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CAPITAL STRUCTURE AND COMPANY PERFORMANCE: EVIDENCE FROM SERBIAN MANUFACTURING LISTED COMPANIES

Abstract: The study includes an examination of the effects of capital structure indicators, mainly indebtedness, on the company's financial performance. Companies from the manufacturing sector are listed on the Belgrade Stock Exchange as part of the BelexLine stock market index and covering the period from 2006. to 2022. were used as a sample. Indicators of return on assets (Roa) and return on capital (Roe) were selected as dependent variables. In the case of independent variables that present the capital structure, indicators of short-term, long-term, and total debt were used. Size and age variables were also used in the study. The results indicated a negative effect of total and short-term debt on the performance of manufacturing companies, while the indicator of long-term debt indicated a positive effect. The findings serve as a complement to the existing literature on the topic of capital structure, as well as to support financial management in better understanding the effects of indebtedness on the profitability of companies.

Keywords: Profitability, capital structure, panel data

1. INTRODUCTION

Financial specialists, researchers, the general public, and company management have all expressed a great deal of interest in, and attention to, the financial performance of businesses. The financial decisions made by management are critical in defining the ideal capital structure. Profits show how well management is performing with finance and investment choices more than any other accounting metric. According to Batchimeg (2017), profitability ratios assess how well a company's management is making money off of sales, total assets, and—above all—stockholder investment. Company management is responsible for determining the optimal capital structure to maximize value. By raising the market price of shares and lowering the total cost of capital, businesses maximize shareholder value, which is one of the most important goals of management (Hassan, et. al., 2022). Companies vary in their amount of leverage, and managers aim to reach the optimal capital structure. Capital structure is a crucial aspect affecting a company's success. Several empirical studies have shown varied results regarding the relationship between company performance and capital structure. Profitability, dividend growth, sales turnover, asset base, and capital utilization are a few ways to evaluate a company's financial success. Nonetheless, there is ongoing discussion across a number of fields about how best to gauge a company's performance and the main indicators influencing it (Omondi & Muturi, 2013). From the standpoint of an investor, profitability is a valuable metric for assessing a company's prospects for the future, and it is crucial to observe in order to determine the amount of profit investors receive from their investment. According to signal theory, a

high degree of profitability combined with the potential for a sizable company encourages investors to invest in the business. Financial backers view the growing interest from stock investors as an indication of improved business execution, which in turn contributes to the construction of expanded profitability over time (Sihombing, et. al., 2023). Given that a company's profitability is one of its primary goals, it is clear why factors influencing a company's profitability have drawn the attention of academic researchers. The main focus of this study is to investigate the nature of the relationship between capital structure indicators and company performance and confirm the majority of previous findings in this field indicating a negative connection. Businesses record higher profits when they are performing well in order to cover their expenses. Therefore, businesses should have a good operational capability as long as borrowed funds are limited to a low percentage of capital and earnings are high. Furthermore, a corporation will perform better the more efficiently its assets are managed (Vătavu, S., 2014). Examining a company's financial performance determinants is crucial, however since each sector operates and has unique characteristics, it is difficult for all sectors to have the same determinants. The subject of this study is the companies listed on the Belgrade stock exchange that belong to the manufacturing sector. The return on investment is extremely significant to investors, and a successful company may provide them with substantial, long-term profits. Additionally, a company's financial success will increase its employees' pay which further shows the importance of managing the tracking of company performance (Mirza & Javed, 2013).

The study is based on the use of independent variables of corporate capital such as short-term and long-term debt on profitability along with micro-indicators of company size and age. The study is divided into four main parts. In the first part of the study, an introduction to the theoretical part of the study is covered, along with a review of the literature, i.e. previous sites from this area. The second part of the study includes the definition and review of the methodology that will be applied in the empirical part of the study. In the third part of the study, the authors present the main findings, comment on the results, and compare them with previous findings from the area. The fourth and last part of the study includes concluding remarks, where a brief overview of the main limitations of the study and suggestions for further types of research are made.

