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The Relationship Between Company Performance and Company Size as a Moderator in the Republic of Serbia

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Abstract:

Research Question: This study examines the relationship between corporate debt and profitability, with a particular focus on the moderating effect of firm size. Motivation: The relationship between corporate debt and profitability has long been a subject of interest in both economic theory and empirical research. However, existing findings are often contradictory, particularly within the context of developing economies such as Serbia, where institutional, financial, and market structures may diverge significantly from those in more advanced economies. Understanding this relationship is crucial, as it directly impacts firms' financial stability, investment decisions, and long-term competitiveness. In economies in transition, where access to capital is often limited and financial risks are elevated, identifying how leverage affects profitability—and under what conditions—can provide valuable insights for both corporate managers and policymakers. This study seeks to address this gap by examining the extent to which firm size influences the debt-profitability nexus, with a focus on whether larger firms possess higher capacity to absorb the risks and costs associated with leverage. Conceptual Framework: Profitability is the dependent variable and is measured by return on assets (ROA), defined as the ratio of net income to total assets. The main independent variable is corporate debt, measured as the ratio of total debt to total assets. Firm size (SIZE) is represented by the natural logarithm of total assets, while firm age and sales growth are included as control variables. Data: The research was conducted on a sample of companies operating within the territory of the Republic of Serbia, selected from the list of the most successful companies in 2023. The analysis covers the period from 2019 to 2023. After excluding certain firms from the sample, the final analysis was performed on 97 companies. Methods: Following descriptive statistics, correlation analysis was applied to determine relationships between variables. Two models were specified: one without interaction terms and one with interaction terms. For both models, panel regression analysis and fixed effects model (FEM) analysis were performed. Findings: Results from the model without interaction terms indicate that corporate debt has a significant negative impact on profitability within the examined sample. Although companies with higher asset values generally achieve higher ROA, an increase in firm size can have an adverse effect on profitability. The interaction model shows that firm size acts as a moderating factor in the relationship between debt and profitability. Contribution: The key contribution of this research lies in the introduction of firm size as a moderating variable in a panel regression framework—an approach that provides a more nuanced understanding of the interdependencies among financial indicators. By shedding light on these dynamics, the study offers practical implications for optimizing capital structure decisions and enhancing financial performance in developing economies.

Key words: performance, profitability, debt, company size, revenue growth rate

JEL Classification: M41

1. Introduction

A company's capital structure refers to the relationship between debt and equity, or between borrowed and owned sources of financing. Establishing an adequate and balanced relationship between debt and equity can influence the health of the company and its value. If this relationship is disrupted, i.e., if there is more borrowed than owned capital, it leads to financial difficulties and to inability to finance regular business activities.

The Modigliani–Miller (MM) theory operates under the premise of a perfectly efficient market, characterized by the absence of information asymmetry, transaction costs, taxes, and bankruptcy risks (Ahmed et al., 2023). Based on this framework, the theory argues that there is no optimal capital structure for firms. Subsequently, Modigliani and Miller introduced the trade-off model, which assumes a tax-free environment. Companies prefer to borrow externally rather than issuing stocks when the benefit of debt, in terms of reducing interest costs before calculating income tax, exceeds the marginal cost of borrowing. In this way, companies establish an optimal capital structure based on a comparison of the tax benefits of borrowing and the costs of debt. Careful and moderate borrowing is essential to prevent the company from limiting its potential for growth and development. On the other hand, companies that finance their assets through borrowing have greater value than those that do not.

Conversely, Myers & Majluf (1984) propose that firms adopt a hierarchical strategy when sourcing funds to meet their capital requirements and enhance profitability. According to their pecking order theory, companies are advised to prioritize the use of retained earnings for financing their operations, as this approach poses the least risk to ongoing business activities. The next option for managers should be borrowing, and as a last resort, issuing and offering new shares or equity should be considered. In this regard, profitability negatively depends on leverage, which has been confirmed in the studies by Vo & Ellis (2017) and Sdiq & Abdullah (2022).

This research intends to analyze how profitability relates to capital structure, considering the influence of company size. Specifically, the study explores whether company size moderates the connection between leverage and profitability. The research focuses on a sample of firms operating within the Republic of Serbia, a country with a post-socialist economic background. Companies in Serbia, as a developing country, face numerous challenges in their operations and have limited opportunities for expanding their business into international markets.

Based on the defined problem, the paper is organized in such a way that after the introduction, a theoretical overview is provided, including a review of the existing literature on the examined problem. Based on this, the research hypothesis is defined. The second section describes the methodology adopted in this study, followed by the presentation and discussion of the findings. The paper concludes with the summary of key conclusions derived from the study.

2. Literature Review

Abbasi & Malik (2015) conducted a study to identify whether the company size can be a moderator of the relationship between company growth (measured as the logarithm of the increase in fixed assets) and profitability. Such analysis was conducted on 50 publicly listed companies. They conclude that company size does have a moderating effect on the relationship between the company growth and profitability.

