Capital Structure Determinants of Small and Medium Enterprises in Croatia

Nataša Šarlija
J. J. Strossmayer University of Osijek, Croatia
natasa@efos.hr

Martina Harc
Croatian Academy of Science and Art, Croatia
harcm@hazu.hr

Most of the research about capital structure is focused towards two theories: trade off theory (TOT) and pecking order theory (POT). The idea is to explore which theory works better in certain conditions and identify the key determinants that affect the capital structure of the company. However, in different countries different determinants with opposite relation to the leverage are found to be significant. Besides, most of the previous researches are oriented on listed companies. The aim of this paper is to analyse the capital structure of small and medium enterprises in Croatia through the analysis of the fundamental determinants of the capital structure. The research was conducted on a data sample of 500 SMEs in Croatia in the period of 2005–2011. On the unbalanced panel data set a linear regression is applied. Influence of determinants on leverage is estimated by a static panel model with random effect and with fixed effect estimation. Four capital structure determinants are analysed: growth, size, profitability and tangible assets. The results of this research support the pecking order theory confirming that SMEs in Croatia are primarily financed from internally generated funds that affect profitability, growth, tangible assets and enterprise size.

Key Words: capital structure, determinants of capital structure, trade off theory, pecking order theory
JEL Classification: C23, C51, F36, G32

Introduction

Capital structure is one of the most intriguing fields in financial management. Since the publication of the famous paper by Modigliani and Miller (1958), the relation between debt and equity has generated a great interest among researchers. Capital structure researches are focused toward two theories: trade off theory (TOT) and pecking order theory (POT). 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 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. From these theories a number of relationships between determinants and debt-equity choice can be derived. Capital structure theories were developed focusing on large listed companies. However, theoretical implications of capital structure can also be applied on the SMEs where determinants have different effect on SMEs compared to large companies (Daskalakis and Thanou 2010). The aim of this paper is to analyse the capital structure of small and medium enterprises through the analysis of the fundamental determinants of the capital structure. In such a way the paper is filling the gap in the capital structure analysis of the SMEs. The analysis is made for the Croatian set of non-listed small and medium enterprises. According to Orsag (2003) capital structure refers to long-term financial structure consisting of long-term debt and equity. Short-term and current liabilities are excluded from the overall financial structure. In this paper capital structure is represented by leverage measured with long-term liabilities over total assets. Orsag (2003) also states that the term leverage is primarily associated with the use of long-term debt to finance their business.

Croatia is a country in transition and a new member of the European Union, and as such it is an interesting case study. In this paper the relationship between leverage and the capital structure determinants such as growth, size, profitability and tangible assets are tested. Based on these results, conclusion is made whether Croatian SMEs are following the pecking order theory which insists on financial hierarchy or the trade off theory, which balances between tax shield and the cost of financial distress. In the period from 2003 to 2007 Croatian economy was accompanied by dynamic growth in economic activity. Growth driver was the internal demand, increased investment and personal consumption. All of it is accompanied by strong lending activity of banks. The reduction in economic activity started in the second half of 2008, which led to a decrease in the growth rate to 2.4% in that year. Due to the impact of the global

economic crisis and the lack of action measures of the state to mitigate the impact of the crisis, in 2009 deterioration of the economy continued with the decline in the gross domestic product of 6%. In 2010, the crisis continued, which led to a drop in GDP of 1.2%, primarily due to a decline in personal consumption and investment and internal demand. Croatian SMEs in the period from 2000 to 2010 recorded the highest net profit in 2007 of 11.3 billion kunas.[1] In 2008, net profit fell to 7.8 billion kunas, in 2009 to 1.2 billion kunas, and in 2010 6.5 billion kunas net loss.

