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## **ČLANCI / ARTICLES**



# ASSESSING SOCIAL IMPACT IN SUSTAINABLE HOSPITALITY: A TECHNOLOGY-ENABLED SOCIAL RETURN ON INVESTMENT FRAMEWORK

Annunziata Tarulli<sup>1</sup>, Domenico Morrone<sup>2</sup>, Chiara Colamartino<sup>3</sup>

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Original Article

## Abstract

*Tourism and hospitality are increasingly expected to deliver measurable social value, yet rigorous methods for assessing it remain underdeveloped. Social Return on Investment (SROI) offers a systematic way to monetise social, environmental, and economic outcomes, but its use in hospitality is fragmented, methodologically inconsistent, and disconnected from digital innovation. This study proposes an integrated SROI framework combining internationally recognised sustainability standards with digitally enabled data ecosystems. Building on a critical literature review, it identifies weaknesses in stakeholder engagement, outcome valuation, attribution, and data collection, and develops an impact map linking inputs, activities, outputs, and outcomes to standardised indicators and digital data sources. A mixed-methods design – systematic review, qualitative case studies, and quantitative SROI modelling supported by artificial intelligence, big data analytics, IoT, and blockchain – operationalises the framework. The result moves social impact assessment beyond static monetisation towards a dynamic, evidence-based system for strategic decision-making and comparison across hospitality contexts.*

**Keywords:** social return on investment (SROI); social impact measurement; sustainable tourism; hospitality industry; digital technologies.

**JEL:** M14; O35; Q56; Z32.

## Introduction

Tourism and hospitality are among the sectors most closely scrutinised for their social and environmental footprints. Before the COVID-19 crisis, tourism

<sup>1</sup> Annunziata Tarulli, Research fellow, LUM University, S.S. 100 km 18, Casamassima (BA), Italy, E-mail: [tarulli@lum.it](mailto:tarulli@lum.it), ORCID ID: <https://orcid.org/0000-0001-9999-6562>

<sup>2</sup> Domenico Morrone, Full professor, LUM University, S.S. 100 km 18, Casamassima (BA), Italy, E-mail: [morrone@lum.it](mailto:morrone@lum.it), ORCID ID: <https://orcid.org/0000-0001-9814-3461>

<sup>3</sup> Chiara Colamartino, Research fellow, LUM University, S.S. 100 km 18, Casamassima (BA), Italy, E-mail: [colamartino@lum.it](mailto:colamartino@lum.it), ORCID ID: <https://orcid.org/0000-0002-1651-4642>

accounted for around 10% of global GDP and one in ten jobs worldwide, a magnitude that underscores both its development potential and its risks in terms of resource use, social equity and local well-being (UNWTO and UNDP, 2017; UNWTO, 2004). The 2030 Agenda for Sustainable Development explicitly recognises tourism under SDGs 8, 12 and 14, and UNWTO and UNDP (2017) call for better alignment of tourism business models with inclusive, low-carbon and community-centred development pathways. In parallel, there is growing pressure on hospitality firms – from investors, regulators, and destination management organisations – to demonstrate their contribution to social value creation, going beyond traditional financial and environmental metrics. Social impact investing and ESG-oriented finance are expanding, but the field still struggles with consistent, decision-useful measures of social outcomes (Roor et al., 2024; Costa and Pesci, 2016). This is particularly acute in hospitality, where benefits (e.g., local employment quality, cultural preservation, community well-being) are diffuse, context-dependent and hard to monetise.

Social Return on Investment (SROI) has emerged as a prominent approach to quantify and monetise the social, environmental and economic value created by projects and organisations, relative to the resources invested. It builds on and extends cost-benefit analysis by explicitly incorporating stakeholder perspectives, non-market outcomes and distributive effects (Lingane and Olsen, 2004; Millar and Hall, 2013; Corvo et al., 2022). While SROI has been widely discussed in social enterprise, health and community projects, systematic applications in tourism and hospitality remain limited and fragmented. Existing work points to both the potential and the methodological challenges of using SROI to understand tourism's social value (Ariza-Montes et al., 2021; Maldonado and Corbey, 2016).

At the same time, hospitality is undergoing a rapid digital transformation: AI-driven revenue management and personalisation, IoT-enabled smart rooms, blockchain-based traceability in supply chains, big-data analytics on guest behaviour and digital platforms that mediate destination experiences (Bulchand-Gidumal, 2024; Zeqiri et al., 2025). Emerging research suggests that these technologies can support more granular, real-time and participatory forms of impact measurement, particularly when aligned with SDGs and destination-level sustainability standards (UNWTO and UNDP, 2017; Zeqiri et al., 2025; UNWTO, 2004).

This work-in-progress paper proposes a conceptual and methodological framework for applying SROI to hospitality enterprises, explicitly integrating sustainability criteria and advanced digital technologies for data collection, stakeholder engagement and outcome monitoring. The focus is on hospitality businesses (hotels, resorts, eco-lodges, social enterprises in accommodation and related services) operating within tourism destinations that have explicit

sustainability policies or are aligned with frameworks such as the UNWTO sustainable tourism indicators and the Global Sustainable Tourism Council (GSTC) Destination Criteria (UNWTO, 2004; GSTC, 2019).

## **Theoretical background**

### **Social Return on Investment: foundations and developments**

SROI is commonly defined as an analytic tool that monetises social, environmental and economic outcomes and compares them to the value of inputs, yielding an SROI ratio (e.g., “€3 of social value for each €1 invested”) (Nicholls et al., 2012; Lingane and Olsen, 2004). Early work by Lingane and Olsen (2004) established methodological guidelines for SROI calculations in corporate and social ventures, highlighting the need for rigorous valuation, transparency on assumptions and sensitivity analysis.

Subsequent guides, notably those developed by the New Economics Foundation and the UK Cabinet Office, systematised a six-stage SROI process: establishing scope, mapping outcomes, evidencing outcomes and giving them a value, establishing impact (deadweight, attribution, displacement and drop-off), calculating the SROI, and reporting and embedding (Nicholls et al., 2012). Corvo et al. (2022) provide a systematic literature review of SROI showing that applications span health, social care, education, environment and employment but remain uneven across sectors and geographies; they also stress the need for better theoretical grounding and methodological standardisation.

In parallel, reviews by Maldonado and Corbey (2016) and Millar and Hall (2013) point to persistent challenges: the risk of over-claiming due to weak counterfactual analysis; the subjectivity of financial proxies; limited stakeholder capacity to engage with complex monetary valuation; and the tendency to reduce rich impact stories to a single headline ratio. Cordes (2017) compares SROI to cost–benefit analysis and emphasises both its promise in capturing broader value for funders and the importance of transparently reporting uncertainties and distributional effects.

More recent work, including Corvo et al. (2022) and Gutiérrez-Nieto et al. (2025), suggests a gradual movement towards “second-generation” SROI, characterised by stronger links to impact investing, integration with lifecycle and sustainability assessment tools, and growing attention to the distinction between measuring impact “to prove” and “to improve” decision-making.

### **Social impact measurement in tourism and hospitality**

In tourism, social impact evaluation has traditionally relied on non-monetary indicators, often aligned with UNWTO’s sustainable tourism indicator

frameworks and later with the SDGs (UNWTO, 2004; UNWTO and UNDP, 2017). The GSTC Destination Criteria, for instance, structure sustainability around four pillars – sustainable management, socio-economic benefits, cultural heritage and environmental stewardship – and provide performance indicators that destinations can adapt at local level (GSTC, 2019).

Within hospitality, a large body of research focuses on corporate social responsibility (CSR), ESG practices and sustainability reporting. Pérez and del Bosque (2014) analyse sustainability reporting by Spanish hospitality firms through a Sustainable Development–Stakeholder Relations Management (SD–SRM) lens, identifying both progress and gaps in how firms account for stakeholder-relevant social impacts. Martínez et al. (2013) develop and validate a CSR measurement scale specifically tailored to hospitality, covering dimensions such as community involvement, employee relations and environmental responsibility.

Empirical studies show that hospitality firms tend to focus on environmental and philanthropic initiatives in their public communications, while social outcomes such as quality of employment, local supplier development or inclusion of vulnerable groups receive less systematic measurement (Martínez et al., 2013; Pérez and del Bosque, 2014; de Grosbois, 2012). At destination level, research on responsible tourism and ESG in hospitality underscores the need for integrated metrics that capture how hotel operations affect community well-being, cultural vitality and social cohesion, not only visitor satisfaction or financial performance (Martínez et al., 2013; Costa and Pesci, 2016).

Despite this, explicit use of SROI in tourism and hospitality remains scarce. Ariza-Montes et al. (2021) apply SROI to assess the impacts of tourism in a specific destination, concluding that the approach can quantify positive social and cultural benefits while highlighting negative externalities, but that data availability and methodological complexity limit its widespread adoption. Case study-based SROI analyses in tourism-related regeneration projects and community programmes similarly reveal potential for making social value visible to policymakers and investors, yet also expose tensions between standardisation and local specificity (Corvo et al., 2022; Maldonado and Corbey, 2016).

### **Digital technologies, tourism sustainability and impact data**

Digital transformation is reshaping the hospitality industry's operations and its interactions with stakeholders. Bulchand-Gidumal (2024) shows how AI, big data and other “critical digital technologies” are being integrated into hospitality and tourism marketing, enabling personalisation, dynamic pricing and predictive analytics but also raising new questions about privacy and algorithmic bias. Zeqiri et al. (2025) argue that digital tourism platforms

leveraging Industry 4.0 technologies (AI, blockchain, VR, IoT) can support the advancement of SDGs by enhancing transparency, participation and resource efficiency in tourism ecosystems.

UN Tourism and other international bodies highlight that innovation and digital tools – such as big-data analytics on mobility, user-generated content, and smart-destination infrastructures – can help measure tourism’s impacts more precisely and support better policy and business decisions (UNWTO, 2004; UNWTO and UNDP, 2017). For hospitality firms, this implies the possibility of moving from static, ex-post reporting towards more dynamic, real-time monitoring of social outcomes, including guest behaviour, employee well-being, local procurement patterns and community engagement.

However, the literature also warns that impact measurement in the digital era often focuses on “proving” rather than “improving” impact, and that the abundance of data does not automatically translate into better decisions. Roor et al. (2024) show that many investors use impact metrics mainly for legitimacy and accountability rather than to adapt strategies in ways that enhance real-world outcomes. This tension is directly relevant for SROI in hospitality: advanced technologies may facilitate data collection and valuation, but they can also reinforce box-ticking approaches if not embedded in a learning-oriented governance framework.

### **Research aims and questions**

Building on these strands of literature, this study pursues three interconnected aims. First, it seeks to synthesise and critically evaluate existing applications of SROI and related social impact measurement approaches in tourism and hospitality, positioning them within wider debates on sustainable tourism indicators, ESG reporting and impact investing. Second, it aims to develop a conceptual framework for applying SROI to hospitality enterprises that aligns outcome indicators with international sustainability standards – such as the SDGs, UNWTO indicators and GSTC criteria – while integrating advanced digital technologies to support data generation, stakeholder engagement and continuous learning. Third, the study intends to design and pilot a mixed-method SROI-based methodology across multiple hospitality case studies, generating empirical insights into the social value produced by different business models, including conventional hotels, eco-resorts and social-purpose hospitality ventures.

The core research questions are:

RQ1: *How has SROI been conceptualised and operationalised in tourism and hospitality, and what are the main methodological and practical gaps identified in the literature?*

- RQ2: *How can SROI be adapted to capture the social impacts of hospitality firms in a way that is consistent with sustainable tourism frameworks and sensitive to local destination contexts?*
- RQ3: *In what ways can advanced digital technologies enhance or hinder the quality, inclusiveness and usefulness of SROI analyses in hospitality?*
- RQ4: *What does an SROI-based assessment reveal about the social value generated by selected hospitality enterprises, and how can such information inform managerial decisions and destination governance?*

### **Methodological framework**

This study adopts a sequential exploratory mixed-methods design, combining systematic literature review, qualitative case study research and quantitative SROI modelling. The research is explicitly presented as work in progress: at the time of writing, the literature review and framework development phases are ongoing; empirical data collection with hospitality enterprises is planned but not yet completed.

### **Systematic literature review**

The first phase involves a structured review of peer-reviewed articles and high-quality reports on SROI, social impact measurement and sustainability in tourism and hospitality. The review strategy builds on Corvo et al. (2022) and Gutiérrez-Nieto et al. (2025) for the general SROI literature, while sector-specific searches target journals such as *International Journal of Hospitality Management* (Elsevier), *Journal of Travel and Tourism Marketing* (Taylor and Francis), *International Journal of Contemporary Hospitality Management* (Emerald), and *Journal of Hospitality and Tourism Management* (Elsevier), as well as SROI applications in tourism (Ariza- Montes et al., 2021). This phase seeks to clarify how SROI has been deployed – or, in some cases, overlooked – within tourism and hospitality, while mapping the outcome domains and indicators most relevant to capturing the sector’s social impact, including decent work, community development, cultural heritage and gender equality. It also engages with key methodological debates on monetisation techniques, attribution issues and the construction of credible counterfactuals. In parallel, it explores how digital technologies are increasingly used to generate, monitor and analyse impact data in tourism, building on recent contributions such as Bulchand-Gidumal (2024) and Zeqiri et al. (2025).

### **Conceptual framework and impact map**

Drawing from the review, the study will develop an impact map tailored to hospitality firms, aligning SROI outcome categories with SDG targets and GSTC socio-economic and cultural criteria. For instance, the model takes into

account inputs such as financial capital (i.e., equity, debt, grants), human resources, physical assets and digital infrastructures, which enable core hospitality activities including accommodation and FandB services, local procurement, staff training, community engagement, cultural programming and environmental initiatives. These activities produce measurable outputs – such as local employment, contracts with SMEs, training hours, community participation and cultural experiences offered – that translate into social outcomes like improved working conditions and skills for residents, greater inclusion of vulnerable groups and women in quality jobs, stronger local SMEs, enhanced community pride and cultural preservation, and reduced negative social impacts. Financial proxies for these outcomes will be derived from secondary data (e.g., wage differentials, unemployment costs, prior SROI valuations) and stakeholder valuation exercises, consistent with SROI principles and established guidance (Lingane and Olsen, 2004; Cordes, 2017; Nicholls et al., 2012).

