

Multidimensional assessment of banking sector competitiveness: Republic of Serbia (2015-2024)

Multidimenzionalna analiza konkurentnosti bankarskog sektora: Republika Srbija (2015-2024)

Jasminka Đurićanin^{a*} , Mirjana Mrvaljević^a , Jelena Veličković^a 

^a Toplica Academy of Applied Studies, Department of Business Studies Blace, Serbia

^b Kosovo and Metohija Academy of Applied Studies, Leposavić, Serbia

Article info

Original scientific paper

Received:
21 March, 2026
Revised:
7 April, 2026
Accepted:
29 June, 2026
Published online: 29 July, 2026

DOI:
<https://doi.org/10.71159/bizinfo260017D>

UDC/ UDK:
347.734(497.11)

Abstract

This research evaluates the competitiveness of the Republic of Serbia banking sector in the period 2015-2024 and uses a composite competitiveness index (CCI) constructed from key performance indicators. The methodological approach of this paper includes descriptive statistics, comparative analysis with selected countries in the region and the European Union, and correlation and regression analyses. The research results show that the banking sector of the Republic of Serbia has made significant progress in the observed period. Despite positive trends, challenges related to market concentration and long-term efficiency remain. The research contributes to the contemporary literature through a comprehensive index-based assessment of the banking sector's competitiveness in the Republic of Serbia. The research also provides guidelines for economic policymakers to encourage sustainable and balanced development of the banking sector in the future.

Keywords: banking sector, competitiveness, composite competitiveness index, Republic of Serbia

Sažetak

U okviru ovog istraživanja analizirana je konkurentnost bankarskog sektora Republike Srbije u vremenskom period od 2015-2024. godine i korišćen je kompozitni indeks konkurentnosti (CCI) konstruisan na osnovu ključnih pokazatelja performansi. Metodološki pristup ovog rada uključuje deskriptivnu statistiku, komparativnu analizu sa odabranim zemljama iz regiona i Evropske Unije, kao i korelaciju i regresionu analizu. Rezultati istraživanja pokazuju da je bankarski sektor Republike Srbije u posmatranom period značajno napredovao. Uprkos pozitivnim trendovima i dalje su prisutni izazovi u tržišnoj koncentraciji i dugoročnoj efikasnosti. Istraživanje doprinosi savremenoj literaturi na osnovu sveobuhvatne indeksno zasnovane procene konkurentnosti bankarskog sektora u Republici Srbiji. Istraživanje ujedno pruža smernice za kreatore ekonomske politike kako bi se podstakao održiv i uravnotežen razvoj bankarskog sektora u budućnosti.

Ključne reči: bankarski sektor, konkurentnost, kompozitni indeks konkurentnosti, Republika Srbija

1. Introduction

In the modern market, the banking sector represents a crucial support of the financial system, and an important part in the allocation of financial resources, intermediation between savings and investments, as well as in encouraging economic growth and the increase of the capital market (Korneev et al., 2023). A continuous and well-organized banking system contributes to the sustainability of the financial system and is a dynamic factor in macroeconomic stability. In the current

conditions of globalization and liberalization of financial markets, the attractiveness of the banking sector is one of the main determinants of the quality and accessibility of financial services, as well as the long-term stability of the financial system (Azarenkova et al., 2018; Ghosh, 2016). The progressions of financial integration, technological expansion, and regulatory fluctuations have meaningfully prejudiced the transformation of the banking sector worldwide (Ferreira, 2023; Fotova Čiković & Cvetanovska, 2022; Berger et al., 2017). In the European context, harmonization of regulatory frameworks,

*Corresponding author

E-mail address: jasminka.djuricanin@vpskp.edu.rs

This is an open access paper under the license



international application standards, and the single financial market development contributed to the strengthening of competition between banks (Anastasiou et al., 2022; Leonida & Muzzupappa, 2018; Menicucci & Paolucci, 2016). These variations are mostly noticeable in transition economies, where financial sector rearrangements were aimed at consolidating the stability of the banking system, improving business efficiency, and increasing the level of competition. The changes also affected the banking sector of the Republic of Serbia, which went through significant structural changes during the previous decades, such as the process of restructuring, consolidation, and privatization of banking institutions, as well as the gradual harmonization of the regulatory framework with the standards of the European Union (Bukvić, 2020a; Bukvić, 2020b; Matović et al., 2018; Ljumović et al., 2014; Miljković et al., 2013). As a result of these processes, the Serbian banking sector is considered to have a comparatively high level of capital adequacy, enhanced loan portfolio quality, and stable growth in profitability. At the same time, changes in the market structure, digitization of financial services, and strengthening of competition among banks additionally affect the dynamics of the development of this sector (Đuranović & Filipović, 2025; Odorović, 2023; Kaličanin & Terzić, 2023; Grubišić et al., 2021).

Previous studies analyzed certain aspects of bank operations, such as profitability, efficiency, or stability, but an integrated analysis of the banking sector competitiveness that includes several dimensions of operations and enables a comparative assessment with the region and European Union countries is limited. In particular, the way in which different financial indicators jointly affect the level of the banking sector's competitiveness in transitional economies such as the Republic of Serbia has been insufficiently researched. Based on the above, the goal of this work is to analyze the level of competitiveness of the banking sector of the Republic of Serbia in the period 2015-2024, with a comparative review of selected countries of the region and member states of the European Union. The countries of the region were selected because they have a similar transitional economic context and banking sector structure, which enables a relevant comparison with the Republic of Serbia. The countries of the European Union are included as a reference group to assess the Republic of Serbia's position in relation to developed markets and harmonization with European Union standards. The choice of these countries is motivated by the accessibility of relevant financial data, which enables a reliable and comparative analysis of the banking sector competitiveness.

In accordance with the defined objective of the research, the following research questions were raised:

RQ₁: How was the banking sector competitiveness in the Republic of Serbia in the period 2015-2024?

RQ₂: What is the position of the banking sector of the Republic of Serbia in comparison with the banking sectors of the selected countries from the region and the European Union?

RQ₃: What are the key factors affecting the banking system competitiveness of the Republic of Serbia in the observed period 2015-2024?

To provide a complete overview of the banking sector competitiveness, the research is based on a combination of descriptive, comparative, and econometric analysis. For the integrated assessment of competitiveness, a composite competitiveness index (CCI) was constructed, which combines key indicators of profitability, efficiency, stability, and market structure of the banking sector. In addition, correlation and regression analysis were applied to recognize the interrelationships between the main financial indicators. This methodological framework permits a comprehensive valuation of competitiveness and the identification of key performance determinants of the banking sector of the Republic of Serbia. The originality of this research is mirrored in the construction and application of the CCI, which simultaneously includes several dimensions of bank performance. Contrasting previous studies that analyze these dimensions separately, the paper provides a combined analytical framework that permits a comprehensive assessment of the sector's performance over time. Comparing the Republic of Serbia with the countries of the region and the European Union countries, the study not only quantifies competitiveness trends but also identifies the key drivers of sector performance, providing theoretical input and practical guidelines for policy making.