2. LITERATURE REVIEW

Salim, & Yadav, (2012) revealed in their study covering the Malaysian listed companies that company performance measured by return of assets and return on equity had a negative relationship with short-term and long-term debt indicators. Studies such as (Habini et al. 2022; Huong, 202; Ilie & Vasiu, 2022) examined the impact of the debt ratio on profitability ratios, including total liabilities to total assets and total equity to total assets. It was demonstrated that the leverage ratio significantly affected the return on assets ratio but less so for the return on equity, which is also reflected in the main studies of this particular study. According to the findings of Putra et al.'s (2021) study on Indonesian manufacturing enterprises, profitability was significantly impacted by business risk, company size, and asset structure, whereas capital structure was not significantly impacted by profitability. The impact of firm size, asset structure, and business risk on capital structure cannot be mitigated by profitability. Omondi & Muturi's (2013) examination of companies listed on the Nairobi stock exchange found that while company size significantly improved financial performance, it might have the opposite impact for too-large enterprises. Additionally, it confirmed that financial performance was significantly impacted negatively by leverage. The study's findings provided convincing evidence that a company's financial performance deteriorates and its risk of bankruptcy rises when its debt load exceeds an optimal level. Lastly, the study found that a company's age significantly improves its financial success. Also on the other hand the research investigation was conducted on the corporate capital structure stability of Chinese Stock Exchange-listed enterprises between 1990 and 2013. According to the results capital structure is significantly impacted by size, profitability, and investment prospects, but not by the tangibility of assets (Kyissima et al. 2019). The findings of Dalci's (2018) study of Chinese manufacturing companies showed that leverage had an inverted U-shaped effect on profitability. It was concluded that the tax shield may be the reason for the positive effect of financial leverage on profitability in this inverted U-shaped relationship, while the listed Chinese company's levels of financial distress, bankruptcy costs, serious agency issues, and information asymmetry may be the cause of the negative effect.

The findings of the regression study of US telecom businesses showed that although the ratio of total equity to assets had a substantial and positive influence on ROA, the ratio of total debt had a large and negative impact (Habibniya, et al., 2022). From the findings of previous studies, the numerous effects of profitability on other indicators as well as the effect of those indicators on profitability can be seen. In the example of a study by Sihombing, et. al., (2023) researching companies on the Indonesian stock exchange, it was discovered that while capital structure has a major impact on business value, liquidity and profitability have little effect. The link between profitability and company value is moderated by commodity prices, but not by liquidity or capital structure. These findings point to the importance of examining the profitability of companies in order to identify their sensitivity to the influence of other indicators.

In their research on the Croatian food and beverage sector, Pervan & Mlikota (2013) found that a negative sign for the debt ratio variable means that a large debt load brought on by high-interest payments has resulted in subpar business outcomes and low profitability. However, it was found that a firm's size had a favorable impact on its profitability, which was attributed to larger organizations' efficiency. According to the estimation findings of research by Soni, Arora & Le (2022), age, foreign earnings intensity, liquidity, and net asset turnover all significantly and favorably affect

profitability. On the other hand, company performance has been adversely affected by solvency and size. According to Batchimeg's (2017) results, the return on assets indicator had more determinants than the return on equity, including earnings per share and return on costs, which had positive effects. In contrast, the ratio of short-term debt to total assets and the cost-to-revenue ratio had negative effects. The empirical findings of the study by Opoku-Asante, et. al., (2022) researching the companies from Ghana and Nigeria suggested the presence of a significant negative relationship between capital structure and financial performance. The findings of Mirza & Javed (2013) demonstrated that ownership structure, risk management, and economic factors significantly influence how well Pakistani businesses perform financially. In the case of the age of companies, Loderer et al, (2009), discovered the presence of a positive and significant relationship between the age of a company and its financial performance proving that being older may make businesses more productive. However, Agarwal & Gort, (2002), pointed out that aging can also lead to organizational disintegration and render knowledge, skills, and talents outdated.