### **Case study selection and data collection**

The empirical component foresees multiple case studies of hospitality enterprises from different segments (e.g., urban business hotels, resort complexes, eco-lodges, social-purpose hospitality ventures) and destinations that have articulated sustainability strategies (e.g., GSTC-aligned or UNWTO-monitored destinations).

Data collection will draw on a multi-layered strategy designed to capture the full breadth of social value created within hospitality contexts. First, documentary evidence – including sustainability and ESG reports, CSR communications and certification records – will be systematically analysed using content-analysis approaches inspired by Pérez and del Bosque (2014) and de Grosbois (2012). Second, semi-structured interviews with managers, employees, local suppliers, community organisations and destination management bodies will surface stakeholders' theories of change and reveal which outcomes they perceive as most meaningful. Third, where feasible, digital trace data such as anonymised HR records (e.g., turnover, training hours), procurement datasets, geolocated guest activity patterns and user-generated content will be incorporated, in full compliance with ethical and privacy standards.

The integration of these qualitative and quantitative sources will enable the construction of robust SROI models for each case, while sensitivity analyses will assess how key assumptions – such as attribution and the duration of outcomes – shape the resulting valuations.

## **Role of advanced technologies in SROI implementation**

A key contribution of the proposed methodology is its systematic integration of advanced technologies throughout the SROI process. Digital surveys, mobile applications and online platforms will facilitate outcome identification and stakeholder engagement, enabling timely feedback from guests, employees and community members (Zeqiri et al., 2025). Data collection will be strengthened through HR analytics and AI-enabled dashboards for monitoring job quality and training outcomes, IoT and smart-building systems for capturing guest-experience indicators, and supply-chain tools – potentially supported by blockchain – to track local sourcing and fair-trade relationships (Bulchand-Gidumal, 2024). Analytical tools will support impact valuation by linking operational metrics to social outcomes and enabling scenario analyses of alternative hiring or sourcing strategies. Finally, interactive dashboards will enhance reporting and organisational learning by presenting SROI results alongside qualitative indicators and promoting continuous improvement rather than reputational uses (Roor et al., 2024; Costa and Pesci, 2016). The study will also examine whether these technologies improve the robustness, timeliness and stakeholder relevance of SROI analyses, and what organisational capabilities are needed to leverage them effectively.

## **Expected results and contribution**

As a work in progress, this study cannot yet present empirical SROI ratios or completed case findings, but several expected contributions can be outlined. First, it is set to offer one of the first integrative frameworks that adapts SROI to hospitality enterprises while aligning it with the SDGs, UNWTO indicators and GSTC criteria, responding to long-standing calls for tools that link business practices to destination-level sustainability goals. Second, by incorporating AI, big data and digital platforms into the SROI process, the study aims to show how hospitality firms can adopt more dynamic, participatory and fine-grained approaches to social impact assessment, extending current digital transformation research beyond its usual focus on marketing and operational efficiency. Third, forthcoming case studies are expected to compare different hospitality models – such as upscale hotels, community-based lodges and social enterprises – in terms of SROI performance across domains like employment, local economic development, inclusion and cultural heritage, potentially revealing trade-offs and synergies not captured by conventional financial or environmental indicators. Finally, the study aims to generate practical recommendations for hospitality managers and impact-oriented investors on integrating SROI into decision-making, and for destination management bodies on translating firm-level results into coherent destination-wide social impact narratives, contributing to broader debates on standardising social impact metrics in sustainable finance.

## Conclusion

The contribution of this study lies less in proposing a new metric than in repositioning social impact assessment within hospitality management. Existing frameworks such as the GSTC criteria and UNWTO indicators operate primarily at destination level, whereas accountability pressures increasingly fall on individual firms. What is missing is a mechanism that connects these two levels. Adapted as proposed here, SROI can perform this function by translating firm-level activities into outcome categories already recognised by destinations and expressing them in a form that impact-oriented investors can use. This positioning is consistent with the shift identified by Corvo et al. (2022) towards a second generation of SROI practice, increasingly integrated with impact investing and broader sustainability assessment rather than confined to the social-enterprise reporting context in which the method originated. The framework also extends research on digital transformation in hospitality. While that literature has largely focused on marketing and operational efficiency, treating AI, IoT and distributed-ledger technologies as infrastructure for impact measurement shifts attention towards accountability, organisational learning and evidence-based decision-making.

The practical implications are equally important. Impact measurement is more likely to become embedded in organisational practice when it draws on systems already in use – such as property management, HR, procurement and guest-feedback platforms – rather than relying on parallel reporting processes that may disappear after a single cycle. At the same time, stakeholders should participate not only in validating results but also in valuing outcomes, because the credibility of any financial proxy depends on whose judgement it represents. As Millar and Hall (2013) note, the subjectivity of proxy selection and stakeholders' limited capacity to engage with monetary valuation remain persistent weaknesses of SROI. For the same reason, investors and destination bodies should resist treating the headline SROI ratio as a self-sufficient measure of performance. A single figure can obscure both the distribution of outcomes and the assumptions on which valuation depends, encouraging comparisons between cases that may not be meaningfully comparable. Standard setters could reduce this fragmentation by developing reference proxy values for recurrent tourism outcomes while making explicit the contextual assumptions attached to them, thereby addressing the uneven and insufficiently standardised practice documented by Corvo et al. (2022).

These benefits, however, are conditional. Digital technologies can reduce the cost of continuous data collection, but they also privilege what existing systems are able to capture, which may not correspond to what communities value most. This limitation becomes particularly significant in light of Roor et al. (2024), who find that impact investors often use metrics primarily for legitimacy and

accountability rather than to revise strategy. Uneven digital maturity creates a further risk: international chains and technologically advanced operators may generate richer evidence than smaller independent firms, producing an apparent performance gap that reflects measurement capacity rather than greater social value. The framework developed here should therefore be understood not as a settled measurement protocol, but as a structured basis for negotiation among firms, investors, destinations and communities.

Three questions should guide future research. First, what does monetisation add? Applying SROI alongside social accounting, wellbeing valuation and participatory evaluation to the same hospitality cases would show whether monetisation reveals trade-offs that non-monetary approaches overlook or simply compresses them into a more portable number. Second, how portable are the valuations themselves? Proxy values are conventions rather than constants: a wage differential, an hour of volunteering or an employment outcome may carry very different significance across destinations. Comparative research should therefore establish whether sufficiently robust proxy values can travel across contexts, or whether local credibility must take precedence over cross-destination comparability. Third, does SROI alter organisational behaviour? Longitudinal studies examining hiring, procurement and investment decisions before and after adoption would reveal whether impact evidence genuinely informs strategy or instead becomes part of the legitimacy-seeking pattern described by Roor et al. (2024).

Underlying these questions is a more fundamental issue of authority. As impact data are increasingly generated through algorithmic systems rather than assembled through deliberative evaluation, decisions about what counts as an outcome may migrate from stakeholder negotiation into technical configuration. Stakeholders may then gain greater visibility over indicators while having fewer opportunities to challenge how those indicators were defined. The central question is therefore not simply whether digital technologies can make social value more measurable, but whether they can do so without making its definition less contestable. SROI cannot resolve that question on its own. Yet the answer will ultimately determine whether digitally enabled impact measurement strengthens accountability to the communities hospitality firms affect, or merely produces more sophisticated forms of accountability about them.

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# PROCENA DRUŠTVENOG UTICAJA U ODRŽIVOM HOTELIJERSTVU: TEHNOLOŠKI PODRŽAN OKVIR DRUŠTVENOG POVRATA NA INVESTICIJE

## *Apstrakt*

*Od sektora turizma i hotelijerstva sve se više očekuje stvaranje merljive društvene vrednosti, dok su rigorozne metode za njenu procenu još uvek nedovoljno razvijene. Društveni povrat na investicije (Social Return on Investment – SROI) pruža sistematičan pristup monetizaciji društvenih, ekoloških i ekonomskih rezultata, ali je njegova primena u hotelijerstvu fragmentisana, metodološki neujednačena i nedovoljno povezana sa digitalnim inovacijama. U ovom radu predlaže se integrisani SROI okvir koji povezuje međunarodno priznate standarde održivosti sa digitalno podržanim ekosistemima podataka. Na osnovu kritičkog pregleda literature identifikuju se nedostaci u uključivanju zainteresovanih strana, vrednovanju rezultata, utvrđivanju doprinosa pojedinačnih faktora i prikupljanju podataka, te se razvija mapa uticaja koja povezuje inpute, aktivnosti, neposredne rezultate i ishode sa standardizovanim pokazateljima i digitalnim izvorima podataka. Okvir se operacionalizuje primenom kombinovanog metodološkog pristupa koji obuhvata sistematski pregled literature, kvalitativne studije slučaja i kvantitativno SROI modeliranje, uz podršku veštačke inteligencije, analitike velikih podataka, Interneta stvari (IoT) i blokčejn tehnologije. Predloženi pristup pomera procenu društvenog uticaja izvan okvira statičke monetizacije ka dinamičnom sistemu zasnovanom na dokazima, namenjenom strateškom odlučivanju i poređenju različitih konteksta u hotelijerstvu.*

**Ključne reči:** društveni povrat na investicije (SROI); merenje društvenog uticaja; održivi turizam; hotelijerstvo; digitalne tehnologije.

**JEL:** M14; O35; Q56; Z32.



# INTERNATIONAL TRADE EXCHANGE OF THE REPUBLIC OF SERBIA: ANALYSIS OF EXPORTS, IMPORTS AND TRADE BALANCE IN THE PERIOD 2015–2024

Nemanja Pantić<sup>1</sup>, Sonja Lazarević<sup>2</sup>, Jasmina Ognjanović<sup>3</sup>

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Original Article

## *Abstract*

*The paper analyzes the international trade exchange of the Republic of Serbia in the period 2015-2024, with special reference to trade relations with Europe, Asia, Africa, America, Oceania and the Polar region. The aim of the research is to analyze the dynamics of exports, imports, trade balance and the degree of coverage of imports by exports using descriptive statistics and comparative analysis. The results indicates the continuous growth of international trade of the Republic of Serbia, with the permanent presence of a trade deficit. Europe represents Serbia's most important international trade partner, while trade with Asia is characterized by a high deficit, and with Africa a predominantly surplus. The findings confirms the need for strengthening export competitiveness, technological modernization and diversification of export markets in order to improve international trade performance and sustainable economic development.*

**Keywords:** *international trade, Republic of Serbia, export, import, trade balance*

**JEL:** *B17, P33, P45, Q27*

## Introduction

International trade turnover represents one of the most important indicators of economic development, competitiveness and economic openness (Kang & Dagli, 2018). The exchange of goods and services with foreign countries

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<sup>1</sup> Nemanja Pantić, Associate Professor, University of Kragujevac, Faculty of Hotel Management and Tourism in Vrnjačka Banja, Vojvodanska 5a, 36210 Vrnjačka Banja, Serbia; e-mail: [nemanja.pantic@kg.ac.rs](mailto:nemanja.pantic@kg.ac.rs) ORCID ID (<https://orcid.org/0000-0003-0030-6950>)

<sup>2</sup> Sonja Lazarević, Associate Professor, University of Kragujevac, Faculty of Hotel Management and Tourism in Vrnjačka Banja, Vojvodanska 5a, 36210 Vrnjačka Banja, Serbia; e-mail: [sonja.milutinovic@kg.ac.rs](mailto:sonja.milutinovic@kg.ac.rs) ORCID ID (<https://orcid.org/0000-0001-9913-4495>)

<sup>3</sup> Jasmina Ognjanović, Associate Professor, University of Kragujevac, Faculty of Hotel Management and Tourism in Vrnjačka Banja, Vojvodanska 5a, 36210 Vrnjačka Banja, Serbia; e-mail: [jasmina.lukic@kg.ac.rs](mailto:jasmina.lukic@kg.ac.rs) ORCID ID (<https://orcid.org/0000-0002-6036-5269>)

achieves a more efficient allocation of resources, encourages specialization, enables the transfer of technology and knowledge, as well as the more intensive involvement of national economies in international economic flows (Burstein & Vogel, 2017; Makioka & Zhang, 2024). In the conditions of globalization, growing markets interdependence and accelerated technological changes, international trade exchange becomes one of the key factors of economic and productivity growth as well as the improvement of international competitiveness (Coşar & Fajgelbaum, 2016; Susanto et al., 2024).

The analysis of international trade enables an overview of the economic performance of a country, since exports, imports, trade balance and export to import ratio represents significant indicators of the economy competitiveness as well as its ability to respond to international market demand (Moon, 2018; Gani, 2017). In addition, the structure and dynamics of international trade exchange provide insight into the production capacity, the level of technological development, the degree of export diversification and dependence on the import of certain products and raw materials (Xu et al., 2020; Hayakawa & Mukunoki, 2021). Therefore, their analysis represents an important basis for the creation of development, industrial and trade policy.

In the last decade, the Republic of Serbia achieved significant changes in the international trade sector that were conditioned by the process of European integration, the inflow of foreign direct investments, the modernization of production capacities and the more intensive inclusion of the domestic economy in international economic flows (Janković & Golubović, 2025; Nikolić & Lobanova, 2025; Božić & Nikolić, 2016). At the same time, international trade flows were strongly influenced by global economic development, including the COVID-19 pandemic, disruptions in international supply chains, the energy crisis, rising raw material prices and geopolitical instability (Getman, 2025; Beraha, & Jovičić, 2021). The aforementioned factors had a significant impact on the dynamics of exports and imports with pronounced declines in certain years, but also the growth of international trade in the following years (Gruszczynski, 2020).