2. Literature review and theoretical background

In this research, the examination of applicable literature is organized through three thematic units. The first part describes the concept of banking sector competitiveness and its basic characteristics. The second part analyzes the key determinants of bank performance, with a special focus on profitability, efficiency, and operational stability. The third part is devoted to the role of market structure and concentration in shaping competition in the banking sector. This structure enables a systematic review of theoretical and empirical findings that represent the basis for the analysis of the banking sector competitiveness in this research.

2.1. Banking sector competitiveness

Efficient functioning of banks permits the mobilization of capital, financing of the economy, and support for economic growth (Bernard Azolibe, 2022). And the competitiveness is described as the bank's ability to provide quality services, manage costs, risks, and capital, while efficiency, stability, and profitability reflect the overall strength of the sector (Srivastava et al., 2023). That is why the competitiveness of the banking sector becomes vital for the quality of financial services, the operational efficiency, and the stability of the financial system (Božić & Božić, 2025). On the other hand, global market integration, technological innovation, and regulatory requirements increase the competition intensity, which requires continuous market position analysis and banks' performance (Karem & Azzahra, 2024; Oyegbade et al., 2022). Contemporary research points out that

competitiveness cannot be evaluated exclusively through financial results, but must take into account the ability of banks to adapt to institutional and technological changes (Bueno et al., 2024; Azarenkova et al., 2018).

2.2. Determinants of banking performance

Empirical research identifies three basic dimensions of banking sector performance: profitability, efficiency, and stability. Profitability, measured by ROA and ROE, reflects the efficiency of asset utilization and capital return, which shows the financial strength of banks (Todorović et al., 2025; Obeid, 2023; Adelopo et al., 2022; Mondol & Wadud, 2022). Efficiency, assessed through cost-to-income ratio (CIR) and net interest margin (NIM), indicates banks' ability to manage operating costs and generate income (Indić et al., 2025; Horvat et al., 2022a; Horvat et al., 2022b). Stability, by measuring the share of non-performing loans (NPL) and capital adequacy (CAR), illuminates banks' resilience to financial shocks (Arhinful et al., 2025; Putra et al., 2024). Research confirms that the internal characteristics of banks and macroeconomic factors together determine the sector performance (Mijoč et al., 2025; Bernardelli et al., 2024). Additionally, digital transformation and the application of fintech solutions increasingly affect operational efficiency and customer engagement, strengthening competitiveness beyond traditional financial metrics (Lekić et al., 2025; Chinoda & Kapingura, 2023; Preziuso et al., 2023; Doran et al., 2022).

2.3. Market structure and competition

The structure of the market affects sector competitiveness, and market concentration is measured by the HHI (Herfindahl-Hirschman Index), which shows the dominance of the largest banks and the impact on competition (Peleckis, 2022). High concentration can limit competition, while fragmentation can reduce economies of scale. Competition stimulates efficiency and service quality, but too much competition can increase systemic risk (Božić & Božić, 2025). Contemporary literature on the competitiveness of the banking sector shows certain contradictory findings regarding the key determinants of performance. While some research highlights profitability and efficiency as primary competitiveness factors (Adelopo et al., 2022; Horvat et al., 2022), other authors emphasize the role of the regulatory framework, digitalization, and fintech innovations (Preziuso et al., 2023; Doran et al., 2022). These contrasting observations indicate the complexity of the sector and the need for a multidimensional analysis that integrates financial indicators, market structure, and technological factors.

Based on the literature review, a gap was recognized in empirical works that instantaneously examine all crucial dimensions of competitiveness in transition economies and compare them with regional and European Union countries. This research seeks to fill this gap by applying a composite index of competitiveness, thereby contributing to a deeper understanding of the factors that shape the banking sector competitiveness of the Republic

of Serbia. The composite index of competitiveness signifies an innovative methodological contribution, as it permits simultaneous assessment of multiple dimensions and comparison between countries, filling the gap of previous research that analyzed these aspects in isolation.

2.4. Theoretical perspectives on competition and stability in banking

In investigating the competitiveness of the banking sector, the Structure-Conduct-Performance (SCP) theory is frequently applied, which starts from the assumption that the market structure affects the behavior of financial institutions, and then their performance (Ab-Rahim & Chieng, 2016). A higher level of market concentration can decrease competitive pressure and permit banks to accomplish advanced profitability (Bourai et al., 2024; Santoso et al., 2023; Panhans et al., 2023). In addition to the SCP approach, a significant theoretical framework is characterized by the Competition-Stability hypothesis, which ponders the relationship between the intensity of competition and the stability of the financial system. Superior competition can increase the efficiency and quality of financial services, but at the same time, it can encourage banks to take additional risks to preserve profitability (Calise, 2025; Ernaningsih et al., 2023; Srivastava et al., 2023; Khattak et al., 2022). Contemporary research highlights the need to strike a balance between competition and stability in order for the banking sector to endure efficiently, profitably, and resiliently to financial shocks. The above-mentioned theoretical methods represent the conceptual framework for the empirical analysis in this research.

3. Methodology

The research analysis is based on annual data from the National Bank of Serbia, the European Central Bank, Eurostat, and the World Bank, covering the period from 2015 to 2024. The competitiveness of the banking sector was assessed through four key dimensions: profitability, efficiency, stability, and market structure (Tran et al., 2023; Gržeta et al., 2023; Srivastava et al., 2023). Profitability is assessed by ROA and ROE, efficiency by CIR and NIM, stability by NPL and CAR, and the market banking sector concentration is used to evaluate the market structure (HHI).

Table 1. Matrix of banking sector competitiveness indicators

Dimension	Indicator	Interpretation
Profitability	ROA, ROE	Bank performance
Efficiency	CIR, NIM	Cost and revenue efficiency
Stability	NPL, CAR	Risk and capital resilience
Market structure	HHI	Market concentration

Source: Author's processing based on relevant literature and financial indicators

For a comprehensive assessment of competitiveness, the CCI index, which integrates all dimensions of the sector, was used. For the robustness of the results, the CCI index was created using the method of normalization and

weighting of indicators, where the weights were determined based on the relevance of the dimensions according to the literature and empirical importance (Tran et al., 2023; Srivastava et al., 2023). This guarantees that each dimension: profitability, efficiency, stability, and market concentration, contributes proportionally to the overall competitiveness rating. In the final step, the standardized values of the indicators were aggregated into a unique composite index using a weighted sum, which enabled an integrated assessment of the banking sector competitiveness in a comparative international context. This approach is often applied in the construction of composite indices when the theoretical framework does not designate the main role of an individual dimension.

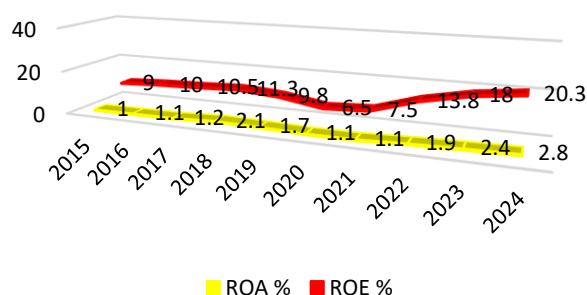
A descriptive analysis was conducted to identify trends and basic statistics, benchmarking for comparison with the countries of the region and the European Union, as well as correlation and regression analysis to determine the interdependence of indicators and key determinants of performance. Correlation analysis was performed with checks for multicollinearity, heteroscedasticity, and autocorrelation to guarantee the reliability of the estimates. Building on this, a regression analysis was conducted using the CCI as the dependent variable and indicators of profitability, efficiency, stability, and market structure as independent variables.