3. METHODOLOGY AND DATA

This study includes an analysis of 8 companies listed on the Belgrade Stock Exchange within the manufacturing sector of the Republic of Serbia. The companies are listed on the reference stock index BelexLine. The analysis period from 2007 to 2022 was used in this analysis and includes the relevant time period for implementing an adequate regression model. The data included are panel data, while the study itself includes 135 observations. The authors of the study employ indicators of return on assets (ROA) and return on capital (ROE) as interpreters of profitability, i.e. financial performance of companies as dependent variables, while independent variables are indicators of capital structure together with the age and size of companies. Indicators of the company's capital structure are represented by the variables of total (TD), short-term (SD), and long-term debt (LD). Indicators of age (LnAge) and size (LnSize) are also employed. The table below shows an overview of the main variables as well as their method of calculation.

Table 1: Used variables

Variable	Measure	Symbol
Dependant variables		
Return on assets	Total debt / Total assets	ROA
Return on equity	Total debt / Total assets	ROE
Independent variables		
Short-term debt	Short-term debt / Total assets	SD
Long-term debt	Long-term debt / Total assets	LD
Age	The Logarithm of Age of Company	LnAge
Size	The logarithm of the size of the company	LnSize

Source: authors

Based on defined segmentation criteria as well as dependent and independent variables, the authors generated the following equations:

$$ROA_{it} = \alpha + \beta_1 SD_{it} + \beta_2 LD_{it} + \beta_3 SIZE_{it} + \beta_4 AGE_{it} + \varepsilon \qquad (1)$$

$$ROE_{it} = \alpha + \beta_1 SD_{it} + \beta_2 LD_{it} + \beta_3 SIZE_{it} + \beta_4 AGE_{it} + \varepsilon \qquad (2)$$

Where are:

ROAtit = Return on assets ratio for the company I in time period t
ROEtit = Return on equity ratio for the company I in time period t
SDit = Short-term debt to assets ratio for the company I in time period t
LDit= Long-term debt to assets ratio for the company I in time period t
LnAgeit = Age of companies I in time period t
LnSizeit = Size of companies I in time period t

Table 2: Descriptive statistics

	ROA	ROE	SD	LD	LNAGE	LNSIZE
Mean	0,035457	0,024573	0,357836	0,061232	3,600538	6,177141
Median	0,022545	0,056150	0,349000	0,015136	3,761200	6,342304
Max	0,268470	2,086700	0,996592	0,354000	4,343805	7,217814
Min	-0,242500	-2,853100	0,004000	0,000000	1,386294	5,041180
Std. Dev.	0,076310	0,410058	0,237068	0,092503	0,575885	0,517074
Obs.	136	136	136	136	136	136

Source: authors

In the table above the descriptive statistics of the used variables are shown. In the case of dependant variables, the indicators of return of assets showed a lower level of standard deviation compared to the return of equity indicators. This represents the presence of more volatility in the case of the return of equity variable. As per capital structure indicators. The short-term debt variable showed more volatility compared to long-term debt while also showing more of an overall presence in the debt financing structure of observed companies. In the case of long-term debt, it can be observed that the minimum value is equal to 0 which indicates that some companies in the sample did not use long-term debt as a financing option. In the case of age, the average age of companies exceeds the 30-year mark and the standard deviation indicators do not show a high level of volatility in the sample of companies used. Also observing the standard deviation of the size indicator, similar to age, it did not show a significant volatility in the sample of companies. The picture below shows the median values of the dependent variables of return on assets and return on equity. The red line represents Roa while the blue represents the Roe. It can be observed that the profitability of observed companies increased after the recession of 2008. and also decreased significantly during the COVID-19 pandemic period.
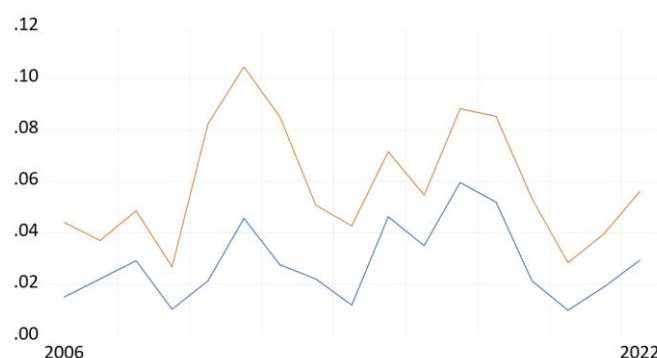
Picture 1: Median of dependent variables
Source: authors