Regarding unfavourable and difficult macroeconomic conditions, which imply illiquidity of the economy, reducing economic activity and a slowdown in the companies' growth, the following hypotheses will be tested in this paper:

H1 *There is a negative relationship between SMEs' growth and leverage. If the growth of a SMEs is measured as the percentage change in total assets over the previous year, the SMEs that invest in their properties do not need to borrow, or can be financed from internally generated funds.*

H2 *There is a negative relationship between SMEs' size (sales revenue) and leverage. By increasing sales revenue, SMEs are more financed by internally generated funds and are less leveraged.*

H3 *There is a negative relationship between SMEs' profitability and leverage. SMEs which are more profitable, less likely to borrow money because it will be funded from its own resources, therefore the expected impact on the capital structure is negative.*

H4 *There is a positive relationship between SMEs' tangible assets and leverage. SMEs need collateral when taking loans in the banks. Collateral position in the balance sheet is represented with tangible assets. SMEs with higher tangible assets have better chances for borrowing from financial institutions.*

The next chapter is a review of previous researches on the determinants of the capital structure. The third chapter is a description of the sample and the methods used in the research followed by research results. The paper ends with the conclusion and discussion.

Previous Research

Beck, Demirgüç-Kunt, and Maksimovic (2004) point out that most of the companies with limited access to external financing methods are small companies. In table 1 there is a presentation of previous researches which

analyse determinants of capital structure in different countries and on different samples in order to identify relationship between the determinants and leverage.

Akdal (2010) proved that profitability and growth are negatively related to the leverage while size and tangible assets positively. Gaud et al. (2005) concluded that size and tangible assets have positive relationship with leverage but growth and profitability negative relationship. Deari and Deari (2009) got opposite results for listed and non-listed companies. Listed companies in Macedonia showed negative relationship of profitability, tangible assets and tax protection to leverage and positive relationship of size and growth to leverage. Non-listed companies showed that profitability, tax protection and growth is in positive relationship with leverage while tangible assets and growth in negative relationship. Cole (2008) focused his research on small enterprises, primarily because he felt that the existing literature is not a reference for small enterprises. He believed that testing trade off theory and pecking order theory can determine the variables that affect the capital structure of SMEs. He conducted a research on a sample of small enterprises in the USA and concluded that leverage is negatively related to size and profitability and positively with tangible assets. Bas, Muradoglu, and Phylaktis (2009) analysed capital determinants focusing their research on SMEs in developing counties. The main determinants they discovered are tangible assets and profitability, which are negatively related to the leverage, then size and growth which are positively related to the leverage. Ramlall (2009) showed that there is a positive relationship between size and leverage and negative between tangible assets and leverage. Profitability and growth are proved to be significant determinants of capital structure. These results follow pecking order theory according to which companies with higher revenues are less leveraged and more financed by internally generated funds. Daskalakis and Psillaki (2008) in their research analysed capital structure determinants of Greece and French SMEs. One of their goals was to discover if the determinants are the same in both countries. They showed there are similarities as well as differences in the capital structures. In both countries there is a positive relation between size and leverage and also tangible assets and profitability are negatively related to leverage. Growth is positively related to leverage only in France. Authors concluded that Greek companies are more leveraged than French, which also have more tangible assets. Degryse, Goeij, and Kappert (2010) analysed SMEs in the Netherlands where they proved that leverage is posi-

TABLE 1 Previous Research on Capital Structure Determinants

Authors	Research period	Research focus	Sample size	Determinants
Akdal (2010)	2002–2009	Listed companies in UK	202	Profitability, size, tax protection, growth, tangible assets, liquidity and volatility
Gaud et al. (2005)	1991–2000	Listed companies in Switzerland	106	Tangible assets, size, profitability, growth and risk
Deari and Deari (2009)	200–2007	Listed and non-listed companies in Macedonia	32	Size, growth, tangible assets, profitability, tax protection
Cole (2008)	1987, 1993, 1998, 2003	SMEs in the USA	5000000	Size, SMEs age, growth, tangible assets, liquid assets, profitability, creditworthiness, industrial leverage
Bas, Muradoglu, and Phylaktis (2009)	2002–2005	Small, medium and large companies in 25 developing countries	11125	Tangible assets, size, profitability, growth, inflation, interest rate, tax rate, GDP
Ramlall (2009)	2005–2006	Small, medium and large companies in Mauritius	450	Size, growth, tangible assets, tax protection, profitability, liquidity, investment, companies' age
Psillaki and Daskalikis (2008)	1998–2002	SMEs in Greece and France	16290	Size, growth, tangible assets, profitability
Degryse, Goeij, and Kappert (2010)	2003–2005	SMEs in the Netherlands	99031	Tangible assets, non-tangible assets, size, profitability, growth, tax rate, depreciation
Song (2005)	1992–2000	SMEs in Sweden	6000	Size, growth, tangible assets, profitability, tax protection, uniqueness of the product
Buferna, Bangassa, and Hodgkinsin (2005)	1995–1999	Public and private companies in Libya	55	Tangible assets, size, profitability, growth

