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PROFITABILITY DETERMINANTS OF SERBIAN JOINT-STOCK COMPANIES

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The paper aims to analyze the influence of the selected financial determinants on profitability as a key determinant of corporate performance success. The sample includes 473 joint-stock companies in the Republic of Serbia that were actively operating in period 2017-2021. Panel data evaluation revealed the presence of a significant positive influence of the company size, growth, and cash flow on profitability, as well as a significant negative influence of the capital and asset structures. In contrast, the influence of liquidity and a tax shield on profitability is statistically insignificant. The obtained results primarily serve the management who can consider the indicators of the business done by joint-stock companies in order to improve profitability and ensure proper resource allocation. They are also useful for investors in planning investment and operational activities with the aim of a more effective and more efficient achievement of profitability goals. The results are also aimed at other stakeholders who want to create a profitability growth and corporate performance strategy directed towards ensuring long-term growth.

Keywords: profitability, ROA, joint-stock companies, panel analysis

JEL Classification: C58, L25

INTRODUCTION

Corporate sustainability is conditioned by the ability of a company to operate profitably (Vuković, Milutinović, Mirović & Milićević, 2020). Generating profit in a long-term period should be the main objective and occupation of a company's management (Marinković, 2008). Estimating the profitability of a company's operations is an important aspect of decision-making in the direction of strategic and operational management. The level of a company's technical and technological development, employment, and innovation are the factors deemed as important for a profitable company's operations. Due to increased competition, price pressure, and improved efficiency, companies often have a problem trying to achieve the desired profitability (Fareed, Ali, Shahzad, Nazir & Ullah, 2016). It is usually necessary to examine the reasons for changes in achieved profitability over time.

The mentioned sample of joint-stock companies is the subject matter of the analysis carried out in this paper given the fact that those highly profitable joint-

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stock corporations distinguish by an understanding of the main indicators of the goal achievement and further strategic positioning. Additionally, a stock market effectively expands ownership, conducts effective risk control, more efficient risk management, and generates a more substantial capital structure of the organization (Purić, 2011). Alongside, bearing in mind the fact that there are numerous internal and external factors that can be seen as either incentives or limitations of the profitable operation of a joint-stock company, there is also the need to investigate the factors driving changes in the level of a joint-stock company's profitability, simultaneously considering the fact that profitable companies influence the creation of value added and promote growth and development.

The primary goal of the paper implies research in the directions and intensity of the correlation among the indicators such as the capital structure, company size, liquidity, cash flow, corporate income tax, asset structure and growth, on the one hand, and profitability, on the other. According to the financial statement analysis of Serbian joint-stock companies over the period from 2017 to 2021, the influence of the observed variables was evaluated in order to find out the most important internal factors used to determine profitability. The obtained results provide a deep insight into the factors that influence the business performance of the Serbian companies so as to ensure the maximization of a company's value and long-term profitability. The value of this research study is evident in the fact that it provides new insights into the influence of the profitability determinants, especially bearing in mind the importance of profitability in measuring performance in a dynamic and changing joint-stock company environment.

Based on the literature review, it can be concluded that the profitability indicators have been analyzed in many industries and countries so far (Fareed *et al*, 2016; Ajao & Ogieriakhi, 2018; Egbunike & Okerekeoti, 2018; Menicucci, 2018; Blazková & Dvouletý, 2018; Nanda & Panda, 2018; Alsharari & Alhmoud, 2019). Bearing that fact in mind, the motives and incentives, too, of this paper lie in the need to provide a contribution to the growing literature on the profitability of joint-stock companies, with a special reference to the Serbian area not extensively researched in the observed period. D. Malinić, K. Denčić-Mihajlov and E. Ljubenović (2013) and S. Arsov (2016) did research in the capital structure determinants of Serbian joint-stock companies, among which profitability also was, but in a different period. D. Malinić *et al* (2013) found that the unsatisfactory profitability of the Serbian joint-stock companies led to a greater borrowing volume. Taking into consideration the observed influence of all other indicators, an adequate informational basis is provided for managers to reach an ideal capital structure, thus enhancing the efficiency of stock corporations and ensuring the stability of the company level. In addition, the analysis of the profitability indicators provides reliable information to all interested parties who want to assess a company's ability to increase its capital employed, strengthen its competitive position and optimally use available funds. This research study added value to future research in providing a detailed insight into the understanding of a company's profitable business and ways to have it improved.

The paper is structured as follows: after the Introduction, the Theoretical Background presents the research questions; thereafter, the Data and Methodology section shows the sample and the applied methodology. The Results and Discussion section is the presentation and interpretation of the results, while the limitations and recommendations for future studies are given in the Conclusion.

LITERATURE REVIEW

The theoretical background is presented from the point of view of the influence of the seven observed variables (the capital structure, the company size, liquidity, cash flow, the tax shield, the asset structure and growth) on the funds return rate, bearing in mind the fact that the influence of these factors may vary between industries, countries and companies. The specific company factors that affect companies' profitability and the relationship between the factors and profitability are presented below.