Vithessonthi & Tongurai (2015) investigated how company size plays a role in determining the relationship between leverage and profitability, focusing on the global financial crisis period from 2007 to 2009 in Thai companies. They conducted three separate panel analyses using the full sample, small firms, and large firms. Their results indicated that leverage had a positive impact on profitability for small firms, whereas for large firms, the effect was negative.

Astuti (2021) examined the imluence of company size and leverage on ROA. He conducted his study on food and beverage industry companies during the period 2016-2019. The results reveal that company size has a positive and significant impact on profitability. The same situation is with leverage.

Similar results were obtained by Dogan (2013). He conducted the research on a sample of 200 companies between 2008 and 2011. First, company size and profitability are positivly related. However, when leverage and company age were included as control variables in the model, the association between company size and profitability turned negative.

Ochieng'Wayongah & Mule (2019) investigated the relationship between company size, leverage, and profitability in non-financial companies listed on the Nairobi Securities Exchange during the period from 2012 to 2018. Their research found that company size negatively moderated the relationship between leverage and profitability. Negative relationship between this variable was also found in the studies by Alipour et al. (2015), Ibhagui & Olokoyo (2018), and Kayo & Kimura (2011). A factor that affected the profitability of the banking sector in the Republic of Serbia was investigated by Dakovic et al. (2024). They found that bank size was not statistically significant in determining profitability, while bank indebtedness has a positive but marginally statistically significant effect. Also, Cavlin et al. (2022) investigated the impact of liquidity and debt ratios on ROA before and during the COVID-19 pandemic. The research was conducted on agricultural

enterprises from various sectors. The results presented that the debt ratio had a negative and statistically significant impact on ROA both before the outbreak of the pandemic and during the pandemic.

Furthermore, research on 39 firms listed on the Indonesian Stock Exchange found that company size does not significantly moderate the relationship between growth, profitability, company age, and debt policy. However, the study emphasized that firm growth and age positively affect debt policy, whereas profitability has a negative effect (Margaretha & Viriany, 2023).

Jankovic & Jovanovic (2016) examined how leverage influences the profitability of companies in Serbia. Their research analyzed a sample of 117 firms during the period from 2008 to 2012. Leverage was measured by the ratio of debt—including short-term, long-term, and total debt—to total assets, while profitability was assessed using Return on Assets (ROA). The study also incorporated sales growth as a control variable, recognizing that varying sales growth rates can impact profitability differently. The findings revealed a statistically significant negative correlation between leverage and profitability.

2.1 Profitability

The key indicators commonly employed in practice to accurately reflect corporate profitability include return on equity (ROE), return on assets (ROA), and the ratio of free cash flow to revenue (Prsa et al., 2022). Return on Assets (ROA) is the most frequently used metric, reflecting the proportion of net profit to total assets and indicating how efficiently a company utilizes its resources to generate earnings (Novicevic Cecevic et al., 2025). If a company achieves a high ROA, it indicates that the management is more efficient and that the company is effectively utilizing its assets (Hanafi & Halim, 2007).

2.2 Leverage

Leverage is a financial indicator that shows how debt is used to finance the business activities of a company. In other words, leverage allows companies to use borrowed capital (debt) alongside their own equity to increase their total capital structure, potentially leading to higher profit margins (Novicevic Cecevic et. al, 2024). Leverage is measured as the proportion of debt relative to total assets. A high degree of leverage may hinder companies from securing further loans, since lenders might worry about the firm's capacity to repay its existing debts Bagh et al. (2025).

2.3 Company Size

Company size can be measured by total assets, total revenue, and number of employees. Larger companies tend to attract external capital more easily (Horvath & Csiki, 2025). This is because investors are more motivated to invest in companies that provide higher returns, which in turn motivates them to invest their capital. Initially, attention was directed toward large enterprises, as company size plays a key role in shaping perceptions of how working capital is managed (Ahmeti et al., 2022).

2.4 Sales Growth

The success of investments during an accounting period can be measured by sales growth. An increase in sales over time is beneficial in multiple ways, not only for the company but also for regulatory bodies, shareholders, and the broader society (Wahyono, 2015). The volume of product sales indicates whether the company's products successfully meet the growing demands of consumers, whether they meet expectations in terms of quality and functionality, and whether the product distribution network is efficiently organized. The higher the customer satisfaction, the larger the sales volume, and consequently, the higher the resulting revenue from those sales (Sudrajat & Setiyawati, 2021).

2.5 Company age

Research by Mardones & Cuneo (2020) and Ibhagui & Olokoyo (2018) shows that sales growth and company age positively influence company profitability, as measured by ROA. In contrast, the authors Nguyen et al. (2022) and Li et al. (2019) concluded that the younger the company, the higher ROA it will achieve, and vice versa.

Based on the review of existing research and methodologies, the following hypotheses have been defined for testing in this study:

Hypothesis 1. Profitability is significantly affected by capital structure.

Hypothesis 2. The relationship between capital structure and profitability is moderated by company size.