tively related to size, tangible assets, growth and negatively to profitability. Dutch SMEs use profit to borrow less. As they are more profitable, they

are financed by internally generated funds supporting the pecking order theory. It has also been shown that more Dutch SMEs use long-term financing compared to short-term financing. In contrast to Dutch SMEs, Song (2005) showed that Swedish SMEs use twice as much short-term borrowing in relation to long-term borrowing. He showed that leverage is positively related to size, growth and tangible assets and negatively to profitability. Buferna, Bangassa, and Hodgkinsin (2005) conducted a research on private companies in Libya. They showed that leverage is in a positive relationship to profitability and size, and in a negative one to growth and tangible assets.

Methodology

The research was conducted on a data sample of 500 SMEs in Croatia. According to the Croatian Accounting Act, a small enterprise has less than 50 employees and annual income or assets up to 10 million EUR. A medium enterprise has less than 250 employees and assets up to 50 million EUR. SMEs are chosen randomly from the total population of SMEs in Croatia.[2] Each firm is observed over a period between 2005 and 2011. Modelling was performed on unbalanced panel data. 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 every year submitted financial statements to the Financial Agency – FINA (in 2006 the number of observed SMEs was 386, in 2007, 447 SMEs in 2008, 425 SMEs in 2009, 380 SMEs in 2010, 366 SMEs and 352 SMEs in 2011). 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. In table 2 there are names, description and descriptive statistics of the variables used in the research. In our research four determinants of the capital structure are analysed: growth, size, profitability and tangible assets. Leverage is measured long term liabilities over assets.

Linear regression is applied on the panel data set. Influence of determinants on leverage is estimated by static panel model (Verbeek 2004), where static models with random effect estimation and with fixed effect estimation are used.

Static models are built on the fixed years without relying on a combination of regression in previous years.

TABLE 2 Descriptive Statistics of the Variables Used in the Research

Variable	Year	Mean	Std. dev.
Assets growth (percentage change in total assets compared to previous year)	2005	–	–
	2006	6.01	32.60
	2007	3.44	27.13
	2008	0.31	22.20
	2009	−4.34	19.41
	2010	−6.19	19.94
	2011	−8.20	20.19
Size (natural logarithm of sales)	2005	13.23	2.06
	2006	13.36	2.16
	2007	13.58	2.16
	2008	13.71	2.12
	2009	13.65	2.10
	2010	13.48	2.17
	2011	12.36	2.11
Profitability (ratio of EBITDA to assets)	2005	0.06	0.12
	2006	0.06	0.12
	2007	0.09	0.15
	2008	0.08	0.16
	2009	0.07	0.18
	2010	0.04	0.10
	2011	0.03	0.13

Continued on the next page

A model with fixed effect includes varying intercept while vector β is fixed:

$$y_{it} = \alpha_i + \gamma_t + x_{it}^T\beta + u_{it}. \quad (1)$$

In practice, it is very common to use a form in which only intercept for cases varies, so the above model can be written:

$$y_{it} = \alpha_i + x_{it}^T\beta + \varepsilon_{it}, \quad (2)$$

where i stands for the cases and index t for time periods, y_{it} is dependent variable, its value for i case in time period t, x_{it} is vector of independent variables dimension $K \times 1$, β is vector of estimated coefficients dimension

