STRATEGIC APPROACH TO ASSESSING THE EFFICIENCY OF AGRICULTURAL AND TOURISM BUSINESS IN THE ECONOMY OF SERBIA

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A B S T R A C T

The authors will present a strategic approach to assessing the performance of agriculture and tourism in the Republic of Serbia. The purpose of the analysis is to determine which of the given economic activities has better economic performance and, accordingly, has a greater impact on the economic growth and development of the Republic of Serbia. The research covered the financial statements of large and medium-sized enterprises in the areas being analyzed. The results of the ratio analysis indicate that both activities jointly contribute to the economic growth and development of the Republic of Serbia. When it comes to determining bankruptcy, the Altman Z` score model has been adapted for developing economies. According to this model, agriculture and tourism, at the level of calculated average values, operate in a zone of moderate risk, which is a golden mean and a good indicator of their business performance.

Introduction

The subject of research in this paper is a strategic approach to assessing the efficiency of the agricultural and tourism sectors. The strategic assessment of the efficiency of agriculture and tourism is based on the analysis of their operations and the implementation of corrective actions, in order to improve their business performance in a dynamic environment (Plavšić & Paunović, 2011). Based on the established strategy, the value of the company is maximized and a competitive advantage is achieved (Masrom

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et al., 2022). A successful strategy serves as the foundation on which a company's operations, as well as the entire industry, rest. The task of management is to identify the risks that threaten the company and to find the causes that preceded their emergence in order to assess the strengths and weaknesses of the business. Based on this, the authors will present the individual contribution of each of the given activities to the economic development of the Republic of Serbia. These two sectors of the economy are covered by the given analysis, as each of them individually holds a special place and impact on the economy of Serbia. The agricultural sector plays an important role in the economic structure of the Republic of Serbia, as evidenced by the fact that Serbia is rich in agricultural land and favorable natural conditions, which, when considered together, lead to a high share of agricultural GDP in the country's total gross added value (Milošević & Milić, 2024). The development of tourism in Serbia during the second half of the 20th century and the beginning of the 21st century was largely conditioned by its overall socio-economic development. However, due to the characteristics that tourism has as an economic activity, and especially because of the characteristics of tourist needs, tourism in Serbia has not developed at the same pace as the economy as a whole (Gligorijević et al., 2020).

The research problem is contained in the following research questions. What methods should be applied when making a strategic assessment of the efficiency of agriculture and tourism? What is the probability of financial difficulties arising at the average level of each of the given activities? The aim of the research is to provide a strategic overview of the development of these two sectors of the economy based on indicators of liquidity, solvency, indebtedness, and profitability, and to indicate the measures that need to be taken for their improvement. The paper will use ratio analysis methods to determine each of the coefficients at the level of these two activities. In addition to them, the Altman Z-score method will be applied, which uses certain indicators to detect financial problems and the likelihood of bankruptcy risk. There are two types of this model: the initial Altman Z-score model and the Altman Z-score model adjusted for developing countries. The application of this model is carried out for both activities based on five coefficients multiplied by certain weights.

Based on the above, the paper presents three research hypotheses, namely one main (H_0) and two auxiliary (H_1 and H_2), which are as follows:

H_0: The strategic approach in assessing the efficiency of agriculture and tourism serves to determine, based on the obtained results, what their business performances are and what impact they have on the economic development of the Republic of Serbia.

H_1: The assessment of the financial structure and earning power is obtained based on the ratio analysis of profitability, liquidity, total asset turnover, net working capital, indebtedness, and solvency.

H_2: The assessment of the risk of bankruptcy for a company in the next two years is conducted using the initial Altman Z-score model and the adjusted Altman Z-score ($Z`$) model.

Materials and methods

The study presents a strategic assessment of the agricultural and tourism sectors and their overall impact on the economic development of the Republic of Serbia. The analysis covered the positions of the balance sheet and the income statement, based on which the average values were calculated at the level of the given activities. Accordingly, financial indicators have been established, which have provided an assessment of the financial structure and financial results of the observed enterprises, which will be useful for the authors in making decisions about the efficiency of the agriculture and tourism sectors. Accordingly, this research examines the relationships between specific balance sheet items in order to obtain an assessment of profitability, liquidity, indebtedness, and solvency at the average level in each of the given activities (Fabris, 2023; Robinson et al., 2015).

Profitability is determined based on the net profit margin, which is calculated from the ratio of net profit to operating income. This ratio shows the proportion of net profit to operating income, i.e., how much net profit the company has earned for every dinar of operating income. The height of this rate depends on the following factors: selling price, sales volume, cost management, and the amount of expenses for interest. The specificity of managing expenses for interest indicates that even though a company achieves a high amount of operating profit, a large share of debts with high interest rates can lead to a small net profit or, ultimately, a net loss (Asiani & Rahayu, 2024).

To determine liquidity as the ability to unconditionally settle due short-term obligations, the rigorous liquidity ratio "quick ratio" was used, which is calculated by comparing current assets (cash, cash equivalents, and current receivables) with short-term liabilities (Malinić et al., 2023). In this case, current assets are reduced by the amount of inventory, as the least liquid current assets, in order to calculate the current assets that can be converted into cash the fastest. This ratio provides information on how much liquid assets cover each dinar of short-term liabilities (Paramitha & Sucipto, 2024; Horne & Wachowicz, 2007). The height of the ratio is influenced by the continuity of short-term obligations and the regularity of collecting receivables from customers. It is based on the acid (quick) test of liquidity, which requires that the ratio between liquid assets and short-term liabilities be 1:1 (Hiadlovský et al., 2016).

The activity of certain companies has been calculated based on the turnover ratio of total assets, which is obtained from the relationship between sales revenue and average total assets. This indicator provides data on how many times the average total assets are turned over during the year, i.e., how much assets are engaged for one dinar of sales revenue (Innocent et al., 2013; Rochmah et al., 2024). In the event that the coefficient is lower than the average in the activity, a detailed analysis should be conducted to identify the cause of this and to take corrective measures. This coefficient can be compared with other companies or industries, average values in the economy of a country, as well as with the same coefficients from previous years (Ivanišević, 2008; Todorović & Ivanišević, 2012).