The capital structure

The analysis of the capital structure became intensive after the publication of Modigliani-Miller theory (Modigliani & Miller, 1958), which stipulates that the absence of the capital structure influences the company value. The theory is based on the assumptions about the existence of a perfect market without bankruptcy risk, income tax liabilities, and transaction costs, but with a high availability of information, which is considered theoretical nowadays. Consequently, theories such as an amended version of the Modigliani-Miller theory, have been developed. The point to the positive impact of increased indebtedness on the company value due to the tax benefits achieved from realized interest costs. Additionally, the capital structure theories that have left a striking mark are trade-off theory, which suggests that every company will perceive benefits tax savings, as well as the shortcomings of bankruptcy costs to the company value (Kraus & Litzenberger, 1973). Pecking order theory, however, considers an order in which financing should be shaped, starting from internal sources, via borrowed ones, ending with issued share capital (Myers, 2001). S. Arsov (2016) found that, in the time period from 2010 to 2016, applied a kind of modified pecking order theory, which primarily relied on the internal sources of financing, borrowed when necessary, and finally issued securities. Furthermore, the authors of agency theory believe that the optimal company value could be achieved with the optimal capital structure implicative of the least level of the interest conflict between shareholders (Jensen & Meckling, 1976). The existence of a certain limit in borrowing beyond which no additional debt can have a positive impact is the common matter of the largest number of the capital structure theories. That limit, however, has not been defined yet (Stančić, Janković & Čupić, 2016).

Analyzing the joint-stock companies operating in Germany between 1993 and 2016, H. Abdullah and T. Tursoy (2021) saw the presence of a positive effect of the capital structure on the performance of the companies mostly financed from borrowed sources. The same is with A. S. Alarussi and X. Gao (2021), who showed a strong positive influence of the debt ratio on the return-on-assets of nonfinancial Chinese companies in the period from 2017 to 2019. K. Mijić, D. Nuševa and D. Jakšić (2018) did research resulting in a positive impact of all capital structure proxies on profitability, believing that borrowing was a precondition for sustainably profitable companies, primarily due to tax benefits and shelters. On the other hand, H. T. Nguyen and A. H. Nguyen (2020) used panel regression on a sample of 488 listed firms on the Vietnamese Stock Market only to indicate the presence of a negative effect of the capital structure on profitability, noting that the effect was more intense with the state-owned companies than with the privately owned ones. The research done in a sample of companies listed on the Malaysian Stock Exchange also confirmed the strong negative influence of the capital structure on corporate operations, which was more intense during the global economic crisis between 2007 and 2009 (Khodavandloo, Zakaria & Nassir, 2017). K. Mijić, S. Zekić and D. Jakšić (2016) analyzed the Serbian meat processing industry in the period 2011-2015 and concluded that there was a negative and statistically significant influence of the capital structure on profitability, adding that the companies operating in this industry distinguished by a significant degree of debt, which could positively influence profitability. Additional indebtedness is used to solve the existing problems, not for the additional investments that would bring an additional profit. The research done by S. Vatavu (2015) showed that the more Romanian manufacturing companies borrowed, the less profitable they were, thus confirming the significant negative effect of the capital structure on company performance. N. M. Alsharari and T. R. Alhmoud (2019) also found a significant negative relationship between the debt ratio and profitability analyzing the internal and external factors of the profitability of the Sharia-compliant corporations in Jordan in period 2013-2015. P. Bauer (2004) found a significant negative influence of leverage on the corporate profitability of 74 Czech companies in the time period from 2000 to 2001, which means that the observed companies preferred internal financing so that they had a less external financing need and lower leverage according to the requirements of pecking order theory. Based on the research results obtained by I. Blazková and O. Dvouletý (2018), the significant negative effect of indebtedness on profitability leads managers to

consider the debt policy, taking into account the fact that high indebtedness causes deterioration in the competitive position and leads to a decline in the Czech companies' credibility. L. Booth, V. Aivazian, A. Demirguc-Kunt and V. Maksimovic (2001) stated that a choice of the capital structure was conditioned by the company's investment opportunities and profitability, so there was a highly significant negative relationship between profitability and the capital structure, which means that less profitable companies are to a greater extent financed from debt financing. Additionally, Z. Fareed *et al* (2016) found that financial leverage indicated a minor influence on profitability, so that financial leverage was significantly negatively related to the profitability of power energy companies. Finally, P. Chandrapala and A. Knápková (2013) found that a higher share of debt in the capital structure caused an increase in financial problems costs and led to a decrease in profitability and the company's value, which was also confirmed by the results of the research study carried out by S. Nanda and A. K. Panda (2018).

On the other hand, C. F. Egbunike and C. U. Okerekeoti (2018) found a significant positive influence of leverage on profitability, simultaneously pointing out the fact that managers should monitor the company's borrowing policy, as a highly leveraged company might be characterized by negative performance. Moreover, the results of the studies conducted by A. Devi and S. Devi (2014), A. O. Dada and Z. B. Ghazali (2016), M. G. Ajao and E. Ogieriakhi (2018), E. Menicucci (2018) and U. Ali, L. Ormal and F. Ahdam (2018) demonstrated the fact that the influence of the capital structure on a company's profitability was not statistically significant, so the same should not be taken into account when considering the profitability factors.