4. Results

4.1. Profitability indicators

To analyze the profitability of the banking sector of the Republic of Serbia, indicators of return on assets (ROA) and return on capital (ROE) were observed in the 2015-2024 period.

Graph 1. Profitability trend of the Serbian banking sector (2015–2024)

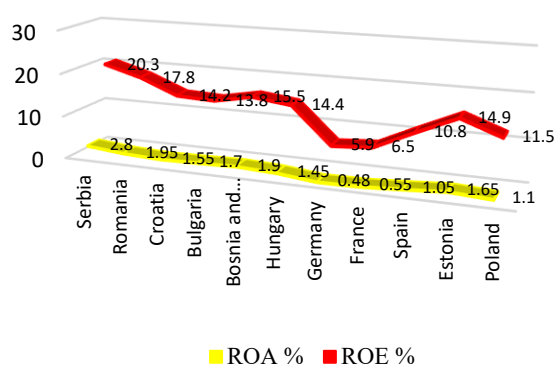


Source: National Bank of Serbia (2015-2024)

The banking sector in the Republic of Serbia began the observed period with a low return ROA (1.1%), and after a slight decline, it entered a phase of stabilization and growth. A significant jump in profitability was recorded in 2017 and 2018, when ROA reached 2.1%, which was the result of the successful resolution of problem loans and lower impairment charges. Although a temporary drop to 1.1% was recorded during the pandemic year 2020 due to uncertainty and the moratorium, a strong upward trend began in 2022. The peak was reached in 2024 with a record 2.8%, which confirms that banks in the Republic of

Serbia managed to make the most of the growth in interest rates and the modernization of operations, which raised profitability on total assets to the highest level in the last decade. At the same time, the banking sector in the Republic of Serbia records an impressive growth in ROE, which in the last decade has more than doubled from a modest 9% in 2015 to a record 20.3% in 2024. The marked trend of profitability growth, especially after 2021, is the result of successful market consolidation, reduction of operating costs, and growth of net interest income (National Bank of Serbia, 2021). Although a temporary decline was recorded during 2020 due to pandemic restrictions, the rapid recovery and reaching the historical maximum in 2024 confirm that the domestic banking system has become extremely attractive for investors, with stable and high returns on invested capital.

Graph 2. Profitability comparison - Serbia, region, and EU (2024)



Source: National Bank of Serbia (2024); European Banking Authority (2024); Raiffeisen Research CEE Banking Sector Report (2024); EY Banking Sector Pulse (2024); BSCEE Review (2024); Eurostat Database (2024); World Bank World Development Indicators (2024); European Central Bank. (2024); European Banking Federation. (2024).

The growth trend when talking about ROA, especially noticeable after 2022, records the Republic of Serbia and developing markets such as Romania (1.95%) and Bosnia and Herzegovina (1.9%) as significantly more profitable compared to developed markets such as Germany and France, where ROA remains at a low 0.48-0.55%. This difference is a direct consequence of higher interest margins and faster economic adjustment of banks in the region compared to the saturated markets of the European Union.

Compared to European markets, the Republic of Serbia in 2024 occupies a leading position with the highest ROE of 20.3%, following the trend of high profitability in the region, where Romania (17.8%) and Bosnia and Herzegovina (15.5%) record double-digit results. In contrast, the developed economies of the European Union, such as France and Germany, have maintained significantly lower rates of return on capital, ranging from 5.9% to 6.5%. This significant difference indicates that emerging markets, despite their smaller economic size, offer banks significantly greater potential for earning

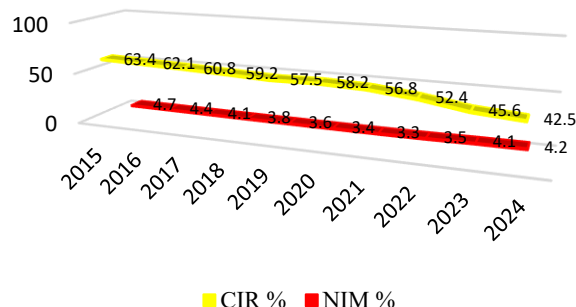
capital compared to saturated European markets with lower interest margins and higher operating costs.

A comparison with the banking sector of the region and the European Union shows that banks in the Republic of Serbia achieve a significantly higher level of profitability. While the indicators of ROA and ROE in the European Union are significantly lower, banks in the Republic of Serbia record significantly higher rates of return on assets and capital. This difference can be explained by higher interest margins, a different market structure, and a lower degree of regulatory burden, but it suggests that there is room for improvement in digitization and innovation to maintain long-term competitiveness in a global context.

4.2. Efficiency indicators

The efficiency of the banking sector is assessed on the basis of the indicators of cost-to-income ratio (CIR) and net interest margin (NIM). These indicators make it possible to assess the ability of banks to optimize operating costs and effectively manage revenues.

Graph 3. Efficiency indicators of the Serbian banking sector (2015-2024)



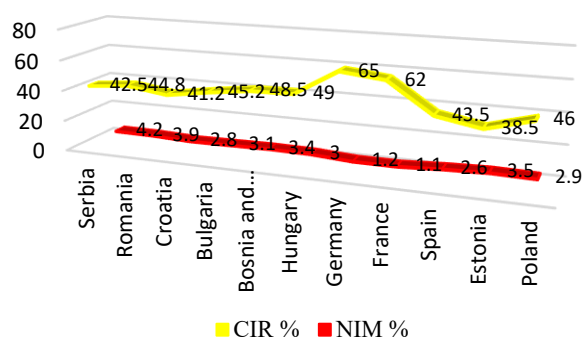
Source: National Bank of Serbia (2015-2024)

The operational efficiency and net interest margin of the banking sector of the Republic of Serbia went through two crucial phases in the past decade. The first phase, until 2021, was marked by a continuous decline in net interest margin (NIM) from a high of 4.7% to a historic low of 3.3% due to the era of low interest rates, while at the same time, the cost-to-income ratio (CIR) gradually declined due to digitization and market consolidation. The second phase begins in 2022, when restrictive monetary policy and an increase in reference rates raise NIM to 4.2% in 2024. This strong revenue growth, while maintaining strict cost control, led to record sector efficiency in 2024, when CIR dropped to the lowest 42.5%, which confirms that banks in the Republic of Serbia generate significantly higher profits with proportionately lower operational investments than at the beginning of the observed period.

By comparison with the countries in the region and in the European Union, the Republic of Serbia stands out as a market with significantly more favorable indicators, where the NIM of the Republic of Serbia of 4.2% is almost three times higher than the NIM in the countries in the region and the European Union. While developed economies such as Germany and France record low NIM

(about 1.2%) and high CIR (over 60%), which indicates saturation and high operating costs, the Republic of Serbia (42.5%) and Estonia (38.5%) lead the list of the most efficient systems. This difference in performance confirms that banks in developing markets, despite less economic strength, manage to maintain significantly better control over costs and achieve higher margins compared to traditional banking centers of the region and Europe.