Despite the continuous growth of exports, Serbia still faces challenges related to a high level of import dependence, trade deficit and the need for further improvement of export competitiveness (Ristanović et al., 2019; Nikolić & Petrović, 2018). Increasing the share of products with higher stages of processing in the export structure, diversifying export markets and strengthening the domestic industrial base are key prerequisites for achieving sustainable economic growth and reducing external macroeconomic imbalances (Kırcıcek & Özparlak, 2023).

## **Materials and methods**

The research is based on a quantitative approach and the application of descriptive statistical analysis of secondary data with the aim of analyzing the basic characteristics and trends of the international trade exchange of the Republic of Serbia in the 2015-2024 period. The subject of the research includes the analysis of the total international trade of the Republic of Serbia, as well as the exchange with certain geographical regions - Europe, Asia, Africa, America, Oceania and the Polar region. The analysis identifies the changes in the volume of exports and imports, the movement of the trade balance and the export to import ratio, with the aim of assessing the competitiveness of the Serbian economy on the international market.

The research used secondary data from the official statistical publications of the Statistical Office of the Republic of Serbia, which represent a relevant and reliable source of information on international trade flows. A time period of ten consecutive years (2015–2024) enabled the observation of long-term trends, as well as the impact of significant economic events, including the COVID-19 pandemic, the energy crisis and disruptions in international supply chains.

Descriptive statistics methods were used for processing and data analysis. Basic measures of central tendency (arithmetic mean and median), measures of dispersion (minimum and maximum value, standard deviation and coefficient of variation) were calculated, which enable assessment of the level and variability of the analyzed indicators. The analysis was conducted for four basic indicators of international trade: value of exports, value of imports, trade balance (exports minus imports) and the export to import ratio. In addition to descriptive statistics, a comparative analysis was applied in order to compare the characteristics of the exchange of the Republic of Serbia with different geographical regions, as well as a time series analysis which identified the basic development trends during the observed period.

The research results were interpreted in accordance with the economic theory of international trade and modern scientific knowledge in the field of foreign trade. The obtained results allow to see the changes in the volume and structure of the exchange of the Republic of Serbia, to assess the stability of certain indicators and to identify the regions that have the greatest importance for the development of international trade. Thus, this research provides the basis for an objective assessment of the competitiveness of the Serbian economy and the formulation of recommendations for improving export orientation and reducing the external trade imbalance.

### International trade of the Republic of Serbia at the global level

The following table presents the export, import, trade balance of the Republic of Serbia as well as the export to import ratio as vital indicators of economic success or stability.

**Table 1.** International trade of the Republic of Serbia in the period 2015–2024. (in million USD)

|      | Export | Import | Export minus import | Export to Import ratio (%) |
|------|--------|--------|---------------------|----------------------------|
| 2015 | 13.376 | 17.875 | - 4.499             | 74,8                       |
| 2016 | 14.883 | 18.899 | -4.016              | 78,8                       |
| 2017 | 16.997 | 21.921 | -4.923              | 77,5                       |
| 2018 | 19.239 | 25.883 | -6.644              | 74,3                       |
| 2019 | 19.633 | 26.731 | -7.098              | 73,4                       |
| 2020 | 19.595 | 26.371 | -6.776              | 74,3                       |
| 2021 | 25.843 | 34.187 | -8.344              | 75,6                       |
| 2022 | 29.060 | 41.155 | -12.095             | 70,6                       |
| 2023 | 30.938 | 39.839 | -8.901              | 77,7                       |
| 2024 | 33.039 | 42.263 | -9.225              | 78,2                       |

*Source: author's calculation based on data from the Statistical Office of the Republic of Serbia*

Analysis of the international trade exchange of the Republic of Serbia in the period 2015–2024. shows the continuous growth of exports and imports, with the permanent presence of a trade deficit. The values of exports and imports indicates the intensification of international trade, but also the long-term imbalance between the export and import components of the Serbian economy. In 2015, exports amounted to 13.376 million USD, while imports reached 17.875 million USD, resulting in a trade deficit of 4.499 million USD and an export to import ratio of 74.8%. By 2019, exports increased to 19,633 million USD (46.8%), while imports increased to 26,731 million USD (49.5%). As a result, the trade deficit increased to 7,098 million USD, which means that the growth of the domestic economy was accompanied by an even more intensive growth of imports.

The COVID-19 pandemic during 2020 did not significantly change the basic flows of international trade. Exports decreased by only 0.2%, while imports decreased by 1.3%, so the trade deficit remained at a high level (6.776 million USD), with the export to import ratio of 74.3%. Such results indicates the relative resilience of the export sector despite global disruptions.

The pandemic was followed by a strong recovery of international trade. In 2021, exports reached 25.843 million USD, while imports increased to 34.187 million USD. The largest trade deficit was recorded in 2022 (12,095 million USD), when the export to import ratio fell to the lowest level of 70.6%. Such developments are associated with rising energy prices, inflationary pressures and disruptions in international supply chains.

During 2023 and 2024 was noticeable a stabilization of international trade. The trade deficit was reduced to 8.901 million USD in 2023, i.e. 9.225 million USD in 2024, while the export to import ratio increased to 77.7%, i.e. 78.2%. These indicators indicates a gradual strengthening of export competitiveness and a more favorable export to import ratio after the unfavorable developments in 2022.

Observed for the entire period, the export of the Republic of Serbia increased by approximately 147%, and the import by approximately 136%. Despite the faster growth of exports, the trade deficit remained a permanent feature of international trade, while the export to import ratio ranged between 70.6% and 78.8%. The obtained results indicates that for the long-term reduction of the external imbalance, it is necessary to improve the technological competitiveness of the economy and reduce import dependence, especially in the segment of energy products and investment equipment.

**Table 2.** Descriptive statistics of the basic indicators of the international trade of the Republic of Serbia in the period 2015–2024.

| Indicator                  | Mean     | Med      | Min     | Max    | Std. dev. | CoV  |
|----------------------------|----------|----------|---------|--------|-----------|------|
| Export                     | 22.260,3 | 19.614,0 | 13.376  | 33.039 | 6.846,4   | 30,8 |
| Import                     | 29.912,4 | 26.551,0 | 17.875  | 42.263 | 8.934,4   | 29,9 |
| Export minus Import        | -7.252,1 | -6.710,0 | -12.095 | -4.016 | 2.582,6   | 35,6 |
| Export to Import ratio (%) | 75,5     | 75,0     | 70,6    | 78,8   | 2,6       | 3,5  |

*Source: author's calculation based on data from Table 1*

Descriptive statistical analysis of exports, imports, trade balance and export to import ratio was carried out in order to assess the basic characteristics of the international trade of the Republic of Serbia in the period 2015-2024. The results shows that the average annual value of exports was 22,260.3 million USD, while the average import was 29,912.4 million USD, which indicates the continued presence of a trade deficit. The average value of the trade balance was -7,252.1 million USD.

The coefficients of variation for exports (30.8%) and imports (29.9%) indicates moderate volatility of these indicators during the observed period, while the trade balance showed the greatest variability (35.6%), due to different dynamics of export and import growth. In contrast, export to import ratio was relatively

stable, with an average value of 75.5% and a coefficient of variation of only 3.5%. This indicates that the export to import ratio has not changed significantly despite the growth of their absolute values. The obtained results confirms the continuous growth of the volume of international trade of the Republic of Serbia, but also the permanent presence of a trade deficit during the analyzed period.

### International trade trends of the Republic of Serbia with Europe

Analysis of exchange between the Republic of Serbia and the European market in the period 2015-2024. shows that Europe represented Serbia's dominant foreign trade partner, with continuous growth in exports and imports and the presence of a trade deficit throughout the observed period. The values are expressed in millions of US dollars and indicates a high degree of economic connection between Serbia and the European market, where exports largely followed the dynamics of imports.

**Table 3.** International trade of the Republic of Serbia with Europe in the period 2015–2024. (in million USD)

|             | Export | Import | Export minus import | Export to import ratio (%) |
|-------------|--------|--------|---------------------|----------------------------|
| <b>2015</b> | 12.468 | 14.981 | -2.513              | 83,2                       |
| <b>2016</b> | 13.811 | 15.613 | -1.802              | 88,5                       |
| <b>2017</b> | 15.809 | 17.601 | -1.792              | 89,8                       |
| <b>2018</b> | 17.932 | 20.532 | -2.600              | 87,3                       |
| <b>2019</b> | 18.114 | 21.089 | -2.975              | 85,9                       |
| <b>2020</b> | 17.766 | 20.041 | -2.275              | 88,6                       |
| <b>2021</b> | 22.772 | 25.574 | -2.802              | 89,1                       |
| <b>2022</b> | 25.866 | 31.281 | -5.415              | 82,7                       |
| <b>2023</b> | 27.108 | 29.680 | -2.572              | 91,3                       |
| <b>2024</b> | 28.525 | 30.613 | -2.088              | 93,2                       |

*Source: author's calculation based on data from the Statistical Office of the Republic of Serbia*

At the beginning of the analyzed period, in 2015, exports to European countries amounted to 12,468 million USD, while imports reached 14,981 million USD, resulting in a trade deficit of 2,513 million USD. Export to import ratio was 83.2%. By 2019, exports increased to 18,114 million USD, i.e. by approximately 45.3%, while imports increased to 21,089 million USD (40.8%). Despite the growth of foreign trade, the trade deficit increased to 2.975 million USD, which indicates that the growth of exports was accompanied by a continuous increase in imports from European countries.

The COVID-19 pandemic in 2020 led to a temporary decrease in the volume of trade exchange. Exports fell to 17.766 million USD, while imports decreased to

USD 20.041 million. At the same time, the trade deficit was reduced to 2.275 million USD, and the export to import ratio increased to 88.6%, which indicates that the decline in imports was more pronounced than the decline in exports. Such trends confirm the relative resilience of Serbia's export sector towards the European market in the conditions of the global economic crisis.

The pandemic was followed by a strong recovery of trade exchange. In 2021, exports increased to 22.772 million USD, while imports reached 25.574 million USD. The most pronounced trade deficit was recorded in 2022, when it amounted to 5.415 million USD, with the lowest export to import ratio of 82.7%. Such developments are connected with the energy prices growth, inflationary pressures and the increase in the value of imports on the European market.

During 2023 and 2024, a significant improvement in foreign trade indicators can be noticed. The trade deficit was reduced from USD 5,415 million in 2022 to 2,572 million USD in 2023, and 2,088 million USD in 2024. At the same time, export to import ratio increased to 91.3%, and then to 93.2%, which represents the highest value in the observed period. This trend indicates the strengthening of the competitiveness of Serbian exports on the European market and the gradual establishment of a more balanced relationship between exports and imports.

Observed for the period 2015–2024. Serbia's exports to Europe increased by approximately 129%, while imports increased by approximately 104%. Although the trade deficit was present throughout the years, its value remained significantly lower than in the total international trade exchange of Serbia, and the export to import ratio ranged between 82.7% and 93.2%. The obtained results confirms that the European market represents the most stable and competitive segment of Serbia's international trade, with a gradual approach to the balance between exports and imports evident. Such developments indicates economy competitiveness growth and additionally the importance of the European market for the sustainable growth of Serbian exports and the improvement of overall international trade performance.

**Table 4.** Descriptive statistics of the basic indicators of the international trade of the Republic of Serbia with Europe in the period 2015–2024.

| Indicator                  | Mean     | Med      | Min    | Max    | Std. dev. | CoV  |
|----------------------------|----------|----------|--------|--------|-----------|------|
| Export                     | 20.017,1 | 18.023,0 | 12.468 | 28.525 | 5.429,2   | 27,1 |
| Import                     | 22.700,5 | 20.810,0 | 14.981 | 31.281 | 5.813,9   | 25,6 |
| Export minus Import        | -2.783,4 | -2.544,0 | -5.415 | -1.792 | 1.041,6   | 37,4 |
| Export to Import ratio (%) | 88,0     | 88,6     | 82,7   | 93,2   | 3,2       | 3,6  |

*Source: author's calculation based on data from Table 3*

Descriptive statistical analysis of exports, imports, trade balance and export to import ratio was carried out in order to assess the basic characteristics of the international trade of the Republic of Serbia with Europe in the period 2015-2024. The results shows that the average annual value of exports was 20,017.1 million USD, while the average import reached 22,700.5 million USD, which indicates the continued presence of a trade deficit in exchange with the European market. The average value of the trade balance was -2,783.4 million USD, with the largest deficit occurring in 2022.

The coefficients of variation of exports (27.1%) and imports (25.6%) indicates moderate volatility of the analyzed indicators, while the trade balance showed the highest variability (37.4%), due to different dynamics of export and import movements during the observed period. On the other hand, the export to import ratio was extremely stable, with an average value of 88.0% and a coefficient of variation of only 3.6%. The obtained results confirms that the European market represented a relatively stable international trade partner of the Republic of Serbia, with a continuous growth of commodity exchange and a significantly higher degree of coverage of imports and exports than in the total foreign trade exchange of Serbia.

**International trade trends of the Republic of Serbia with Asia**

Analysis of the trade exchange of the Republic of Serbia with the Asian market in the period 2015–2024. shows a continuous growth of exports and imports, with a particularly high and permanent trade deficit. The values are expressed in millions of US dollars and indicate Serbia's significant import dependence on Asian countries. It is important to note that during the entire period, imports exceeded the value of exports many times over. Such an exchange structure is characteristic of trade relations with the Asian market, which as such represents one of the most significant sources of imports of industrial products, electronic equipment, machines and other products of higher technological complexity.