TABLE 2 *Continued from the previous page*

Variable	Year	Mean	Std. dev.
Tangible assets in total assets	2005	0.27	0.29
	2006	0.27	0.28
	2007	0.27	0.28
	2008	0.30	0.31
	2009	0.31	0.32
	2010	0.32	0.32
	2011	0.33	0.29
L1 = ratio of liabilities and assets (total liabilities/total assets)	2005	0.74	0.36
	2006	0.74	0.39
	2007	0.72	0.42
	2008	0.70	0.40
	2009	0.69	0.41
	2010	0.70	0.42
	2011	0.72	0.40
L2 = ratio of long term liabilities and assets (long term liabilities/total assets)	2005	0.06	0.12
	2006	0.13	0.26
	2007	0.13	0.25
	2008	0.13	0.27
	2009	0.13	0.26
	2010	0.13	0.24
	2011	0.14	0.26
L3 = ratio of short term liabilities and assets (short term liabilities/total assets)	2005	0.58	0.39
	2006	0.60	0.39
	2007	0.59	0.42
	2008	0.57	0.40
	2009	0.57	0.43
	2010	0.57	0.42
	2011	0.58	0.41

$K \times 1$, α_i is a random variable that describes the unobserved effect of i case, and ε_{it} is a random variable with expected value 0 and variance which represents the model error.

The random effect model can be presented with a formula (2) in the same way as the fixed effect model. Depending on how we look at i this

model will differ from the fixed effects model. The fixed effects model shows all the unobserved individual effects of specific random variable. If we have a random effects model, then all unobserved effects are described by independent and equally distributed random variables. Choosing between a model with fixed effects and a model with random effects was made after conducting the Hausman test which tests the null hypothesis that there is no correlation between individual effects and explanatory variables.

In the first part of our analysis each determinant is individually tested in a way that bivariate regression panel analysis is done with dependent variables L2 (long-term liabilities/total assets) and independent variables growth, size, profitability and share of tangible assets in total assets, each tested separately. After that, multivariate panel regression model is developed with the L2 as a dependent variable. In the process of model development 23 independent variables were analysed. Several models with different combination of variables with random as well as with fixed effect estimation were developed. Finally, the model with random effect estimation consisted of 6 variables was chosen.

Results

Descriptive statistics of the variables used in the research is presented in table 2. Figures 1–3 and 4–7 show trend of analysed variables for the period from 2005 to 2011. It can be seen that the mean leverage (total liabilities/total assets) of the analysed Croatian companies ranged from 0.72 to 0.74 indicating the high leverage of Croatian companies, regardless of the negative trend. This trend can be caused by reduction in lending to enterprise sector after the economic crisis since 2007. The same trend can be seen in growth and profitability as a result of deterioration of economic growth in the given period. The ratio of short-term liabilities in total liabilities of the company was around 58%, indicating a high short-term debt of Croatian SMEs.

The first hypothesis in the research is that growth is negatively related to leverage. In order to test the relationship between growth and leverage, bivariate panel regression with random effect is developed. Independent variable is 'growth' (percentage change in assets) and dependent variable is L2 (long-term liabilities/total assets). Estimated regression coefficient is 0.0002 with *p*-value 0.2243 showing that the relationship between long-term leverage and growth is positive but we didn't find it statistically significant.