3. Methodology of Empirical Research

Financial data for the analysis were collected from the annual reports of companies operating in the territory of Serbia and listed among the 100 most successful companies based on the net profit achieved. The analysis period covered the years from 2019 to 2023. Initially, the preliminary sample included all companies. However, some companies were established during this period, so data were not available for all the analyzed years. In the end, the research was based on a sample of 97 companies, or 485 observations.

The structure of the sample, categorized by company type and Serbian regions, is shown in Table 1.

Table 1. Sample characteristics				
Variables	Frequency	Valid %		
Company type				
Joint-stock company - JSC	13	13.4 %		
Limited liability company - LLC	79	81.4 %		
Public enterprise - PE	5	5.2 %		
Region				
Beograd	54	55.7 %		
Vojvodina	21	21.6 %		
Central Serbia	8	28.2 %		
Western Serbia	7	7.2 %		
Southern Serbia	4	4.1%		
Eastern Serbia	3	3.0%		

Table 1: Sample characteristics

Source: Authors' calculation

Out of a total of 97 companies, 93 are large, while four companies are of medium size. The analysis of the sample by ownership structure shows that limited liability companies are dominant, accounting for 79 companies. Joint-stock companies make up 13, or 13.4%, while public enterprises represent 5.2% of the observed sample.

The analysis of the sample from the perspective of the region in which the company is based indicates that the highest number of companies is from the Belgrade region, namely, 54 companies, or 55.7%. Twenty-one companies are based in the Vojvodina region (21.6%), eight companies in Central Serbia (28.2%), and seven in Western Serbia (7.2%). The least number of companies are from Southern Serbia (four companies – 4.1%) and Eastern Serbia (three companies – 3.0%).

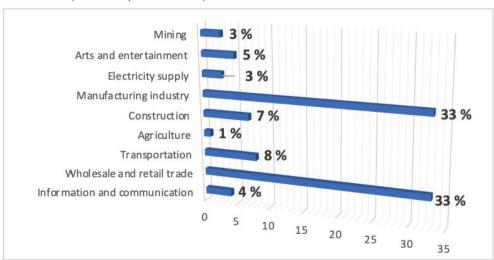


Figure 1: shows the distribution of companies according to the activity they perform *Source: Authors*'

The majority of the companies analyzed are engaged in the manufacturing industry and wholesale and retail trade – 33 companies each, accounting for 34.0% of the sample. Eight companies (8.2%) are from the transportation sector, seven (7.2%) are from construction, and four companies (4.1%) are from the information and communication sectorsand . Five companies (5.2%) operate in the arts and entertainment sector, while three companies (3.1%) come from the mining and electricity production sectors. The sample includes only one company engaged in agriculture.

We chose Return on Assets (ROA) as the dependent variable and as an important measure for exploring the business performance of companies. In this study, the independent variable is capital structure, regarded as a key factor in explaining the observed results. Company size serves as a moderator in the relationship between capital structure and profitability. According to the literature, firm size can be measured by total assets, total sales, number of employees, or number of members. For the purposes of this research, company size is quantified using the natural logarithm of total assets.

Decisions regarding capital structure can be influenced by multiple factors, with some being highly significant, while others may have little or no impact in certain industries or countries. To more accurately examine the link between company size, capital structure, and profitability authors selected control variables. Their inclusion in the regression models allowed for industry-specific characteristics to be captured and sampling bias to be minimized. An overview of the basic definitions of the variables used in this research is provided in the Table 2.

Table 21 Becomplient of about variables				
	Variable	Acronym	Description	
Dependent Variable	Return on assets	ROA	The ratio of net income to total assets (Hanafi & Halim, 2007)	
Independent Variable	Debt	Debt	The ratio of total debt to total assets (Bagh et al.,2025)	
Moderating Variable	Firm Size	SIZE	Natural logarithm of total assets (Horvath & Csíki, 2025)	
Control Variable	Annual Sales Growth	ASG	The percentage of increasing sales compared to the year before (Wahyono, 2015)	
	Firm Age	FAGE	Natural logarithm of the number of years (Mardones & Cuneo, 2020)	

Table 2: Description of used variables

Source: Authors'

The empirical analysis involves descriptive statistics, correlation analysis, and panel regression analysis. This approach enables the analysis of the relationship between one dependent variable and multiple independent factors, meaning that multiple regression can be used when examining two or more interrelated relationships, and it has proven to be useful in such analyses. Considering that the aim of the research is to investigate the impact of presented factors on company profitability, we defined the following models:

Models without interaction:

Profitability (ROA)_t = $\beta 0 + \beta 1 \text{ Debt}_{t} + \beta 2 \text{ SIZE}_{t} + \beta 3 \text{ ASC}_{t} + \beta 4 \text{ FAGE}_{t} + \epsilon_{t}$

Models with interaction:

Profitability (ROA)_{it} = $\beta 0 + \beta 1 \text{ Debt}_{it} + \beta 2 \text{ SIZE}_{it} + \beta 3 \text{ (Debt}_{it} * \text{SIZE}_{it}) + \beta 4 \text{ ASC}_{it} + \beta 5 \text{ FAGE}_{it} + \epsilon_{it}$

The subscript i refers to the individual companies observed, while t indicates the time dimension. The coefficient β_0 denotes the intercept, whereas β_1 through β_5 represent a series of independent factors. Firm size is considered as both an independent variable and as a moderating factor. Coefficients β_4 and β_5 are treated as control variables, and ϵ_i captures the random error term.