Net working capital is calculated as the difference between long-term sources and fixed assets. The financial structure of the company is based on the golden balance sheet rule in a broader sense, which defines long-term financial stability. The rule states that long-term assets (real estate, facilities, equipment, intangible investments) and permanent current assets (inventory) are financed from long-term sources (equity, long-term reserves, long-term liabilities), while other current assets are financed from short-term liabilities. Net working capital represents a part of current assets that is financed in the long term (Stančić, 2006). The net working capital level depends on the following factors: the company's activities, profit policy, procurement and sales policy, and management practices. In the case that net working capital has a positive value, it means that a portion of current assets (inventory) is financed from long-term sources and that long-term financial balance has been achieved. If the net working capital is negative, it indicates that the company is in a difficult financial situation and is experiencing operational problems, which implies that when the company uses long-term sources to cover its fixed assets, it does not have enough resources to cover its net working capital. It primarily refers to inventory coverage.

The analysis of indebtedness is carried out using indicators of financial structure, namely the debt ratio (leverage), which represents the relationship between total liabilities and total assets (Kartikaningrum, 2024; Chakraborty et al., 2024). This ratio is expressed as a percentage and answers the question of how much of the total assets is financed by debt. If there is a large share of debt in the financial structure, the company is exposed to the risks of paying back the principal and interest on loans. On the contrary, if there is a lower proportion of debt in the financial structure, the company will be able to more easily obtain loans from creditors, as it has a greater borrowing capacity (Jovanović Škarić, 2018). This indicator is an essential measure that analysts and potential investors use to assess the financial position of a company. It can be compared to the average in the industry, with other industries, or with historical trends in the industry and the company.

The solvency ratio is obtained by comparing total assets to total liabilities. Solvency represents long-term liquidity and is used to determine a company's ability to pay all due obligations. Conversely, if it cannot meet all its due obligations, it is confirmed that the company is insolvent and that its liabilities exceed its assets. The coefficient is calculated from the ratio of total assets to total liabilities (Rodić et al., 2017). This indicator ranges from 1 and above. It is understood that a company is solvent when this indicator is equal to or greater than 1, and if it is less than 1, the company is insolvent. Insolvency arises as a result of the over-indebtedness of a company.

After conducting an analysis of the financial structure, the authors performed a credit analysis using the Altman Z-score model (both the original and the adjusted), which represents a multivariate statistical formula, in order to assess the condition of companies operating in the tourism and agriculture sectors, specifically how exposed each sector's companies are, on average, to the risk of bankruptcy in the next two years (Apoorva et al., 2019). The formula for this model was invented by American finance professor Edward Altman during the Great Depression when many companies

were at risk of bankruptcy. The value of Z-scoring is calculated based on the sum of predetermined indicators multiplied by assigned weights (Ali et al., 2016). This shows that the Z score model is obtained by combining indicators of liquidity, profitability, efficiency, volatility, and the total asset turnover ratio, which are calculated in the following way (Mohammed, 2016):

$$\text{Liquidity ratio } X_1 = \frac{Net\ working\ capital}{Total\ assets}$$

$$\text{Profitability coefficient } X_2 = \frac{Net\ profit}{Total\ assets}$$

$$\text{Efficiency coefficient } X_3 = \frac{Earnings\ before\ interest\ and\ taxes}{Total\ assets}$$

$$\text{Volatility coefficient } X_4 = \frac{Market\ value\ or\ book\ value\ of\ a\ company's\ shares}{Book\ value\ of\ total\ liabilities}$$

$$\text{The total asset turnover ratio } X_5 = \frac{Revenue\ from\ sales}{Total\ assets}$$

Initial Altman Z-score (Z) model = $1.21X_1 + 1.4X_2 + 3.3X_3 + 0.6X_4 + 0.99X_5$

The initial Altman Z-score model is used for ranking companies, as shown in Table 1.

Table 1. Classification of bankruptcy results of companies according to the initial Altman Z-score model

Z > 2.99	Safe (green) zone
1.81 < Z < 2.99	Moderate risk zone (Gray zone)
Z < 1.81	High-risk area (Red zone)

Source: Altman et al., 2013.

In Table 1, the classification of bankruptcy results for companies according to the initial Altman Z-score model presents the values of the Z-score model. If the Z-score model value is less than 1.81, it indicates that companies in each industry are individually, on average, exposed to the risk of bankruptcy, and that there is a 95% probability of their bankruptcy within the next two years (Filipović & Mirjanić, 2016). If the Z-score model value ranges between 1.81 and 2.99, companies in each industry individually are generally in the moderate risk zone (the gray zone), where the possibility of bankruptcy is reduced (Milić et al., 2021). If the obtained Z-score value of the model is greater than 2.99, companies in each activity sector are, on average, in a safe (green) zone, and there is a minimal probability of bankruptcy risk (Srebro et al., 2021). Based on the initial Altman Z-score model, a corrected Altman Z'-score model has been obtained. This model is obtained by modifying the original model by including parameter 3.25 and excluding indicator X_5, which is presented as follows:

Adjusted Altman Z-score (Z`) model = $3.25 + 6.56\ X_1 + 3.26\ X_2 + 6.72\ X_3 + 1.05\ X_4$

Below is Table 2, which shows the ranking of bankruptcy risk for companies in each industry individually, averaged by zones according to the adjusted Altman Z-score model.

Tabela 2. Classification of bankruptcy results of companies according to the adjusted Altman Z-score (Z`) model

Z` > 5.85	Safe (green) zone
3.75 < Z` < 5.85	Moderate risk zone (Gray zone)
Z` < 3.75	High-risk area (Red zone)

Source: Altman, 2017.

Table 2 shows the ranking of companies according to the adjusted Altman Z-score (Z`) model. If the value of the Z-score model is less than 3.75, it means that companies individually, on average, are in the high-risk zone. In the event that the value of the Z-score model falls within the range of 3.75 to 5.85, then companies individually, on average for each activity, are in the moderate risk zone (gray zone). If the Z-score model value is greater than 5.85, companies in every industry individually find themselves in the safe (green) zone when there is a minimal probability of bankruptcy risk.