Bearing in mind the earlier studies mentioned above, the following hypothesis was set:

H1: A statistically significant negative effect is determined between the indebtedness level and the profitability of Serbian joint-stock companies.

The company size

Companies can achieve higher productivity and the economies of scale due to their size that affects their profitability. Having analyzed 1194 manufacturing companies in India, D. Jaisinghani and K. Kanjilal (2017) concluded that the company size itself affected profitability and the effect of the capital structure, believing that, if the size exceeded a certain equipment value of approximately 1.7 million euros, then the capital structure had a favorable influence on profitability, and vice versa. After conducting an analysis of the company-level and sectoral profitability factors of the Czech food processing companies in the time period from 2005 to 2012, I. Blazková and O. Dvouletý (2018) concluded that the firm size had a significant positive influence on profitability, which means that big companies are characterized by greater market success and that achieving economies of scale due to such a sufficient company size is an important factor in profitable business. After having analyzed the characteristics and financial performance of Nigerian manufacturing companies in the consumer goods sector, C. F. Egbunike and C. U. Okerekeoti (2018) also found a significant positive influence of the firm size on profitability as the level of the company's earnings is greater than the level of its costs. Likewise, P. Chandrapala and A. Knápková (2013) confirmed a significant positive effect of the firm size on the return rate, which indicated that the firm size growth affected its ability to generate income, which was consistent with the microeconomic theory of the economies of scale. Z. Fareed *et al* (2016) found that the company size was a very important variable in the business done by the energy power companies, so that the firm size growth increased profitability, thus showing the presence of significant positive relationships with return on assets, as was also confirmed by the research results of the studies by S. Nanda and A. K. Panda (2018) and A. S. Alarussi and X. Gao (2021). E. Menicucci (2018) showed that larger hotels managed to achieve a greater return on employed assets because of the economies of scale used, controlled a large volume of the market and allowed a better allocation of fixed costs. According to the studies by M. Khodavandloo, Z. Zakaria and A.

M. Nassir (2017) and U. Ali *et al* (2018), the size has a beneficial influence on profitability.

The studies conducted by A. Devi and S. Devi (2014) and N. M. Alsharari and T. R. Alhmoud (2019) revealed positive correlation between the company size and its profitability although it was statistically insignificant. On the other hand, after having carried out an analysis of the influence of the company-specific factors on the performance of the Nigerian insurance companies in the period from 2009 to 2017, M. G. Ajao and E. Ogieriakhi (2018) found that the company size affected the growth of inefficiency, so that a larger company size led to unsatisfactory financial performance. K. Mijić, D. Nuševa and D. Jakšić (2018), H. Abdullah and T. Tursoy (2019), and B. Vuković *et al* (2020) also indicate an adverse effect of the company size on its profitability.

Considering the presented empirical studies, the following hypothesis was set:

H2: A statistically significant positive effect is determined between the size of joint-stock companies in Serbia and their profitability.

Liquidity

After they had made an assessment of the influence of liquidity on company performance, T. P. V. Le and T. B. N. Phan (2017) believed that there was positive influence of liquidity on company performance, simultaneously claiming that companies with liquid assets strived to invest, reducing bankruptcy risk and increasing the company's profitability. S. Vatavu (2015) indicates that current assets give an opportunity for higher profits. K. Mijić, D. Nuševa and D. Jakšić (2018), S. Nanda and A. K. Panda (2018) and H. T. Nguyen and A. H. Nguyen (2020) also confirmed the positive correlation between liquidity and profitability. Companies own the funds that are not limited to investments but also serve to generate profits and realize returns on investments, so that an increase in liquidity leads to a decrease in liquidity risk, which exerts an influence on an increase in ROA. In a similar fashion, their analysis of the factors of a company's profitability in the logistics industry of the Balkan economies led the authors B. Vuković *et al* (2020) to demonstrate the fact that the favorable influence of liquidity on the level of engaged funds indicated that big logistics companies effectively managed their working capital, had enough current assets to efficiently maximize their profitability and dealt with short-term liabilities. The research results obtained by C. F. Egbunike and C. U. Okerekeoti (2018) also confirmed a significant positive relationship between liquidity and profitability, simultaneously emphasizing the fact that managers should monitor the balance of the company's liquidity or should take into consideration the industry and a comparison between companies in order to monitor the company's status in relation to the competition.

However, A. Devi and S. Devi (2014) highlight negative correlation between a firm's capital structure and its liquidity and its financial performance. Specifically, the findings suggest that a rise in liquidity is typically associated with a decline in profitability based on the opportunity cost of holding cash instead of investing, which is also confirmed by the research results obtained by A. S. Alarussi and X. Gao (2021), who stated that the companies made low profits due to their inefficiency in using liquid assets. High liquidity implies the directing of funds towards productive activities and investments and making them unavailable for generating profits or realizing returns based on investments. However, I. S. Youssef, C. Salloum and M. Al Sayah (2022) revealed negligible correlation between liquidity and profitability among the SMEs listed in the UK between 2012 and 2020. Based on the prior literature, the following hypothesis is formulated:

H3: A statistically significant positive effect is determined between the liquidity of joint-stock firms in Serbia and their profitability.

