

CAPITAL STRUCTURE OF A COMPANY WITH A FOCUS ON INDUSTRY AFFILIATION: CASE OF CROATIA

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ABSTRACT

The purpose of this paper is to analyze capital structure of Croatian companies with a focus on their industry affiliation. Most of the empirical research is focused on determinants of capital structure such as firm size, profitability, growth rate, etc. Basically, they focus on internal characteristics of companies, neglecting other important variables. One of those less tested determinants is industry affiliation of the firm. According to some authors, industry affiliation undoubtedly affects financial decisions, it is therefore important to incorporate it in empirical analysis more often. With that aim, the authors analyze the differences and similarities in capital structures of Croatian companies regarding their industry affiliation. At the same time the relation between financial leverage on the one hand, and profitability, asset tangibility and firm size on the other hand will be tested, but also in terms of industry classification. Observation period is from year 2007 to 2012.

THEORETICAL AND EMPIRICAL RESEARCH REVIEW

Capital structure decisions are of the basis of a company's financial strategy and have crucial long-term implications for firm's value management. In order for company to evolve and survive in a given environment, understanding a firm's capital structure choice is the most important task for managers. Among other, this implies identifying the most important determinants of capital structure. A great deal of empirical research studies firm's characteristics such as asset structure, profitability, volatility, dividend policy, etc. as those of a major influence. It can be assumed that some of these characteristics arise from their industry affiliation. First, companies belonging to the same industry face the same economic conditions. Second, companies in the same industry are similar according to their asset structure, growth opportunities, business risk and other characteristics that may influence their financing decisions. Third, a relation can exist between the industry average debt ratio and firm's debt ratios due to the industry competition [3, p. 134]. Therefore, it can be assumed that firms belonging to the same industry are similar and have similar capital structures, and their capital structures are different than those of the firms belonging to other industries.

According to Frank and Goyal (2009), firms located in the same industry should have similar characteristics, for example the same asset structure, technology, growth possibilities etc., therefore they should obtain similar capital structure [2, p. 8]. Haris and Raviv (1991) note that Drugs, Instruments, Electronics and Food have low leverage whilst Paper, Textiles, Mill Products, Steel, Airlines and Cement have high leverage [6, p. 72]. They have reached the conclusion that it can generally be accepted

that firms in a given industry have similar proportions of individual assets and liabilities. This conclusion was based on the summarized findings of the four studies, Bowen, Daly and Huber (1982), Bradley, Jarrell and Kim (1984), Long and Matiz (1985) and Kester (1986), which have investigated leverage ratios for selected industries and found that specific industries have a common leverage ratio, relatively stable over time [4, p. 2]. One of the possible explanations is that managers use the median of industry's capital structure ratio as their firm's target capital structure ratio [2, p. 8]. In their study, Hovakimian, Opler and Titman (2001) have indeed confirmed that firms actively adjust their capital structure to the industrial average [5, p. 14, 17]. Similar, DeAngelo and Masulis (1980) note that company should search for optimal capital structure because adjusting firm's capital structure to the industrial average can increase a firm's value [1, p. 24].

CAPITAL STRUCTURE OF CROATIAN COMPANIES IN DIFFERENT INDUSTRIES

A. Data

Data for this research are taken from the Register of Annual Financial Reports which is kept by the Financial Agency (FINA) and from annual financial statements of corporations listed on the Zagreb Stock Exchange (ZSE), that are announced on ZSE web sites. It is the aggregated data of Croatian companies that are used in this descriptive analysis¹. The observed data are from the period 2007 - 2012.

B. Dependent and independent variables

In this analysis the dependent variable is financial leverage which is defined as the ratio of total debt to total capital. Total debt includes long-term and short-term financial debt (where non-financial liabilities are excluded, such as accounts payable, taxes payable, compensations and benefits ("wages payable") etc.). Total capital, the denominator of calculation in financial leverage, is equal to the sum of total debt and shareholder's equity. Since the market values of total debt and equity are not available, book values are used instead.