Results

The aim of the study is to provide an adequate picture of the strategic assessment of the efficiency of the agricultural and tourism sectors and their impact on the economy of the Republic of Serbia, based on a comparative analysis of the financial structure data and the success of enterprise. The study used data from the official website of the Business Registers Agency for a period of five years, from 2019 to 2023 (Business Registers Agency). The research sample encompasses medium and large enterprises. Below is a quantitative assessment of the financial performance of each of these activities individually, in order to enable their comparability over a period of 5 years, respectively. The analyzed financial data were taken from the balance sheet and income statement for companies operating in agriculture and tourism. The obtained data represent the basis for a financial analysis that includes the following indicators: net profit margin, quick ratio, total asset turnover ratio, net working capital, debt ratio, and solvency ratio (Vuković et al., 2024). First, a temporal analysis of each activity was presented individually, based on which a comparative financial analysis was conducted. In that sense, the data is a comparative analysis of agriculture and tourism using Altman's Z-score model, in order to assess the exposure at the average level of each sector to potential bankruptcy risk (Koshti, 2019). Based on the obtained results, an explanation and a graphical representation of the movement of the initial Z-score model and the corrected Z'-score model are provided. Table 3 contains the average values of balance sheet items in agriculture.

Table 3. Average value by sector - agriculture (u 000 RSD)

Balance sheet positions	2019.	2020.	2021.	2022.	2023.
Total assets	11,030,898	11,307,546	9,274,707	10,855,722	11,603,496
Net profit	723,449	568,343	252,361	21,969	573,649
Business income	7,486,360	7,432,255	7,425,905	8,965,481	10,268,725
Working capital	3,794,316	3,426,502	3,304,834	3,949,137	4,509,381
Supplies	1,122,933	1,186,490	1,265,960	1,837,987	1,803,554
Working capital - Supplies (liquid assets)	2,671,382	2,240,012	2,038,874	2,111,149	2,812,445
Short-term liabilities	2,661,667	2,735,660	2,966,953	3,947,463	3,725,177
Long-term sources	8,250,957	8,404,098	7,686,412	7,024,249	8,201,269
Permanent assets	7,194,552	7,838,199	6,932,898	6,859,620	7,057,956
Total liabilities	6,892,857	6,830,033	7,574,257	8,094,288	7,728,865
Sales revenue	1,172,064	1,115,667	841,671	1,124,501	1,029,359
Retained earnings	2,023,998	1,699,701	1,805,705	2,188,378	2,036,515
Earnings before interest and taxes	936,685	1,013,102	566,775	641,732	1,329,878
Market value of a company's shares	4,922,832	2,438,051	1,825,256	1,809,751	1,928,452

Source: Author's

As shown in Table 3, the average value of total assets in agriculture has not significantly changed during this time period. The net profit had its lowest value in 2022, averaging around 21,969 RSD. The reason for the decline in net profit is the rise in costs and obligations at a time when the war in Ukraine occurred and the crisis spilled over to the entire world. Based on the analysis of business revenues, a gradual increase is noticeable up to 2023, reaching 10,268,725 RSD, as during that time the volume of work and the number of tourists from package sales increased. Current assets also show an increase to 4,509,381 RSD, indicating a rise in inventories, receivables, and cash. Considering that this growth includes inventory, a deeper analysis should be conducted, as long-term storage of inventory leads to a decline in quality and makes them unsellable. Short-term liabilities (liabilities to suppliers, wage liabilities, tax liabilities) gradually increase from 2,661,667 RSD in 2019 to 3,725,177 RSD in 2023, when they exceed liquid assets, thus the acid test is not respected. Long-term sources have small fluctuations during the observed period, and their value in 2023 amounts to 8,201,269 RSD. However, a deeper analysis needs to be conducted to see whether equity or long-term liabilities prevail in long-term sources. Fixed assets have a constant value and do not show significant fluctuations, as they are long-term tied to a predetermined rate of depreciation (Malinić et al., 2023). Total liabilities have increased from 6,892,857 RSD in 2019 to 7,728,865 RSD in 2023, so attention should be paid to the financial structure of the company when borrowing. Undistributed profit saw the largest decline in 2020, after which it gradually increased, reaching 2,036,515 RSD in 2023, meaning it is reinvested by being carried over into the accounting periods of the following years (Malinić, 2007). Profit before interest and taxes decreased from 936,685 RSD in 2019 to 566,775 RSD in 2020. However, in 2023, it rises to 1,329,878 RSD, which is a good

sign and an indication of value growth. Based on the analysis of the market value of the company's shares, this value has significantly decreased from 4,922,832 RSD in 2019 to 1,928,452 RSD in 2023, which is why a deeper investigation into the factors that led to this trend should be conducted. the cause may be the increase in total liabilities, as well as the gradual decline in net profit, which reaches its minimum in 2022, amounting to 21,969 rsd. table 4 presents the average values at the industry level - tourism.

Table 4. Average value by sector - tourism (in 000 RSD)

Balance sheet positions	2019.	2020.	2021.	2022.	2023.
Total assets	2,729,212	3,672,218	4,268,595	4,413,273	4,081,475
Net profit	55,013	-182,026	-630	169,112	183,959
Business income	549,594	354,140	831,313	1,183,754	1,136,814
Working capital	378,956	301,586	658,552	857,742	589,362
Supplies	31,992	58,253	145,455	113,260	110,174
Working capital - Inventory (liquid assets)	346,964	243,332	513,096	744,481	479,187
Short-term obligations	512,402	298,507	621,741	634,503	521,613
Long-term sources	2,217,393	3,414,557	3,619,039	3,744,161	2,740,869
Fixed assets	2,366,929	3,390,563	3,634,070	3,553,596	3,546,214
Total liabilities	1,980,534	2,387,942	2,420,942	2,197,178	2,066,988
Revenue from sales	480,943	215,255	768,004	1,092,735	936,513
Undistributed profit	434,625	-132,219	437,931	611,542	698,963
Earnings before interest and taxes	143,385	141,553	142,971	204,279	235,247
Market value of a company's shares	1,128,831	1,777,685	2,334,980	2,570,662	2,570,617