Cash flow

A company's cash flow represents the current cash level at a particular time after inflows and outflows. Some research has shown that free cash increases the investment level by contributing to higher performance and profitability (Chang, Chen, Hsing

& Huang, 2007; Le & Phan, 2017). Bearing in mind the fact that investors often rely on profitability when assessing the financial strength of a company and do not take into account changes in cash flows, the study conducted by U. Ali *et al* (2018) aimed to examine the correlation among the profitability of firms and their free cash flows in the German automotive industry. The analysis was carried out in a ten-year interval from 2007 to 2016. The findings they came to confirmed the previous studies, indicating that, as one of the most important corporate health measures, free cash flow had a relevant positive effect on the rate of the engaged assets of the listed firms. On the other hand, a big difference between cash inflows and expenditures may cause unnecessary investments potentially harmful to a company's operations.

Considering all previous research, the following hypothesis is formulated:

H4: A statistically significant positive effect is determined between the cash flow of joint-stock firms in Serbia and their profitability.

A tax shield

Corporate income tax (CIT) is a binding fiscal form of taxation for every company that generates a tax profit in the tax balance. The Corporate Income Tax Law stipulates a class of expenses that reduce the tax base, the income exempt from taxation, as well as tax reliefs and transferred carryforward tax losses reducing the amount of the tax liability (Law on corporate income tax, 2001). These are all the legal approaches used by modern taxpayers when establishing the corporate tax policy. A tax shelter is a determinant of profitability of great importance. Interest expenses are deductible expenses in the tax balance of a company, permanently reducing the tax base. Taking this into account, the capital structure dominated by borrowed resources is a logical choice for highly profitable companies. The companies that make financial gains achieve better credit conditions in the capital market. In this regard, companies are more prone to credit indebtedness in relation to share capital issuance, simultaneously reducing the tax profit base and achieving higher profitability. S. Vatavu (2015) showed that tax directly affected the profitability of the observed Romanian companies, showing that the companies were more careful with their fund distribution when there were tax burdens.

The negative effect of tax shields on profitability was confirmed by I. C. Pitulice, A. Stefanescu, V. G. Minzu, A. F. Popa and A. M. Niculescu (2016), as well as S. Vržina and M. Dimitrijević (2020). J. M. Kurawa and H. Saidu (2018) did research and discovered adverse statistically insignificant correlation between corporate tax income and profitability. Their findings suggest that the financial performance of the consumer goods corporations listed in Nigeria may experience an improvement if tax experts perform legal tax planning to reduce net tax payments. In that way, net income after taxation increases, which will lead to an increase in the financial success determined by ROA.

Based on foregoing, the following hypothesis is set:

H5: A statistically significant negative effect is determined between the tax shield of joint-stock firms in Serbia and their profitability.

The asset structure

The asset structure represents the share of fixed assets in the sum of a company's assets. The high value of fixed assets, as well as their modernity, is a positive signal for external users, especially creditors. Fixed assets enable companies to reduce risk and bankruptcy costs, unlike the intangible assets that are more business-related and whose value is more difficult to determine. The lower costs of bankruptcy and a financial loss, as well as the fixed assets whose value increases over time, create a greater opportunity for higher performance, which guides a positive influence of the assets structure on profitability. The results of the research study carried out by P. Chandrapala and A. Knápková (2013) showed that Czech companies use efficiently capital-intensive technology and a greater share of fixed assets in total assets leads to higher returns for these companies.

Concluding that tangibility is the only determinant of the negative influence on profitability, S. Vatavu (2015) indicates that Romanian manufacturing companies are more profitable in circumstances when they invest in tangible assets on a smaller scale and have a high share of capital in the total equity structure. K. Mijić, D. Nuševa and D. Jakšić (2018) and H. T. Nguyen and A. H. Nguyen (2020) also believe that there is an adverse effect. Analyzing the capital structure effect on profitability, N. P. Singh and M. Bagga (2019) conclude that the asset tangibility of Indian companies has no influence on company performance measured by return on assets during the period 2008-2017. Furthermore, M. G. Ajao and E. Ogieriakhi (2018) find that the companies with a greater share of fixed assets are less profitable and that a larger volume of investments, research and development activities and innovation is in line with a larger volume of intangible assets, but this indicator does not represent a significant factor of insurance companies' performance.

Bearing in mind the above-mentioned research studies carried out in the past, the following hypothesis is set:

H6: A statistically significant negative effect is determined between the share of fixed assets in the total assets of joint-stock firms in Serbia and their profitability.