**Table 5.** International trade of the Republic of Serbia with Asia in the period 2015–2024. (in million USD)

|             | Export | Import | Export minus import | Export to import ratio (%) |
|-------------|--------|--------|---------------------|----------------------------|
| <b>2015</b> | 411    | 2.599  | -2.188              | 15,8                       |
| <b>2016</b> | 543    | 2.866  | -2.323              | 18,9                       |
| <b>2017</b> | 669    | 3.557  | -2.888              | 18,8                       |
| <b>2018</b> | 748    | 4.424  | -3.676              | 16,9                       |
| <b>2019</b> | 855    | 4.591  | -3.736              | 18,6                       |
| <b>2020</b> | 834    | 5.231  | -4.397              | 15,9                       |
| <b>2021</b> | 1.670  | 7.101  | -5.431              | 23,5                       |
| <b>2022</b> | 2.036  | 8.406  | -6.370              | 24,2                       |

|             |       |       |        |      |
|-------------|-------|-------|--------|------|
| <b>2023</b> | 2.448 | 8.501 | -6.053 | 28,8 |
| <b>2024</b> | 2.95  | 9.755 | -6.805 | 30,2 |

*Source: author's calculation based on data from the Statistical Office of the Republic of Serbia*

At the beginning of the analyzed period, in 2015, exports to Asia amounted to only 411 million USD, while imports reached 2,599 million USD, resulting in a trade deficit of 2,188 million USD. Export to import ratio amounted only 15.8%, which indicates a marked imbalance in trade. By 2019, exports increased to 855 million USD, or by approximately 108%, while imports increased to 4,591 million USD (76.6%). As a consequence of the faster absolute growth of imports, the trade deficit increased to 3,736 million USD.

The COVID-19 pandemic during 2020 did not lead to a decrease in imports from Asia, but on the contrary, imports increased further to 5,231 million USD, while exports slightly decreased to 834 million USD. Because of this, the trade deficit reached 4,397 million USD, and the export to import ratio decreased to 15.9%. Such trends confirm that Serbia has maintained a high level of import dependence on Asian markets, especially when it comes to industrial products and raw materials, even in conditions of global disturbances.

The pandemic was followed by a period of intense growth in trade. In 2021, exports almost doubled and reached a value of 1,670 million USD, while imports increased to 7,101 million USD. The growth trend continued during the following years, so in 2024, exports reached 2,950 million USD, and imports as much as 9,755 million USD. At the same time, the trade deficit increased to a record of 6,805 million USD. Although the deficit grew, there is a continuous improvement of the export to import ratio, which increased from 23.5% in 2021 to 24.2% in 2022, 28.8% in 2023 and 30.2% in 2024. This indicates that exports to the Asian market grew faster than imports in the last years of the analyzed period.

Observed for the entire period 2015–2024. Serbia's exports to Asia increased by approximately 618%, while imports increased by approximately 275%. Despite the significantly higher growth rate of exports, the absolute difference between exports and imports remained very pronounced, as the trade deficit increased from 2,188 to 6,805 million USD. The export to import ratio also increased from 15.8% to 30.2%, but it was still many times lower than in Serbia's exchange with the European market. The obtained results indicates that the Asian market is the dominant source of imports for the Serbian economy, while exports, despite accelerated growth in recent years, have not yet reached a level that could significantly alleviate the existing trade imbalance. Further improvement of export competitiveness and diversification of the export structure are key

prerequisites for a more balanced development of Serbia's trade relations with Asian countries.

**Table 6.** Descriptive statistics of the basic indicators of the international trade of the Republic of Serbia with Asia in the period 2015–2024.

| Indicator                  | Mean     | Med      | Min    | Max    | Std. dev. | CoV  |
|----------------------------|----------|----------|--------|--------|-----------|------|
| Export                     | 1.316,4  | 844,5    | 411    | 2.950  | 859,2     | 65,3 |
| Import                     | 5.703,1  | 4.911,0  | 2.599  | 9.755  | 2.607,3   | 45,7 |
| Export minus Import        | -4.386,7 | -4.066,5 | -6.805 | -2.188 | 1.722,1   | 39,3 |
| Export to Import ratio (%) | 21,2     | 18,9     | 15,8   | 30,2   | 5,4       | 25,3 |

*Source: author's calculation based on data from Table 5*

Descriptive statistical analysis of exports, imports, trade balance and export to import ratio was carried out in order to assess the basic characteristics of the international trade of the Republic of Serbia with Asia in the period 2015-2024. The results shows that the average annual value of exports amounted to 1,316.4 million USD, while the average import reached 5,703.1 million USD, which indicates a marked imbalance in trade with the Asian market. The average value of the trade deficit was -4,386.7 million USD, with the largest deficit recorded in 2024.

The coefficient of variation of exports (65.3%) indicates a very pronounced volatility, which reflects the strong growth of exports in the second part of the observed period. Imports was more stable, but still showed significant variability (45.7%), while the trade balance had a coefficient of variation of 39.3%, confirming the continued deepening of the trade deficit. The export to import ratio averaged only 21.2%, with a coefficient of variation of 25.3%, which indicates a gradual improvement, but still a very low level of coverage in relation to the exchange with Europe and the total international trade exchange of the Republic of Serbia. The obtained results confirms that Asia represents a market with an intensive growth of trade exchange, but also with an extremely high trade deficit in favor of imports.

### **International trade trends of the Republic of Serbia with Africa**

Analysis of goods exchange between the Republic of Serbia and the African market in the period 2015–2024. shows a significantly different structure compared to trade with Europe and Asia. The values are expressed in millions of US dollars, and the characteristic of the exchange with Africa is a relatively small volume of trade, with marked annual fluctuations in exports and imports. During most of the analyzed period, Serbia achieved a trade surplus (with the exception of 2017), while a deficit was recorded only in the last two years.

**Table 7.** International trade of the Republic of Serbia with Africa in the period 2015–2024. (in million USD)

|             | Export | Import | Export minus import | Export to import ratio (%) |
|-------------|--------|--------|---------------------|----------------------------|
| <b>2015</b> | 189    | 106    | 83                  | 178,3                      |
| <b>2016</b> | 211    | 200    | 11                  | 105,5                      |
| <b>2017</b> | 161    | 165    | -4                  | 97,6                       |
| <b>2018</b> | 191    | 154    | 37                  | 124,1                      |
| <b>2019</b> | 237    | 208    | 29                  | 113,9                      |
| <b>2020</b> | 388    | 225    | 163                 | 172,4                      |
| <b>2021</b> | 426    | 282    | 144                 | 151,1                      |
| <b>2022</b> | 390    | 315    | 75                  | 123,8                      |
| <b>2023</b> | 504    | 616    | -112                | 81,8                       |
| <b>2024</b> | 598    | 699    | -101                | 85,5                       |

*Source: author's calculation based on data from the Statistical Office of the Republic of Serbia*

At the beginning of the analyzed period, in 2015, exports to African countries amounted to USD 189 million, while imports reached USD 106 million, resulting in a trade surplus of USD 83 million. The export to import ratio amounted to an extraordinary 178.3%, which means that the value of exports almost doubled the value of imports. In the following years were recorded pronounced oscillations. In 2016, the surplus was reduced to only 11 million USD, while in 2017 was achieved a slight trade deficit of 4 million USD, with almost complete equalization of exports and imports (97.6% coverage).

In the period 2018-2022. was established a positive trade balance. Exports increased from USD 191 million in 2018 to 426 million USD in 2021, while imports increased from 154 million USD to 282 million USD. The largest trade surplus was achieved in 2020 and amounted to 163 million USD, with export to import ratio of 172.4%. Such developments indicate that Serbia's exports to the African market grew significantly faster than imports during the pandemic, which contributed to the improvement of the trade balance. In 2022, the surplus was reduced to 75 million USD, while the export to import ratio amounted to 123.8%, which still confirms the favorable relationship between exports and imports.

However, during 2023 and 2024, there was a significant change in the structure of trade exchange. Imports from Africa increased from 315 million USD in 2022 to 616 million USD in 2023 and 699 million USD in 2024. Exports, however, grew at a slower pace and reached 504 million USD in 2023 and 598 million USD in 2024. As a result of the faster growth of imports, Serbia for the first time after 2017 realized a trade deficit that amounted to 112 million USD in 2023 and 101 million USD in 2024. At the same time, the export to import ratio

decreased to 81.8% and 85.5%, which indicates a deterioration of the trade balance with the African market.

Observed for the entire period 2015–2024. Serbia's exports to Africa increased by approximately 216%, while imports increased by approximately 559%. Although exports were higher than imports during most of the period, the extremely accelerated growth of imports in the last two years led to the transition from a trade surplus to a deficit. Despite this, trade with Africa still constitutes a relatively small part of the value of international trade of the Republic of Serbia. The obtained results indicates that the African market has significant potential for further export growth, but also that in order to preserve a positive trade balance, it is necessary to strengthen export competitiveness and diversify the export offer, in order to mitigate the growing import and ensure a more sustainable development of trade relations with the countries of the African continent.

**Table 8.** Descriptive statistics of the basic indicators of the international trade of the Republic of Serbia with Africa in the period 2015–2024.

| Indicator                  | Mean  | Med   | Min  | Max   | Std. dev. | CoV   |
|----------------------------|-------|-------|------|-------|-----------|-------|
| Export                     | 329,5 | 313,5 | 161  | 598   | 150,8     | 45,8  |
| Import                     | 297,0 | 216,5 | 106  | 699   | 190,5     | 64,1  |
| Export minus Import        | 32,5  | 56,0  | -112 | 163   | 91,3      | 280,9 |
| Export to Import ratio (%) | 123,4 | 123,9 | 81,8 | 178,3 | 35,0      | 28,4  |

*Source: author's calculation based on data from Table 7*

Descriptive statistical analysis of exports, imports, trade balance and export to import ratio was carried out in order to assess the basic characteristics of the international trade of the Republic of Serbia with Africa in the period 2015-2024. The results shows that the average annual export was 329.5 million USD, while the average import reached 297.0 million USD. In contrast to the exchange with Europe and Asia, the average trade balance with the African market was positive and amounted to 32.5 million USD, which indicates the achievement of an average surplus during the observed period.

The coefficient of variation of exports was 45.8%, while imports showed greater volatility (64.1%), which indicates more pronounced oscillations in the value of imports. The trade balance had the highest relative variability (280.9%), due to alternating years with surplus and deficit. The average export to import ratio was 123.4%, with a coefficient of variation of 28.4%, which confirms that in most of the analyzed period, Serbia achieved a surplus in trade with Africa, although a deficit was recorded in the last two years. The obtained results indicates that trade with Africa is significantly smaller in volume compared to

Europe and Asia, but with a more favorable trade position of the Republic of Serbia during most of the observed period.

### International trade trends of the Republic of Serbia with America

Analysis of the trade exchange of the Republic of Serbia with the American market in the period 2015–2024. shows the continuous growth of exports and imports, with the permanent presence of a trade deficit. Values are expressed in millions of US dollars, and the characteristic of trade relations with the American continent is a significantly smaller volume of exchange compared to Europe and Asia, with a gradual strengthening of Serbia's export activity and occasional reduction of the trade imbalance.

**Table 9.** International trade of the Republic of Serbia with America in the period 2015–2024. (in million USD)

|             | Export | Import | Export minus import | Export to import ratio (%) |
|-------------|--------|--------|---------------------|----------------------------|
| <b>2015</b> | 300    | 513    | -213                | 58,5                       |
| <b>2016</b> | 307    | 555    | -248                | 55,3                       |
| <b>2017</b> | 353    | 584    | -231                | 60,4                       |
| <b>2018</b> | 353    | 725    | -372                | 48,7                       |
| <b>2019</b> | 410    | 795    | -385                | 51,6                       |
| <b>2020</b> | 488    | 706    | -218                | 69,1                       |
| <b>2021</b> | 667    | 801    | -134                | 83,2                       |
| <b>2022</b> | 734    | 1.095  | -361                | 67,1                       |
| <b>2023</b> | 830    | 958    | -128                | 86,6                       |
| <b>2024</b> | 931    | 1.140  | -209                | 81,7                       |

*Source: author's calculation based on data from the Statistical Office of the Republic of Serbia*

At the beginning of the analyzed period, in 2015, exports to the American countries amounted to 300 million USD, while imports reached 513 million USD, which resulted in a trade deficit of 213 million USD. The export to import ratio was 58.5%, which indicates that the value of exports was significantly lower than the value of imports. By 2019, exports increased to 410 million USD, or approximately 36.7%, while imports increased to 795 million USD (55.0%). As a result of faster import growth, the trade deficit increased to 385 million USD, and the export to import ratio ranged between 48.7% and 60.4%, with the lowest value recorded in 2018.

The COVID-19 pandemic in 2020 led to a decrease in imports from the US market, while exports continued to grow. Exports increased to 488 million USD, while imports decreased to 706 million USD, resulting in a reduction in the trade

deficit to 218 million USD. At the same time, the coverage of imports by exports increased to 69.1%, which represents a significant improvement compared to previous years.

The post-pandemic period is characterized by more intense export growth. In 2021, exports reached 667 million USD, while imports amounted to 801 million USD, so the trade deficit was reduced to only 134 million USD, which represents the lowest deficit in the analyzed period. The export to import ratio increased to 83.2%, confirming the significant improvement of Serbia's export position on the American market. During 2022, imports increased sharply to 1,095 million USD, which led to the growth of the trade deficit to 361 million USD and a decrease of the export to import ratio up to 67.1%. In the following two years, exports continued to grow steadily and reached 830 million USD in 2023 and 931 million USD in 2024. At the same time, imports increased to 958 million USD, or 1,140 million USD, while the trade deficit remained relatively moderate compared to previous years. The export to import ratio was a high 86.6% in 2023 and 81.7% in 2024, which indicates the preservation of a more favorable relationship between exports and imports.

Observed for the entire period, Serbia's exports to American countries increased by approximately 210%, while imports increased by approximately 122%. Although the trade deficit was present throughout the years, exports grew at a significantly faster rate than imports, which contributed to the improvement of the export to import ratio from 58.5% to 81.7%. The obtained results indicates a gradual strengthening of the competitiveness of Serbian exports on the American market and a reduction of the trade imbalance in the long term. Although trade with the countries of America still constitutes a relatively small part of Serbia's total international trade, the evident growth of exports confirms the existence of significant potential for further improvement of economic relations and diversification of export markets.