Three independent numerical variables are used in this analysis: asset structure, profitability and firm size. Tangibility or asset structure is one of the fundamental determinants of capital structure, so it was inevitable to use it in this analysis. As proposed and commonly used in other empirical research, tangibility of assets is approximated by proportion of long-term assets in the total assets of the firm. Second independent variable used in this research is the profitability of companies. The most common variable used for profitability is return on assets (ROA), i.e. ratio of earnings before interest and taxes (EBIT) to total assets, so the same measure is used in this paper. Companies are divided in groups of small and medium versus large companies according to Croatian Accounting Act². Given this classification, no approximation for firm size is necessary.

¹ Due to lack of individual companies data, aggregated data had to be used.

² To be a small entrepreneur, two of three conditions should be met: the value of total assets up to 32.5 million HRK (circa 4.3 million EUR), revenue up to 65 million HRK (circa 8.6 million EUR), number of employees up to 50. For a medium large entrepreneur, two of three previously mentioned criteria must be exceeded, but not more than 130 million HRK (circa 17.3 million EUR) of total asset, 260 million HRK (circa 34.6 million EUR) of revenues or 250 employees. Large entrepreneurs are those who exceed at least two of three criteria defined as upper limitations for medium sized entrepreneurs.

C. Results

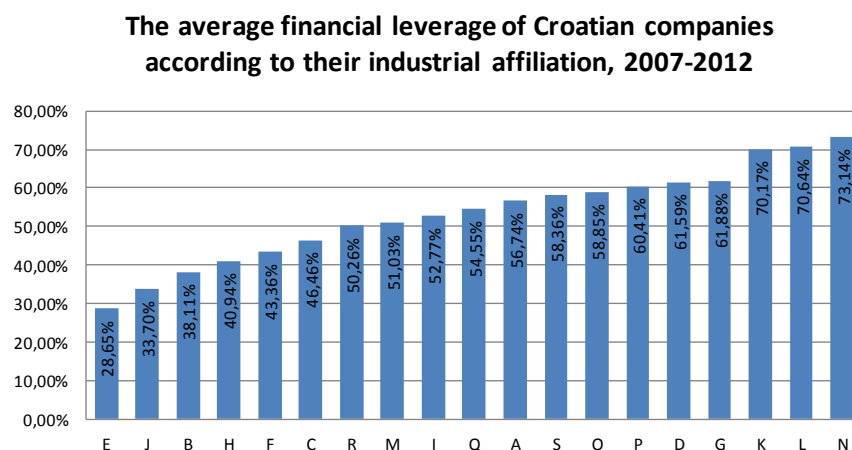
In order to study financial leverage of Croatian firms, descriptive analysis is used in this paper. The collected data are presented using tables and graphs in order to determine whether certain trends in financial leverage and correlation among the selected variables can be observed. This observation is conducted with a focus on industry affiliation of the companies. Industry classification is made according to the Croatian National Classification of Activities, 2007 version. Used labels of industry classification are presented in Table 1.

Table 1: Industry classification labels, National Classification of Activities, 2007 version

Label	Industry affiliation	Label	Industry affiliation
A	Agriculture, forestry and fishing industry	K	Financial intermediation and other financial services
B	Mining and quarrying industry	L	Real estate activities
C	Manufacturing / processing industry	M	Professional, scientific and technical activities
D	Gas and electricity	N	Administrative and support service activities
E	Water supply	O	Public administration and defense
F	Construction industry	P	Education
G	Trade (retail and wholesale)	Q	Health and social welfare
H	Transport and storage	R	Arts, entertainment and recreation
I	Services (e.g. tourism and catering industry)	S	Other service activities
J	Information technology and communications		

Figure 1 depicts the average financial leverage of Croatian companies according to their industrial affiliation in the 6-years observed period. As shown, the highest financial leverage can be found in K – Financial activities, L – Real estate activities, and N – Administration. Their average share of debt in total capital exceeds 70%, which can be recognized as an intensive use of debt. On the other hand, the lowest shares of debt in capital structure have E – Water supply, J – Information and communication, and B – Mining and quarrying industry, under 40%.

