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Article

Determinants of Firm-Level Sales Growth in a Transition Economy: Panel Evidence From Serbian Companies

Bojana Novićević Čečević[1], Tamara Rađenović[2,*], Ljilja Antić[1]

[1]Department of Accounting, Mathematics, and Informatics, Faculty of Economics, University of Niš, 18000 Niš, Serbia
[2]Department for Social Development and Humanization of Working and Living Environment, Faculty of Occupational Safety, University of Niš, 18000 Niš, Serbia
*Correspondence: tamara.radjenovic@znrfak.ni.ac.rs (Tamara Rađenović)

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Abstract

Sales growth represents a fundamental indicator of a company's business vitality and competitive capability, as it not only reflects success in meeting market demands but also provides essential resources for reinvestment, innovation, market expansion, and long-term business sustainability. It also reflects managers' ability to use available resources efficiently to expand the firm's capacity in the future. Effective resource utilization eliminates barriers to business growth and supports the achievement and maintenance of competitive advantage in the market. The purpose of this research is to explore which factors contribute to improving company performance, as indicated by the Sales Growth Rate (SGR). The sample consists of active companies in Serbia, identified based on the Serbian Business Registers Agency (SBRA)'s publication of the most successful firms. Data were collected over a five-year period (2019–2023), resulting in a sample of 375 observations. To address the research objective, statistical techniques, including correlation and panel regression analyses, were employed. The results indicate that firm size, liquidity, Return on Assets (ROA), and leverage have a positive and statistically significant impact on company growth, as measured by the SGR. In addition to these factors, company growth also depends on monetary and fiscal policy measures, incentive policies, and adequate institutional support.

Keywords: company growth; ROA; liquidity; leverage; performance improvement
JEL: D22, L25, M41

1. Introduction

The way in which companies grow, as well as the identification of key determinants of such growth, represents a contemporary, complex, and highly relevant topic that remains at the forefront of interest for both domestic and international researchers. Company growth is not merely a measure of internal success; rather, it carries multidimensional implications at both the micro and macroeconomic levels (Vaz, 2021). On the micro level, firm growth leads to increased capacity, productivity, competitiveness, and job creation, fostering both individual and professional development of employees. In today's dynamic market environment, sustainable growth is increasingly viewed as a reflection of entrepreneurial agility, adaptability, and the capacity to seize opportunities.

On the macro level, the growth of individual firms contributes significantly to overall economic development, the creation of social wealth, and improved living standards. A dynamic and healthy small and medium-sized enterprises (SME) sector, in particular, plays a critical role in economic diversification, innovation, and balanced regional development. Therefore, understanding the factors that either stimulate or constrain firm growth is not only an academic concern but also a foundational element for shaping effective economic policy, development strategies, and entrepreneurship support programs (Marković et al., 2022).

The core assumption of this study is that company growth is not a random process but is influenced by a range of factors, both internal and external. These factors can be associated with the characteristics of firm owners, the resources and capabilities available to the company, and the broader environment in which it operates. Existing literature offers diverse perspectives on the nature of firm growth. While some scholars argue that growth follows a linear and predictable trajectory, others suggest it often results from opportunistic behavior and unpredictable market dynamics (Gupta et al., 2013). Firms with a strong orientation toward growth are considered critical drivers of national economic development. Nevertheless, the way in which entrepreneurs perceive and define growth can vary considerably. Growth is most commonly expressed through increases in sales, value creation, and business expansion. Still, it need not be limited to quantitative indicators, qualitative facets like enhanced market position, upgraded product quality, and stronger brand reputation can reflect it as well.

This research makes several key contributions to the literature on firm growth in transition economies. First, it directly addresses a contextual gap by focusing on Serbia, a post-transition economy where institutional conditions (legal systems, capital markets, financing access) differ markedly from those in developed countries. While

firm growth is a widely studied topic, most existing studies are grounded in developed market contexts; this work provides much-needed insights from a transition market where firms rely heavily on internal finance and face high regulatory uncertainty. Second, it offers an integrated analysis of multiple financial determinants of sales growth (firm size, liquidity, profitability, and leverage) within a single empirical framework. Prior studies in the region have typically examined individual aspects of growth or focused on specific subsets of firms (e.g., only SMEs) (Mijoč, 2024; Tekić et al., 2023a; Vuković et al., 2020). In contrast, this panel dataset of large, top-performing Serbian companies allows the evaluation of the combined influence of these factors over time, something rarely done in the Western Balkan context (Vuković et al., 2022; Naumoski, 2022; Lee, 2023). This comprehensive approach not only illuminates how internal resources and financial policies jointly affect growth, but also captures dynamic effects (through 2019–2023, including the COVID-19 period) that cross-sectional studies cannot. Third, this study bridges theoretical perspectives by interpreting the results through the lenses of the resource-based view, dynamic capabilities, and institutional theory. By doing so, it highlights the interplay between firm-specific capabilities and external institutional constraints in driving growth, an intersection that has been underexplored in prior research on transition economies. Notably, the finding that higher leverage correlates with higher sales growth in these firms (despite the typically higher risk of debt) challenges conventional wisdom and suggests that under certain institutional conditions, external financing can be an effective catalyst for growth.