Graph 4. Efficiency comparison - Serbia, region, and EU (2024)



Source: National Bank of Serbia (2024); European Banking Authority (2024); Raiffeisen Research CEE Banking Sector Report (2024); EY Banking Sector Pulse (2024); BSCEE Review (2024); Eurostat Database (2024); World Bank World Development Indicators (2024); European Central Bank. (2024); European Banking Federation. (2024).

By comparison with the countries in the region and in the European Union, the Republic of Serbia stands out as a market with significantly more favorable indicators, where the NIM of the Republic of Serbia of 4.2% is almost three times higher than the NIM in the countries in the region and the European Union. While developed economies such as Germany and France record low NIM (about 1.2%) and high CIR (over 60%), which indicates saturation and high operating costs, the Republic of Serbia (42.5%) and Estonia (38.5%) lead the list of the most efficient systems. This difference in performance confirms that banks in developing markets, despite less economic strength, manage to maintain significantly better control over costs and achieve higher margins compared to traditional banking centers of the region and Europe.

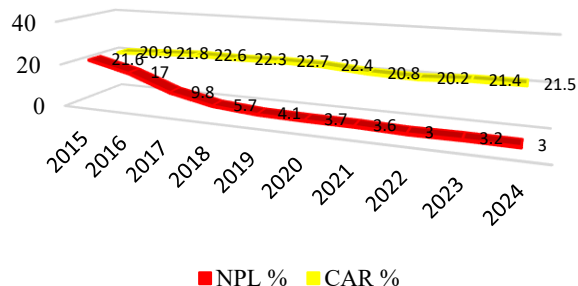
4.3. Stability indicators

The stability of the banking sector is a key component of its long-term competitiveness, and in the analysis of stability, the indicators of the share of non-performing loans (NPL) and capital adequacy (CAR) were observed.

The last decade in the Serbian banking sector was marked by a drastic drop in the share of non-performing loans (NPL) from over 21.6% to a record low of 3.0%, which is a direct consequence of the systematic sale of bad debts to funds and the introduction of stricter rules by the National Bank of Serbia. Along with this trend, the capital

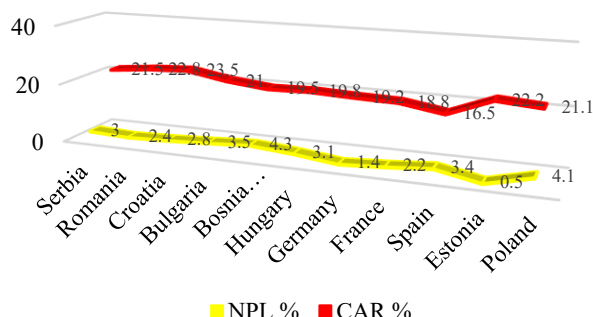
adequacy ratio (CAR) is stably maintained at a level above 20%, which is almost twice the legal minimum and confirms that domestic banks are extremely well capitalized and resistant to shocks. This correlation, where risky loans continuously decrease while capital strength increases or remains stable, represents one of the greatest successes in stabilizing the domestic financial system in the last ten years.

Graph 5. Stability indicators of the Serbian banking sector (2015-2024)



Source: National Bank of Serbia (2015-2024)

Graph 6. Stability comparison - Serbia, region, and EU



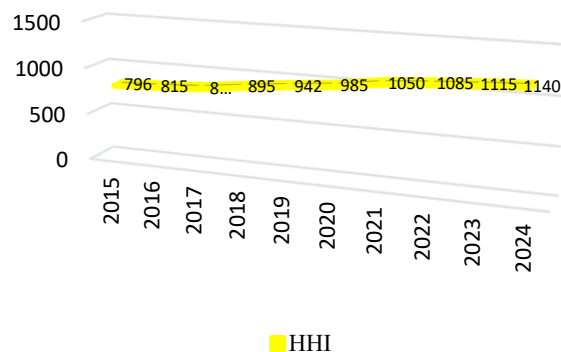
Source: National Bank of Serbia (2024); European Banking Authority (2024); Raiffeisen Research CEE Banking Sector Report (2024); EY Banking Sector Pulse (2024); BSCEE Review (2024); Eurostat Database (2024); World Bank World Development Indicators (2024); European Central Bank. (2024); European Banking Federation. (2024).

Compared to the European average in 2024, the banking system of the Republic of Serbia shows enviable stability, where its NPL of 3.0% is at the level of the European Union average, while the CAR of 21.5% is significantly above the European Union average. While developed economies like Germany and France record traditionally lower NPL, they often have lower capital adequacy, which places the Republic of Serbia and countries like Croatia and Romania in the group of the safest and best capitalized markets in Europe. Such results confirm that regulatory measures in the region have created extremely resilient banking systems, ready to absorb potential economic disruptions without endangering depositors.

4.4. Market structure

The market structure of the banking sector was analyzed using the Herfindahl–Hirschman index (HHI) - a standard indicator of market concentration.

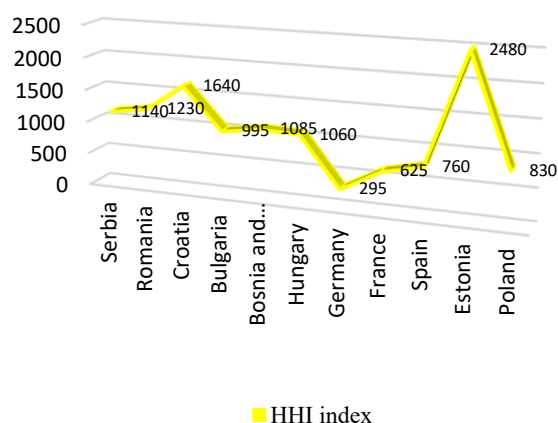
Graph 7. HHI concentration index of the Serbian banking sector (2015-2024)



Source: National Bank of Serbia (2015-2024)

During the observed decade, the banking sector of the Republic of Serbia went through an intensive process of consolidation, which is clearly reflected in the growth of the HHI index from 796 in 2015 to 1.140 in 2024. This growth indicates the market transition from a phase of high fragmentation (where around 30 banks operated) to a phase of moderate concentration, driven by large acquisitions and mergers of leading banking groups. Despite the reduction in the number of banks to 20 in 2024, the market has maintained a high level of competitiveness, as no single bank dominates the system, while the increased size of the remaining banks has enabled greater operational efficiency and stability.

Graph 8. Market structure - Serbia, region, and EU



Source: National Bank of Serbia (2024); European Banking Authority (2024); Raiffeisen Research CEE Banking Sector Report (2024); EY Banking Sector Pulse (2024); BSCEE Review (2024); ECB Structural Financial Indicators 2024; Euro Banking Federation - EBF Facts & Figures 2024; Eurostat Database (2024); World Bank World Development Indicators (2024).

Compared to the average of selected European countries in 2024, the Serbian banking sector, with the HHI index of 1.140, belongs to the group of moderately concentrated markets, which is typical for the region economies that

have gone through the consolidation process. While in Estonia (2.480), there is a high concentration due to the dominance of several large groups, the Republic of Serbia maintains a healthy balance between the stability of large systems and strong market competition. In contrast, developed markets such as Germany (295) and France (625) are considered to have extremely low concentration due to a specific structure with a large number of local and savings banks. This position of the Republic of Serbia in 2024 indicates a mature market that has achieved operational efficiency through mergers and acquisitions, without impairing the competitiveness of the offer for clients.