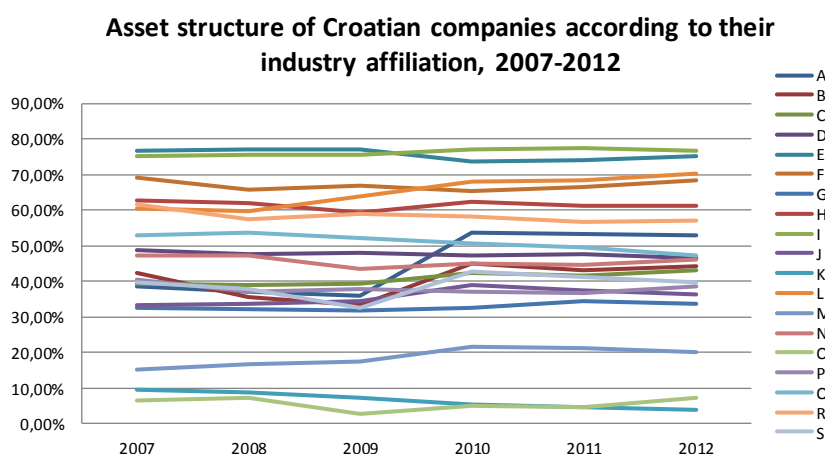
Figure 1: The average financial leverage of Croatian companies according to their industrial affiliation in the period 2007– 2012.



It is important to point out that during the observed period, financial leverage of almost each industry is increasing³, causing aggregate financial leverage of Croatian companies to grow.

According to the theory, the relation between asset structure and financial leverage should be positive because higher share of long-term material assets allows firms to have higher levels of financial leverage since this asset category is more convenient for collateralization. Figure 2 presents trends in the asset structure of companies operating in different industries. As it can be seen, the following industries have the highest share of long-term assets in total assets in 2012: I - Services (e.g. tourism and catering industry) (76,69%), E - Water supply (75,04%), L – Real estate activities (70,08%) and F - Construction industry (68,52%). Taking into account characteristics of their business activities, it is not surprising that these industries have high shares of long-term material assets. As the theory predicts, these industries are expected to have higher levels of financial leverage. However, these expectations are not confirmed on the basis of aggregate data of Croatian companies⁴. Better insight into relation between asset structure and financial leverage should be searched for on the basis of individual data of companies. Namely, some industries do not have a need for large amounts of long-term material assets, yet have a high financial leverage (e.g. Financial intermediation and other financial utilities). However, if the trends of asset structure and financial leverage are compared, it can be seen that positive relation between these variables can be assumed⁵. In the period 2007-2012, as the share of long-term material assets in total assets is increasing, the financial leverage is also increasing⁶. This is more obvious if the financial leverage is calculated as long-term debt to total capital⁷. Potential explanation lays in the fact that higher amounts of long-term material assets are more necessary for long-term debt financing than for short-term debt financing.

Figure 2: Trends in the asset structure of Croatian companies according to their industry affiliation in the period 2007-2012.



³ Due to the size of the figure presenting movement of financial leverage, the same could not be displayed. Available on request.

⁴ Except for L – Real estate activities.

⁵ Although more detailed analysis is necessary.

⁶ Due to the size of the figure presenting movement of company's long-term material asset, the same could not be displayed. Available on request.

⁷ Instead of total (long- and short-term) financial debt to total capital.

In the next step, Croatian companies are divided into two groups: small and medium sized vs. large companies. Financial leverages of companies in different groups are analyzed according to their industry affiliation. It can be seen that the financial leverages of Croatian small and medium sized companies are higher than those of large companies, for most industries. Also, trends of financial leverages between these groups are quite different. In the observed period the financial leverage of small and medium sized companies is increasing, while financial leverage of large companies is stagnating and even decreasing in the last three years. The highest increases in financial leverage in the 6-years period have small and medium-sized companies in O – Public administration and defense (from 32,44% in 2007 to 87,94% in 2012), K – Financial intermediation and other financial services (from 47,33% in 2007 to 94,15% in 2012) and D – Gas and electricity (from 45,59% in 2007 to 68,61% in 2012).