Collectively, these contributions distinguish this work from earlier studies and underscore its value. It not only fills an important gap by providing evidence on growth determinants for large firms in a transition economy, but also offer novel insights that refine existing theories of firm growth. The results can inform policymakers and practitioners: for instance, the positive role of liquidity and prudent leveraging in spurring growth implies that improving access to working capital and credit in Serbia could stimulate business expansion. In sum, this research serves as a critical reference point for understanding firm growth under institutional constraints and lays groundwork for future comparative studies in other transitioning markets. Therefore, the main objective of this research is to identify the drivers of the sales growth of companies operating in Serbia. The analysis focuses on selected financial indicators, which are viewed as key determinants of firm growth potential within the specific economic environment of a transition economy. Based on the outlined research problem, the structure of this study proceeds as follows: the introductory section is followed by a review of the theoretical framework and relevant literature, with special attention given to prior empirical studies and findings of authors working on similar issues. Drawing upon this review, the research hypothesis is formulated. The subsequent section presents the research methodology in detail, followed by the empirical results and their interpretation. The final section provides conclusions derived from the research process, highlighting potential implications and directions for future studies.

2. Theoretical Background

The theoretical foundation of this paper rests on three complementary approaches that enable a deeper understanding of the mechanisms of firm growth in a transition economy. First, under the resource-based view (RBV), internal strengths, such as financial stability, operational performance, and leadership expertise are key drivers of sustained growth and competitive advantage (Rađenović and Krstić, 2017; Burger et al., 2024). In the context of our study, indicators such as liquidity, profitability, and capital structure are treated as reflections of a firm's internal capacity to exploit market opportunities for expanding sales.

Second, dynamic capabilities theory highlights a firm's ability to continuously adapt, integrate, and reconfigure its resources in line with a changing environment (Rađenović and Krstić, 2017). In Serbia, where firms operate under unstable regulatory and macroeconomic conditions, adaptive capacity, for example, through restructuring the financial portfolio or altering market strategy, can be a critical driver of growth. Our analytical model therefore includes variables that capture firms' financial flexibility in such an environment.

Third, institutional theory helps explain how external factors, such as the efficiency of capital markets, the availability of bank financing, and regulatory and tax policies, affect firm behavior and performance (Peng et al., 2009). In transition economies, these institutional factors are often not fully developed, which constrains the standard growth mechanisms present in advanced economies. Using an institutional perspective, the paper considers the broader context in which firms make decisions about liquidity, leverage, and profit reinvestment.

By combining these three theoretical frameworks, the paper provides a comprehensive analysis of how internal resources and strategies, together with external institutional determinants, shape patterns of sales growth among firms in Serbia. In doing so, it positions itself at the intersection of microeconomic and institutional approaches to growth in transition settings.

A company growth can be defined as an increase in its size over a specific period. There are several paths which companies can take to achieve growth, including expanding the production and sales of existing products, launching new products, or upgrading and modernizing current offerings. The pace and extent of this growth largely depend on the company financial capacity and the effectiveness of its management. When individual companies grow, they contribute positively to the overall economic development of a country. In general, the greater the number of businesses experiencing growth, the stronger and more dynamic the national economy becomes.

The sales growth rate indicates the success of a company's investments in the previous accounting period. Since it can serve as a parameter for assessing the demand for a company's products as well as its competitiveness, it may provide a solid basis for determining future growth. The expansion of product sales, reflected in high sales, is highly beneficial for a company, including its shareholders, who receive their rewards in the form of dividends (Pervan et al., 2019). A company's achieved sales can also be a key factor in determining its overall value. The volume of product sales indicates whether the company's products meet growing consumer needs, whether their quality and functionality are satisfactory, whether the product distribution system is adequately established, etc. The higher the customer satisfaction, the greater the sales volume and the realized revenue.