Growth

The possibility of growth is one of the prerequisites for long-term business and sustainable performance. A company's ability to achieve growth guides its ability to successfully realize investments. The favorable influence of growing possibilities on profitability is noticed by T. P. V. Le and T. B. N. Phan (2017), U. Ali *et al* (2018), K. Mijić *et al* (2018), H. T. Nguyen and A. H. Nguyen (2020) and H. Abdullah and T. Tursoy (2021). Having made an analysis of the influence of the internal factors on financial performance of Czech companies in the period from 2005-2008, P. Chandrapala and A. Knápková (2013) found that sales growth had a positive influence on return on assets, which indicates a positive influence of the marketing strategy on company performance. A positive but insignificant influence of growth on profitability is noticed in the research study carried out by B. Vuković *et al* (2020), who claimed that sales growth advanced revenue, which is the main element of the net profit and affects a greater yield on the employed assets of logistics companies. Z. Fareed *et al* (2016) showed that company growth had a positive but insignificant influence on the profitability of the power-and-energy sector companies from 2001 to 2012. On the other hand, growth can affect an increase in investment opportunities, which causes a rise in agency costs, as well as reducing profitability, which on its part is consistent with the agency theory of the capital structure. In that direction, M. G. Ajao and E. Ogieriakhi (2018) showed that the insurance companies characterized by a higher growth rate performed worse compared to the companies characterized by a lower growth rate.

Taking into consideration the above-mentioned previous research studies on this topic, the following hypothesis is set:

H7: A statistically significant positive effect is determined between the growth of joint-stock firms in Serbia and their profitability.

DATA AND METHODOLOGY

The research sample includes 473 Serbian-based active joint-stock firms operating in different sectors based on NACE Rev. 2 (Eurostat, 2008) from 2017 to 2021, forming a sample of 2,365 observations. The data source is the TP Catalyst Database (https://www.bvdinfo.com/en-gb/our-products/catalyst/tp-catalyst). Because of the delay caused by the coronavirus pandemic, the latest information that could be obtained at the time of conducting the study was that for 2021. In line with the research goal, the sample can be divided into different sectors, omitting the financial sector (the K section) due to its unique characteristics related to the capital and cash markets rather than market trends. The final classification of the firms by industries is accounted for in Table 1.

It is noticeable that the sample is dominated by the companies belonging to the following sectors: C - Manufacturing and G - Wholesale and retail trade; repair of motor vehicles and motorcycles, which is logical given the fact that these are the sectors with the largest number of the registered companies in the Republic of Serbia.

Table 1 An overview of the distribution of the enterprises by industry

NACE Rev. 2 Sections	Number of companies	%
A - Agriculture, forestry and fishing	31	6.55%
B - Mining and quarrying	4	0.85%
C - Manufacturing	143	30.23%
D - Electricity, gas, steam and air conditioning supply	5	1.06%
E - Water supply; sewerage, waste management and remediation activities	5	1.06%
F - Construction	58	12.26%
G - Wholesale and retail trade; repair of motor vehicles and motorcycles	66	13.95%
H - Transportation and storage	32	6.77%
I - Accommodation and food service activities	22	4.65%
J - Information and communication	26	5.50%
L - Real estate activities	24	5.07%
M - Professional, scientific and technical activities	40	8.46%
N - Administrative and support service activities	10	2.11%
P - Education	2	0.42%
Q - Human health and social work activities	1	0.21%
R - Arts, entertainment and recreation	1	0.21%
S - Other service activities	3	0.63%
Total	473	100%

Source: Authors

The variables were chosen based on the variables used in the previous research, as well as the available data contained in financial statements, so the final assessment of the influence of the observed variables was made using panel regression analysis. Table 2 presents the selection of the dependent and independent variables in the evaluated model.

Table 2 The overview of the types, names, and formulas of the model variables

Variable type	Variable name	Formulation
Dependent	Profitability	ROA (Net profit/Total Assets)
Independent	Capital structure	Total Debt/ Total Assets
	Size	Ln(Total Assets)
	Liquidity	Current ratio
	Cash flow	Sum of net profit and depreciation/Total assets
	Tax shield	Income tax liability/ Gross profit
	Asset structure	Fixed assets/ Total assets
	Growth	$(Sales_t\text{-}Sales_{t-1})/Sales_{t-1}$

Source: Authors

The empirical analysis of the assessment of the financial indicators with respect to profitability began with the descriptive statistics of the financial indicators that would represent the variables in the model. The assessment of the influence of the firm-specific characteristics on the profitability of the joint-stock firms registered in Serbia was conducted by means of panel regression analysis. The analysis focused on the firms continually operating between 2017 and 2021. Therefore, the subsequent regression equation was to be evaluated:

$$ROA_{it} = \beta_{it} + \beta 1\ CST_{it} + \beta 2\ SZ_{it} + \beta 3\ LQ_{it} + \beta 4\ CHF_{it} + \beta 5\ TSH_{it} + \beta 6\ AST_{it} + \beta 7\ GRW_{it} + u_{it}, \quad (1)$$

where: i stands for each company (i = 1,2,3…, n), t refers to each year (t = 1,2,3,4,5), *ROA* relates to profitability, *CST* is used for the capital structure, *SZ* stands for the size, *LQ* stands for liquidity, *CHF* is used for cash flow, *TSH* refers to a tax shield, *AST* relates to the asset structure, *GRW* means growth, β_{0i} is the average initial level depending on the variable,

$\beta_{0i} = \beta_0 + \mu_i$, $\beta_{1, 2, 3, 4, 5, 6, 7}$ represents the regression coefficient, and u_{it} is used for the random error.

