample.

\textit{Table 1 Descriptive statistics of ratios used in research}

<table>
<thead>
<tr>
<th>Variable</th>
<th>Year</th>
<th>Mean</th>
<th>Standard deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size</td>
<td>2005</td>
<td>13,23</td>
<td>2,06</td>
</tr>
<tr>
<td>Natural logarithm of sales</td>
<td>2006</td>
<td>13,36</td>
<td>2,16</td>
</tr>
<tr>
<td></td>
<td>2007</td>
<td>13,58</td>
<td>2,16</td>
</tr>
<tr>
<td></td>
<td>2008</td>
<td>13,71</td>
<td>2,12</td>
</tr>
</tbody>
</table>

\textsuperscript{23} Loof, H., (2004.), Dynamic optimal capital structure and technical change, Structure Change and Economic Dynamics, Vol. 15, No. 4, pp. 449-468
It is interesting to notice that Croatian SMEs have more short-term loans than long-term loans (they are high short-term levered around 58%). But generally Croatian SMEs are highly levered (around 70% in observed period).

In order to examine the relationship between firm size and leverage, correlation coefficients between the firm size and leverage ratios are calculated. The aim is to examine whether the larger the firm is the less leveraged is or vice versa. Results are presented in table 2.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Year</th>
<th>Mean</th>
<th>Standard deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2009</td>
<td>13.65</td>
<td>2.1</td>
</tr>
<tr>
<td></td>
<td>2010</td>
<td>13.48</td>
<td>2.17</td>
</tr>
<tr>
<td></td>
<td>2011</td>
<td>12.36</td>
<td>2.11</td>
</tr>
<tr>
<td>L1 = Ratio of liabilities and assets</td>
<td>2005</td>
<td>0.74</td>
<td>0.36</td>
</tr>
<tr>
<td>(total liabilities/total assets)</td>
<td>2006</td>
<td>0.74</td>
<td>0.39</td>
</tr>
<tr>
<td></td>
<td>2007</td>
<td>0.72</td>
<td>0.42</td>
</tr>
<tr>
<td></td>
<td>2008</td>
<td>0.7</td>
<td>0.4</td>
</tr>
<tr>
<td></td>
<td>2009</td>
<td>0.69</td>
<td>0.41</td>
</tr>
<tr>
<td></td>
<td>2010</td>
<td>0.7</td>
<td>0.42</td>
</tr>
<tr>
<td></td>
<td>2011</td>
<td>0.72</td>
<td>0.4</td>
</tr>
<tr>
<td>L2 = Ratio of long term liabilities and assets</td>
<td>2005</td>
<td>0.06</td>
<td>0.12</td>
</tr>
<tr>
<td>(long term liabilities/total assets)</td>
<td>2006</td>
<td>0.13</td>
<td>0.26</td>
</tr>
<tr>
<td></td>
<td>2007</td>
<td>0.13</td>
<td>0.25</td>
</tr>
<tr>
<td></td>
<td>2008</td>
<td>0.13</td>
<td>0.27</td>
</tr>
<tr>
<td></td>
<td>2009</td>
<td>0.13</td>
<td>0.26</td>
</tr>
<tr>
<td></td>
<td>2010</td>
<td>0.13</td>
<td>0.24</td>
</tr>
<tr>
<td></td>
<td>2011</td>
<td>0.14</td>
<td>0.26</td>
</tr>
<tr>
<td>L3 = Ratio of short term liabilities and assets</td>
<td>2005</td>
<td>0.58</td>
<td>0.39</td>
</tr>
<tr>
<td>(short term liabilities/total assets)</td>
<td>2006</td>
<td>0.5</td>
<td>0.39</td>
</tr>
<tr>
<td></td>
<td>2007</td>
<td>0.59</td>
<td>0.42</td>
</tr>
<tr>
<td></td>
<td>2008</td>
<td>0.57</td>
<td>0.4</td>
</tr>
<tr>
<td></td>
<td>2009</td>
<td>0.57</td>
<td>0.43</td>
</tr>
<tr>
<td></td>
<td>2010</td>
<td>0.57</td>
<td>0.42</td>
</tr>
<tr>
<td></td>
<td>2011</td>
<td>0.58</td>
<td>0.41</td>
</tr>
</tbody>
</table>

Source: Author’s calculation

Table 2 The correlation coefficients between firm size and leverage ratios

<table>
<thead>
<tr>
<th>Average leverage ratios for 2005-2010</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total debt/Total assets</td>
<td>-0.004 (0.943)</td>
<td>-0.065 (0.238)</td>
<td>-0.005 (0.924)</td>
<td>-0.025 (0.657)</td>
<td>-0.045 (0.452)</td>
<td>0.012 (0.842)</td>
</tr>
<tr>
<td>Long-term debt/Total assets</td>
<td>0.226 (0.000)</td>
<td>0.053 (0.319)</td>
<td>0.012 (0.815)</td>
<td>-0.019 (0.725)</td>
<td>0.025 (0.669)</td>
<td>0.025 (0.668)</td>
</tr>
</tbody>
</table>
The results of this research indicate negative relationship between firm size and leverage. But, firm size differently affect short-term and long-term leverage. The relationship between firm size and short-term leverage is negative but not statistically significant in all observed years. The relationship between firm size and long-term leverage is positive in all observed years but is not statistically significant, except one year. These results suggests that larger Croatian SME's are mostly more profitable and use more retained earnings to finance their business. This finding is consistent with the pecking order theory which predicts a negative relationship between firm size and the leverage.

5. Conclusions

Previous studies that were analysing determinants of capital structure confirm the existence of a significant impact of size on capital structure. Financial theories suggests two different explanations. According to trade off theory, size has a positive impact on capital structure because size is considered as a proxy for bankruptcy cost, the larger the company, the lower is bankruptcy risk. Within pecking order theory, debt should be in decreasing function of size. The larger the company, the easier access to capital market and financial assets has. As companies are smaller, it is more difficult to issue debt so they prefer internal financing. Many authors have suggested the positive relation between firm size and capital structure. Only few of them found significant negative relation between firm size and capital structure. The results of this paper showed significant differences between short-term, long-term and total debt ratios. The results illustrated that the bigger the company in term of sale, the smaller amount of debt it has in its capital structure. Meaning that larger companies financed them self first with internal generated funds. According to results companies tend to employ more long-term debt then short-term debt, which is in opposite that Croatian small and medium enterprises are more short-term leveraged. All of this leaves space for further detailed analysis between size and capital structure.

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