Therefore, the objective of this study is to identify the factors influencing the growth of companies operating in Serbia, measured by the sales growth rate. The sales growth rate represents the percentage increase in a company's sales over a specific period (Vuković et al., 2022). The general determinants of sales growth can be categorized as external and internal factors. External factors refer to the macroeconomic environment, the phase of the business cycle, inflation rates, interest rate levels, the development of the financial market, monetary and fiscal policy, and similar aspects. Internal determinants are those dependent on the company and its ability to generate revenue, while external determinants are influenced by broader economic conditions and occur at the macroeconomic level. In addition to these widely recognized classifications, there are also factors affecting sales growth that are more difficult to define and identify.

The size of a company can be assessed through different measures, such as asset worth, employee count, total revenue, or operational scale. A suitable measure for assessing the impact of company size on growth rate is the number of employees. Bigger enterprises are more likely to improve operational efficiency, broaden their market presence, and take advantage of scale economies. The study conducted by Niskanen and Niskanen (2006) examined small and micro-enterprises operating in Finland and found that as firm size increases, the growth rate also rises, but only up to a certain threshold, after which the growth rate begins to decline. The relationship between firm growth and size was also confirmed by Mateev and Anastasov (2010). They further concluded that firm growth depends on financial structure and productivity, while investments in research and development (R&D) and other intangible assets do not have a significant impact on increasing the growth rate. An empirical study by Kachlami and Yazdanfar (2016) demonstrated a statistically significant and positive effect of firm size on growth rate. Larger firms in Sweden achieve higher growth rates as they are more inclined to expand their operations, both by entering new markets and introducing new products.

Liquidity refers to a company's ability to meet its short-term obligations as they come due (Djordjević et al., 2024). A higher level of liquidity indicates that a company settles its obligations on time, while a low level of liquidity suggests that some short-term liabilities remain unpaid. Previous studies have investigated the relationship between growth rate and three liquidity measures: current ratio, quick ratio, and cash ratio. Current liquidity reflects a company's capacity to meet its short-term obligations using its short-term assets. A company's ability to cover short-term obligations without relying on inventory is measured by the quick ratio (Vintilă and Nenu, 2016). The effectiveness with which a company meets its short-term financial obligations using available cash is measured by the cash ratio.

Megaravalli and Sampagnaro (2019) identified a strong positive link between liquidity and growth in a sample of 45,000 family-owned SMEs in Italy, with liquidity ratio, solvency, firm age, cash flow, and working capital as key predictors. Higher liquidity was associated with increased growth potential.

The research by Voulgaris et al. (2003) focused on identifying the determinants of sales growth among Greek SMEs. A panel analysis was applied to a sample of 143 companies, determined that key drivers of firm growth include liquidity, profitability, leverage, workforce efficiency, and firm size. Specifically, liquidity was found to have a negative effect on firm growth rates. In companies with higher growth rates, lower liquidity levels were observed, as these firms primarily sought to balance the supply and demand for financial resources.

Profitability serves as an indicator of a company's success and long-term sustainability, reflecting its capacity to generate profits in relation to revenue, assets, or equity. It reflects the overall efficiency of management in generating profit. Specifically, profitability expressed through Return on Assets (ROA) measures a company's ability to generate net income based on its asset level, indicating how efficiently the company utilizes its existing assets to create profit (Novićević Čečević et al., 2025a). A higher ROA value represents a stronger ability of a company to achieve a high level of profitability (Vătavu, 2015). In a study examining the impact of various factors on the profitability of agricultural companies operating in the Republic of Serbia, Novićević Čečević et al. (2025b) found that factors such as total assets, fixed assets, leverage, and liquidity have a negative impact on ROA.

In the study conducted by Zekić-Sušac et al. (2016), factors influencing company growth in the industrial sector were examined using a sample of Croatian companies. Among other factors (such as the liquidity ratio, leverage indicators, and the ratio of intangible assets to total assets), they investigated the relationship between profitability and company growth and found a positive correlation between these indicators. The positive impact of profitability on firm growth rates was also explored by Mijoč (2024).

Although most empirical studies have concluded that growth and profitability are positively correlated, a smaller number of authors have found an inverse relationship between these two variables (Serrasqueiro et al., 2023).

In some cases, profitability does not show a significant correlation with sales growth, as certain firms may sustain high profit levels despite a decline in growth rate. This can occur due to oligopolistic market structures or barriers to entry for new competitors (Vuković et al., 2022). For instance, Loi and Khan (2012) analyzed companies in Belgium and Luxembourg over a five-year period, examining the relationship between financial indicators and firm growth rates. Their conclusion was that there is no connection between profitability and growth rate. A study by Markman and Gartner (2002) found that growth and profitability were not significantly related.