Before conducting the empirical part of the research concerned with the use of the panel regression analysis, it was crucial to test the assumptions about the application of that approach, such as multicollinearity, autocorrelation and heteroskedasticity using dedicated tests.

RESULTS AND DISCUSSION

In light of the general data analysis, the most significant data presented in the descriptive statistics (Table 3) are the average data. To avoid the influence of the extreme values of certain variants of the model, the average values are interpreted using the median values. In general, the average profitability of the sample is low, with an average rate of 0.5% of return on assets. Therefore, the question, "How are new investments financed?" arises. The findings prove that joint-stock corporations are on average funded from borrowed sources to the extent of 42% of the total business financing sources, mainly relying on own sources in the form of retained earnings or capital collected through shares sold. In addition, the median value of the current liquidity indicator is 1.192, which falls below the reference value of 2. This means that there is a limited amount of cash or easily convertible assets available inside a business for settling obligations. The asset structure of the companies in the sample is slightly oriented towards fixed assets. In other words, long-term assets correspond to a

Table 3 The descriptive statistics findings

Variable name	No. of observations	Median	Mean	Minimum	Maximum	Standard deviation
ROA	2,365	0.005	0.001	-0.940	0.900	0.115
Capital Structure	2,365	0.425	0.597	0.001	10.582	0.739
Size	2,365	8.140	8.126	2.489	15.086	2.124
Liquidity	2,365	1.192	2.612	0.001	264.897	7.560
Cash flow	2,365	0.028	0.030	-0.927	0.942	0.115
Tax shield	2,365	0.003	0.076	-72.054	80.000	2.641
Asset Structure	2,365	0.599	0.580	0.276	0.998	0.276
Growth	2,365	0.018	0.975	-1.000	1,048.407	27.082

Source: Authors

Table 4 The findings of Pearson's correlation index

Variable name	ROA	Capital Structure	Size	Liquidity	Cash flow	Tax shield	Asset Structure	Growth
ROA	1							
Capital Structure	-0.2639**	1						
Size	0.1537**	-0.0414*	1					
Liquidity	0.0236	-0.1756**	-0.0796**	1				
Cash flow	0.9736**	-0.2482**	0.1267**	0.0039	1			
Tax shield	-0.0005	-0.0034	-0.0119	0.0089	-0.0002	1		
Asset Structure	-0.1857**	-0.0448*	0.0972**	-0.1516**	-0.1617**	-0.0075	1	
Growth	-0.0103	0.0130	-0.0003	-0.0099	-0.0097	-0.0055	0.0226	1

Note: The significance level: ** for 1% / * for 5%

Source: Authors

sufficient extent to the guaranteed substance for creditors in the capital market. Observing the medial value of growth, it is noticeable that the companies in the sample achieve an average of 1.8% growth in sales revenue, which is not a high value. That, however, could be the basis for sustainability in business.

Preliminarily, the identification of the direction of the linear connection among the variables relies on the correlation coefficients presented in Table 4. In the context of the regression model, Pearson's correlation index reveals a statistically significant link between each independent variable and the profitability indicator, except for liquidity and the tax shield. Strong positive correlation is evident between the firm size and cash flow, on the one hand, and profitability on the other. Contrary to the expectations, a significant negative linear relationship is observed between the capital structure and the tax shield, on the one hand, and ROA on the other. To draw the final conclusions about the effects of the independent variables on profitability, it is necessary to employ panel data analysis.

The first step in the panel regression analysis is to evaluate the models with fixed and random specifications. Bearing in mind the fact that profitability, as well as its determinants used in this paper, are not continuous between the comparative data and the time units, using the models with constant regression parameters is considered to be inadequate. Furthermore, it proves that it is necessary to determine which of the two previously presented specifications is more adequate for the model evaluation that is the subject matter of the research. The Hausman test is used when selecting the specification. Its basic assumption under the null hypothesis stipulates that the difference between the fixed and random model specifications is not statistically significant. Since the test result p = 0.0000 is under the significance threshold of 5%, the null hypothesis is rejected, as well as the initial assumption. Considering the above-mentioned, applying the fixed specification model when estimating the regression coefficients in the panel analysis is considered to be more appropriate. To test the completeness of the basic assumptions about the model evaluation using panel analysis, it is necessary to inquire about the existence of multicollinearity, autocorrelation and heteroskedasticity. The presence of multicollinearity, which refers to significant correlation among the independent variables, is the fundamental assumption that requires testing. Table 5 accounts for the outcomes of the multicollinearity test conducted on the independent variables. Variance Impact Factors (VIF) were employed to assess multicollinearity.