Source: Author's

In Table 4, the average total assets gradually increased over the observed period, from 2,729,212 RSD in 2019 to 4,081,475 RSD in 2023, which represents good performance for companies operating in tourism. Net profit, despite fluctuations during the observed period, rises from 55,013 RSD in 2019 to 183,959 RSD in 2023. Business revenues are increasing in value from 549,594 RSD in 2019 to 1,136,814 RSD in 2023. Current assets are increasing year by year, from 378,956 RSD in 2019 to 589,362 RSD in 2023, indicating growth in inventories, receivables, and cash. Fixed assets increased by 34%, total liabilities rose by 5%, sales revenue grew by 49%, earnings before interest and taxes increased by 40%, and the market value of the company's shares went up by 47%. These indicators are good signs and speak to a stable financial structure of the tourism company, skilled management, an increase in the market value of the company's shares, and a rise in revenue.

When comparing these two activities, the total assets of agricultural enterprises were greater than those of tourism enterprises by 8,301,686 RSD in 2019, and by 2023, that difference decreased to 7,522,021 RSD. The net profit of agricultural enterprises is higher than the net profit of tourism enterprises by 668,436 RSD in 2019, and by 389,690 RSD in 2023. The business revenues of agricultural enterprises were higher than those

of tourism enterprises by 6,936,766 RSD in 2019, and by 9,131,911 RSD in 2023. The working capital of agricultural enterprises is greater than that of tourism enterprises by 3,415,360 RSD in 2019, and in 2023, that difference amounts to 3,920,019 RSD. Short-term liabilities are higher for agricultural enterprises in 2019 by 2,149,265 RSD, and in 2023 by 3,203,564 RSD. Long-term sources do not show any significant fluctuations, so the difference in favor of agriculture in 2019 amounted to 6,033,564 RSD, while in 2023 it was 5,460,400 dinars. Fixed assets in agriculture increased by 4,827,623 RSD in 2019, and by 3,511,742 RSD in 2023. By comparing these activities, a noticeable increase in total liabilities is observed during the observed period, rising from 4,912,323 RSD in 2019 to 5,661,877 RSD in 2024. By comparing sales revenue, it is noticeable that the difference is decreasing, which was 691,121 RSD in 2019, and is now 92,846 RSD in 2023. By comparing the undistributed profits of these two activities, a reduction in the differences over the years is observed, as in 2019 it amounted to 1,589,373 RSD, while in 2023 it stands at 1,337,552 RSD in favor of the average in the agricultural sector. By comparing the movement of earnings before interest and taxes between these two sectors, it has been established that the average for agriculture is higher than that for tourism, with the difference amounting to 793,300 RSD in 2019 and 1,094,631 RSD in 2023. The comparison of the movement of the market value of company shares in 2019 indicates that agriculture had the advantage, with a difference of 3,794,001 RSD. However, in 2023, that difference favors tourism, amounting to 642,165 RSD. Below is a comparative tabular representation of the movement of average coefficients for agriculture and tourism over a five-year period (2019-2023).

Accordingly, Table 5 follows, which shows the average coefficients in agriculture.

Table 5. Ratio indicators in agriculture

Coefficients	2019.	2020.	2021.	2022.	2023.
Net profit margin	0.96635	0.07646	0.33983	0.00245	0.05586
Ratio accelerated liquidity	1.00228	0.81882	0.68719	0.53481	0.75498
Total asset turnover ratio	0.10625	0.10512	0.0793	0.10595	0.09699
Net working capital	1,056,404	565,899	753,513	164,629	1,143,913
Debt ratiо	0.62486	0.60405	0.81881	0.74652	0.66608
Solvency coefficient	1.60033	1.65548	1.22128	1.34116	1.50132

Source: Author's

Based on the presented table, it shows the movement of the average value of coefficients over the given time period for agricultural enterprises. The net profit margin used to determine the profitability of the company had its highest value in 2019, and in each subsequent year, it decreases with smaller fluctuations, indicating that the profitability of the company in that sector is also declining. The liquidity ratio reached its highest value in 2019, when it amounted to 1.00228, indicating that at that time, companies had the most liquid assets in their portfolio. The reduction of the accelerated liquidity ratio indicates a decrease in receivables and cash, which necessitates an analysis of the dynamics of short-term debt repayment. The total asset turnover ratio had its highest

value in 2019, when it amounted to 0.10625, and with gradual fluctuations, it decreased to 0.09699, indicating a negative trend in turnover reduction. Net working capital has the highest value in 2023, amounting to 1,143,913 RSD, which means that companies in agriculture have a stable financial structure, adhering to the golden balance sheet rule in a broader sense. This indicates that management is following a proper profit policy for the company. The leverage ratio analyzes the indebtedness of a company and reached its highest amount in 2020 at 1.65548, which means that during that period, total liabilities were the highest in relation to total assets. In the following period, it shows a gradual decline, which indicates a reduction in the tension of the financial structure and risks for creditors (Stančić, 2006). The solvency ratio reached its highest value in 2020, amounting to 1.65548, which means that the companies operating in that sector were the healthiest during that period and capable of settling all due obligations on time.

Table 6. Ratio indicators in tourism

| Coefficients	2019.	2020.	2021.	2022.	2023.
Net profit margin	0.10009	-0.51399	-0.00075	0.14286	0.16182
Ratio accelerated liquidity	0.67713	0.81516	0.82525	1.17333	0.91866
Total asset turnover ratio	0.35033	0.06924	0.24289	0.23914	0.20619
Net working capital	-149,536	23,994	-15,031	190,565	-805,345
Debt ratio	0.72568	0.65027	0.56715	0.49786	0.50643
Solvency coefficient	1.37802	1.53782	1.76319	2.00861	1.97460