Leverage measures the proportion of a company's total debt to its total assets, reflecting the degree to which the firm depends on borrowed capital to support its operations. A higher level of leverage suggests that the company obtains additional financial resources from the capital market to cover its short-term and long-term obligations. Companies with higher levels of leverage face greater financial risk compared to companies with lower levels of leverage.

If a company primarily relies on leverage, its capital structure is considered aggressive, as it allows for higher profits but comes with increased risk. Conversely, when equity dominates, it is referred to as a conservative capital structure, which carries lower risk but also limits potential profits. The ideal capital structure balances risk and return and is considered optimal when leverage does not exceed 50% of total financing sources (Melananda and Sari, 2024). Based on collected information about a company's growth potential, management decides whether to take on additional leverage or finance investments with internal funds. Although future growth opportunities may seem promising, managers are advised to finance investments as much as possible from internal resources to avoid situations where they cannot meet their current obligations.

Gill and Mathur (2011) conducted an empirical study to define the factors influencing the potential growth of Canadian companies. The sample consisted of 164 manufacturing firms listed on the Toronto Stock Exchange over a three-year period (2008–2010). The results of this study showed that the growth of Canadian firms is influenced by company size, current liquidity, leverage, cash flow, firm age, and industry sector. A positive correlation with growth was observed for current liquidity, leverage, and cash flow, while a negative relationship was found for company size and age. As a company grows, its need for additional capital increases to support business expansion, including higher production, investments in fixed assets, and more intensive marketing and distribution activities. However, once a company reaches a phase of stable and efficient growth, its ability to manage costs improves, which may reduce reliance on leverage. As a result, the capital structure may become less dependent on external financing. The relationship between a company's growth and its capital structure is not direct, as it depends on a variety of internal and external influences. Taking into account all previous research, particularly the study conducted by Megaravalli and Sampagnaro (2019), we propose the following hypothesis:

H1: The business performance of companies in Serbia, indicated by sales growth rate, is positively affected by firm size, liquidity, profitability, and leverage.

3. Methodology

The objective of this study is to examine the factors influencing the growth of companies operating in Serbia that are ranked among the top 100 most successful businesses. As part of its regular yearly operations, the Serbian Business Registers Agency (SBRA) prepares a list of the country's most successful companies. The "TOP 100" rankings of business entities are based on key financial indicators reported in annual financial statements. For our analysis, we selected the list of the most successful companies based on net profit.

Based on the reviewed literature it is evident that company growth can be measured in various ways. The most commonly used indicators of company growth include the number of employees, asset growth, and sales growth. For labor-intensive companies and those that outsource a significant portion of their processes, it is appropriate to assess company growth based on the number of employees. However, for capital-intensive companies, measuring growth by the number of employees may introduce a certain degree of bias. In such cases, company growth should be measured based on its assets. To avoid bias and discrimination, many authors argue that sales growth is a more suitable measure for assessing overall business performance. Sales growth data is relatively easy to obtain, applicable to companies regardless of their size and industry, and widely used in empirical research (Anton, 2019). Additionally, sales growth is an important determinant of company profitability and serves as a key driver of economic growth. Therefore, the dependent variable in this study is a sales growth rate.

For this study, information covering the period 2019–2023 was obtained from publicly available financial reports on the SBRA website, as well as from other authorized credit rating sources. During the calculation of performance indicators used in the analysis, it was observed that for certain years and specific companies, obtaining accurate results was not possible due to some financial report entries being recorded as zero. As a result, these companies were excluded from further analysis. Additionally, companies that were not operating during the analyzed period, those that failed to submit financial reports regularly, and those undergoing bankruptcy or liquidation were also excluded from the initial dataset. After removing firms with missing data and standardizing the dataset, the analytic sample comprises 75 companies, yielding 375 firm-year observations.

The structure of the analyzed sample, categorized by company type, region, and business sector, is presented in Table 1.

Table 1. Sample characteristics.

Variables	Frequency	%
Type of Business Entity		
LLC (Limited Liability Company)	58	77.3
Public Enterprise	3	4
Joint-Stock Company	14	18.7
Region		
Belgrade	31	41.4
Šumadija and Western Serbia	12	16
Vojvodina	25	33.3
Southern Eastern Serbia	7	9.3
Sector		
Wholesale and Retail Trade	12	16
Manufacturing Industry	39	52
Agriculture	1	1.3
Construction	6	8
Electricity Supply	3	4
Financial Activities	1	1.3
Accommodation and Food Services	1	1.3
Mining	2	2.7
Information and Communication	4	5.3
Transport	3	4
Arts and Entertainment	3	4
Total	75	100

Source: own.