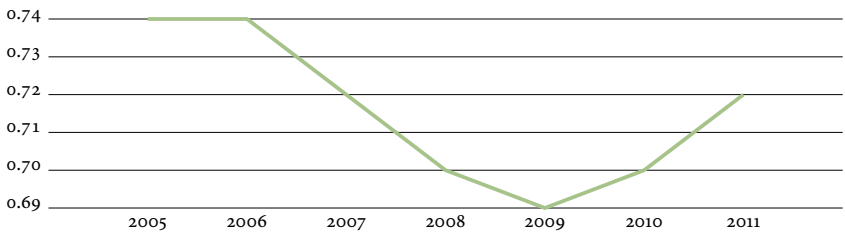

FIGURE 1 Leverage Ratios over the Period 2005–2011: Liabilities and Assets

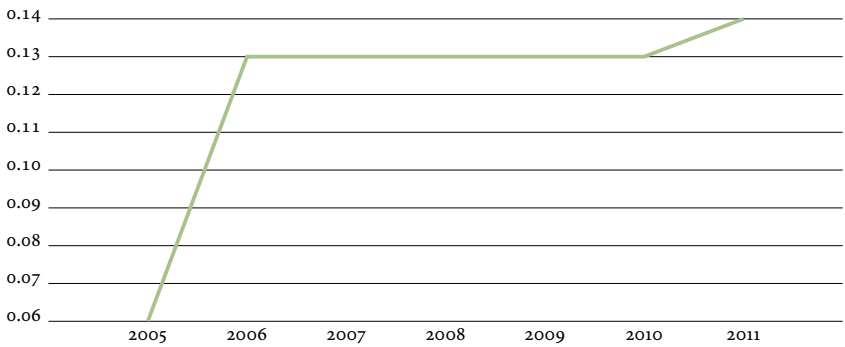

FIGURE 2 Leverage Ratios over the Period 2005–2011: Long Term Liabilities and Assets

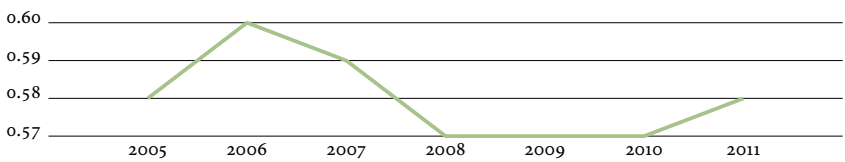

FIGURE 3 Leverage Ratios over the Period 2005–2011: Short Term Liabilities and Assets

The second hypothesis is that there is a negative relationship between size and leverage. In order to test the relationship, bivariate panel regression is developed with the size (sales revenue) as independent variable and L2 (long-term liabilities/total assets) as dependent variable. Random effect is applied for L2 (Hausman $p = 0.0675$). Estimated regression coefficient is 0.0089 with p-value < 0.0001 showing that the relationship between long-term leverage and size is positive and statistically significant. Results show that with the increase of the sales revenue, there is an increase in L2 (long term leverage).

The third hypothesis in our research is that profitability and leverage is negatively related. Bivariate panel regression with fixed effect es-