Source: Author's

Table 6 shows the movement of indicators over the given time period for tourism companies. The net profit margin is the highest in 2023, with a value of 0.16182, indicating that the profitability of the company is increasing year by year and represents the most important measure of investment security for long-term creditors (Malinić, 2007). The liquidity coverage ratio has its highest value in 2022, when it amounts to 1.17333. However, in 2023, it is declining, which indicates that the amount of short-term liabilities is increasing, and thus the risk as well. The total asset turnover ratio reached its highest value in 2019, amounting to 0.35033, indicating that in that year, the average business assets were utilized the most. However, in the following years, this turnover declined, suggesting a decrease in the efficiency of total asset utilization (Stančić, 2006). Net working capital has the highest value in 2023, amounting to 190,565 RSD. However, in 2023, it suddenly drops to -805,345 RSD. This confirms that companies have a poorer financial structure, as there are not enough long-term resources to finance net working capital. The ratio reached its highest value in 2019, amounting to 0.72568, and subsequently declines in later periods, meaning that liabilities in relation to total assets are also decreasing, which is in accordance with the principle of maintaining invested capital (Malinić, 2007). The solvency ratio gradually increases and reaches its maximum amount in 2022, when it stands at 2.00861. Considering that the solvency ratio has been greater than 1 in all time periods, this means that companies in the tourism sector operate at an average level and possess long-term financial stability. Below is a graphical representation of the movement of the net profit rate.

Figure 1. Comparative movement of the net profit rates of tourism and agriculture
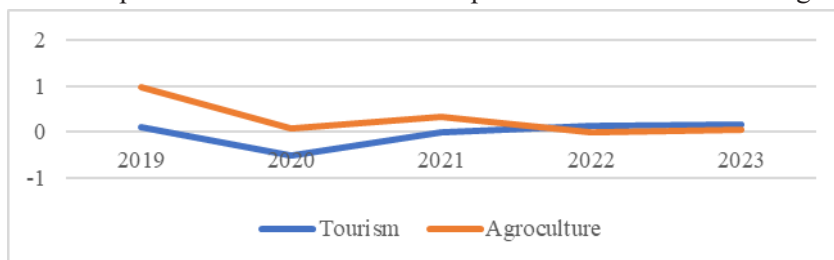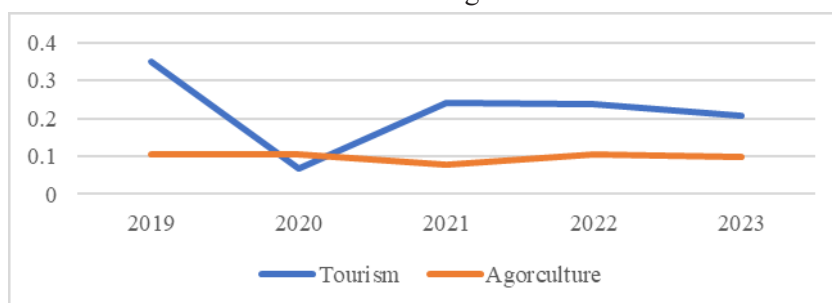

Source: Author's

As can be seen from Figure 1, the movement of the net profit rate in the agriculture sector up to mid-2022 is favorable for agriculture. However, since 2022, that rate has gradually declined below the average tourism rate. When comparing coefficients, tourism has a lower net profit margin in the first three years, which amounts to -0.51399 (2019) and -0.00075 (2021). In the next two years (2022 and 2023), it shows a slight increase to 0.14286 and 0.16182 respectively, and in those years, it has a higher amount than the agricultural coefficient, which amounts to 0.00245 and 0.05586. This means that tourism businesses are achieving higher revenue growth from sales, which allows them to more easily cope with the burden of debt. Below is a Figure of the accelerated liquidity ratio.

Figure 2. Comparative movement of the accelerated liquidity ratio of tourism and agriculture
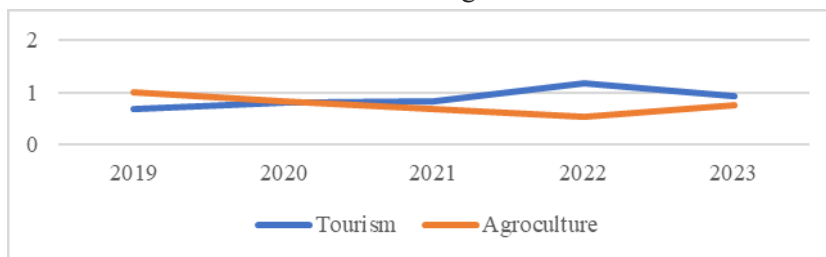
Source: Author's creation

Figure 2 shows that the average liquidity in agriculture declines until mid-2021, falling below the quick liquidity ratio of tourism. Since 2022, it has shown a gradual increase, but it is still lower than the accelerated liquidity ratio of tourism. When it comes to tourism, the liquidity ratio shows a gradual increase from 0.67713 in 2019 to 0.91866 in 2023. In agriculture, the liquidity ratio gradually decreases from 1.002288 to 0.53481 in 2022 and then rises again to 0.75498 in 2023. The biggest difference occurs in 2022, when the accelerated liquidity ratio in tourism is 1.17333, while in agriculture it is 0.53481. This indicates that the structure of working capital and the maturity periods of short-term liabilities should be reconsidered for agricultural enterprises.

Figure 3. Comparative movement of the total asset turnover ratio in tourism and agriculture
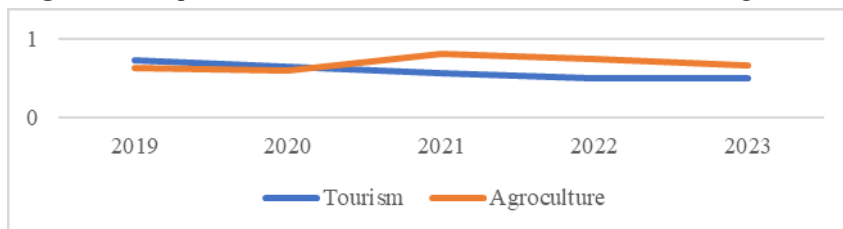

Source: Author's

Figure 3 presents the parallel movement of the total asset turnover ratio at the agricultural level, which generally maintains a constant value without significant fluctuations. However, its value is lower than the value of the total asset turnover ratio in tourism. The turnover ratio of total assets in tourism shows a higher amount in all years compared to agriculture. This coefficient saw a drastic drop in 2020 (0.06924) during the coronavirus pandemic, which led to a decrease in the sales of tourist packages and had a significant impact on the tourism sector.