In this study, all companies fall into the category of large enterprises. When analyzing companies by ownership structure, limited liability companies (LLC) are dominant, accounting for 58 out of 75 companies, or nearly 77.3%. The remaining companies include 14 joint-stock companies, making up 18.7% of the sample, while public enterprises account for only 3 companies (4%).

Since the analyzed companies operate within Serbia, they were also categorized by the region. The majority of companies are located in the capital city, Belgrade, with 31 companies (41.3%). The second-largest group consists of companies operating in the autonomous province of Vojvodina, totaling 25 companies (33.3%). Twelve companies are headquartered in Sumadija and Western Serbia, and seven companies (9.3%) operate in Southern and Eastern Serbia.

The largest number of analysed companies operate in the manufacturing sector, totaling 39 companies (52%). Wholesale and retail trade is conducted by 12 companies (16%), while 6 companies (8%) are engaged in construction. The remaining companies belong to the following sectors: Information and Communication (4), Electricity Production (3), Mining (2), while Agriculture, Financial Services, and Accommodation and Food Services each have one company represented.

For data analysis, the study employed EViews 12 (IHS Markit – EViews, Seal Beach, CA, USA), with Sales Growth Rate serving as the dependent variable. Since the study seeks to evaluate the impact of specific factors (company size, liquidity, ROA and leverage on company growth, these variables were used as independent variables in the model. Based on the conducted literature review, the following independent variables were selected as potential driving factors of sales growth. The Table 2 displays the indicators used, along with their respective abbreviations and methods of calculation.

The analysis of the selected variables is conducted using descriptive statistics, correlation assessments, and panel regression analysis. The analysis is based on a final sample of 75 active companies within Serbia. Financial data were obtained from official financial statements available on the SBRA website. In line with previous research and to pinpoint factors influencing firm growth, the following model has been suggested Eqn. 1:

$$SGR_{i,t} = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon_{i,t} \quad (1)$$

$SGR_{i,t}$ – dependent variable (SGR);
β_0 – model constant;
β_i – Regression coefficients;
X_1 – size (Ln of number of employees);
X_2 – Liquidity (Current Assets/Current Liabilities);
X_3 – ROA (Net Income/Total Assets);
X_4 – Leverage (Debt/Total Assets);
$\varepsilon_{i,t}$ – the error term;
i – company (i = 1, . . ., 75);
t – period (year from 2019 to 2023).

To determine the factors influencing the growth of companies operating in Serbia during the period 2019–2023, the panel regression analysis method was applied. Panel data represent datasets containing repeated observations of selected units of analysis, covering both temporal and spatial dimensions (Tekić et al., 2023b). Panel regression was selected as an appropriate method because it enables the simultaneous consideration of the temporal and cross-sectional dimensions of the data, yielding a more reliable and deeper analysis of relationships between variables. This method is particularly useful for identifying the effects of variables that change over time while controlling for unobserved heterogeneity across firms. Alternative methods, such as classical Ordinary Least Squares (OLS) regression, would not provide the same precision in estimating effects when the sample is heterogeneous and spans multiple periods. Additionally, the study period (2019–2023) includes the COVID-19 pandemic years, which may have influenced firm behavior and growth rates, especially with respect to leverage and liquidity. This was taken into account in the interpretation of the results.

Before analyzing the regression results, the appropriate model for the panel data must be selected: Pooled Regression, Fixed Effects (FEM), or Random Effects (REM).

Table 2. The list of employed variables.

Variable	Acronym	Method of Calculation
Sales Growth Rate	SGR	(Sales of Current Period - Sales of Previous Period)/Sales of Previous Period
Size	Size	Log of Number of Employees
Liquidity	Liq	Current Assets/Current Liabilities
Profitability	ROA	Net Income/Total Assets
Leverage	Leverage	Debt/Total Assets

Source: own. SGR, sales growth rate; ROA, Return on Assets.

Table 3. Descriptive statistics.

	Min	Max	Mean	Median	Std. Dev.	N
SGR	–0.842019	16.32787	0.250149	0.107803	1.051775	375
Size	0.693147	9.610592	6.196069	6.146329	1.359451	375
Liq	0.115226	29.25687	2.483082	1.556296	3.368603	375
ROA	–0.224396	1.045791	0.135516	0.096265	0.132451	375
Leverage	0.005283	0.833974	0.289854	0.254447	0.175266	375

Source: Authors' calculations. Std. Dev., Standard Deviation.

To determine the appropriate model, several tests were conducted: the F-test, the Breusch-Pagan Lagrange Multiplier (LM) test, and the Hausman test.