4. MAIN FINDINGS AND DISCUSSION

To demonstrate the lack of multicollinearity and stationarity, the authors first provide the findings of correlation and unit root tests in this portion of the research. The authors established the lack of multicollinearity along the correlation matrix using the Variance inflation factor test. The outcomes of many panel unit root tests, including the Levin, Lin & Chu, Im, Pesaran & Shin, and Augmented Dickey-Fuller tests, are displayed in the table below. The presented coefficients indicate the presence of stationarity at a level for variables, return on equity, long-term debt, and age while, return on assets, short-term debt, and size after the 1st differentiation. The correlation matrix and variance inflation factors both indicate the absence of multicollinearity from these models.

Table 3: Correlation

	ROA	ROE	SD	LD	LNAGE	LNSIZE
ROA	1,000000	0,444975	-0,525895	0,004907	0,445634	0,006749
ROE	0,444975	1,000000	-0,365853	-0,049345	0,382273	0,135458
SD	-0,525895	-0,365853	1,000000	0,162755	-0,718091	-0,150956
LD	0,004907	-0,049345	0,162755	1,000000	-0,141235	0,353162
LNAGE	0,445634	0,382273	-0,718091	-0,141235	1,000000	0,264511
LNSIZE	0,006749	0,135458	-0,150956	0,353162	0,264511	1,000000
Average VIF	**1,7062**					

Table 4: Unit root tests

	Levin-Lin & Chu		Im, Pesaran & Shin		ADF	
Variables	Level	1st	Level	1st	Level	1st
ROA	-1,1185 (0,1317)	-3,8099 (0,0001)	-2,1824 (0,0145)	-5,7003 (0,0000)	29,43 (0,0212)	63,38 (0,0000)
ROE	-1,7192 (0,0428)	-4,5212 (0,0000)	-2,5618 (0,0052)	-6,2787 (0,0000)	33,60 (0,0061)	70,16 (0,0000)
SD	0,6655 (0,7471)	-4,2613 (0,0000)	-0,2532 (0,4001)	-5,7503 (0,0000)	15,0995 (0,5174)	62,0368 (0,0000)
LD	-2,5992 (0,0047)	-8,8616 (0,0000)	-1,7794 (0,0376)	-7,1928 (0,0000)	24,5643 (0,0391)	71,6167 (0,0000)
LNAGE	-24,5487 (0,0000)	-22,9722 (0,0000)	-160,453 (0,0000)	-150,959 (0,0000)	147,559 (0,0000)	147,365 (0,0000)
LNSIZE	-0,4857 (0,3136)	-2,8042 (0,0025)	2,0095 (0,9778)	-4,6170 (0,0000)	10,5743 (0,8350)	50,8243 (0,0000)

The table below provides an overview of the regression model results. The table also shows the results of diagnostic tests such as the Breuch-pagan and Pesaran CD tests. These tests were conducted to establish the adequacy of the panel regression model. The results of the Breuch-Pagan test indicate the presence of heteroscedasticity in the case of both models, while the Pesaran CD test indicates the presence of cross-sectional dependence in the first model where the dependent variable is return on assets, while in the case of the second model of return on capital cross-sectional dependence is not present. Based on the results of these diagnostic tests, the authors decided to apply the generalized least squares (GLS) model precisely because of its nature as a more adequate interpretation of the model where heteroscedasticity and cross-sectional dependence are present. As for the regression model, the first model indicates a statistically significant influence of all used independent variables, while in the case of the second model, the effect of only two variables is present. Short-term debt showed a negative effect in the case of return on assets and return on capital similar to Salim, & Yadav, (2012). In the case of the first model, statistical significance is present with 1% significance, while in the case of the second model with 10% significance.