Table 5 The findings of the Variance Impact Factor (VIF)

Variables	VIF	1/VIF
Capital Structure	1.12	0.89
Size	1.04	0.96
Liquidity	1.07	0.93
Cash flow	1.13	0.89
Tax shield	1.00	0.99
Asset Structure	1.08	0.93
Growth	1.00	0.99
Mean VIF	1.06	-

Source: Authors

Given the fact that the VIF coefficients for all the variables are less than 10, it is possible to conclude that there is no multicollinearity in the set model. Furthermore, it is necessary to examine the additional assumptions of the panel analysis. The results of the mentioned tests are shown in Table 6.

Table 6 The testing of the basic assumptions of the panel analysis

Test name	Test value	*p*-value
Wooldridge test	19.130	0.0000
Breusch-Pagan / Cook-Weisberg test	8.700	0.0032
Pesaran cross-section independence test	1.554	0.1201

Source: Authors

Autocorrelation occurs during the analysis of the time series, where random errors between the observation period are correlated. Although the presence of autocorrelation can be determined graphically, a more accurate result could be achieved using the Wooldridge test (Drukker, 2003) shown in Table 6. The results of the Wooldridge test show that the value of p = 0.0000 under the significance threshold (5%). Thus, the null hypothesis is rejected, which stipulates the incidence of autocorrelation. The presence of heteroskedasticity was assessed using the Breusch-Pagan/Cook-Weisberg test. The null hypothesis, which posits the existence of the model heteroskedasticity, is not accepted given the fact that the value of p = 0.0032 is lower than the predetermined significance level. Based on the results of Pesaran's test of cross-sectional independence, p value (p = 0.1201) is greater than the significance level, for the reason of which fact the null hypothesis fails to be rejected. This means that there is no strong evidence to suggest cross-sectional dependence among the observations in the dataset. Since the initial assumptions about autocorrelation and heteroskedasticity, which are a prerequisite for an accurate model evaluation, are violated during the regression model evaluation, it is necessary to further examine the specification and employ robustness analysis. The transformed model is presented in Table 7.

Table 7 The findings of the modified regression model

ROA / Variables	Coefficient	*p*-value
Capital Structure	-0.0022	0.001
Size	0.0016	0.000
Liquidity	0.0001	0.069
Cash flow	0.9859	0.000
Tax shield	-0.7400	0.836
Asset Structure	-0.0147	0.000
Growth	0.0001	0.074
Constant	-0.0314	0.000
Number of observations	2,365	
R^2	0.9852	

Source: Authors

Finally, the regression equation of the final model is as follows:

$$ROA_{it} = - 0.0314 - 0.0022\ CST_{it} + 0.0016\ SZ_{it} + 0.0001\ LQ_{it} + 0.9859\ CHF_{it} - 0.7400\ TSH_{it} - 0.0147\ AST_{it} - 0,0001\ GRW_{it} + u_{it} \quad (2)$$

The obtained results indicate that the capital structure has a negative and statistically significant effect on the profitability of the sampled firms, which resulted in accepting the hypothesis H1, which is in line with the research done by L. Booth *et al* (2001), P. Bauer (2004), S. Vatavu (2015), K. Mijić *et al* (2016), M. Khodavandloo *et al* (2017), I. Blazková and O. Dvouletý (2018), N. M. Alsharari and T. R. Alhmoud (2019) and H. T. Nguyen and A. H. Nguyen (2020). It is obvious that the observed joint-stock companies are more efficient from the point of view of their financial performance when relying to a greater extent on their capital taking into consideration the fact that financing from other sources leads to an increase in financial risk and a decrease in profitability. High levels of debt can result in significant interest expenses, which can reduce a company's net income and consequently its profitability. In addition, the presence of an excessive debt has the potential to result in negative reactions inside the market. The perception of a firm being heavily leveraged by investors, creditors, and customers could be considered as a source of risk, potentially influencing its stock price, credit rating, and commercial relationships. Consequently, these factors have the potential to have an influence on the company's profitability.

Moreover, the independent variables such as the size and cash flow have beneficial statistically significant effects on a company's profitability, which implies the accepting of the hypotheses H2 and H4. The influence of the size on profitability is in accordance with the results obtained by P. Chandrapala and A. Knapkova (2013), Z. Fareed *et al* (2016), M. Khodavandloo *et al* (2017), U. Ali *et al* (2018), I. Blazkova and O. Dvouletý (2018), C. F. Egbunike and C. U. Okerekeoti (2018), S. Nanda and A. K. Panda (2018), E. Menicucci (2018) i A. S. Alarusi and X. Gao (2021). Bigger firms tend to be more profitable because they benefit from the economies of scale, usually dominate their