To determine the suitability of the Pooled versus the FEM model, an F-test was conducted. A significance level above 0.05 leads to acceptance of the null hypothesis. In this case, results indicating that the Pooled model is preferable compared to the alternative hypothesis, which favors the FEM model. If the test results suggest accepting the null hypothesis, this means that there are no significant differences in regression constants among the analyzed companies (Jovičić and Dragutinović Mitrović, 2011).

To test whether the Pooled model is more suitable than the REM model, the Breusch-Pagan LM test was employed. Confirmation of the Pooled model's adequacy implies the absence of significant individual effects in the error term (Jovičić and Dragutinović Mitrović, 2011).

When results from the F-test and Breusch-Pagan LM test indicate that FEM or REM may be suitable, the Hausman test is applied to make the final model selection. The test assesses whether the REM model is more appropriate under the null hypothesis compared to FEM under the alternative hypothesis. Before proceeding with the analysis, the basic assumptions underlying the use of panel data were verified for all constructed models. Specifically, tests were conducted to check for multicollinearity, heteroscedasticity, autocorrelation, and cross-sectional dependence to ensure the proper specification of the final model.

4. Results

The descriptive statistics of the dependent and independent variables used in the model are presented in Table 3.

The median value of the sales growth rate variable is 10, indicating that half of the companies in the observed sample have a growth rate of up to 10%, while the other half exceed this rate. The maximum value of the sales growth rate is 16%, while the negative value suggests that some companies did not experience sales growth during the analyzed period.

Average company size stood at 6.1960, and the values showed no notable spread. The mean value of the current liquidity ratio was 2.4830, indicating that companies had 2.4830 times higher current assets compared to their short-term liabilities. The variation in liquidity ranged from a minimum value of 0.1152 to a maximum of 29.256, highlighting that some companies exhibited exceptionally high levels of liquidity.

The companies in the sample had an average ROA of 13.5526%. Given that the reference value for ROA is $\geq$10%, it is evident that the analyzed companies exceeded this benchmark. The values of this variable ranged from –0.2243 to 1.0457. A negative ROA suggests that, for some firms, earnings were negative in specific years.

With an average Leverage of 0.2898, about 29% of assets were debt-funded across the observed firms. The indicator ranges between 0.005 and 0.833, so none of the companies relied on borrowing to a level near or above total assets. Consequently, the financial structure of these companies does not appear to be at risk. Correlation analysis was performed to determine whether the chosen variables are related, and to gauge the strength and sign of those relationships. Table 4 displays the matrix of correlation coefficients.

The significant negative association between SGR and company size were identified ($r = –0.133$, $p = 0.0100$), suggesting that smaller companies, on average, achieve a higher sales growth rate. The relationship between SGR and liquidity is positive and statistically significant ($r = 0.193$, $p = 0.0002$). This implies that companies with higher liquidity levels tend to have a higher sales growth rate. Additionally, a positive and statistically significant correlation was found between SGR and ROA ($r = 0.169$, $p = 0.0010$). Companies with higher ROA have a greater potential to invest resources in financing future growth. The correlation

Table 4. Correlation matrix.

	SGR	Size	Liq	ROA	Leverage
SGR	1				
Size	–0.132883 (0.0100)	1			
Liq	0.192682 (0.0002)	–0.041361 (0.4245)	1		
ROA	0.169369 (0.0010)	–0.140342 (0.0065)	0.100421 (0.0520)	1	
Leverage	–0.014599 (0.7781)	–0.310024 (0.0000)	–0.446014 (0.0000)	–0.075846 (0.1427)	1

Note: *p*-values in ().
Source: Authors' calculations.

analysis also revealed that the relationship between SGR and leverage is not statistically significant (r = –0.015, p = 0.7781). For companies in Serbia that were part of the analysis, no reliable relationship was found between the level of inleverageedness and sales growth.

Following the correlation analysis, we conducted tests to determine the most suitable regression model. The results are presented in Table 5. Based on the findings, the Fixed Effects Model (FEM) was identified as the most appropriate for adjusting the analyzed data.

Table 5. Model selection test results.

F-test	Breusch-Pagan LM	Hausman
H0: Pooled, H1: FEM	H0: Pooled, H1: REM	H0: REM, H1: FEM
2.261278	168.033749	75.430474
(0.0000)	(0.0000)	(0.0000)

Source: Authors' calculations. FEM, Fixed Effects; REM, Random Effects; LM, Lagrange Multiplier.

Table 6 summarizes the results obtained from the regression analysis. With 40.08% of SGR variance explained, the estimated model is statistically significant per the F-test ($p < 0.0000$). The results of the regression analysis show that all the financial indicators analyzed have a statistically significant and positive impact on the sales growth rate (SGR) of the observed companies during the period from 2019 to 2023. Company size, expressed as the natural logarithm of the number of employees, has a coefficient of 0.4395, indicating that a 1% increase in the number of employees leads to an approximate 0.0044% increase in sales growth, ceteris paribus.