The descriptive statistics of used variables (profitability, debt, company size, Age and SGR) are presented in Table 3.

Table 3: Descriptive statistics

	ROA	DEBT	SIZE	FAGE	SGR
Mean	0.067719	0.441507	16.94084	20.30579	0.908935
Median	0.050659	0.425217	16.83047	19.00000	0.119686
Maximum	1.045791	1.819808	20.78700	73.00000	90.68139
Minimum	-0.596734	0.031431	11.98391	0.000000	-1.000000
Std. Dev.	0.111001	0.250880	1.237234	11.07575	6.800351

Source: Authors' calculation

The ROA variable has a mean value of 0.0677, indicating that companies exhibit relatively low returns on assets. However, although the average value is low, there are companies in the sample that achieve high levels of ROA (max = 1.045791), while the negative minimum values clearly indicate the presence of companies with a negative ROA (min = -0.596734). The median value for ROA is 0.0507, meaning that for half of the companies the return on assets is lower than this value, while for the other half it is higher. Companies in the sample have a moderate level of debt, as indicated by the mean value of 0.4415. The maximum value of DEBT is 1.8198, while the minimum is 0.0314, suggesting a wide range of debt levels among companies. Firm size ranges from 11.9839 to 20.7870, and the mean value is 16.9408. On average, the companies in the sample have been operating for 20 years, suggesting they are in the mid-phase of their business cycle. The sales growth rate has a very high mean value of 0.9089, indicating that some companies experienced exceptionally rapid growth. However, the median sales growth rate is much lower, at 0.1197, suggesting that the majority of companies did not experience such high growth. The maximum value of the sales growth rate is 90.6814, while the minimum is -1, implying the existence of companies that experienced a decline in sales. These descriptive statistics suggest significant heterogeneity among the companies, which is crucial for further analysis of the relationship between profitability, debt, and other business characteristics.

After the descriptive statistics, we conducted a correlation analysis to determine the interrelationships between key variables, with the aim of understanding more accurately the connections between capital structure, profitability, firm size, age, and sales growth rate. This analysis allows us to identify potential linear relationships among these factors and provides the foundation for further multivariate analyses to test theoretical hypotheses regarding their mutual impact. Additionally, we performed a multicollinearity analysis using the tolerance and variance inflation factor (VIF) (Shrestha, 2020). The tolerance value should be greater than 0.1, while the acceptable level for VIF should be less than 5 (Gujarati, 2004). The analysis showed that in our case, there is no multicollinearity problem, as the maximum value of VIF is 1.390, and the lowest tolerance value is 0.719.

Table 4: Correlation matrix

lable 4. Correlation matrix							
Correlation						Collinearity	y Statistics
Probability	ROA	DEBT	SIZE	AGE	SGR	Tolerance	VIF
ROA	1.000000						
						.719	1.390
DEBT	-0.107537	1.000000				.719	1.390
	0.0180						
VEL	-0.098994	-0.459853	1.000000			.774	1.292
	0.0294	0.0000					
FAGE	0.001870	-0.253241	0.017595	1.000000		.908	1.101
	0.0473	0.0000	0.6994				
SGR	-0.001755 0.0393	0.124003 0.0063	0.021417 0.6383	-0.164684 0.0003	1.000000	.960	1.041

Source: Authors' calculation

The dependent variable ROA shows an inverse and statistically significant relationship with the variables Debt (-0.107537, p=0.0180) and firm size (-0.098994, p=0.0294). This suggests that companies with lower levels of debt achieve higher ROA. Similarly, smaller companies tend to have a better ROA indicator. Although the intensity of the relationship between these variables is weak, it still exists. Regarding the control variables, there is a link between ROA and AGE. A correlation coefficient of 0.001870 indicates a positive and statistically significant relationship (p=0.0473). Companies that have been operating for a longer period

of time tend to achieve higher ROA values. ROA and the sales growth rate show a negative correlation, which is close to the threshold of statistical significance.

If we want to select an appropriate model for analysis, we need to conduct tests to choose among the Pooled Effect Model (OLS), the Random Effect Model (REM), and the Fixed Effect Model (FEM) (Park, 2011). The first test is the Chow test. This test helps decide whether the Common Effect Model or the Fixed Effect Model better fits the data. If the probability value of the F-statistic is lower than the 5% significance level, the null hypothesis (H_0) is rejected. Conversely, if the F-statistic probability exceeds the 5% threshold, the null hypothesis is accepted. Therefore, a significant F-statistic (p < 0.05) indicates that the Fixed Effect Model is more appropriate. Second, we need to conduct the Breusch–Pagan Lagrange Multiplier test. The Lagrange Multiplier test is used to determine whether the Random Effect Model or the Common Effect Model is more appropriate. If the significance level of the Breusch–Pagan test is less than 5%, the Random Effect Model is preferred. If the probability value is higher than 5%, the Common Effect Model is considered suitable. As the final step, the Hausman Test is conducted to determine whether the Fixed Effect Model (FEM) or the Random Effect Model (REM) is more appropriate (Purba & Bimantara, 2019). If the probability of this test is less than 5%, the alternative hypothesis (H_1) is accepted (the model follows the Fixed Effect). Otherwise, if the probability is higher than 5%, the null hypothesis (H_0) is accepted (the model follows the Random Effect). Table 5 presents the results of the tests conducted.