markets, have better access to capital, diversify their revenue sources, reach global markets, negotiate favorable terms with suppliers, invest in innovation and brand recognition, operate efficiently, and maintain a competitive edge. As far as cash flow is concerned, positive cash flow has a positive influence on profitability by providing the liquidity needed to meet short-term obligations, invest in growth, service a debt, manage working capital, and weather financial challenges. It allows for strategic investments, dividend payments, and contributes to higher earnings and overall financial health. Those results are also confirmed by S. C. Chang *et al* (2007) and T. P. V. Le and T. B. N. Phan (2017). Furthermore, the asset structure has a significant adverse influence on the profitability of the Serbian joint-stock firms, which is consistent with the conclusions of S. Vatavu (2015), K. Mijić *et al* (2018) and H. T. Nguyen and A. H. Nguyen (2020). So, the hypothesis H6 is accepted. This implies that the allocation of significant resources towards fixed assets or the infrastructure by publicly traded companies did not yield the expected increase in the return on engaged funds, nor were the fixed resources utilized optimally during the period under examination. A high proportion of fixed assets can negatively influence profitability due to high depreciation and maintenance costs, reduced liquidity, limited flexibility, and the potential for unprofitable capital projects. Additionally, using a debt to finance fixed assets can increase interest expenses and burden the balance sheet, decreasing overall profitability. Finally, liquidity, growth and the corporate income tax shield are not statistically significant when contemplating the influence on profitability, for which reason the hypotheses H3, H5 and H7 are rejected. While liquidity is crucial for financial stability and meeting short-term obligations, it may not have a direct influence on profitability. Liquidity ensures the ability to cover immediate expenses but does not necessarily enhance the core operations that generate a profit. Considering sales, sales growth alone does not guarantee higher profitability. If profit margins are thin or the cost of sales increases proportionally with revenue, sales growth may not lead to increased profits. Furthermore, the tax shield, often associated with interest expense deductions on the debt, may not be significant if a company does not have a substantial debt or operates in a tax-efficient manner. In some cases, other factors might offset potential tax savings.

CONCLUSION

In conclusion, this study underscores the intricate dynamics of the financial factors and their influence on profitability. Fostering a deep understanding of the interplay between the capital structure, size, liquidity, cash flow, asset structure, tax shield, and sales growth is essential for sound financial decision-making. The findings underscore the need for a balanced and strategic approach to financial management, which takes into consideration the specific circumstances and goals of each firm. Moreover, the research highlights the importance of adaptability and the context-aware financial strategies that can navigate the complexities of today's dynamic business environment, ultimately leading to enhanced profitability and financial sustainability.

The results of the panel regression model evaluation of the fixed specification on the sample of 473 Serbian joint-stock corporations operating between 2017 and 2021 have pointed to several firm-specific factors significantly influencing corporate profitability. The culmination of this research provides valuable insights into the complex relationship between various financial factors and a firm's profitability. The analysis has revealed distinct patterns in how these factors influence profitability, shedding light on the critical aspects of financial management and decision-making. First and foremost, the findings clearly indicate that the capital structure, including the use of a debt, has a discernible negative influence on profitability. On the other hand, the research demonstrates the fact that the company size has a positive effect on profitability. Interestingly, the study has not uncovered any significant relationship between liquidity and profitability. Bigger firms tend to benefit from the economies of scale, which can translate into higher profit margins. While liquidity is essential for short-term obligations, it may not directly influence profitability, which suggests that

maintaining an adequate liquidity level is crucial for financial stability but not necessarily for a profit generation. Conversely, the analysis reveals that cash flow has a positive influence on profitability. Companies with robust cash flows have better opportunities to invest in opportunities, weather financial challenges, and meet operational expenses, ultimately contributing to higher profits. The asset structure, which pertains to the composition of a firm's assets, has been identified as having a negative influence on profitability. Taking into account the median values of this indicator for the companies included in the sample, which envisages the predominance of fixed assets in the asset structure, this result is considered to be extremely important for joint-stock companies and could direct companies towards making future investments in intangible assets. Surprisingly, the research findings indicate that tax shields have no significant effect on profitability, which can be attributed to the factors such as tax efficiency, tax management strategies, and the interplay of various other financial variables that offset potential tax savings. Lastly, the analysis has not found any significant relationship between sales growth and profitability, which suggests that sales growth alone does not guarantee increased profits, as profitability hinges on several other factors, including cost management and pricing strategies.

The findings of this research study provide insights for company executives and management teams seeking to make decisions on their firm's financial structure and strategies. This knowledge could assist investors in making investment decisions and assessing the financial health and potential returns of their investments. The obtained results are also beneficial to the governing bodies of companies in transition or developing countries when considering the factors influencing profitability, which can be highly significant especially in times of economic or epidemiological crises similar to the COVID-19 virus pandemic. Academics and researchers in the fields of finance and economics could use these findings as the basis for further research and analysis.

The limitations of the paper also presuppose recommendations for future research. In this direction, future research could include companies in a specific industry or in another geographical area. The influence of some nonfinancial variables can be considered as well. Recommendations for future research also suggest the evaluation of the model that takes into account the macroeconomic context. In addition, it is necessary to consider whether there is a difference between the effect of firm-specific factors on profitability during and after the COVID-19 crisis.

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