**Table 10.** Descriptive statistics of the basic indicators of the international trade of the Republic of Serbia with America in the period 2015–2024.

| Indicator                  | Mean   | Med    | Min  | Max   | Std. dev. | CoV  |
|----------------------------|--------|--------|------|-------|-----------|------|
| Export                     | 537,3  | 449,0  | 300  | 931   | 233,7     | 43,5 |
| Import                     | 787,2  | 760,0  | 513  | 1.140 | 212,0     | 26,9 |
| Export minus Import        | -249,9 | -224,5 | -385 | -128  | 91,7      | 36,7 |
| Export to Import ratio (%) | 66,2   | 64,4   | 48,7 | 86,6  | 14,3      | 21,6 |

*Source: author's calculation based on data from Table 9*

Descriptive statistical analysis of exports, imports, trade balance and export to import ratio was carried out in order to assess the basic characteristics of the international trade of the Republic of Serbia with America in the period 2015-

2024. The results show that the average annual export value was 537.3 million USD, while the average import reached 787.2 million USD, which indicates the continued presence of a trade deficit in the exchange with the American market. The average value of the trade balance was -249.9 million USD, with the largest deficit occurring in 2019.

The coefficient of variation of exports was 43.5%, which indicates a more pronounced volatility compared to imports, whose coefficient of variation was 26.9%. The trade balance showed moderate variability (36.7%), while the average export to import ratio was 66.2%, with a coefficient of variation of 21.6%. The obtained results indicates that Serbia's trade exchange with America during the analyzed period recorded growth in both exports and imports, but without a significant reduction in the trade deficit, despite the improvement in the export to import ratio in recent years.

**International trade trends of the Republic of Serbia with Oceania and the Polar Region**

Analysis of the trade exchange of the Republic of Serbia with Oceania and the Polar region in the period 2015–2024. shows that it is a market with the smallest volume of international trade compared to other continents, but also a market where Serbia achieved a favorable trade balance during almost the entire analyzed period. The values are expressed in millions of US dollars, and the main characteristic of the exchange is the continuous growth of exports with a relatively low level of imports and a high export to import ratio.

**Table 11.** International trade of the Republic of Serbia with Oceania and the Polar Region in the period 2015–2024. (in million USD)

|             | Export | Import | Export minus import | Export to import ratio (%) |
|-------------|--------|--------|---------------------|----------------------------|
| <b>2015</b> | 10     | 6      | 4                   | 166,7                      |
| <b>2016</b> | 11     | 8      | 3                   | 137,5                      |
| <b>2017</b> | 13     | 8      | 5                   | 162,5                      |
| <b>2018</b> | 15     | 7      | 8                   | 214,3                      |
| <b>2019</b> | 17     | 9      | 8                   | 188,9                      |
| <b>2020</b> | 25     | 15     | 10                  | 166,7                      |
| <b>2021</b> | 31     | 25     | 6                   | 124,0                      |
| <b>2022</b> | 34     | 35     | -1                  | 97,1                       |
| <b>2023</b> | 49     | 17     | 32                  | 288,2                      |
| <b>2024</b> | 34     | 34     | 0                   | 100,0                      |

*Source: author's calculation based on data from the Statistical Office of the Republic of Serbia*

At the beginning of the analyzed period, in 2015, exports to the countries of Oceania and the Polar Region amounted to 10 million USD, while imports reached only 6 million USD, which resulted in a trade surplus of 4 million USD. The export to import ratio was 166.7%, which indicates that the value of exports was significantly higher than the value of imports. In the following years, the gradual growth of the trade exchange continued, with exports increasing from 10 million USD in 2015 to 17 million USD in 2019, while imports remained at a very low level and ranged between 7 and 9 million USD. As a result of such developments, Serbia continuously achieved a trade surplus during this period, with the export to import ratio ranging from 137.5% to 214.3%.

During the COVID-19 pandemic, trade with this market continued to grow. In 2020, exports increased to 25 million USD, while imports reached 15 million USD, resulting in a surplus of 10 million USD and an export to import ratio of 166.7%. In 2021, exports were further increased to 31 million USD, while imports reached 25 million USD, so the surplus amounted to 6 million USD. In contrast to previous years, in 2022 was realized a symbolic trade deficit of only 1 million USD, since exports amounted to 34 million USD and imports to 35 million USD. At the same time, the export to import ratio was 97.1%, which indicates an almost completely balanced trade exchange.

The most favorable results were achieved in 2023, when exports reached 49 million USD, while imports decreased to only 17 million USD. As a result, the trade surplus increased to a record 32 million USD, and the export to import ratio reached 288.2%, which represents the highest value in the analyzed period. In 2024, exports and imports were equal and amounted to 34 million USD each, which achieved a complete balance in trade, without a trade surplus or deficit, with export to import ratio of 100%.

Observed for the entire period 2015–2024. In 2008, Serbia's exports to Oceania and the Polar Region increased from 10 to 34 million USD, or about 240%, while imports increased from 6 to 34 million USD, or approximately 467%. Despite the faster relative growth of imports, Serbia achieved a trade surplus or a balanced trade exchange during almost the entire analyzed period, with a negligible deficit of 1 million USD recorded only in 2022. The obtained results indicate that, although Oceania and the Polar region participate with a very small share in the total interanational trade exchange of Serbia, trade relations with this market have a stable character and are characterized by a high degree of export competitiveness of domestic products.

**Table 12.** Descriptive statistics of the basic indicators of the international trade of the Republic of Serbia with Oceania and the Polar Region in the period 2015–2024.

| Indicator                  | Mean  | Med   | Min  | Max   | Std. dev. | CoV   |
|----------------------------|-------|-------|------|-------|-----------|-------|
| Export                     | 23,9  | 21,0  | 10   | 49    | 13,4      | 56,1  |
| Import                     | 16,4  | 12,0  | 6    | 35    | 11,2      | 68,3  |
| Export minus Import        | 7,5   | 5,5   | -1   | 32    | 9,2       | 122,7 |
| Export to Import ratio (%) | 164,6 | 164,6 | 97,1 | 288,2 | 58,4      | 35,5  |

*Source: author's calculation based on data from Table 11*

Descriptive statistical analysis of exports, imports, trade balance and export to import ratio was carried out in order to assess the basic characteristics of the international trade of the Republic of Serbia with Oceania and the Polar Region in the period 2015-2024. The results show that the average annual export value was 23.9 million USD, while the average import value was 16.4 million USD. The average value of the trade balance was 7.5 million USD, which indicates that on average Serbia achieved a trade surplus in exchange with this region.

The coefficients of variation of exports (56.1%) and imports (68.3%) indicates a pronounced volatility of commodity exchange, characteristic of smaller-scale markets. The trade balance showed a very high relative variability (122.7%), due to significant annual oscillations and changing surpluses and an almost balanced exchange. The average export to import ratio amounted to 164.6%, with a coefficient of variation of 35.5%, which confirms that the exports of the Republic of Serbia exceeded the value of imports in most of the observed period. Although the volume of trade with Oceania and the Polar region is relatively small compared to other continents, the results indicates a favorable international trade position of the Republic of Serbia in this segment of international exchange.

### Conclusion

The conducted research made it possible to analyze the international trade exchange of the Republic of Serbia in the period 2015-2024. with Europe, Asia, Africa, America, Oceania and the Polar region. The results confirms the continuous growth of exports and imports, which indicates the strengthening of the involvement of the Republic of Serbia in international trade flows. At the same time, the trade deficit has remained a permanent feature of international trade, although in recent years there have been signs of its gradual reduction.

The analysis also confirms that Europe represents the most important international trade partner, with the largest volume of trade exchange and the most favorable export to import ratio. In contrast, trade with Asia is characterized by a marked trade deficit, while trade with Africa was in surplus during most of the analyzed period. Trade relations with America recorded a

gradual increase in exports and an improvement of the export to import ratio, while trade with Oceania and the Polar Region, despite the small volume, was mostly balanced.

Descriptive statistical analysis showed that trade with Europe was the most stable, while trade flows with Asia, Africa and Oceania were more variable due to the smaller volume of trade and the influence of external economic factors. The COVID-19 pandemic and disruptions in international supply chains temporarily affected trade flows, but did not change their long-term trend.

The results also indicates that improving the international trade performance of the Republic of Serbia requires strengthening export competitiveness, increasing the share of products with higher added value, technological modernization and diversification of export markets. At the same time, the reduction of import dependence is an important condition for the long-term reduction of the trade deficit and sustainable economic growth.

The scientific contribution of the work is reflected in the comparative analysis of the international trade exchange of the Republic of Serbia with different geographical regions in the period 2015-2024. The obtained results can represent the basis for the improvement of development and trade policies, while future research should be focused on a more detailed analysis of the commodity structure of exports, technological competitiveness and the impact of international economic integration on the development of international trade of the Republic of Serbia.

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**SPOLJNOTRGOVINSKA RAZMENA REPUBLIKE SRBIJE:  
ANALIZA IZVOZA, UVOZA I TRGOVINSKOG BILANSA U  
PERIODU 2015–2024. GODINE**

***Apstrakt***

*Rad analizira spoljnotrgovinsku razmenu Republike Srbije u periodu 2015–2024. godine, sa posebnim osvrtom na trgovinske odnose sa Evropom, Azijom, Afrikom, Amerikom, Okeanijom i Polarnim regionom. Cilj istraživanja jeste sagledavanje dinamike izvoza, uvoza, trgovinskog bilansa i stepena pokrivenosti uvoza izvozom primenom deskriptivne statistike i komparativne analize. Rezultati ukazuju na kontinuiran rast spoljne trgovine Republike Srbije, uz trajno prisustvo trgovinskog deficita. Evropa predstavlja najznačajnijeg spoljnotrgovinskog partnera Srbije, dok se razmena sa Azijom odlikuje visokim deficitom, a sa Afrikom pretežno suficitom. Dobijeni nalazi potvrđuju potrebu za jačanjem izvozne konkurentnosti, tehnološkom modernizacijom i diverzifikacijom izvoznih tržišta radi unapređenja spoljnotrgovinskih performansi i održivog privrednog razvoja.*

***Ključne reči:*** *spoljnotrgovinska razmena, Republika Srbija, izvoz, uvoz, trgovinski bilans*

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## INFLUENCE OF CERTAIN FACTORS ON CAPITAL STRUCTURE OF CONSTRUCTION COMPANIES

Miloš Pjanić<sup>1</sup>, Jelena Andrašić<sup>2</sup>, Miloš Đaković<sup>3</sup>, Milica Šušljik<sup>4</sup>

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Original Article

### *Abstract*

*Capital structure refers to a combination of debt and equity that companies use to finance their operations. It determines the balance between the risk and return for shareholders and affects the company's financial stability and cost of capital. The subject of this study includes a sample of 42 construction companies operating in the Serbian market observed in the period from 2006 to 2023. In order to analyze the effects of selected variables on the level of debt, three dependent variables were used in the form of indicators of total debt, short-term debt, and long-term debt of companies. The aim of the study is to understand the effects and significance of the impact of selected microeconomic and macroeconomic variables on the level of indebtedness of businesses. The analysis includes the use of static and dynamic econometric models to analyze panel data. The results indicated the statistical significance of variables such as liquidity, profitability, tangibility, tax shield and gross domestic product on the level of indebtedness, as well as a significant effect of lagged versions of debt indicators, which pointed to the existence of debt persistence and supported the dynamic character of the model formulation. The authors expect that the findings of this paper will provide policymakers*

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<sup>1</sup> Miloš Pjanić, associate professor, University of Novi Sad, Faculty of Economics, Subotica, Segedinski put 11, Subotica, Serbia, email: milos.pjanic@ef.uns.ac.rs. ORCID ID: <https://orcid.org/0000-0001-9746-8838>

<sup>2</sup> Jelena Andrašić, associate professor, University of Novi Sad, Faculty of Economics, Subotica, Segedinski put 11, Subotica, Serbia, email: jelena.andrasic@ef.uns.ac.rs. ORCID ID: <https://orcid.org/0000-0003-3941-1184>

<sup>3</sup> Miloš Đaković, assistant, University of Novi Sad, Faculty of Economics, Subotica, Segedinski put 11, Subotica, Serbia, email: milos.djakovic@ef.uns.ac.rs. ORCID ID: <https://orcid.org/0000-0003-0167-4026>

<sup>4</sup> Milica Šušljik, saradnik u nastavi, Univerzitet u Novom Sadu, Ekonomski fakultet Subotica, Segedinski put 11, Subotica, Srbija, email: milica.susljik@ef.uns.ac.rs. ORCID ID: <https://orcid.org/0009-0007-2448-9209>

*and managers with information to establish an adequate capital structure in the company by understanding the nature of the effects of certain microeconomic and macroeconomic variables and also to prove the application of certain capital structure theories.*

**Key words:** *Capital Structure, Construction companies, Short-term debt, Long-term debt, Indebtedness*

**JEL:** *G32; C23; L74*

## **Introduction**

The construction sector is an important part of a country's economy, driving industrial expansion, innovation and employment. Capital structure consists of a combination of debt and equity that a company uses to finance its operations and expansion. This balance between borrowed and equity capital is crucial because it affects the company's risk, cost of capital and financial flexibility. Too much debt increases a company's debt, making things unpredictable for creditors and business owners. Capital structure research focuses on determining the optimal balance of equity and debt. It is almost impossible to determine which source of capital is best for financing certain commercial activities of the company (Gajdosikova, et al., 2023). A number of different theories have been developed to examine the capital structure of firms, for example, irrelevance theory, trade-off theory, and pecking-order theory (Modigliani & Miller, 1963; Kraus & Litzenberger, 1973; Myers & Majluf, 1984). The most popular of these theories are trade-off theory and hierarchical order or differently known as pecking-order theory, and most of the work written on this topic attempts to confirm the relevance of these theories. One of the objectives of this study is to analyze the way in which these two theories are applied in the case of the construction industry in Serbia. According to trade-off theory, an adequate amount of debt occurs when the marginal benefit of debt financing equals the marginal cost. However, the pecking-order theory states that companies should prioritize internal financing over borrowed capital. Firms first prioritize internal money, then issue external debt, and finally provide external capital (Myers & Majluf, 1984).