Figure 4. Comparative movement of net working capital in tourism and agriculture
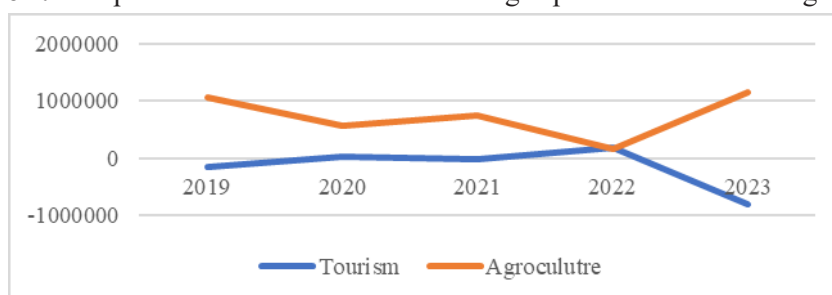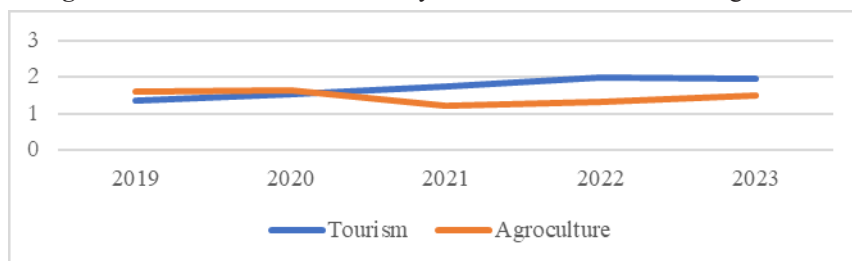

Source: Author's

Based on Figure 4, the movement of net working capital in agriculture is higher than that of net working capital in tourism. However, this value declines in 2022 and reaches a lower level in relation to tourism. When it comes to tourism, the lowest amount of net working capital in 2023 was recorded, as it had a negative value of -805.345 RSD, while in agriculture, net working capital saw significant growth in 2023, amounting to 1.143.913 RSD. This indicates the stability of the financial structure and confirms the coverage of net working assets by long-term sources.

Figure 5. Comparative movement of the debt ratio of tourism and agriculture

Source: Author's

Graph 5 shows the movement of the debt ratio in agriculture, which is slightly lower compared to tourism until mid-2021, when it reached a higher, but not enviable level, while in 2023 it shows a gradual decline. The ratio of these two activities is quite balanced. However, the biggest difference between them is in the year 2021, when in tourism it amounts to 0.56715, while in agriculture it is 0.81881. In 2023, their values are once again converging. Since the ratio has been less than 1 for both activities all the time, it means that assets are still greater than liabilities, indicating a good financial structure of the company. However, one should be cautious regarding borrowing capacity.

Figure 6. Movement of the solvency coefficient in tourism and agriculture

Source: Author's

Based on Figure 6, it is clear that the movement of the solvency ratio in agriculture declines until 2020, and this decline continues as the curve moves below the tourism curve. The movement of the tourism solvency coefficient shown in the observed years increases from 1.37802 in 2019 to 1.9746 in 2023. In agricultural activities, this coefficient initially shows a slight increase to 1.65548 in 2020, and then it sharply declines to 1.22128 in 2021, after which it begins to gradually rise, but it does not reach the value of the solvency coefficient in tourism. This indicates that businesses in tourism are less exposed to the risk of insolvency and have more available cash to meet their due obligations.

In the following section, the authors will present an analysis using Altman's Z-scoring model, which serves as an indicator for determining the risk of bankruptcy for companies in the next two years (Mirković, 2013). The value of the Z-score model is calculated using a linear combination of a greater number of financial indicators of liquidity, solvency, profitability, leverage, and activity weighted by coefficients. These indicators are relevant for assessing the financial performance of a company, determining the level

of risk, and providing warnings about the likelihood of the company's insolvency. The paper will conduct a comparative analysis of the original Altman Z-score model and the adjusted Altman Z'-score model (for emerging markets) on companies operating in the agricultural and tourism sectors in the Serbian economy. The values of the Z-score model have been calculated in the presented tables, based on which a comparison of the observed activities has been made. It should be noted that the higher the Z-score value, the less exposed an average company in each of these sectors is to the risk of bankruptcy.

Table 7. The value of variables in the Z-score model in agriculture

Variables	2019.	2020.	2021.	2022.	2023.
X_1	0.09576	0.05004	0.08124	0.01517	0.095858
X_2	0.18348	0.15031	0.19469	0.20159	0.17551
X_3	0.08491	0.08959	0.06111	0.05911	0.11461
X_4	0.71419	0.35694	0.24035	0.22358	0.24951
X_5	0.10625	0.09866	0.09075	0.10359	0.08871
Z	1.18668	0.87850	0.80659	0.73235	0.98074
Z`	5.79692	5.04520	5.08068	4.63867	5.50104

Source: Author's

The table presents the movement of the values of the Altman Z-score model (initial and adjusted) for agricultural enterprises over a five-year period. The liquidity coefficient X1 shows that it fell to 0.05004 in 2020, after which it gradually increased to 0.095858 in 2023. Since this ratio continues to remain below 1, it can be interpreted as a weak financial structure of the company in this industry. The profitability coefficient X2 reaches its maximum in 2022 when it amounts to 0.20159. However, in 2023, it drops to 0.17551, indicating that there is a low net asset growth and raising questions about whether companies can finance their needs from retained earnings. The efficiency indicator X3 shows a gradual decline to 0.05911 in 2022, followed by an increase to 0.24951 in 2023, indicating that earnings before interest and taxes are growing faster than total assets, which means that the financial strength of the company in this sector is increasing. The total asset turnover ratio X5 shows a gradual decline from 0.10625 to 0.08871 in 2023, indicating a decrease in sales relative to total assets and, consequently, lower liquidity, solvency, and profitability.