Table 5: Comparative Analysis of Model Fit Indicators

	Models without interaction	Models with interaction
F-test	6.090731	5.828743
Pooled or FEM	(0.0000)	(0.0000)
Breusch-Pagan LM	448.618460	436.624515
Pooled or REM	(0.0000)	(0.0000)
Hausman	34.554627	32.114698
REM or FEM	(0.000)	(0.0000)

Based on the conducted tests, the appropriate regression models were selected, which will allow for a more detailed analysis and quantification of the relationship between the key variables. The further discussion will focus on the interpretation of the obtained results, with an emphasis on the models that best reflect the actual data, providing insights into potential causal relationships and predicting future trends.

4. Research Results and Discussion

When it comes to the model without interaction, the regression results indicate that the selected model successfully explains 62.09% of the variation in company profitability. Overall significance of the model is displayed by F-statistic tests. The p-value of F test is very small, so the results indicate statistical significance of the model (F = 6.271782, P < 0.005). The following table presents the results of regression without interaction.

Table 6: Regression results without interaction

	Coefficient	
Variable	Prob.	
		t-Statistic
Constant	-0.6638	
	(0.0005)	-3.5165
DEBT	-0.0948	
	(0.0036)	-2.9305
SIZE	0.0540	
	(0.000)	4.1887
FAGE	-0.0068	
	(0.0257)	-2.2390
SGR	-0.0013	
	(0.0424)	-2.0366
R-squared	.6208	
Adjusted R-squared	.5218	
F-statistic	6.2717	
Prob(F-statistic)	.0000	

Source: Authors' calculation

Statistically significant and negative impact on the company profitability comes from variable Debt (p < 0.05). The coefficient for the Debt variable of -0.094861 indicates that if Debt increases by 1 unit, the ROA will decrease by 0.0949 units.

The analysis indicates that firm size positively and significantly affects the achieved return on assets (p < 0.05). The coefficient for firm size is 0.0540, meaning that with an increase in firm size by 1 %, the ROA increases by 0.00054 %.

The control varilable, AGE, has a statistically significant negative impact on profitability. ROA drops by approximately 0.0069 for each year the firm gets older. This may be related to a decrease in operational efficiency as well as to other external factors.

Sales growth, as one of the explanatory variables in the model, is shown to have a significant adverse impact on ROA (p = 0.0424). This result, although statistically significant, is surprising since it is expected that firms with higher revenue would have a higher ROA. We can assume that firms have not adequately managed their expenses, leading to a lower net profit, which resulted in a decrease in ROA.

The findings from the panel regression analysis, based on the chosen FEM model without interaction terms, align with the principles of pecking order theory. A negative and statistically significant relationship between profitability and leverage has been documented in the research conducted by Ngatno et al. (2021), Abdullah & Tursoy (2021), Almajali & Shamsuddin (2019), and Siddik et al. (2017). Therefore, Hypothesis 1 — *Profitability is significantly affected by capital structure* — can be considered confirmed.

The following table presents the results of the selected FEM model with interaction. The results indicate a solid statistical foundation for the model. The estimated model explains 62.09% of the variation in ROA ($R^2 = 0.6209$), while the adjusted coefficient of determination (Adjusted R^2) is 52.07%, which further confirms the relevance of the independent variables in explaining the dependent variable. The F-statistic is 6.1951, and the corresponding probability (Prob > F) is 0.0000, which indicates a high level of statistical significance for the model (p < 0.01). These findings indicate that the model demonstrates strong predictive capability and can be considered reliable for analyzing the factors influencing the return on assets.

Table 7: Regression results with interaction

Coefficient

Variable	Prob.	
Variable	1100.	t-Statistic
Constant	-0.5990	
	(0.0426)	-1.8675
DEBT	-0.2204	
	(0.0066)	-0.4385
SIZE	0.0502	
	(0.0114)	2.5429
S_Z	0.0073	
	(0.0085)	0.2503
FAGE	-0.0068	
	(0.0262)	-2.2319
SGR	-0.0013	
	(0.0456)	-2.0059
R-squared	.62092	·
Adjusted R-squared	.52069	
F-statistic	6.19510	
Prob(F-statistic)	.0000	_

Source: Authors' calculation

The results of the regression model with interaction indicate a statistically significant impact of the selected independent variables on the profitability of firms, measured by the return on assets (ROA), for the period from 2019 to 2023. The model as a whole shows a satisfactory level of explained variance and statistical significance, which confirms its reliability in the analysis of the determinants of profitability.