These trends in financial leverage of Croatian companies are quite more understandable when compared with the trends in their profitability (Table 2). Namely, during the observed period their profitability is sharply decreasing⁸, recording zero or negative returns on asset (ROA), with exception of the Manufacturing / processing industry –C (from 0,98% in 2007 to 3,35% in 2012). At the same time, as previously stated, their financial leverage is increasing, which suggests negative relation between these variables. Also, companies in industries with negative profitability mostly have higher shares of debt in their capital structure, above 50%. Industries with the lowest profitability in the observed period, K - Financial intermediation and other financial services (-3,28%), L - Real estate activities (-2,65%), and N - Administrative and support service activities (-2,23%), have the highest financial leverage: 70,17%, 70,64%, 73,14%. When classified by size, small and medium-sized companies of most (18 out of 19) industries record continuous decline in profitability, which is not the case with large companies.

Table 2: Average return on asset (ROA) of small and medium-sized (SME) and large (LE) companies according to their industry affiliation in the period 2007-2012.

	SME	LE		SME	LE
A	-1,50%	-2,43%	J	1,91%	9,14%
B	-0,12%	2,35%	K	-4,99%	-1,18%
C	-0,31%	1,03%	L	-3,01%	-1,96%
D	-0,98%	0,27%	M	1,35%	-2,89%
E	-0,55%	0,40%	N	-1,52%	-14,65%
F	-1,11%	-0,49%	O	8,25%	16,67%
G	0,22%	-0,46%	Q	7,51%	1,41%
H	-0,37%	-1,00%	R	-4,11%	7,64%
I	-3,46%	-0,33%			

CONCLUSION

The aim of this paper is to identify similarities and differences in financial leverage of companies according to their industry affiliation. It seems that financial leverage of each industry is a result of both, industry characteristics and their profitability. It is understandable that some industries demand higher

⁸ Due to the size of the figure presenting movement of company's profitability, the same could not be displayed. Available on request.

shares of debt in their capital structures (e.g. Financial intermediation and other financial utilities), but it can be assumed that most of the observed financial leverages of industries are mostly results of their low and negative profitability. As the pecking order theory suggests, capital structure is just a reflection of company's needs for financial funds. The observed time period, 2007-2012, covers the time of financial crisis, when needs for financial funds are even more emphasized. In order to maintain everyday business operations, it is assumed that Croatian companies had to increase debt financing to compensate for the lack of internal funds due to the sharp downfall of their business activity.

Better insight into this topic can be made on the basis of individual company's data, which was unavailable at the moment of this research. Since most of research on capital structure was conducted on companies in developed countries, mostly USA, this paper can be seen as a good contribution to the scarce empirical research in developing countries. Through more detailed research it may be possible to clarify whether the assumptions outlined in this paper can be confirmed or refuted.

REFERENCES

- [1] DeAngelo, H., & Masulis, R. Optimal Capital Structure under Corporate and Personal Taxation. *Journal of Financial Economics*, 1980, 8, 3-29.
- [2] Frank, M.Z., & Goyal, V.K. Capital Structure Decisions: Which Factors are Reliably Important? *MPRA Paper No. 22525*, 2009, 1-37.
- [3] Freydenberg, S. Capital Structure Theories and Empirical Tests: An Overview. In Baker, H.K., & Martin, G.S. (eds). *Capital Structure and Corporate Financing Theory. Evidence and Practice*. Wiley, 2011.
- [4] Hatfield, G.B., Cheng, L.T.W., & Davidson, W.N. The Determination of Optimal Capital Structure: The Effect of Firm and Industry Debt Ratios on Market Value. *Journal of Financial and Strategic Decisions*, 1994, 7 (3), 1-14.
- [5] Hovakimian, A., Opler, T., & Titman, S. The Debt - Equity Choice. *Journal of Financial and Quantitative Analysis*, 2001, 36, 1-24.
- [6] Prasad, S., Green, C.J., & Murinde, V. *Company Financing, Capital Structure, and Ownership: A Survey, and Implications for Developing Economics*. Suerf Studies, no.12, 2001, 1-104.