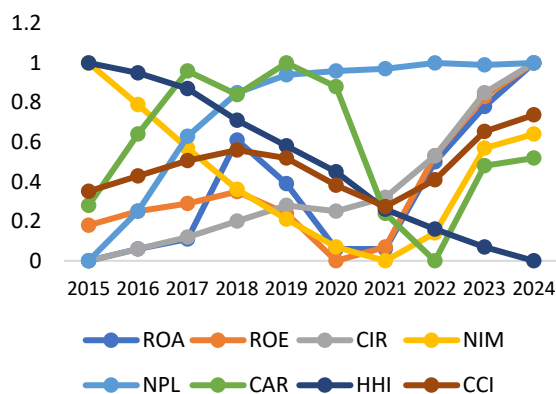
4.5. Composite competitiveness index

To comprehensively assess the competitiveness of the banking sector, a CCI index was constructed, which integrates key indicators of profitability, efficiency, stability, and market structure:

$$CCI = \sum_{i=1}^n w_i Z_i$$

where w_i denotes the weight assigned to each indicator, Z_i represents the standardized value of the observed indicator after applying normalization, and n denotes the total number of indicators included in the construction of the index (which is a total of seven, in this research). Standardization of indicators was carried out using the *z-score* method to ensure mutual comparability of indicators expressed in different units of measure. The final index value was obtained by aggregating the standardized values using a weighted sum. In this research, all dimensions of competitiveness (profitability, efficiency, stability, and market structure) are treated equally, with indicators being assigned equal weights to guarantee a balanced assessment of the overall banking sector competitiveness.

Graph 9. CCI index of the Serbian banking sector (2015-2024)



Source: National Bank of Serbia (2024); European Banking Authority (2024); Raiffeisen Research CEE Banking Sector Report (2024); EY Banking Sector Pulse (2024); BSCEE Review (2024); Eurostat Database (2024); World Bank World Development Indicators (2024).

The values shown on the graph were obtained using the *min-max* normalization method, which enables

comparability of the indicators of different measurement units. Within this method, all indicators were transformed to an interval from 0 to 1. For indicators where higher values indicate better competitiveness of the banking sector (ROA, ROE, NIM, and CAR), the following formula was applied:

$$X_{norm} = \frac{X - X_{min}}{X_{max} - X_{min}}$$

For indicators where lower values indicate a more favorable situation (CIR, NPL, and HHI), the reverse transformation was used:

$$X_{norm} = \frac{X_{max} - X}{X_{max} - X_{min}}$$

After normalization, the composite competitiveness index (CCI) was calculated as the arithmetic mean of all seven standardized indicators (ROA, ROE, CIR, NIM, NPL, CAR, and HHI):

$$CCI = \frac{ROA + ROE + CIR + NIM + NPL + CAR + HHI}{7}$$

A unique indicator was obtained that unites the key dimensions of the banking sector competitiveness and enables monitoring of their movement during the observed period (2015-2024).

The movement of the CCI index in the period 2015-2024 shows the steady improvement of the banking sector competitiveness. In the initial years of the analyzed period, the values of the index are relatively lower, which can be related to more noticeable structural boundaries of the sector, primarily a higher share of problem loans and a lower level of bank profitability. During the following years, there will be a gradual improvement of key indicators, especially through a reduction in the share of NPL, an increase in profitability (ROA and ROE), and an improvement in operational efficiency, which is reflected in the growth of the CCI index value. A temporary slowdown of this trend can be observed in the period 2020-2021, which is partly related to the economic consequences of the global health crisis. From 2022, the index records a more noticeable growth and reaches its highest value in 2024, which indicates the strengthening of stability, profitability, and overall competitiveness of the banking sector of the Republic of Serbia in the observed period.

4.6. Econometric analysis

To identify mutual relationships between the analyzed indicators, correlation analysis was applied.

The results of the correlation analysis indicate a strong positive correlation between ROA and ROE profitability indicators ($r = 0.908$), which confirms their mutual compatibility in movement during the observed period. At the same time, the indicator of operational efficiency CIR shows a pronounced negative correlation with ROA and

ROE, which suggests that the reduction of operating costs contributes to the increase in banks' profitability. A significant negative correlation was observed between HHI and CIR ($r = -0.907$), while HHI shows a moderate positive correlation with ROA and ROE, which may indicate that higher market concentration may be associated with a higher level of profitability in the banking sector.

To identify the key determinants of banking sector competitiveness, a regression analysis was conducted, with the CCI index as the dependent variable, and indicators of profitability, efficiency, stability, and market structure of the banking sector were included as independent variables. Although the CCI index was constructed on the basis of the mentioned financial indicators, a regression analysis was carried out to assess the relative contribution of each individual component to the overall competitiveness of the banking sector and to identify the crucial factors that most influence its dynamics in the observed period.

The regression model has the following form:

$$CCI_t = \beta_0 + \beta_1 ROA_t + \beta_2 ROE_t + \beta_3 CIR_t + \beta_4 NIM_t + \beta_5 NPL_t + \beta_6 CAR_t + \beta_7 HHI_t + \varepsilon_t$$

where β_0 is a model constant that represents the expected CCI value when all independent variables are equal to zero, β_1 – β_7 - regression coefficients that measure the marginal impact of each independent variable on the change in the CCI index value, ε - random error of the model that includes the influence of factors not included in the model, t - time period (2015-2024).

Table 2. Regression analysis

Variable	Coefficient (β)	St. error	t	p value
Constant	0.193	0.082	2.35	0.047
ROA	0.164	0.061	2.68	0.032
ROE	0.072	0.034	2.12	0.061
CIR	-0.139	0.049	-2.83	0.027
NIM	0.058	0.025	2.32	0.046
NPL	-0.117	0.043	-2.72	0.031
CAR	0.051	0.022	2.28	0.049
HHI	0.083	0.036	2.31	0.047

Source: Author's calculation

The results of the regression analysis enable the identification of the key determinants of the competitiveness of the banking sector of the Republic of Serbia in the observed period. The coefficient of determination ($R^2 = 0.86$) indicates that the selected independent variables explain about 86% of the variation of the composite index of competitiveness, which indicates a high level of explanation of the model. Also, the value of the adjusted coefficient of determination (Adjusted $R^2 = 0.77$) confirms that the model retains significant explanatory power even after adjusting for the number of included variables. The results of the F-test show that the model as a whole is statistically significant, which means that the selected set of indicators significantly contributes to the explanation of the competitiveness of the banking sector.