Debt (DEBT) shows a negative and statistically significant impact on profitability ($\beta 1 = -0.2204$; p = 0.0066), which is in line with theoretical expectations. A high level of Debt can increase expenses, reduce net profit, and increase financial risk, which negatively affects return on assets. Companies with higher debt levels often experience reduced profitability, whereas lower debt levels are generally associated with improved

performance. Therefore, managers should aim to strike a balance between utilizing internal financing and relying on external borrowing. These conclusions are in line with the study by Kallandranis et al. (2020), who analyzed publicly traded firms operating during the period from 2005 to 2018.

As the coefficient for company size is $\beta 2 = 0.0503$, this leads to the conclusion that the impact is positive and signifiat (p = 0.0114). Every 1% increase in firm size is associated with an increase in ROA of approximately 0.05 percentage points, assuming other variables remain constant. These findings are consistent with the research conducted by Nguyen (2020), Fonseca et al. (2022), and Aydýn et al. (2017).

The interaction effect between firm size and Debt (S_Z) shows a positive and significant impact (β 4 = 0.0073; p = 0.0085), implying that larger firms manage debt more successfully and use it as a tool to enhance profitability. This finding may indicate the presence of a so-called "financial leverage effect," where firm size helps mitigate the negative effects of debt.

The age of the company (AGE) has a slightly statistically significant (p = 0.0262) but negative impact on ROA (β 3 = -0.0069), which may suggest that younger firms, driven by innovation, flexibility, and greater agility in the market, achieve higher return rates than older firms.

Sales Growth Rate (SGR), included as a control variable, exhibits a negative) $\beta 5 = -0.0014$) and statistically significant impact on ROA (p = 0.0456). This may suggest that firms experiencing rapid sales expansion often allocate substantial resources, which can temporarily reduce the efficiency with which total assets are utilized.

Overall, the data suggest that company profitability largely depends on its size, level of debt, and their mutual interaction. These conclusions are in agreement with the pecking order theory of capital structure. The theory proposes a hierarchy in financing decisions, where internal funds are utilized first, followed by external options if needed. Retained earnings, which are part of internal sources, are more frequently used than debt to finance the activities of high-profitability firms. The amount of assets a company has can serve as an indicator of its size. An increase in assets can be used as internal capital to finance future operations. In large firms, which also have high profitability, the need for external borrowing decreases, as they have sufficient resources to finance business activities and invest in future development. Based on all of the above, Hypothesis 2: *The relationship between capital structure and profitability is moderated by company size* is confirmed, which supports the findings the findings of Ahmed (2022), Fonseca et al. (2022), Nguyen (2020), and Aydýn et al. (2017).

Conclusion

Business analysis is a specialized scientific field that concentrates on a more focused area—the economics of an individual enterprise. It involves defining and assessing business activities within the broader framework of the overall economy. This discipline specifically examines a company's economic aspects, evaluating its operational goals through the perspective of general economic theory (Cavlin et al., 2025). So, the performance of businesses, both globally and in the Republic of Serbia, is the subject of interest for numerous authors. In addition to calculating performance based on financial data, the relationship between various indicators is also an interesting question. This is particularly relevant because improving performance is commonly cited as a key reason or goals behind organizational change (Mladenova, 2024).

This paper aims to investigate whether company size moderates the relationship between profitability and leverage. By studying publicly accessible financial documents alongside the literature, return on assets (ROA) emerged as the preferred and relevant metric for measuring business profitability. Company debt is the independent variable in the study, and it is measured as the ratio of total liabilities and company assets. Selected control variables applied in the research are company age and sales growth.

Information for the analysis was sourced from the Business Registers Agency's compilation of the most successful companies. The final dataset comprises 97 companies, with a timeframe spanning 2019 to 2023. Statistically significant correlations, although weak, were found between the ROA and the chosen independent variables through correlation analysis. Based on the correlation analysis, we can conclude that higher leverage and larger company size slightly reduce profitability, expressed by ROA. For the purposes of this research, two regression models were formed, with and without the interaction between leverage and company size. Larger companies, although potentially more indebted, have the capacity to manage debt more efficiently and achieve higher profitability. These findings have significant implications for management, particularly in the areas of optimizing the financial structure and strategic growth planning for long-term sustainability and operational efficiency. The results of the research in the model without interactions showed that company leverage negatively and significantly impacts profitability in the sample. Despite companies with greater asset values generally achieving higher ROA, an increase in company size appears to negatively influence profitability. Findings from the interaction model suggest that company size plays a moderating role in the relationship between leverage and profitability.

Since company assets can be measured in different ways, future research will focus on examining whether various measures of company assets can moderate the relationship between individual variables. As this research focuses on companies operating in the Republic of Serbia, future studies could be directed towards including countries from the Western Balkans, as they belong to the group of post-socialist countries. The distribution of the sample by regional affiliation of companies shows that the Belgrade and Vojvodina regions dominate, and are also the most developed regions of the Republic of Serbia. Future research by the authors will focus on achieving an approximately equal number of surveyed companies in all regions, in order to enable an empirical examination of factors by region and a comparison of these factors across regions.