Liquidity, measured as the ratio of current assets to current liabilities, also positively affects growth, with a one-point increase in the liquidity coefficient resulting in a 0.2249% increase in sales growth. Profitability, measured by ROA, has the strongest individual impact, with a coefficient of 3.0218, meaning that if ROA increases by 1, the sales growth will increase by 3.02%. Interestingly, leverage also shows a positive and significant impact (coefficient = 2.6059), which deviates from conventional expectations. This result could suggest that the analyzed companies are efficiently using leverage to finance growth or that higher leverage accompanies more aggressive expansion strategies.

Table 6. Regression results.

	SGR
constant	–4.196104 [–3.433881] (0.0007)
ln Size	0.439465 [2.200011] (0.0286)
Liq	0.224912 [6.860327] (0.000)
ROA	3.021784 [5.284186] (0.0000)
Leverage	2.605865 [3.923967] (0.0001)
R^2	0.408021
Adj. R^2	0.252027
F test	2.615613 (0.000)

Note: t statistics are given in [ ], p values are given in ( ).
Source: Authors' calculations.

Overall, the model suggests that profitability and capital structure are key factors in explaining sales growth, with additional contributions from company size and liquidity. It is important to note that our regression model explains approximately 40% of the variance in the sales growth rate. This implies that a substantial share of the determinants of growth lies outside the scope of this analysis; therefore, the results should be interpreted with an understanding of the model's limited scope.

5. Discussion

Our research, based on a sample of 75 companies operating in Serbia, indicates that an increase in company size, liquidity, ROA, and leverage has a positive and significant impact on the Sales Growth Rate.

The accepted specification indicates that larger firms (measured by number of employees) experience higher sales growth, with the effect positive and statistically significant. This implies that companies with a larger number of employees have the potential to achieve higher growth. These findings are consistent with previous research (Claver et al., 2006). The positive relationship between company size and sales growth rate may indicate that the company achieves satisfactory productivity and possesses adequate technical and technological equipment to

meet client needs. Additionally, larger companies may have access to favorable financial resources, enabling them to finance future growth.

Liquidity shows a positive and significant association with company sales growth in the model (F = 0.207689, $p < 0.05$). Therefore, higher firm liquidity yields a stronger effect on firm growth, whereas a decline in liquidity leads to a lower growth rate. Maintaining an optimal level of liquidity is one of the key prerequisites for business growth and development. If a company lacks sufficient financial resources to settle its short-term liabilities, it will be unable to take on additional leverage and finance future growth. However, an excessively high level of liquidity is also undesirable, as it indicates the presence of idle cash that is not utilized effectively and does not contribute to generating economic benefits. Based on the conducted analysis, we can conclude that the managers of the sampled companies allocate available cash resources efficiently, further contributing to business growth as measured by the sales growth rate. These findings are consistent with empirical research (Megaravalli and Sampagnaro, 2019).

Profitability (measured by ROA) exerts a positive, statistically significant influence on growth ($p < 0.05$). Together, profitability and sales growth are fundamental determinants of a firm's overall success. They represent the management's ability to manage limited resources, to find the right investment directions as well as directions for business improvement. All companies in the sample fall into the category of large, according to the current Accounting Law, so it is assumed that they have greater opportunities to obtain additional funds to finance future growth. So it is understandable that the have a higher ROA and high sales growth. According to Nuševa et al. (2025), who examined Serbia for 2018–2021, higher sales are associated with greater profitability in manufacturing firms. Zekić-Sušac et al. (2016) reached the same conclusion in their study, which examined these variables on a sample of firms in Croatia. The obtained results are also in accordance with the research conducted by Vuković et al. (2022), Vuković et al. (2020) and Kachlami and Yazdanfar (2016).

Finally, corporate leverage, measured by the debt -to-total assets ratio, has a positive and statistically significant impact on company growth, as measured by sales growth. Based on the results, it was found that a increased level of corporate leverage leads to higher company growth rates. Leverage measures the degree to which companies finance assets with debt rather than equity. Such a financing model can be sustained in the long term only if firms achieve a return on total capital that exceeds the cost of borrowed funds. It has been observed that, due to unstable and uncertain business conditions, firms in the Republic of Serbia finance a significant share of their assets with borrowed funds and, as a result, exhibit substantial potential for growth and development through additional borrowing. Nevertheless, there are no signs of over-indebtedness among these firms, since a higher degree of external financing has a positive effect on their growth. These results are consistent with the findings of Vuković et al. (2022). Furthermore, Naumoski (2022), in a study on a sample of Southeast European companies, found a positive and statistically significant relationship between leverage and company growth. Similar results were also reported by Lee (2023), who examined factors influencing firm growth in the Czech Republic, Hungary, and Poland.