The results show that profitability indicators have a positive impact on the competitiveness of the banking sector. The variable ROA has a positive and statistically significant coefficient, which indicates that greater efficiency in the use of total assets contributes to the growth of the competitiveness of the banking sector. Similarly, the ROE indicator also shows a positive relationship with the value of the CCI index, which confirms that a higher return on equity increases the attractiveness and financial strength of the banking system. The operational efficiency indicator CIR shows a negative and statistically significant coefficient. This result indicates that an increase in the CIR reduces the banking sector's competitiveness, while the reduction of operating costs and more efficient income management contribute to the strengthening of the sector's overall competitiveness. This finding is in line with modern research that emphasizes the importance of operational efficiency as one of the key factors of banking performance. The NIM shows a positive relationship with the composite index of competitiveness. This result suggests that higher interest margins allow banks to generate higher revenues from their core business, which contributes to the growth of profitability and overall competitiveness of the banking sector. The results show that the share of NPLs harms the competitiveness of the banking sector. A higher level of problem loans increases credit risk and negatively affects the stability and profitability of banks, which is reflected in the lower level of overall competitiveness of the sector. Conversely, the CAR shows a positive relationship with the value of the CCI index, which indicates that a strong capital base contributes to the stability of the banking system and increases its resistance to potential financial shocks. The HHI market concentration index also shows a positive coefficient, which suggests that moderate market concentration can have a positive effect on the banking sector's competitiveness. A higher degree of concentration can enable banks to realize economies of scale, reduce operating costs, and increase business efficiency, which positively reflects on the overall performance of the sector.

5. Discussion

The analysis of the banking sector competitiveness of the Republic of Serbia in the period 2015-2024 shows a multidimensional improvement in four key dimensions: profitability, efficiency, stability, and market structure. The CCI index records continuous growth, which reflects the successful consolidation and strategic development of banks in the Republic of Serbia. Profitability, measured by ROA and ROE indicators, shows significant growth, placing domestic banks ahead of many regional countries and well above the European Union countries. These results confirm that, despite the smaller size of the market, countries in transition like the Republic of Serbia can achieve higher returns thanks to favorable interest margins and faster adaptation to market conditions (Srivastava et al., 2023; Azarenkova et al., 2018). Compared to the region and the European Union, Serbian banks achieve superior operational efficiency, while the high CIR of developed economies, such as Germany and France, limits

profitability. These findings confirm the literature that highlights efficiency as a key driver of banking sector competitiveness in transition economies (Indić et al., 2025; Horvat et al., 2022). Stability, assessed through NPL and CAR, shows a significant improvement in the quality of the loan portfolio and capital adequacy, the decline in NPL, and the maintenance of the CAR position of Serbian banks among the most resilient in the region. These results confirm that regulatory measures and careful risk management effectively reduce credit risk and contribute to the long-term sustainability of the sector (Arhinful et al., 2025; Putra et al., 2024). Analysis of the market structure through the HHI index shows a moderate degree of concentration. Although HHI has grown due to consolidation and mergers, the market maintains a balance between gaining economies of scale and competitive pressure. Compared to Estonia, which has a high concentration, or Germany, which has a low concentration, the Republic of Serbia achieves an optimal balance that enables efficiency without significantly distorting competition, which is in line with the SCP theory and the competitiveness-stability hypothesis (Calise, 2025; Ab-Rahim & Chieng, 2016).

The comparative analysis confirms the unique position of the Serbian banking sector, because banks in the Republic of Serbia surpass their regional counterparts in terms of profitability and efficiency, while at the same time maintaining high stability. Compared to EU banks, the Republic of Serbia achieves higher ROA and ROE, better CIR, as well as competitive NPL and CAR values. It can be concluded from this research that the results indicate that markets in transition, although smaller, can achieve a high level of competitiveness by balancing operational efficiency, risk management, and strategic consolidation. Multidimensional comparative analysis confirms that CCI is a useful tool for monitoring competitiveness, integration of multiple dimensions, and international comparison. These findings from this research provide practical guidance to regulators and policymakers for targeted interventions, supporting market development and innovation, to ensure long-term resilience and compliance with European Union standards.

The displayed correlation values enable a deeper understanding of the interdependence of key indicators and their impact on the competitiveness of the sector. The results in this research show a strong positive correlation between ROA and ROE, which confirms the mutual compatibility of these indicators in measuring the financial strength of banks. CIR is strongly negatively related to ROA and ROE, indicating that the reduction of operating expenses directly contributes to the growth of profitability. These findings are consistent with the research of Obieda (2023), Adelopa et al. (2022), and Horvata et al. (2022), who highlight the key role of efficiency in achieving financial performance. NIM shows a weaker, but still positive connection with ROE and minimal with ROA, which reflects the specifics of the market of the Republic of Serbia, where profitability is more determined by cost control, and not by the amount of net interest margins, which is also confirmed by Srivastava et al. (2023). Stability, measured by CAR,

shows a weaker association with profitability and efficiency, indicating that domestic banks maintain a high capital reserve regardless of current performance, a finding supported by Arhinful et al. (2025) and Putra et al. (2024). The HHI index is moderately positively related to ROA and ROE, and strongly negatively related to CIR and NPL. Moderate market concentration in the Republic of Serbia contributes to higher profitability and efficiency, while reducing the level of problem loans. These results confirm the predictions of the SCP theory (Ab-Rahim & Chieng, 2016) that the market structure shapes the behavior of banks and their performance, but also the Competition-Stability hypothesis (Calise, 2025; Khattak et al., 2022), which points out that the balance between competition and concentration can maintain the stability of the sector. Integrated analysis through CCI in this research shows that the combination of high profitability, efficient cost management, low level of NPLs, and moderate market concentration contributes to the stable growth of the sector's competitiveness. This multidimensional approach confirms the recommendations of Bueno et al. (2024) and Tran et al. (2023), who emphasize the importance of simultaneous assessment of all key dimensions of bank performance in transition economies.

6. Conclusion

In connection with the first research question, RQ₁, the results demonstrate the banking sector competitiveness of the Republic of Serbia during 2015-2024. showed a trend of gradual improvement, which is also confirmed by the increase in the CCI index value. In relation to the second research question, RQ₂, the comparative analysis shows that the banking sector of Serbia achieves competitive performance compared to the selected countries of the region and the European Union, especially in terms of profitability and stability of bank operations. The results of the econometric analysis provide an answer to the third research question, RQ₃, indicating that operational efficiency, net interest margin, and the quality of the loan portfolio are among the crucial factors that affect the profitability and overall competitiveness of the banking sector.

The findings of this research provide important guidelines for regulators and policymakers in the banking sector of the Republic of Serbia. Regulatory institutions should continue with policies that encourage competition and prevent excessive market concentration to ensure the efficient functioning of the financial market. Maintaining a stable regulatory framework, improving credit risk management, and encouraging the digital transformation of the banking sector can additionally contribute to strengthening the banking system's competitiveness and resilience. The research shows that Serbian banks have achieved significant improvements in profitability, efficiency, and stability, which positions them competitively in the regional context.

Future strategies should prioritize digital transformation, further efficiency improvements, and careful risk management to maintain the sector's long-term

competitiveness, because maintaining operational efficiency, strong capital adequacy, and prudent credit risk management are key to long-term competitiveness. The results in this research also point to the need for strategic investments in digital banking and innovative financial solutions in order for the sector to comply with European Union standards and improve international competitiveness. Regulators can use this information to create targeted policies, support innovation, and strengthen the resilience and banking sector competitiveness.

Although the research provides a comprehensive analysis of the Serbian banking sector's competitiveness, certain limitations should be taken into account. The analysis is based on aggregated data from the banking sector, which may limit a more detailed insight into the individual performance of banks. Future research can expand the analysis by applying microeconomic data at the level of individual banks, as well as by including additional indicators related to the digitalization of financial services and the development of the fintech sector.