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REFERENCES

- [1] Abbasi, A., & Malik, Q. A. (2015). Firms' size moderating financial performance in growing firms: An empirical evidence from Pakistan. *International Journal of Economics and Financial Issues*, 5(2), 334–339.
- [2] Abdullah, H., & Tursoy, T. (2021). Capital structure and firm performance: Evidence of Germany under IFRS adoption. *Review of Managerial Science*, 15(3), 379–398.
- [3] Ahmed, A. M. (2022). The relationship between firm size and profitability: Evidence from the commercial banks in Iraq. *Scientific Journal of Cihan University Sulaimaniya*, 6(1), 145–156.
- [4] Ahmed, A. M., Nugraha, D. P., & Hagen, I. (2023). The relationship between capital structure and firm performance: The moderating role of agency cost. *Risks*, *11*(102).
- [5] Ahmeti, A., Ahmeti, Y., & Ahmeti, S. (2022). The impact of working capital management on SME profitability Evidence from Kosovo. *Zbornik radova Ekonomskog fakulteta u Rijeci: časopis za ekonomsku teoriju i praksu, 40*(2), 459–478. DOI: 10.18045/zbefri.2022.2.459
- [6] Alipour, M., Mohammadi, M. F. S., & Derakshan, H. (2015). Determinants of capital structure: An empirical study of firms in Iran. *International Journal of Law and Management*, *57*, 53–83.
- [7] Almajali, M., & Shamsuddin, Z. (2019). The effect of capital structure on performance of insurance companies: Evidence from Jordan. *International Journal of Accounting, Finance, and Business, 4*(1), 64–73.
- [8] Astuti, W. A. (2021). Analysis of company size and leverage on profitability. In *Proceedings of the 4th International Conference on Business, Economics, Social Sciences, and Humanities 2021*.
- [9] Aydýn Unal, E., Unal, Y., & Isik, O. (2017). The effect of firm size on profitability: Evidence from Turkish manufacturing sector. *Pressacademia*, *6*(3), 301–308.
- [10] Bagh, T., Hunjra, A. I., Guo, Y., & Bouri, E. (2025). Corporate capital structure in BRICS economies: An integrated analysis of ESG, firm, industry, and macroeconomic determinants. *International Journal of Finance & Economics*, 30(3), 2682-2704. https://doi.org/10.1002/ijfe.3036
- [11] Cavlin, M., Dmitrovic, V., Jovanovic, Z., & Durovic, M. (2025). Controlling vs. business analysis: Theoretical and practical perspectives in a dynamic business environment. *Journal of Agronomy, Technology and Engineering Management*, 8(1), 1448–1458. DOI: 10.55817/GPYL6982
- [12] Cavlin, M., Dokic, A., & Miletic, V. (2022). Influence of liquidity and solvency on profitability of agroindustrial companies in the conditions of COVID-19. *Ekonomika poljoprivrede, 69*(2), 441–456. DOI: 10.5937/ekoPolj2202441C
- [13] Dakovic, M., Milenkovic, N., & Andrasic, J. (2024). Factors affecting the profitability of banks: Evidence from Serbia's banking sector. *Management: Journal of Sustainable Business and Management Solutions in Emerging Economies*, 29(3). DOI: 10.7595/management.fon.2023.0006
- [14] Dogan, M. (2013). Does firm size affect firm profitability? Evidence from Turkey. Research Journal of Finance and Accounting, 4(4), 53–59.
- [15] Fonseca, S., Guedes, M. J., & da Conceição Gonçalves, V. (2022). Profitability and size of newly established firms. International Entrepreneurship and Management Journal, 18, 957–974.
- [16] Gujarati, D. N. (2004). Basic econometrics (4th ed.). McGraw-Hill.
- [17] Hanafi, M. M., & Halim, A. (2007). Financial statement analysis. Yogyakarta: UPP YKPN.
- [18] Horvath, R., & Csiki, O. (2025). Drivers for corporate social responsibility: Analysis of Romanian companies. Journal of East European Management Studies, 30(1), Article 39356. DOI: 10.31083/JEEMS39356
- [19] Ibhagui, O. W., & Olokoyo, F. O. (2018). Leverage and firm performance: New evidence on the role of firm size. *North American Journal of Economics and Finance*, 45, 57–82.
- [20] Jankovic, M., & Jovanovic, D. (2016). Influence of leverage on profitability of companies in the Republic of Serbia. In *Proceedings of the EBM 2016 Conference*, Faculty of economics Kragujevac, Serbia.
- [21] Kallandranis, C., Kalantonis, P., & Sotiropoulos, M. (2020). Leverage and firm performance: New evidence on the role of economic sentiment using accounting information. *Journal of Capital Markets Studies*, 4(2), 149–166.