The negative effect of the short-term debt indicator indicates that the companies in the sample, in case of an increase in the level of short-term debt in the capital structure, actually reduce the level of profitability of the business itself, similar to Omondi & Muturi (2013). In the case of long-term debt, statistical significance is present only in the case of the first model where the effect is positive, which is contrary to the findings of the effect of short-term debt. The age variable, similar to the short-term debt, showed a statistically significant and positive effect in the case of both models, implying that the older the company, the higher the level of profitability of the company over time. The size indicator showed a negative and statistically significant effect in the case of the first model, contrary to Omondi & Muturi's (2013) and Pervan & Mlikota (2013), which points to the conclusion that companies when increasing their assets and growth, reduce the level of profitability. The negative effect of short-term debt combined with the negative effect of size on the return on assets as a representative of profitability leads to the conclusion that most of the companies in the sample use short-term debt for the sake of their growth, i.e. increasing their assets, and at the same time negatively affect their profitability.

Table 5: Regression results

Variable	ROA		ROE	
			Coefficient	Prob.
SD	-0,1391	0,0001	-0,3323	0,0978
LD	0,1354	0,0425	-0,0062	0,9875
LNAGE	0,0270	0,0605	0,1653	0,0531
LNSIZE	-0,0251	0,0399	0,0361	0,6164
C	0,1351	0,1094	-0,6744	0,1781
R-squared	0,3176	0,0355	0,1652	0,0246
Adjusted R-squared	0,2968	0,0763	0,1397	0,4101
F-statistic	15,2443	1,1246	6,4827	1,7697
Prob(F-statistic)	0,0000		0,0001	
Breusch-Pagan test	48,85	0,0087	39,7	0,0703
Pesaran CD test	35,05	0,0000	170,33	0,0000

Source: authors

5. CONCLUSION

The results of this study indicated the presence of a statistically significant effect of capital structure indicators on profitability indicators. In the case of ROA, the effect of short-term debt (SD) is negative, where a 1% increase in debt indicates a -0.14% decrease, while in the case of long-term debt (LD), a 1% increase indicates a 0.13% increase. In the case of return on capital (ROE), only the indicator of short-term debt (SD) showed a statistically significant negative effect, where an increase of 1% causes a decrease of 0.33%. In addition to capital structure indicators, size (LNSIZE) and age (LNAGE) indicators were used. In the case of return on assets (ROA), both indicators indicated a significant effect. In the case of age, the effect is positive where a 1% increase causes a 0.03% increase while in the case of size (LNSIZE) a 1% increase causes a 0.025% decrease. In the case of return on capital (ROE), only the age indicator (LNAGE) showed a statistically significant and positive effect, where a 1% increase causes a 0.16% increase. The negative effect of short-term debt on profitability is in agreement with most of the previous findings from the area where the postulates of the trade-off theory are supported, which states that companies balance the benefits and costs of debt when deciding on the capital structure. Although debt can bring tax benefits, over-reliance on short-term debt can increase financial risk and refinancing costs, which negatively affects profitability. For legislators, investors, and business stakeholders attempting to negotiate the intricacies of financial decision-making in the manufacturing industry, these results offer insightful information. In order to get a more thorough knowledge of the financial dynamics within the Serbian manufacturing sector, future studies might examine the effects of regulatory frameworks on debt dynamics or go further into certain industrial segments. Additional study limitations include the assessment of a single nation's industrial sector and the usage of just eight enterprises in the sample. Research on the manufacturing industries of many nations for comparative analysis and the inclusion of more businesses in the sample are suggestions for future studies.

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