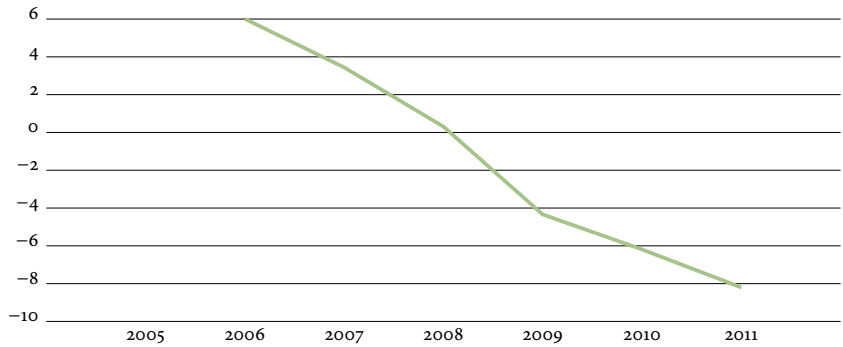

FIGURE 4 Capital Structure Determinants over the Period 2005–2011: Asset Growth

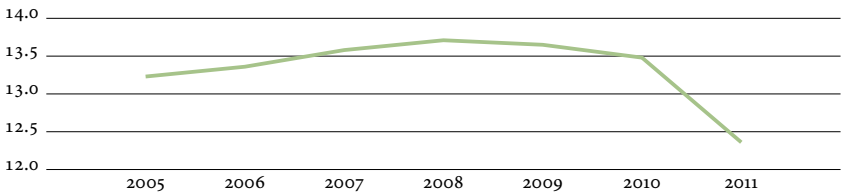

FIGURE 5 Capital Structure Determinants over the Period 2005–2011: Sales

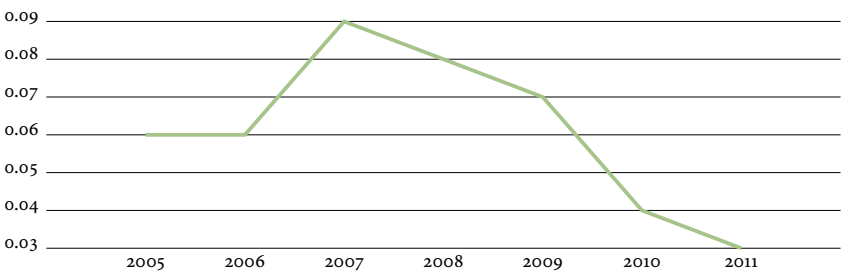

FIGURE 6 Capital Structure Determinants over the Period 2005–2011: Profitability

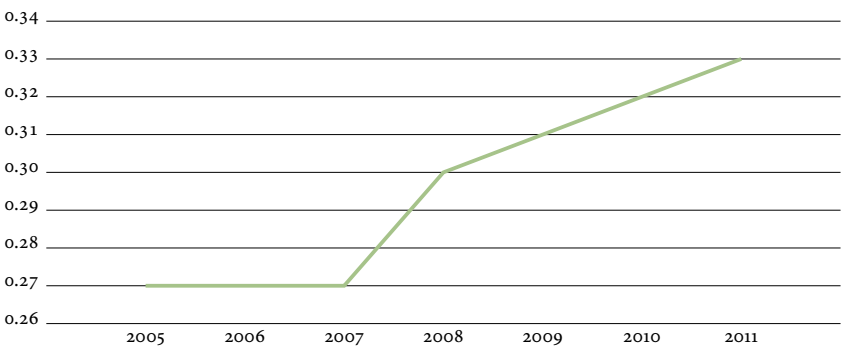

FIGURE 7 Capital Structure Determinants over the Period 2005–2011: Tangible Assets in Total Assets

timation is developed (Hausman test $p < 0.0001$). Dependent variable is L2 (long-term liabilities/total assets) and independent variable is ratio of EBITDA to assets. Estimated regression coefficient is –0.3865 with p-value < 0.0001 showing that the relationship between long-term leverage and profitability is statistically significant with the negative sign. It confirms the hypothesis that with the increase of EBITDA to assets there is the decrease of long-term leverage.

The forth hypothesis in the research is that there is a positive relationship between ratio of tangible assets in the total assets and leverage. In order to test the hypothesis, panel regression with fixed effect is developed (Hausman test $p < 0.0001$). The independent variable is 'tangible assets in total assets' and dependent variable is L2 (long-term liabilities/total assets). Estimated regression coefficient is 0.1153 with p-value < 0.0001 showing that the relationship between long-term leverage and tangible assets is positive and statistically significant. It can be confirmed that with the increase of tangible assets in the total assets there is the increase in the long-term leverage.

After examining each of the determinants individually, the next step in our analysis was to develop multivariate panel regression model. In the process of model development 22 independent variables were analysed: yearly percentage change in total assets, sales revenue, ratio of EBITDA to assets, tangible assets to total assets, amortization over assets, financial assets to short-term liabilities, current ratio, quick ratio, ratio of fixed assets to equity and long-term liabilities, total debt ratio, equity to assets ratio, debt-equity ratio, equity to tangible assets, equity and long-term liabilities over tangible assets, total asset turnover, fixed asset turnover, current asset turnover, receivables turnover, ratio of revenues and expenses, profit margin, return on assets and return on equity.

Different combinations of independent variables with random as well as with fixed effect estimation are tested. We wanted to explore which financial coefficients are significant in describing capital structure of the SMEs in Croatia. Since there were 22 financial ratios, we wanted to explore whether the financial ratios we set in our hypotheses will be extracted in the final model. The final multivariate panel regression model with random effect estimation consisted of 6 variables explaining a long-term liability to total assets was chosen. It is presented in table 3.