The analysis presents the obtained results of the Z-score in the observed time intervals. In 2019, the Z-score in agriculture is 1.18668, indicating that this sector is in a high-risk zone (red zone) since the Z-score is below 1.81. In the coming years, this coefficient continues to remain below the threshold value, indicating that agriculture remains in the high-risk zone (red zone). When applying the initial Altman Z`-score model, the results show that the Z`-score values range from 3.75 to 5.85 in the observed years, indicating that agriculture is in the moderate risk zone (gray zone). Since the threshold values of these two models are different, the question of which model to apply in the analysis depends on whether it is a highly developed economy or an emerging economy. Based on this analysis, a graphical representation of the initial Z-score and the adjusted Z'-score model follows.

Figure 7. Movement of Z-score and Z' score values in agriculture
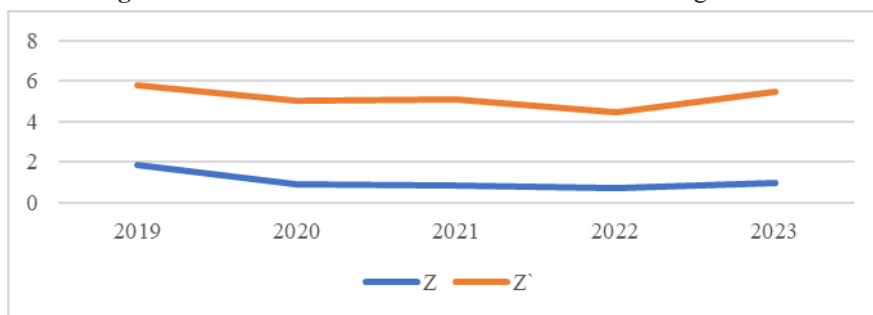
Figure 7 shows the movement of these two coefficients, with the Z-score consistently remaining in a lower range compared to the Z'-score, as its boundary values are also lower. Both coefficients show small oscillations in the same direction in their movement while maintaining their constant value. Table 8 shows the values of the variables in the Z-score model for tourism.

**Table 8.** The value of variables in the Z-score model in tourism

Variables	2019.	2020.	2021.	2022.	2023.
X_1	-0.05479	0.00653	-0.00352	0.04318	-0.19732
X_2	0.15924	-0.03601	0.10259	0.13857	0.17125
X_3	0.05253	0.03855	0.03349	0.04629	0.05764
X_4	0.56996	0.74444	0.96449	1.16998	1.24365
X_5	0.17622	0.05862	0.17992	0.2476	0.22945
Z	0.84646	0.5894	1.00671	1.34611	1.16456
Z`	4.36123	4.21619	4.79915	5.52453	4.20704

The table shows the movement of the initial Z-score model values for tourism over a five-year period. The liquidity coefficient X1 is the lowest in 2019, when it amounts to -0.05479, and with slight fluctuations, it remains negative in 2023, when it stands at -0.19732, indicating that there are low investments in current assets. The profitability coefficient X2 had its lowest value in 2020, at -0.03601, and has been gradually increasing since then, reaching a value of 0.17125 in 2023. This indicates an annual growth in assets, as well as an increase in retained earnings. The efficiency indicator X3 shows slight fluctuations in its movement, with a value of 0.05253 in 2019, and a similar value of 0.05764 in 2023. This indicates that earnings before interest and taxes are growing more slowly compared to total assets. Therefore, it is necessary to determine whether to take measures for more efficient cost management or to increase prices and the volume of services. The total asset turnover ratio X5 had its lowest value in 2020, amounting to 0.05862, while the highest value was recorded in 2023 at 0.22945, due to an increase in sales relative to total assets.

The results obtained from the initial Altman Z-score model during the observed period show that the Z-score value in 2019 is below the threshold of 1.81, standing at 0.84646, which means that tourism is in the high-risk zone (red zone). In all the following years, high-risk business operations continue as the Z-scoring values remain below 1.81. When applying the business performance assessment in the sector according to the modified Z`-model, it is observed that the average values of Z` range from 3.75 to 5.85, indicating that tourism is in the moderate risk zone (gray zone). In Graph 8, a comparative representation of the movement of the values of the Z-score and Z'-model for tourism is presented.

Figure 8. Movement of Z-score and Z' score in tourism
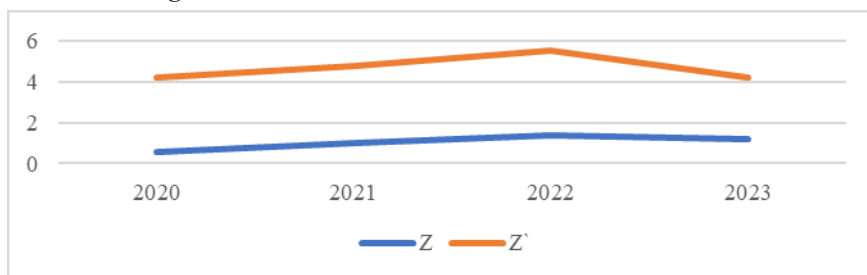
Source: Author's

In Figure 8, a parallel increase in the values of the Z-score and Z'-score in tourism can be observed up to the year 2022. In that year, these values reach their peak, after which they begin to decline, with the Z-score in tourism having a steeper slope, and consequently a greater decrease in values.