References

- Ab-Rahim, R., & Chiang, S. N. (2016). Market structure and performance of Malaysian banking industry. *Journal of Financial Reporting and Accounting*, 14(2), 158-177. <https://doi.org/10.1108/jfra-11-2014-0086>
- Adelopo, I., Vichou, N., & Cheung, K. Y. (2022). Capital, liquidity, and profitability in European banks. *Journal of Corporate Accounting & Finance*, 33(1), 23-35. <https://doi.org/10.1002/jcaf.22522>
- Anastasiou, D., Giannoulakis, S., Koutoupis, A., Tzomakas, C., & Davidopoulos, L. G. (2022). European banks' profitability and sentiment cycle. *Review of Behavioral Economics*, 9(3), 223-250. <https://doi.org/10.1561/105.00000157>
- Arhinful, R., Mensah, L., Gyamfi, B. A., & Obeng, H. A. (2025). The impact of non-performing loans on bank growth: The moderating roles of bank size and capital adequacy ratio—Evidence from US banks. *International Journal of Financial Studies*, 13(3), 165. <https://doi.org/10.3390/ijfs13030165>
- Azarenkova, G., Shkodina, I., Samorodov, B., & Babenko, M. (2018). The influence of financial technologies on the global financial system stability. *Investment Management & Financial Innovations*, 15(4), 229. [https://doi.org/10.21511/imfi.15\(4\).2018.19](https://doi.org/10.21511/imfi.15(4).2018.19)
- Berger, A. N., Klapper, L. F., & Turk-Ariss, R. (2017). Bank competition and financial stability. In *Handbook of competition in banking and finance* (pp. 185-204). Edward Elgar Publishing. <https://doi.org/10.4337/9781785363306.00018>
- Bernard Azolibe, C. (2022). Banking sector intermediation development and economic growth: Evidence from Nigeria. *Journal of African Business*, 23(3), 757-774. <https://doi.org/10.1080/15228916.2021.1926857>
- Bernardelli, M., Korzeb, Z., & Niedziółka, P. (2024). What drives the profitability of banking sectors in the European Union? The machine learning approach. *International Journal of Management and Economics*, 60(4), 272-284. <https://doi.org/10.2478/ijme-2024-0022>
- Bourai, S., Arora, R., & Yadav, N. (2024). Structure-conduct-performance (SCP) paradigm in digital platform competition: a conceptual framework. *Journal of Strategy and Management*, 17(2), 322-347. <https://doi.org/10.1108/jsma-07-2023-0184>
- Božić, I., & Božić, A. (2025). Commercial banking and financial stability: evaluating internal and external determinants. *Journal of Business and Economic Options*, 8(1), 1-14. <https://doi.org/10.5281/zenodo.17371089>
- BSCEE Review. (2024). *Banking Sector in Central and Eastern Europe 2024*. <https://www.bscee.org/review2024>
- Bueno, L. A., Sigahi, T. F., Rampasso, I. S., Leal Filho, W., & Anholon, R. (2024). Impacts of digitization on operational efficiency in the banking sector: Thematic analysis and research agenda proposal. *International Journal of Information Management Data Insights*, 4(1), 100230. <https://doi.org/10.1016/j.jjime.2024.100230>
- Bukvić, R. (2020a). Concentration and Competition in Serbian Banking Sector in the Period 2016–2018. *Ekonomika*, 66(2), 17-35. <https://doi.org/10.5937/ekonomika2002017b>
- Bukvić, R. M. (2020b). Measuring of concentration and competition: Serbian banking sector. *Synaxa–Matica Srpska International Journal for Social Sciences, Arts, and Culture*, (6-7), 65-90. https://mpa.ub.uni-muenchen.de/107465/1/MPRA_paper_107465.pdf
- Calice, P. (2025). *Navigating the Competition-Stability Nexus in Financial Services*. World Bank. <https://doi.org/10.1596/1813-9450-11124>
- Chinoda, T., & Kapingura, F. M. (2023). The impact of digital financial inclusion and bank competition on bank stability in sub-Saharan Africa. *Economies*, 11(1), 15. <https://doi.org/10.3390/economies11010015>
- Doran, N. M., Bădîrcea, R. M., & Manta, A. G. (2022). Digitization and financial performance of banking sectors facing COVID-19 challenges in Central and Eastern European Countries. *Electronics*, 11(21), 3483. <https://doi.org/10.3390/electronics11213483>
- Đuranović, G., & Filipović, S. (2025). The impact of the external factors on the profitability of the banking sector in Serbia. *Ekonomika preduzeća*, 283-297. <https://doi.org/10.5937/ekopre2506283d>
- Ernaningsih, I., Smaoui, H., & Temimi, A. (2023). The effect of capitalization on the competition-stability Nexus: Evidence from dual banking systems. *Pacific-Basin Finance Journal*, 82, 102152. <https://doi.org/10.1016/j.pacfin.2023.102152>
- European Banking Authority. (2024). *Risk Assessment Report of the European Banking System 2024*. Paris: EBA. <https://www.eba.europa.eu/documents/eba-2024-report>
- European Banking Federation. (2024). *Banking in Europe: EBF Facts & Figures 2024*. Brussels: European Banking Federation. <https://www.ebf.eu/factsandfigures/>
- European Central Bank. (2024). *Structural Financial Indicators*. <https://www.ecb.europa.eu/home/html/index.en.html>
- Eurostat. (2024). *Eurostat database*. Luxembourg: European Commission. <https://ec.europa.eu/eurostat>
- EY. (2024). *Banking Sector Pulse 2024: Trends and Insights*. London: Ernst & Young. <https://www.ey.com/banking2024>
- Ferreira, C. (2023). Competition and stability in the European Union banking sector. *International Advances in Economic Research*, 29(4), 207-224. <https://doi.org/10.1007/s11294-023-09880-z>
- Fotova Čiković, K., & Cvetkoska, V. (2022). How efficient are banks in Croatia?. *Ekonomski vjesnik: Review of Contemporary Entrepreneurship, Business, and Economic Issues*, 35(1), 139-150. <https://doi.org/10.51680/ev.35.1.11>
- Ghosh, A. (2016). Banking sector globalization and bank performance: A comparative analysis of low income countries with emerging markets and advanced