It can be noticed that the long-term leverage will be increased with the increase of the percentage of assets growth, sales revenue, ratio of tangible assets in total assets, ratio of amortization and total assets and ratio of

TABLE 3 Multivariate Panel Regression Model for L2 (Long-Term Liabilities/Total Assets)

Variable	Est. regression coeff.	*p*-value
Percentage of assets growth	0.00039	0.01236
EBITDA/assets	−0.06774	0.05605
Sales revenue	0.00262	0.01072
Tangible assets in total assets	0.23658	< 0.0001
Amortization over total assets	0.20971	0.0849
Financial assets/current liabilities	0.02538	0.00373

financial assets and current liabilities and with the decrease of the profitability measured with the ratio of EBITDA and assets. We consider four hypotheses on the determinants of growth, size, profitability and tangible assets over long term debt. Two of them related to profitability and tangible assets are confirmed and other two related to sales and growth are not confirmed. Concerning growth and leverage, we assumed that SMES that invest in their properties are financed from internally generated funds but the results showed that they rely more on long term financing than internally generated funds. The same is shown in the second hypothesis where we expected negative relationship between sales revenue and leverage but got positive.

Conclusion and Discussion

The aim of this research was to analyse the capital structure determinants of SMES in Croatia. Previous studies depending on the country where the research was conducted have shown a positive or a negative relationship between growth, size, profitability, tangible assets and capital structure.

These results confirm once again that there is no optimal capital structure because financial market conditions constantly change and vary from country to country. However, there are researches in which results are trying to bring the capital structure to the entrepreneurs who can identify deficiencies and advantages of certain ways of financing their enterprises.

The results of this research support the pecking order theory, confirming that SMES in Croatia are primarily financed from internally generated funds that affect profitability, growth, tangible assets and enterprise size. In accordance with the theory, more profitable SMES are less long term leveraged and more financed by internally generated funds.

They use retained earnings as the primary source of funding and thus reduce the level of borrowing. The same results are proven by Akdal (2010), Gaud et al. (2005), Deari and Deari (2009), Cole (2008.), Bas, Muradoglu, and Phylaktis (2009), Daskalakis and Psillaki (2008), Degryse, Goeij, and Kappert (2010) and Song (2005) while Buferna, Bangassa, and Hodgkinsin (2005) have shown positive relationship between profitability and leverage. Previous researches twofold interpret the influence of the growth to leverage.

Trade off theory predicts a negative relation between firm growth and leverage, like we did. SMES with the growth tendency have the lower leverage because they use free cash flow in their investments (negative relationship). By contrasts, the pecking order theory predicts positive relation between growth and leverage. SMES that generate additional investments opportunities will be funded through debt (positive relationship). Croatian SMES with tendency to growth increase long-term borrowing, meaning that internal funds are not sufficient for high growth enterprises, which increases their demand for long term debt.

Positive impact of growth to leverage is also confirmed by the results of Degryse, Goeij, and Kappert (2010) and Deari and Deari (2009). The relationship between size and long-term leverage is positive, as the trade off theory predicts. Most authors like Gaud et al. (2005), Buferna, Bangassa, and Hodgkinsin (2005) Psillaki and Daskalikis (2008) have shown that larger enterprises exhibit higher leverage. The value of tangible assets of the company is reflected in its role of collateral.

Results of this research are in accordance with the maturity matching principle that long term assets are financed with long term financing. It is proven that small and medium enterprises use their collateral to attract long term debt with relatively lower interest rates and costs of banks. These results confirmed that it is important to research the capital structure of SMES.

From our research it can be concluded that small and medium enterprises in Croatia use profit to reduce debt, use tangible assets as collateral in long term financing, and increase debt by increasing size and growth potential. In order to provide more financing opportunities for small and medium enterprises in Croatia, it is advisable for Croatia to provide the development of financial markets focusing on small and medium enterprises financial needs. As guidelines for further research, we suggest extensions of data series, including macroeconomic factors as new variables.

Notes

1 1 EUR = 7.5 kunas.

2 Financial Agency – FINA has made the data available for this research.

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