It is often stated that economic policy uncertainty combined with firm characteristics is very important in shaping firms' debt financing decisions (Li & Qiu, 2021). Countries with the most developed financial systems tend to produce the most important empirical research and ideas on capital structure. Capital structures of companies in developed and developing countries differ. Among the many country-specific factors that influence capital structure decisions are the characteristics of legal and tax systems, corporate governance

procedures, and financial systems of different countries (Kuč & Kaličanin, 2021). Recent studies conducted on the topic of the capital structure of companies deal with the research of the impact of certain factors on the level of company debt (Frank & Goyal, 2009; Raval & Dave, 2021), as well as the impact of the capital structure on other company performances (Co, Uong & Nguyen, 2021; Ilie & VasIU, 2022). Mostly the studies involve some kind of data segmentation such as country, country group and industry sector specific data segmentation. Some studies conducted investigations of the relationship of certain factors in the case of developed countries such as, (Gajdosikova, et al., 2023; Li & Qiu, 2021; Chen, et al., 2022; Mokhova & Zinecker, 2014; Stöckl & Winner, 2013), while other articles investigated developing countries (Alrabba, Ahmad & Hamadneh, 2019; Amponsah, Michael & Hughes, 2013; Ilie & VasIU, 2022; Jõeveer, 2013). Investigating capital structure and the effects of financial leverage in so-called transition economies is still of interest. Due to different circumstances, this problem is experienced differently in each country. The length of the privatization process, the level of development of the capital market, the availability of various sources of financing, the level of investor protection, the stability of the legal system and the standard of management are the most important of them. Each of these features can affect certain organizations to a different degree, depending on the country (Malinić et al., 2013).

The main objective of this study is to better understand how certain microeconomic factors affect the leverage levels of companies. The article is divided into five main parts. After the introduction, there will be a review of the literature, where the findings of studies that investigated similar relationships between capital structure and relevance indicators will be presented and commented on. The methodology and data are presented in the third part of the study. This section includes an overview of the data used, data sampling, and a presentation of the diagnostic tests and panel data regression models used. In the fourth part of the study, an econometric test was presented along side the regression analysis. In the last part of the study presents certain conclusions and recommendations by the authors. The basis of this study is the construction sector of Serbia and the time frame from 2006 to 2023. The study aims to prove the applicability of both trade-off theory and the pecking-order theory and to help better understand the nature and direction of influence of certain capital structure factors. Limitations of the study are the absence of companies from other industrial sectors in the country, as well as the absence of some macroeconomic factors that are not included in this study.

### **Literature review**

Regarding the theory of capital structure of companies, the authors in table no.

I list the most relevant theories of capital structure investigated in this paper. The table also shows the main postulates of the mentioned theories.

Table 1. Theories of the company's capital structure

| Theories             | Author                        | Findings                                                                                                                                                                             |
|----------------------|-------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Irrelevance theory   | Modigliani and Miller (1958)  | The level of a company's capital structure has no effect on its value (Modigliani, & Miller, 1958).                                                                                  |
| Relevance theory     | Modigliani and Miller (1963)  | An indebted company has more benefits than a non-indebted company in terms of taxes (Modigliani & Miller, 1963).                                                                     |
| Trade-off theory     | Kraus and Litzenberger (1973) | Firms borrow until the tax benefits of each additional dollar of debt are exactly equal to the costs associated with the increased risk of bankruptcy (Kraus, & Litzenberger, 1973). |
| Pecking-order theory | Myers and Majluf (1984)       | Managers favor retained earnings and debt over new shares because of knowledge asymmetry and selection problems (Myers & Majluf, 1984).                                              |

Source: authors

The process of choosing a form of financing is often influenced by various factors, including company size, legal structure, profit margin, industry in which it operates, macroeconomic climate, business regulatory environment, and credit policy (Gajdosikova, et al., 2023). A study investigating Brazilian manufacturing companies found that private companies were more inclined to use subsidized financing than public companies (Eça, Costa Gomes & Valle, 2022). Various studies investigating companies in the Turkish textile industry found that firm size, profitability, liquidity, and asset tangibility negatively affected the leverage ratio, while non-debt tax shields, growth prospects, earnings volatility, and GDP growth had a positive effect. The research also confirmed the results of the pecking-order theory (Ersoy, 2022). One study, which investigated Chinese listed micro-enterprises, found that market competition, high-tech enterprise status, and audit quality influence the relationship between enterprise digital transformation and debt financing costs (Sun, et al., 2022).

The results of the study, which used companies listed on the Amman Stock Exchange for the data sample, showed that ROA was significantly negatively affected by short-term and total debt levels, but positively by company size and asset growth (Alrabba, Ahmad & Hamadneh, 2019). Comparable research results of companies listed on the Suadi Stock Exchange showed that capital structure ratios significantly reduce the return on assets (ROA) and return on equity (ROE) of the company (Boshnak, 2023). The importance of debt for the

operational success of a company must be emphasized when talking about the capital structure and its importance. The impact of the deleveraging policy on the risk of corporate debt default is particularly pronounced for companies that have developed sectors with non-state ownership, low operational performance and backward capacities (Chen, et al., 2022). A study investigating companies listed on the Romanian stock exchange found that ROE had the most significant negative relationship with the debt-to-equity indicator (Ilie & VasIU, 2022). From the perspective of capital structure theory, it has been found that the pecking-order theory is most useful for small, publicly traded industrial companies, especially in an unstable economic climate (Köksal & Orman, 2015).

In the case of Indian manufacturing firms, the debt ratio was found to be positively correlated with variables such as asset composition, business risk and return on assets, while the debt ratio was negatively correlated with firm size and debt servicing capacity (Sofat & Singh, 2017). In a study on large Korean companies, it was determined that indebtedness is negatively and significantly influenced by profitability and liquidity, measured by total, short-term and long-term debt ratios (Tulcanaza Prieto & Lee, 2019). A study conducted in Albania on the capital structure of unlisted companies revealed that liquidity, profitability and size have a significant impact on leverage (Cekrezi, 2013). As a result of the high cost of debt financing and the increased vulnerability of the economy to shocks, highly leveraged companies are more vulnerable to insolvency, according to the results of a study conducted on listed companies on the Ghana Stock Exchange (Essel, 2023). In the case of Australian firms, industry-specific variables have been found to influence the establishment of capital structures both directly and indirectly (Li & Islam, 2019).

A study investigating Kuwaiti firms produced results that supported the hierarchy hypothesis more than the trade-off theory. Some findings of this study supported the importance of expansion prospects and profitability (Sbeti & Moosa, 2012). According to a study that examines the factors that influence the capital structure in post-transition economies, more successful companies and those with more tangible assets use less debt financing, it was shown that larger companies and those with higher investments in fixed assets show a higher level of indebtedness (Arsov & Naumoski 2016).

Based on the review of relevant literature in the field of capital structure, the authors have formulated the following research hypotheses:

H1 - There is a statistically more significant effect of microeconomic variables than macroeconomic variables on the levels of total, short-term and long-term debt.

H2 – There is a statistically significant effect of debt persistence in the case of

companies in the construction sector.

Methodology and data

This study analyzes the influence of certain microeconomic variables on the indebtedness levels of selected construction companies in the Republic of Serbia. The panel data consists of unbalanced data from 42 construction companies. The analysis covers the period from 2006 to 2023, uses annual data and includes 609 observations. The main dependent variables used are the total debt-to-assets indicator, as well as the short-term debt-to-assets indicator and the long-term debt-to-assets indicator. Indicators of liquidity, profitability, size, tax shield, non-tax shield and tangibility are used as independent variables, while macroeconomic indicators of gross domestic product and inflation are used as control variables. In the table below, the authors show more precisely the variables used in the empirical research:

Table 2. Used variables

| Variables              | Symbol        | Calculation                        |
|------------------------|---------------|------------------------------------|
| Dependent variables    |               |                                    |
| Total debt             | <b>TD</b>     | Total debt/Total assets            |
| Short-term debt        | <b>SD</b>     | Short-term debt/Total assets       |
| Long-term debt         | <b>LD</b>     | Long-term debt/Total assets        |
| Independent variables  |               |                                    |
| Liquidity              | <b>LIQ</b>    | Current assets/Current liabilities |
| Profitability          | <b>ROA</b>    | Net profit/Total assets            |
|                        | <b>ROE</b>    | Net profit/Total equity            |
| Size                   | <b>SIZE</b>   | Log of total assets                |
| Tax-shield             | <b>TAX</b>    | Corporate income tax/EBIT          |
| Non-tax shield         | <b>NONTAX</b> | Amortization/Total assets          |
| Tangibility            | <b>TAN</b>    | Tangible assets / Total assets     |
| Control variables      |               |                                    |
| Gross-domestic product | <b>GDP</b>    | % annual growth                    |
| Inflation              | <b>INF</b>    | % annual growth                    |

Source: authors

Under table no. 2, the authors present the main models of the study. The study uses both static and dynamic modeling using the programming language R. The main process of the study consists of diagnostic tests at baseline. Diagnostic tests used are panel unit root tests, multicollinearity tests using the correlation matrix, Breusch-Pagan homoscedasticity test, F test for individual effects, Sargan test, and autocorrelation tests. After the results of the diagnostic tests, the selection process follows. According to the results, the authors choose the most adequate static or dynamic model for interpretation, similar to (Saif-

Alyousfi, et al., 2020).

The static model consists of:

$$TD_{it} = \beta_0 + \beta_1 LIQ_{it} + \beta_2 ROA_{it} + \beta_3 ROE_{it} + \beta_4 SIZE_{it} + \beta_5 TAX_{it} + \beta_6 NONTAX_{it} + \beta_7 TAN_{it} + \beta_8 GDP_t + \beta_9 INF_t + \varepsilon_{it} \quad (1)$$

$$SD_{it} = \beta_0 + \beta_1 LIQ_{it} + \beta_2 ROA_{it} + \beta_3 ROE_{it} + \beta_4 SIZE_{it} + \beta_5 TAX_{it} + \beta_6 NONTAX_{it} + \beta_7 TAN_{it} + \beta_8 GDP_t + \beta_9 INF_t + \varepsilon_{it} \quad (2)$$

$$LD_{it} = \beta_0 + \beta_1 LIQ_{it} + \beta_2 ROA_{it} + \beta_3 ROE_{it} + \beta_4 SIZE_{it} + \beta_5 TAX_{it} + \beta_6 NONTAX_{it} + \beta_7 TAN_{it} + \beta_8 GDP_t + \beta_9 INF_t + \varepsilon_{it} \quad (3)$$

Where is:

TD<sub>it</sub> = Total debt of company i at time t

SD<sub>it</sub> = Short-term debt of the company i at time t

LD<sub>it</sub> = Long-term debt of the company i at time t

LIQ<sub>it</sub> = Liquidity ratio of company i at time t

ROA<sub>it</sub> = Coefficient of return on the assets of the company i at time t

ROE<sub>it</sub> = Coefficient of return on capital of the company i at time t

SIZE<sub>it</sub> = Logarithm of the total assets of the company i at time t

TAX<sub>it</sub> = Indicator of the company's tax shield i at time t

NONTAX<sub>it</sub> = Tax indicator that is not owed by the company and at time t

TAN<sub>it</sub> = Coefficient of tangibility of the company i at time t

GDP<sub>t</sub> = Gross domestic product at time t

INF<sub>t</sub> = Inflation rate at time t

The dynamic model of equation (1) above can be represented as:

$$TD_{it} = \beta_0 + \beta_1 TD_{it-1} + \beta_2 LIQ_{it} + \beta_3 ROA_{it} + \beta_4 ROE_{it} + \beta_5 SIZE_{it} + \beta_6 TAX_{it} + \beta_7 NONTAX_{it} + \beta_8 TAN_{it} + \beta_9 GDP_t + \beta_{10} INF_t + \varepsilon_{it} \quad (4)$$

$$SD_{it} = \beta_0 + \beta_1 SD_{it-1} + \beta_2 LIQ_{it} + \beta_3 ROA_{it} + \beta_4 ROE_{it} + \beta_5 SIZE_{it} + \beta_6 TAX_{it} + \beta_7 NONTAX_{it} + \beta_8 TAN_{it} + \beta_9 GDP_t + \beta_{10} INF_t + \varepsilon_{it} \quad (5)$$

$$LD_{it} = \beta_0 + \beta_1 LD_{it-1} + \beta_2 LIQ_{it} + \beta_3 ROA_{it} + \beta_4 ROE_{it} + \beta_5 SIZE_{it} + \beta_6 TAX_{it} + \beta_7 NONTAX_{it} + \beta_8 TAN_{it} + \beta_9 GDP_t + \beta_{10} INF_t + \varepsilon_{it} \quad (6)$$

Where is:

TD<sub>it-1</sub> = Dynamic indicator of total company debt i at time t -1

SD<sub>it-1</sub> = Dynamic indicator of the company's short-term debt i at time t -1

LD<sub>it-1</sub> = Dynamic indicator of the company's long-term debt i at time t -1

LIQ<sub>it</sub> = Liquidity ratio of company i at time t

ROA<sub>it</sub> = Coefficient of return on the assets of the company i at time t

ROE<sub>it</sub> = Coefficient of return on capital of the company i at time t

SIZE<sub>it</sub> = Logarithm of the total assets of the company i at time t

TAXit = Indicator of the company's tax shield i at time t  
 NONTAXit = Tax indicator that is not owed by the company and at time t  
 TANit = Coefficient of tangibility of the company i at time t  
 GDPt = Gross domestic product at time t  
 INFt = Inflation rate at time t

Table no. 3 shows a descriptive analysis of the variables used. The results of the analysis show that the biggest change is noticeable in the case of liquidity, total debt and short-term debt. The volatility of these indicators can be seen through the standard deviation coefficients that indicate the largest gap between the minimum and maximum amount. In the case of total debt, the mean value of 0.523 indicates that the average construction company selected from this sample finances its assets using mostly debt compared to equity. On the other hand, a high standard deviation of long-term debt indicates high volatility, meaning that some companies have very high levels of long-term debt while others have none. In the case of total and short-term debt, the analysis shows a more normal distribution between the minimum and maximum values.