- [22] Kayo, E. K., & Kimura, H. (2011). Hierarchical determinants of capital structure. *Journal of Banking and Finance*, 35, 358–371.
- [23] Li, K., Niskanen, J., & Niskanen, M. (2019). Capital structure and firm performance in European SMEs: Does credit risk make a difference? *Managerial Finance*, 45, 582–601.
- [24] Mardones, J. G., & Cuneo, G. R. (2020). Capital structure and performance in Latin American companies. Economic Research-Ekonomska Istraživanja, 33(1), 2171–2188. DOI: 10.1080/1331677X.2019.1697720
- [25] Margaretha, N., & Viriany, V. (2023). The impact of firm growth, profitability, and firm age on debt policy using firm size as moderator variable. *DOI:* 10.24912/ijaeb.v1i2.772-780
- [26] Mladenova, I. (2024). Organisational capacity for change and its relationship with adaptability and organisational performance: Evidence from Bulgaria. *Journal of East European Management Studies*, 29(3), 440–460. DOI: 10.5771/0949-6181-2024-3-440
- [27] Myers, S. C., & Majluf, N. S. (1984). Corporate financing and investment decisions when firms have information that investors do not have. *Journal of Financial Economics*, 13(2), 187–221.
- [28] Ngatno, Apriatni, E. P., & Youlianto, A. (2021). Moderating effects of corporate governance mechanism on the relation between capital structure and firm performance. *Cogent Business & Management, 8*, Article 1866822. DOI: 10.1080/23311975.2020.1866822
- [29] Nguyen, A., Nguyen, T., & Hoang, P. (2022). The impact of corporate governance quality on capital structure choices: Does national governance quality matter? Cogent Economics & Finance, 10, 2073003.
- [30] Nguyen, Q. K. (2020). Ownership structure and bank risk-taking in ASEAN countries: A quantile regression approach. Cogent Economics & Finance, (2020), 8: 1809789, DOI: 10.1080/23322039.2020.1809789
- [31] Novicevic Cecevic, B., Antic, Lj., & Dordevic, M. (2024). Measuring companies' business performance in the Republic of Serbia using composite indices. *Facta Universitatis, Series: Economics and Organization*, 21(3), 203–219. DOI: 10.22190/FUEO240606014N
- [32] Novicevic Cecevic, B., Nikolic, S., & Jovanovic, S. (2025). Profitability determinants of Serbian agricultural companies. *Ekonomika poljoprivrede*, 72(1), 329–343. DOI: 10.59267/ekoPolj2501329N.
- [33] Ochieng'Wayongah, D. W., & Mule, R. K. (2019). Moderating effect of firm size on the relationship between financial leverage and financial performance of non-financial firms listed in the NSE, Kenya. *International Journal of Education and Research*, 7(8), 131–142.
- [34] Park, H. M. (2011). Practical guides to panel data modeling: A step-by-step analysis using Stata. Public Management and Policy Analysis Program, Graduate School of International Relations, International University of Japan.
- [35] Prsa, D., Sestanovic, A., & Ramljak, I. (2022). Factors influencing dividend payout policy: Evidence from listed non-financial firms of the Zagreb Stock Exchange. *Zbornik radova Ekonomskog fakulteta u Rijeci:* casopis za ekonomsku teoriju i praksu, 40(2), 441–457. DOI: 10.18045/zbefri.2022.2.441
- [36] Purba, J. H. V., & Bimantara, D. (2019). The influence of asset management on financial performance, with panel data analysis. In *Advances in Economics, Business and Management Research* (Vol. 143, pp. 150–155). 2nd International Seminar on Business, Economics, Social Science and Technology (ISBEST 2019). Institut Bisnis dan Informatika Kesatuan.
- [37] Sdiq, S. R., & Abdullah, H. A. (2022). Examining the effect of agency cost on capital structure–financial performance nexus: Empirical evidence for emerging market. *Cogent Economics & Finance*, 10(1), Article 2148364. DOI: 10.1080/23322039.2022.2148364
- [38] Shrestha, N. (2020). Detecting multicollinearity in regression analysis. *American Journal of Applied Mathematics and Statistics*, 8(2), 39–42. DOI: 10.12691/ajams-8-2-1
- [39] Siddik, M. N. A., Kabiraj, S., & Joghee, S. (2017). Impacts of capital structure on performance of banks in a developing economy: Evidence from Bangladesh. *International Journal of Financial Studies*, 5(1), 13.
- [40] Sudrajat, J., & Setiyawati, H. (2021). Role of firm size and profitability on capital structures and its impact over firm value. *Dinasti International Journal of Economics, Finance and Accounting*, 2(1) 13–26.
- [41] Vithessonthi, C., & Tongurai, J. (2015). The effect of firm size on the leverage–performance relationship during the financial crisis of 2007–2009. *Journal of Multinational Financial Management*, 29, 1–29.
- [42] Vo, X. V., & Ellis, C. (2017). An empirical investigation of capital structure and firm value in Vietnam. *Finance Research Letters*, 22, 90–94.
- [43] Wahyono, T. (2015). The Influence of Asset Growth, Sales Growth, Profitability, Liquidity and Company Size on Debt To Total Assets in Financing Companies Registered in Bei Year 2010 2013. Jurnal Ilmiah Manajemen Dan Bisnis, 1(2), 177-193.

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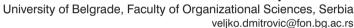
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