However, a higher leverage ratio also indicates an increased risk of bankruptcy. The companies in our sample are among the top 100 most successful in Serbia, and the results suggest that their managers effectively balance equity and borrowed funds.

Although the correlation analysis indicated a negative relationship between firm size and growth, in the multivariate regression this relationship becomes positive. This suggests that, when controlling for profitability, liquidity, and leverage, larger firms have greater growth potential. This apparent contradiction underscores the complexity of interdependencies among the variables. It is possible that larger firms utilize available resources more effectively, have more stable financing sources, and easier access to markets, which fosters more stable growth.

6. Conclusions

Business performance remains a demanding objective in Serbia as well as internationally. The study analyzes factors linked to success, using sales growth as the outcome variable and employing suitable statistical methods alongside panel regression. The dataset consists of publicly accessible financial statements for firms ranked in the SBRA Top 100.

Based on a review of relevant and available literature, the dependent variable selected is the sales growth rate. Sales growth represents the change in revenue from one accounting period to another. This increase contributes to the company's development and benefits shareholders through the proportional distribution of dividends and bonuses, thereby achieving maximum profit. The independent variables in the defined model are company size, company liquidity, Return on Assets, and company leverage.

The correlation analysis revealed some concordance between SGR and the explanatory variables; however, for leverage, the observed association was not statistically significant. The research results indicate that the factors of company size, liquidity, ROA and leverage level have a statistically significant and positive impact on the increase in SGR. This implies that an increase in these variables leads to an increase in the sales growth rate. A particularly noteworthy finding is that leverage has a positive and statistically significant effect on sales growth, which does not always align with theoretical expectations. A possible explanation lies in the fact that the firms analyzed are among the most successful in the country, with stable revenues and a greater capacity to manage debt. In the Serbian context, access to long-term financing often depends on a firm's cred-

itworthiness; thus, high leverage does not necessarily indicate risk but may signal an investment drive. Similar results are reported by Serrasqueiro et al. (2023), where debt is used as an instrument for growth by firms with strong profitability indicators.

The limitations of the conducted research have provided ideas for future studies. This research was restricted to the territory of Serbia and to companies listed among the 100 most successful according to the ranking of the SBRA. Future research could include companies operating in the Western Balkans region as well as in other geographical areas. Additionally, future studies may explore the impact of other determinants, both financial and non-financial, on company sales growth.

These results have important practical and theoretical implications. On the theoretical side, they confirm that, in the context of a transition economy, factors such as profitability, liquidity, and firm size remain crucial for explaining growth, though their importance may manifest differently than in advanced economies. The finding of a positive effect of leverage also calls for a re-examination of traditional assumptions in post-transition markets.

On the practical side, the findings suggest that economic policymakers should develop instruments to support firms' liquidity and profitability, while carefully calibrating debt instruments to encourage investment-led growth and avoid over-indebtedness. We also recommend strengthening access to affordable sources of finance for firms with stable performance, devising measures to improve liquidity, and tailoring policies to sector-specific conditions.

The study's limitations include its focus on large firms, which does not capture the broader picture of the SME sector. In addition, the analysis is limited to the 2019–2023 period, which includes the pandemic years and may have had particular effects on business performance. While an analysis over a longer time frame would yield more precise results, the conducted research serves as a solid foundation for future studies on this topic.

Given its relevance, it is particularly possible to include in the analysis the impact of factors related to sustainability reporting across all aspects, as well as other factors such as legal regulations, general social conditions, and similar influences (Marjanović et al., 2025). Future research should incorporate non-financial indicators (innovation, competition, management quality) and undertake comparisons with firms in other countries in the region.

Availability of Data and Materials

All data reported in this paper will be shared by the corresponding author upon reasonable request.

Author Contributions

BNČ: study conception and design, material preparation, methodology, analysis, writing the original draft and review. TR: study conception and design, material preparation, methodology, analysis, writing original draft, review and editing. LA: study conception and design, review and editing. All authors read and approved the final manuscript. All authors have participated sufficiently in the work and agreed to be accountable for all aspects of the work.

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Conflicts of Interest

The authors declare no conflict of interest.

Declaration of AI and AI-Assisted Technologies in the Writing Process

During the preparation of this work the authors used ChatGpt-5 in order to check spell and grammar. After using this tool, the authors reviewed and edited the content as needed and takes full responsibility for the content of the publication.

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