Table 3. Descriptive statistics

| Variables | Mean     | Max       | Min       | Std. Dev. | Obs. |
|-----------|----------|-----------|-----------|-----------|------|
| TD        | 0,523150 | 1,000000  | 0,000000  | 0,306590  | 609  |
| SD        | 0,497524 | 1,000000  | 0,000000  | 0,304132  | 609  |
| LD        | 0,197732 | 0,9592410 | 0,000000  | 3,611719  | 609  |
| LIQ       | 7,230446 | 569,6156  | 0,000000  | 41,79605  | 609  |
| ROA       | 2,024659 | 211,3232  | -313,7550 | 20,04510  | 609  |
| ROE       | 3,663723 | 727,4052  | -133,3819 | 38,23158  | 609  |
| SIZE      | 3,800973 | 6,688737  | 0,000000  | 1,568173  | 609  |
| TAN       | 2,481280 | 178,1095  | 0,000000  | 12,50407  | 609  |
| TAX       | 0,183678 | 310,0000  | -69,73319 | 12,60634  | 609  |
| NONTAX    | 0,028242 | 1,751734  | -2,329182 | 0,210812  | 609  |
| GDP       | 2,548282 | 7,389000  | -2,732000 | 2,757379  | 609  |
| INF       | 5,878279 | 12,41100  | 1,122000  | 3,790749  | 609  |

Source: authors

## Findings

Stationarity and multicollinearity are some of the main requirements that need to be met in order to derive a valid regression model. In the case of multicollinearity, a common method for identifying is the use of a correlation matrix. Multicollinearity is a statistical concept that occurs when two or more

independent variables in a model show a high correlation. The results can be seen in table no. 4, where the highest value of the correlation coefficient does not exceed the value of 0.60, which indicates the absence of multicollinearity between independent variables.

Table 4. Correlation matrix

|            | LIQ        | ROA        | ROE        | SIZE       | TAN        | TAX        | NONTA<br>X | GDP        | INF        |
|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| LIQ        | 1.000      | 0.048<br>2 | 0.000<br>9 | 0.038<br>2 | 0.020<br>8 | 0.051<br>6 | 0.0028     | 0.030<br>9 | 0.009<br>6 |
| ROA        | 0.048<br>2 | 1.000      | 0.565<br>6 | 0.190<br>9 | 0.112<br>6 | 0.011<br>0 | -0.0103    | 0.075<br>9 | 0.008<br>3 |
| ROE        | 0.000<br>9 | 0.565<br>6 | 1.000      | 0.176<br>7 | 0.131<br>3 | 0.055      | 0.0042     | 0.005<br>2 | 0.003<br>9 |
| SIZE       | 0.038<br>2 | 0.190<br>9 | 0.176<br>7 | 1.000      | 0.358<br>2 | -0.092     | -0.0339    | 0.011<br>9 | 0.002<br>8 |
| TAN        | 0.020<br>8 | 0.112<br>6 | 0.131<br>3 | 0.358<br>2 | 1.000      | 0.026<br>4 | 0.0146     | 0.028<br>8 | 0.055<br>6 |
| TAX        | 0.005<br>1 | 0.110<br>8 | 0.055<br>7 | 0.092<br>7 | 0.000<br>2 | 1.000      | -0.0124    | 0.006<br>5 | 0.032<br>1 |
| NONTA<br>X | 0.002<br>8 | 0.010<br>3 | 0.004<br>2 | 0.033<br>9 | 0.014<br>6 | -0.012     | 1.000      | 0.000<br>3 | 0.073<br>3 |
| GDP        | 0.030<br>9 | 0.075<br>9 | 0.005<br>2 | 0.011<br>9 | 0.028<br>8 | 0.065      | 0.0003     | 1.000      | 0.151<br>0 |
| INF        | 0.009<br>6 | 0.008<br>3 | 0.003<br>9 | 0.002<br>8 | 0.055<br>6 | -0.032     | 0.0733     | 0.151<br>0 | 1.000      |

Source: authors

On the other hand, stationarity is also an important condition to be met in order to implement an adequate regression model. In the case of the static models applied in this study (POLS, FE, RE) stationarity is necessary, while in the case of the dynamic model (GMM), stationarity is not a necessary condition. Due to the nature of panel data, Levin, Lin and Chu, Breitung and Im, Pesaran and Shin tests were applied in this study. Results in table no. 5 indicate the stationarity of the dependent variables of total debt and short-term debt at the level, while in the case of long-term debt, stationarity is present after the first differentiation. Stationarity in the case of independent variables is present at the level in the case of liquidity, profitability, size, tangibility and gross domestic product, while in the case of inflation, stationarity is present after the first differentiation.

Table 5. Unit root tests

| Variables | Levin, Lin & Chu     |                      | Breitung             |                      | Im, Pesaran & Shin   |                      |
|-----------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
|           | Level                | 1st diff             | Level                | 1st diff             | Level                | 1st diff             |
| TD        | -190.61<br>(0.0000)  | -135.18<br>(0.0000)  | -4.594<br>(0.0000)   | -8.057<br>(0.0000)   | -30.916<br>(0.0000)  | -29.92<br>(0.0000)   |
| SD        | -190.07<br>(0.0000)  | -134.96<br>(0.0000)  | -4.804<br>(0.0000)   | -8.329<br>(0.0000)   | -31.341<br>(0.0000)  | -29.94<br>(0.0000)   |
| LD        | -0.144<br>(0.4427)   | 2.212<br>(0.9865)    | 3.867<br>(0.9999)    | -1.4107<br>(0.1030)  | -2.299<br>(0.011)    | -11.3235<br>(0.0000) |
| LIQ       | -28.123<br>(0.0000)  | -13.8285<br>(0.0000) | -1.8001<br>(0.0359)  | -3.34748<br>(0.0003) | -8.8759<br>(0.0000)  | -12.6535<br>(0.0000) |
| ROA       | -36.5687<br>(0.0000) | -14.3368<br>(0.0000) | -1.4224<br>(0.0775)  | -4.51193<br>(0.0000) | -11.4049<br>(0.0000) | -13.5440<br>(0.0000) |
| ROE       | -17.5091<br>(0.0000) | -10.9538<br>(0.0000) | -1.63049<br>(0.0515) | -5.94065<br>(0.0000) | -6.49394<br>(0.0000) | -11.8924<br>(0.0000) |
| SIZE      | -3.3334<br>(0.0004)  | -4.75082<br>(0.0000) | -0.6883<br>(0.2456)  | -5.07827<br>(0.0000) | -3.8871<br>(0.0001)  | -10.2519<br>(0.0000) |
| TAN       | -77.4862<br>(0.0000) | -89.4455<br>(0.0000) | -3.50782<br>(0.0002) | -7.80650<br>(0.0000) | -16.6793<br>(0.0000) | -28.3702<br>(0.0000) |
| TAX       | -55.6535<br>(0.0000) | -19.113<br>(0.0000)  | -1.41633<br>(0.0783) | -1.2373<br>(0.1080)  | -14.8638<br>(0.0000) | -13.9454<br>(0.0000) |
| NONTAX    | -32.1685<br>(0.0000) | -24.6162<br>(0.0000) | -2.9693<br>(0.0015)  | -6.24932<br>(0.0000) | -11.3683<br>(0.0000) | -19.0169<br>(0.0000) |
| GDP       | -14.0087<br>(0.0000) | -25.8509<br>(0.0000) | -3.36047<br>(0.0004) | -11.3288<br>(0.0000) | -5.26538<br>(0.0000) | -19.7531<br>(0.0000) |
| INF       | 3.06512<br>(0.9989)  | -11.8081<br>(0.0000) | 6.21081<br>(1.0000)  | -3.3266<br>(0.0004)  | 7.1664<br>(1.0000)   | -7.1417<br>(0.0000)  |

Source: authors

Table no. 6 shows the results of the conducted research. The composition is the results of static and dynamic models. The static models used include ordinary least squares (OLS), the fixed effects model (FE) and the random effects model (RE) on the example of the dependent variable of total debt. First, the results of the OLS model are presented, showing the statistical significance of the effects at the 1%, 5% and 10% levels of independent variables such as liquidity (LIQ), return on assets (ROA), size (SIZE), gross domestic product (GDP) and inflation (INF). The results of the individual effects F test show statistical significance, indicating a higher validity of the fixed effects (FE) model compared to the OLS method. The results of FE methods indicated a significant influence of liquidity (LIQ), tangibility (TAN), tax shield (TAX), gross domestic product (GDP) and inflation (INF). The Hausman test was conducted to determine the validity of fixed effects (FE) and random effects (RE) models. The authors conclude that the statistic consistently and effectively accepts the null hypothesis of the random effects model. In the case of the random effects model, the variables liquidity (LIQ), tangibility (TAN), tax shield (TAX), gross domestic product (GDP) and inflation (INF) showed a statistically significant effect.

The results of the Breusch-Pagan heteroscedasticity test show the rejection of

the null hypothesis of homoscedasticity of the data and indicate the necessity of using dynamic models for greater robustness of the data, similar to (Paredes Gómez, Ángeles Castro & Flores Ortega, 2016). The results of the generalized method of moments (GMM) model show a statistically significant effect of the dynamic variable, lag version of total debt, liquidity (LIQ), tax shield (TAX) and gross domestic product (GDP). A positive effect was shown by the lag version of total debt, where a growth of 1% contributes to an increase in total debt by 0.3847%. These findings indicate the existence of debt persistence and support the use of dynamic modeling, similar to (Stöckl & Winner, 2013). A 1% increase in liquidity and the level of tax shield causes an increase in the level of total debt by 0.2786% and 0.2861% respectively, similar to the findings of (Amponsah, Michael & Hughes, 2013). These tax shield findings follow the main principles of the “trade-off” theory and the benefits of tax shields first introduced by Modigliani and Miller (1963). Growth of gross domestic product by 1% results in debt growth of 0.2502%, which points to the conclusion that companies from the construction sector in periods of economic expansion take on additional debt. The final diagnostic test is shown in table no. 6, where the Sargan test indicates the validity of using the dynamic GMM model in the case of total debt due to not rejecting the null hypothesis (Roodman, 2009).

Table 6. Results of the total debt regression model

| Variables                     | Static                |                       |                       | Dynamic              |
|-------------------------------|-----------------------|-----------------------|-----------------------|----------------------|
|                               | POLS                  | FE                    | RE                    | GMM                  |
| lag(TD)                       |                       |                       |                       | 0,38472<br>(0,0001)  |
| LIQ                           | -0,001065<br>(0,0001) | -0,000885<br>(0,0003) | -0,000896<br>(0,0002) | 0,27868<br>(0,0053)  |
| ROA                           | 0,001207<br>(0,0798)  | 0,001584<br>(0,3435)  | 0,000694<br>(0,2560)  | -0,2472<br>(0,8048)  |
| ROE                           | -0,0001<br>(0,8031)   | 0,0000625<br>(0,8435) | 4,81E-05<br>(0,8785)  | -0,11577<br>(0,2469) |
| SIZE                          | -0,013437<br>(0,0856) | 0,004689<br>(0,8315)  | -0,010020<br>(0,4735) | 0,5934<br>(0,5529)   |
| TAN                           | -0,000462<br>(0,6319) | -0,002009<br>(0,0455) | -0,001739<br>(0,0736) | 0,6354<br>(0,5252)   |
| TAX                           | -0,001172<br>(0,1920) | -0,001477<br>(0,0647) | -0,001485<br>(0,0604) | 0,28613<br>(0,0042)  |
| NONTAX                        | -0,048106<br>(0,3662) | -0,014643<br>(0,7557) | -0,020600<br>(0,6597) | -0,7641<br>(0,4448)  |
| GDP                           | -0,015199<br>(0,0002) | -0,014816<br>(0,0000) | -0,014870<br>(0,0006) | 0,25025<br>(0,0123)  |
| INF                           | 0,012651<br>(0,0000)  | 0,012308<br>(0,0000)  | 0,012399<br>(0,0000)  | -0,14379<br>(0,1504) |
| R-squared                     | 0,06                  | 0,36                  | 0,074                 |                      |
| Num of ob.                    | 609                   | 609                   | 609                   | 609                  |
| Breusch-Pagan test            | 23,51 (0.0051)        |                       |                       |                      |
| F test for individual effects |                       | 7,6147 (0.0000)       |                       |                      |

|                          |  |  |                |                     |
|--------------------------|--|--|----------------|---------------------|
| Hausman Test             |  |  | 4,993 (0.8349) |                     |
| Sargan Test              |  |  |                | 15,352<br>(0,4263)  |
| Autocorrelation test (1) |  |  |                | -3,8876<br>(0,0001) |
| Autocorrelation test (2) |  |  |                | 1,2392<br>(0.2152)  |

Source: authors

Table no. 7 shows the results on the example of the dependent variable of short-term debt. First, the results of the POLS model are presented, showing the statistical significance of the effects at the 1%, 5% and 10% levels of independent variables such as liquidity (LIQ), return on assets (ROA), return on equity (ROE), size (SIZE), gross domestic product (GDP) and inflation (INF). The results of the individual effects F test show statistical significance, indicating a higher validity of the fixed effects (FE) model compared to the POLS method. The results of FE methods indicated a significant influence of liquidity (LIQ), tangibility (TAN), tax shield (TAX), gross domestic product (GDP) and inflation (INF). The Hausman test was conducted to determine the validity of fixed effects (FE) and random effects (RE) models. The authors conclude that the statistic consistently and effectively accepts the null hypothesis of the random effects model. In the case of the random effects model, the variables liquidity (LIQ), return on assets (ROA), tangibility (TAN), tax shield (TAX), gross domestic product (GDP) and inflation (INF) showed a statistically significant effect. The dynamic model (GMM) indicates the statistical significance of the effects of the dynamic variable late version of short-term debt, tax shield (TAX) and gross domestic product (GDP). The results of the Breusch-Pagan heteroskedasticity test do not show the rejection of the null hypothesis of homoscedasticity of the data and indicate the validity of the static models in the case of short-term debt. In table no. 7, the Sargan test which, due to the rejection of the null hypothesis, indicates a greater validity of using static models in the case of short-term debt.