Conclusions

Based on the research conducted, it can be concluded that agricultural enterprises have stronger financial performance compared to tourism enterprises, which can be confirmed by their achieved final results in 2023. This is supported by the fact that at the average level, total assets are higher by 7,522,021 RSD, net profit by 389,690 RSD, business income by 9,131,911 RSD, long-term sources by 5,460,400 RSD and retained earnings by 1,337,552 RSD. This indicates that agricultural activity has much greater financial potential and impact on the economic development of the economy of the Republic of Serbia. In the following, the authors delve deeper into this financial analysis, supporting it with ratio indicators based on which they obtained their results. The final results obtained in 2023 indicate that the rate of net profit gradually decreases in the agricultural activity to 0.0024, while in tourism there is a slight increase to 0.0558. This means that certain measures should be taken in agriculture in order to reduce accumulated costs, non-current inventory and liabilities. The coefficient of turnover of total assets has been higher in tourism in the last three years than in agriculture, so that in 2023 it is 0.20619, and in agriculture 0.09699. This indicates that the invested assets are not being used efficiently enough in agriculture. Net working capital in agriculture in the last observed year of 2023 at the average level is 1,143,913 RSD, while in tourism

it is 805,345 RSD. Considering that this coefficient is drastically higher in agriculture than in tourism, it is a sign of a stronger financial structure in agricultural companies. However, it should be kept in mind that these are different types of business activities, as tourism is primarily concerned with selling services, which is why there is no need for a significant amount of net working capital. The debt ratio (leverage), which shows the relationship between liabilities and assets, is less than 1 in both industries, which is not a good sign because it calls into question the payment of liabilities. Namely, at the end of 2023, this coefficient in tourism is 0.50643, while in agriculture it is 0.66608. However, the solvency ratio, which evaluates liquidity in the long term in the last year of 2023, is 1.9746 in tourism and 1.5013 in agriculture. Given that this coefficient is greater than 1 on average in both observed branches, it shows their long-term financial stability in business.

By comparing the obtained results of the initial Altman Z-score model, agriculture and tourism are in the high risk zone (red zone), because their coefficients are lower than the limit value of 1.81 and in the final year of 2023, they amount to 0.98074 (agriculture) and 1.6456 (tourism). However, using the corrected Altman Z'-score model, the observed activities are in the zone of moderate risk (gray zone) in the same time interval, so that in the last observed year 2023, they amount to 5.50104 (agriculture) and 4.20704 (tourism). Since there are different boundary values for these two models, which model to apply in the analysis depends on whether it is a highly developed economy or a developing country. For Serbia, it is a better solution to apply Altman's corrected Z`-score model, because it is adapted to developing countries.

Based on that research, the authors believe the hypotheses they proposed have been proven. The results obtained at the average level over the observed five-year period (2019-2023) will be presented below. First, the basic hypothesis H_0, which is based on the claim that the strategic approach to assessing the efficiency of agriculture and tourism determines their impact on the development of the economy of the Republic of Serbia, is supported. This has been proven based on research conducted in which a quantitative evaluation of the financial performance of agricultural activities and tourism was carried out. Accordingly, there was an increase in the average value in agricultural activity and tourism when observing the movement of net assets by 572,598 RSD (agriculture) and 1,352,263 RSD (tourism), business income by 2,782,365 RSD (agriculture) and 587,220 RSD (tourism), and retained earnings by 12,517 RSD (agriculture) and 264,338 RSD (tourism). However, the average value of long-term sources decreased by 49,688 RSD in agriculture, while it increased by 523,476 RSD in tourism. Based on this, a deeper analysis of the financial statements should be conducted to determine whether equity or long-term liabilities predominate in the structure.

Next, hypothesis H_1, which is based on the use of profitability, liquidity, total asset turnover, net working capital, leverage, and solvency analysis, was proven using concrete financial data from agricultural and tourism companies. In the following, the authors will provide the average movement amounts of the coefficients for the observed five-year period (2019-2023). Profitability is shown using the net profit rate, which

in agricultural activity decreases by 0.91049, and in tourism it increases by 0.06173. Liquidity is shown based on the quick ratio, which decreased by 0.2453 in agriculture and increased by 0.24153 in tourism. The total asset turnover was determined based on the total asset turnover ratio, which decreased by 0.96551 and 0.14414 in agricultural activities and tourism, respectively. The movement of net working capital in agricultural activity shows an average increase of 87,509 RSD, while the flow in tourism decreases by 655,809 RSD. When it comes to changes in the level of indebtedness, it is determined based on debt ratios, which increase by 0.04122 and 0.21925 respectively in the agricultural and tourism sectors. Solvency analysis indicates that the solvency ratio in agriculture decreases by 0.09901, while in tourism it increases by 0.5964. Based on the indicators presented, the authors conclude that tourism performs better in terms of profitability and liquidity trends, while agriculture has a higher amount of net working capital, higher asset turnover (although there is a decline in both sectors), and a lower level of indebtedness

Finally, hypothesis H_2, which refers to the application of Altman's initial Z-score model and the corrected Altman's Z'-score model for determining bankruptcy risk, established the extent to which companies at the industry level are exposed to this risk, thus confirming the hypothesis. The results obtained using Altman's Z-score model indicate that the value of Altman's Z-score model decreases in both agriculture by 0.88606 and tourism by 0.29588. However, the results based on Altman's modified Z-score model, which is applicable to developing economies, show that the Z-score value increases in agriculture by 0.3181 and in tourism by 0.15419. Based on a deeper analysis of Altman's Z-score model, the Z-score value is higher in the first three years in agriculture and lower in the last two years compared to tourism. When it comes to the movement of the value of Altman's Z'-score model, in the first three years the Z'-score value is also higher in agriculture, while in 2022 it decreases annually. Furthermore, in 2023 the Z-score value for agriculture is in the safe (green) zone, while the Z-score value for tourism is in the moderate risk zone (gray zone). This indicates that the values of the variables in Altman's Z-score model adjusted for tourism need to be studied more deeply in order to be in the safe (green) zone.

The authors conclude that, although agricultural enterprises have a greater market potential, the presented activities together impact the economy of the Republic of Serbia, which can be supported by the results obtained from the analysis of ratio indicators and the Altman Z-score and Z'-score models. These activities complement each other when it comes to their impact on economic growth and development, as in those parts of the analysis where the results are around critical values for one activity, the other activity neutralizes this with its indicators, and together they influence the development of the Serbian economy. The contribution of the research is reflected in its ability to assess the current performance of companies, predict their future performance, and facilitate comparisons among them. The implication of this analysis is reflected in its expansion to comparisons between companies in different economic sectors (industry, construction, trade, etc.) in order to determine the efficiency of their operations and, based on that, to ascertain the impact of a specific

economic activity on the economy. In the end, the research can be applied in the strategic assessment of macroeconomic data between individual economies, in order to determine the level of success and the achievement of set goals over a specific period of time.

Conflict of interests

The authors declare no conflict of interest.

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