- economies. *Review of Development Finance*, 6(1), 58-70. <https://doi.org/10.1016/j.rdf.2016.05.003>
- Grubišić, Z., Kamenković, S., & Kaličanin, T. (2021). Comparative analysis of the banking sector competitiveness in Serbia and Montenegro. *Journal of Central Banking Theory and Practice*, 10(1), 75-91. <https://doi.org/10.2478/jcbtp-2021-0004>
- Gržeta, I., Žiković, S., & Tomas Žiković, I. (2023). Size matters: analyzing bank profitability and efficiency under the Basel III framework. *Financial innovation*, 9(1), 43. <https://doi.org/10.1186/s40854-022-00412-y>
- Horvat, A. M., Milenković, N., Radovanov, B., Zelenović, V., & Milić, D. (2023). DEA efficiency of Serbian banks-comparison of three approaches. *Anali Ekonomskog Fakulteta u Subotici*, 59(50), 19-35. <https://doi.org/10.5937/aneksub2200011m>
- Horvat, A. M., Radovanov, B., Milić, D., & Milenković, N. (2022). Efficiency analysis of Serbian banking sector using data envelopment analysis: pre-pandemic era. *BizInfo Blace*, 13(2), 41-47. <https://doi.org/10.5937/bizinfo2202041m>
- Indić, M., Horvat, A. M., & Pjanić, M. (2025). Assessing banks efficiency: DEA implementation. *BizInfo Blace*, 16(1), 21-30. <https://doi.org/10.71159/bizinfo250003i>
- Kaličanin, T., & Terzić, I. (2023). Measures of concentration level in the banking sector: Empirical evidence from Serbia, Croatia and Montenegro. *The European Journal of Applied Economics*, 20(1), 107-121. <https://doi.org/10.5937/ejae20-42392>
- Karem, A. A., & Azzahra, M. S. (2024). Analyzing the impact of regulatory policies on financial stability and market dynamics in the banking industry. *Inspirasi & Strategi (INSPIRAT): Jurnal Kebijakan Publik & Bisnis*, 14(2), 83-91. <https://ejournal.isha.or.id/index.php/Inspirat/article/view/277>
- Khattak, M. A., Alaeddin, O., & Abojeib, M. (2022). Competition-stability relationship in dual banking systems: Evidence from efficiency-adjusted market power. *The Singapore Economic Review*, 67(01), 309-332. <https://doi.org/10.1142/s0217590820420096>
- Korneev, V., Dziubliuk, O., Tymkiv, A., Antkiv, V., & Kucherenko, N. (2023). Banking sector stability and economic development: Assessment of risks and efficiency. *Economic Affairs*, 68(3), 1683-1692. <https://doi.org/10.46852/0424-2513.3.2023.33>
- Lekić, S., Vapa Tankosić, J., Bejatović, G., & Redžepagić, S. (2025). The role of education in enhancing innovation in banks. *International Review*, 14(1-2), 95-104. <https://doi.org/10.5937/intrev2501095L>
- Leonida, L., & Muzzupappa, E. (2018). Do Basel Accords influence competition in the banking industry? A comparative analysis of Germany and the UK. *Journal of Banking Regulation*, 19(1), 64-72. <https://doi.org/10.1057/s41261-017-0053-0>
- Ljumović, I., Pavlović, V., & Cvijanović, J. (2014). Two aspects of concentration in Serbian banking sector. *Industrija: časopis za ekonomiku industrije*, 42(3), 61-77. <https://doi.org/10.5937/industrija42-5867>
- Matović, I. M. (2018, November). Creating and developing competition in the banking sector of the Republic of Serbia. In *Proceedings of the 11th International RAIS Conference on Social Sciences* (pp. 59-64). Scientia Moralitas Research Institute. <https://doi.org/10.2139/ssrn.3303339>
- Menicucci, E., & Paolucci, G. (2016). The determinants of bank profitability: empirical evidence from European banking sector. *Journal of financial reporting and Accounting*, 14(1), 86-115. <https://doi.org/10.1108/jfra-05-2015-0060>
- Mijoč, I., Kuzmić, M., & Vujanić, M. (2025). Estimating the determinants of bank profitability: comparative study for EU and US banks. *Organizacija*, 58(1), 31-47. <https://doi.org/10.2478/orga-2025-0003>
- Miljković, M., Filipović, S., & Tanasković, S. (2013). Market concentration in the banking sector: Evidence from Serbia. *Industrija*, 41(2), 7-27. <https://doi.org/10.5937/industrija41-4064>
- Mondol, D. K., & Wadud, A. (2022). Determinants of profitability of commercial banking in Bangladesh: A panel analysis. *International Journal of Statistical Sciences*, 22(1), 115-143. [https://doi.org/10.21511/bbs.12\(3-1\).2017.03](https://doi.org/10.21511/bbs.12(3-1).2017.03)
- National Bank of Serbia. (2024). *Annual Report on the Banking Sector in Serbia 2015-2024*. <https://www.nbs.rs/banking-report-2024>
- Obeid, R. (2023). Factors affecting return on assets (ROA) in the banking sector of selected Arab countries: Is there a role for financial inclusion and technology indicators. *International Journal of Economics and Finance*, 15(9), 1-1. <https://doi.org/10.5539/ijef.v15n9p1>
- Odorović, A. (2023). Open banking: Between cooperation and competition. *Annals of the Faculty of Law in Belgrade*, 71(1), 65-91. https://doi.org/10.51204/anal_i_pfbu_23102a
- Oyegbade, I. K., Igwe, A. N., Ofodile, O. C., & Azubuike, C. (2022). Transforming financial institutions with technology and strategic collaboration: Lessons from banking and capital markets. *International Journal of Multidisciplinary Research and Growth Evaluation*, 4(6), 1118-1127. <https://doi.org/10.54660/ijmrge.2023.4.6.1118-1127>
- Panhans, M. T. (2024). The rise, fall, and legacy of the structure-conduct-performance paradigm. *Journal of the History of Economic Thought*, 46(3), 337-357. <https://doi.org/10.1017/s105383722300038x>
- Peleckis, K. (2022). Determining the level of market concentration in the construction sector—case of application of the HHI index. *Sustainability*, 14(2), 779. <https://doi.org/10.3390/su14020779>
- Prezioso, M., Koefer, F., & Ehrenhard, M. (2023). Open banking and inclusive finance in the European Union: perspectives from the Dutch stakeholder ecosystem. *Financial Innovation*, 9(1), 111. <https://doi.org/10.1186/s40854-023-00522-1>
- Putra, C. I. W., Manurung, A. H., & Machdar, N. M. (2024). Effect of Capital Adequacy Ratio, Credit Policy, Liquidity Risk and Non-Performing Loan on Financial Distress. *Greenation International Journal of Economics and Accounting*, 2(4), 309-322. <https://doi.org/10.38035/gjjea.v2i4.300>
- Raiffeisen Research. (2024). *CEE Banking Sector Report 2024*. Vienna: Raiffeisen Bank International. <https://www.raiffeisen-research.com/cee-report2024>
- Santoso, D. B., Suprpto, E., Zakaria, R. A., Kusumaningrum, H. A., & Jamil, H. (2023). Analysis of banking competition in Indonesia and its impact on profitability: Structure conduct performance (SCP) approach. *Journal of Innovation in Business and Economics*, 7(01), 19-28. <https://doi.org/10.22219/jibe.v7i01.27156>
- Srivastava, B., Singh, S., & Jain, S. (2023). Bank competition, risk-taking and financial stability: insights from an emerging economy. *Competitiveness Review: An International Business Journal*, 33(5), 959-992. <https://doi.org/10.1108/cr-10-2021-0143>
- Todorović, A., Popović, A., Vučić, V., & Barjaktarević, M. (2025). The impact of macroeconomic factors on bank profitability: Evidence from selected Southeast

- European countries. *International Review*, (3-4), 28-36.
<https://doi.org/10.5937/intrev2504028t>
- Tran, H. S., Nguyen, T. D., & Nguyen, T. L. (2023). Market structure, institutional quality and bank stability: evidence from emerging and developing countries. *Competitiveness Review: An International Business Journal*, 33(6), 1046-1068.
<https://doi.org/10.1108/cr-02-2022-0016>
- World Bank. (2024). *World Development Indicators Database*. Washington, DC: World Bank.
<https://data.worldbank.org>