The random effects model (REM), which according to the diagnostic tests proved to be the most valid, showed that an increase in liquidity (LIQ) of 1% causes a decrease in the level of short-term debt by 0.0009%. A 1% increase in return on assets (ROA) causes an increase of 0.001%, which is different from the findings of Kuč & Kalićanin (2021), who found a negative relationship between return on assets and short-term debt in the case of companies from Serbia. A 1% increase in tangibility indicators (TAN) and tax shield (TAX) leads to a decrease in the value of short-term debt by 0.002% and 0.001%, respectively. Growth of gross domestic product (GDP) by 1% results in a decrease in indebtedness of 0.0160%, which points to the conclusion that companies from the construction sector reduce the level of short-term debt in periods of economic expansion. It is also shown that an increase in inflation of

1% acts as an increase in short-term debt by 0.122%.

Table 7. Results of the short-term debt regression model

| Variables                     | Static                |                       |                       | Dynamic              |
|-------------------------------|-----------------------|-----------------------|-----------------------|----------------------|
|                               | POLS                  | FE                    | RE                    | GMM                  |
| lag(SDA)                      |                       |                       |                       | -0,31684<br>(0,0015) |
| LIQ                           | -0,001102<br>(0,0000) | -0,000992<br>(0,0000) | -0.000988<br>(0,0000) | 0,1345<br>(0,1786)   |
| ROA                           | 0,001629<br>(0,0163)  | 0,000899<br>(0,1425)  | 0.001044<br>(0,0852)  | -0,8685<br>(0,3851)  |
| ROE                           | -0,000584<br>(0,0969) | -0,000362<br>(0,2499) | -0.000386<br>(0,2166) | 0,11099<br>(0,2670)  |
| SIZE                          | -0,022082<br>(0,0041) | 0,008877<br>(0,6852)  | -0.015001<br>(0,2671) | 0,13094<br>(0,1904)  |
| TAN                           | -0,000409<br>(0,6659) | -0,00215<br>(0,0313)  | -0.001807<br>(0,0600) | 0,1015<br>(0,3101)   |
| TAX                           | -0,001198<br>(0,1752) | -0,001441<br>(0,0696) | -0.001486<br>(0,0585) | 0,21105<br>(0,0348)  |
| NONTAX                        | -0,077093<br>(0,1411) | -0,029501<br>(0,5282) | -0.038790<br>(0,4039) | 0,3896<br>(0,6968)   |
| GDP                           | -0,016457<br>(0,0001) | -0,01602<br>(0,0000)  | -0.016088<br>(0,0000) | 0,20231<br>(0,0431)  |
| INF                           | 0,012561<br>(0,0000)  | 0,012135<br>(0,0000)  | 0.012263<br>(0,0000)  | -0,7812<br>(0,4347)  |
| R-squared                     | 0,08                  | 0,36                  | 0,08                  |                      |
| Num of ob.                    | 609                   | 609                   | 609                   | 609                  |
| Breusch-Pagan test            | 0,393 (0.2211)        |                       |                       |                      |
| F test for individual effects |                       | 7,132 (0.0000)        |                       |                      |
| Hausman Test                  |                       |                       | 9,992 (0.3511)        |                      |
| Sargan Test                   |                       |                       |                       | 31,61<br>(0,0112)    |
| Autocorrelation test (1)      |                       |                       |                       | -1,1965<br>(0,2311)  |
| Autocorrelation test (2)      |                       |                       |                       | -2,1304<br>(0,0331)  |

Source: authors

Table no. 8 shows the results of the long-term debt model. First, the results of the POLS model are presented, showing the statistical significance of the effects at the 1%, 5% and 10% levels of independent variables such as return on assets (ROA), return on equity (ROE) and tangibility (TAN). The results of the F test of individual effects do not show statistical significance, which indicates a higher validity of the POLS model compared to the fixed effects (FE) model.

The results of FE methods indicated a significant effect of return on assets (ROA), return on equity (ROE) and tangibility (TAN). The Hausman test was conducted to determine the validity of fixed effects (FE) and random effects (RE) models. The authors conclude that the statistic consistently and effectively rejects the null hypothesis of the random effects model. In the case of the random effects model, the return on assets (ROA), return on equity (ROE) and tangibility (TAN) variables also showed a statistically significant effect.

The results of the Breusch-Pagan heteroscedasticity test show the rejection of the null hypothesis of homoscedasticity of the data and indicate the necessity of using dynamic models for greater robustness of the data, similar to (Paredes Gómez, Ángeles Castro & Flores Ortega, 2016). The results of the Generalized Method of Moments (GMM) model show a statistically significant effect of the dynamic variable of the lag version of long-term debt. These findings indicate the existence of debt persistence and are consistent with the idea of debt reduction or adjustment to return to the optimal debt ratio. The findings are consistent with the postulates of "trade-off" theories and support the use of dynamic modeling in the case of long-term debt. The final diagnostic test is shown in table no. 8, where the Sargan test indicates the validity of using the dynamic GMM model in the case of long-term debt.

Table 8. Results of the long-term debt regression model

| Variables  | Static                |                       |                       | Dynamic               |
|------------|-----------------------|-----------------------|-----------------------|-----------------------|
|            | POLS                  | FE                    | RE                    | GMM                   |
| lag(LDA)   |                       |                       |                       | -0,219068<br>(0,0000) |
| LIQ        | 0,000188<br>(0,9312)  | -0,000433<br>(0,8515) | 0.000188<br>(0,9316)  | -0,13005<br>(0,1934)  |
| ROA        | -0,047811<br>(0,0000) | -0,046492<br>(0,0000) | -0,047811<br>(0,0000) | 0,8148<br>(0,4152)    |
| ROE        | 0,082257<br>(0,0000)  | 0,082474<br>(0,0000)  | 0,082257<br>(0,0000)  | -0,4442<br>(0,6569)   |
| SIZE       | -0,013697<br>(0,8281) | -0,062377<br>(0,7673) | -0,013697<br>(0,8290) | -0,3682<br>(0,7127)   |
| TAN        | -0,027703<br>(0,0004) | -0,026095<br>(0,0067) | -0,027703<br>(0,0004) | -0,13315<br>(0,1830)  |
| TAX        | -0,005564<br>(0,4432) | -0,005392<br>(0,4803) | -0,005564<br>(0,4455) | -0,375<br>(0,7076)    |
| NONTAX     | -0,094316<br>(0,8264) | -0,17828<br>(0,6921)  | -0,094316<br>(0,8273) | 0,6497<br>(0,5159)    |
| GDP        | -0,009411<br>(0,7768) | -0,008829<br>(0,7916) | -0,009411<br>(0,7778) | -0,3546<br>(0,7229)   |
| INF        | 0,016563<br>(0,4944)  | 0,016456<br>(0,5004)  | 0,016563<br>(0,4966)  | 0,5742<br>(0,5659)    |
| R-squared  | 0,56                  | 0,58                  | 0,56                  |                       |
| Num of ob. | 609                   | 609                   | 609                   | 609                   |

|                               |                |                 |                  |                  |
|-------------------------------|----------------|-----------------|------------------|------------------|
| Breusch-Pagan test            | 31,77 (0.0002) |                 |                  |                  |
| F test for individual effects |                | 0,8297 (0.7671) |                  |                  |
| Hausman Test                  |                |                 | 15,7088 (0.0732) |                  |
| Sargan Test                   |                |                 |                  | 10,5549 (0,3097) |
| Autocorrelation test (1)      |                |                 |                  | -1,0158 (0,3097) |
| Autocorrelation test (2)      |                |                 |                  | -0,1848 (0,3247) |

Source: authors

The results of the regression model point to the confirmation of both research hypotheses. Microeconomic factors showed a more statistically significant effect on the level of total, short-term and long-term debt of companies from the construction sector and thus confirmed the first hypothesis H1 of this research. The results also indicated the presence of debt persistence in the case of all three models, total, short-term and long-term debt, thus confirming the second hypothesis H2.

## Conclusion

The study comprehensively analyzed the determinants of total debt, short-term debt and long-term debt using static (POLS, FE and RE) and dynamic (GMM) models. The results consistently showed the importance of several financial variables, such as liquidity, tax shield and gross domestic product in the case of total and short-term debt, while in the case of long-term debt, only the lagged version of the long-term debt variable showed a statistically significant effect. Using various diagnostic tests, the dynamic model was chosen as the most adequate for presenting the results in the case of total debt and long-term debt, while the Breusch-Pagan heteroscedasticity test highlighted the greater adequacy of the static random effects model for the example of short-term debt. The results suggest a special approach to debt management in construction companies in Serbia. The findings of the total debt model point to the application of the trade-off theory, which speaks of the ability of companies to bear the additional risk and burden of borrowing at a higher level of liquidity and the level of the tax shield. The results of the short-term debt model point more to the application of the pecking-order theory, which points to a greater concentration of companies on using their own funds in relation to borrowing short-term debt. In the case of the third model of long-term debt, the effect of debt constancy was confirmed, which turned out to be negative, indicating that companies with higher past long-

term debt tend to issue less current long-term debt, which is in line with the idea of reducing indebtedness or adjusting to return to the optimal debt ratio, which is advocated by the trade-off theory. The main scientific contribution of this study is reflected in the research of the practical application of various theories of capital structures on the example of construction companies, as well as a deeper understanding of the effects of the determinants of capital structures. The construction sector of Serbia is relatively unexplored from the aspect of research in the field of capital structure. Also, the results of this study, which indicated the flexibility of various effects of microeconomic and macroeconomic factors as well as the presence of a dynamic effect of indebtedness, contribute to the future development of heterogeneous and proactive capital structure strategies of companies from capital intensive sectors such as construction. The study provides robust evidence on the determinants of debt at different maturities, confirming the relevance of dynamic modeling techniques and the applicability of financial theories in understanding corporate debt behavior. These insights are particularly valuable to policymakers and financial managers in formulating strategies to optimize capital structure decisions.

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# UTICAJ ODABRANIH FAKTORA NA STRUKTURU KAPITALA GRAĐEVINSKIH KOMPANIJA

## *Apstrakt*

*Struktura kapitala se odnosi na kombinaciju duga i kapitala koji kompanije koriste za finansiranje svog poslovanja. On određuje ravnotežu između rizika i prinosa za akcionare i utiče na finansijsku stabilnost kompanije i cenu kapitala. Predmet ove studije obuhvata uzorak od 42 građevinske kompanije koje posluju na tržištu Srbije posmatrano u periodu od 2006. do 2023. godine. Za analizu efekata odabranih varijabli na nivo zaduženosti korišćene su tri zavisne varijable u vidu indikatora ukupnog duga, kratkoročnog duga i dugoročnog duga preduzeća. Cilj studije je da se razumeju efekti i značaj uticaja odabranih mikroekonomskih i makroekonomskih varijabli na nivo zaduženosti privrednih subjekata. Analiza uključuje upotrebu statičkih i dinamičkih ekonometrijskih modela za analizu panel podataka. Rezultati su ukazali na statističku značajnost varijabli kao što su likvidnosti, profitabilnosti, opipljivosti, poreskog štita i bruto domaćeg proizvoda na nivo zaduženosti, kao i značajan efekat zakasnelih verzija indikatora duga, što je ukazivalo na postojanje perzistentnosti duga i podržalo dinamiku i karakter formulacije modela. Autori očekuju da će rezultati ovog rada dati kreatorima politike i menadžerima informacije za uspostavljanje adekvatne strukture kapitala u preduzeću kroz razumevanje prirode efekata određenih mikroekonomskih i makroekonomskih varijabli, kao i za dokazivanje primene određenih teorija strukture kapitala.*

**Ključne reči:** *Stuktura kapitala, Građevinske kompanije, Kratkoročni dug, Dugoročni dug, Zaduzenost*

**JEL:** *G32; C23; L74*

## COMPARATIVE ECONOMIC AND FINANCIAL ASPECTS OF TOURISM FLOWS IN SERBIA AND NEIGHBORING COUNTRIES

Milan Novović<sup>1</sup>, Aleksandar Lukić<sup>2</sup>, Dragan Milačić<sup>3</sup>

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Original Article

### *Abstract*

*This paper presents a comparative economic and financial analysis of tourism flows in Serbia and selected neighboring and nearby countries in Southeast and Central Europe, including Albania, Bosnia and Herzegovina, Bulgaria, Montenegro, Croatia, Hungary, North Macedonia, and Romania. The study examines tourist arrivals and overnight stays, international tourism revenues, and the direct and total contributions of tourism to gross domestic product (GDP) and employment. Particular attention is given to the period from 2019 to 2023, covering the pre-pandemic period, the COVID-19 disruption, and the subsequent recovery. Using secondary data from national statistical offices, Eurostat, and the World Travel & Tourism Council, the study applies a descriptive comparative methodology to identify similarities and differences in tourism performance and economic significance. The findings indicate substantial differences in tourism intensity and economic dependence across the observed countries, while Serbia recorded a comparatively strong post-pandemic recovery. The analysis also highlights the importance of methodological differences among national statistical systems, particularly in the interpretation of Albania's arrival data. The results provide a comparative empirical basis for assessing Serbia's tourism position and identifying areas for further research and policy development.*

**Keywords:** *tourism flows, Serbia, gross domestic product, employment, neighboring countries*

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<sup>1</sup> Milan Novović, Associate Professor, Academy of Hospitality, Tourism and Wellness, 11000 Belgrade, Serbia; e-mail: [mnovovic@akademijahtw.bg.ac.rs](mailto:mnovovic@akademijahtw.bg.ac.rs), ORCID ID: <https://orcid.org/0000-0002-6944-7973>

<sup>2</sup> Aleksandar Lukić, Professor of Applied Studies, Higher vocational school of economics, Belgrade, Gradski Park 2, Zemun, Serbia; e-mail: [aleksandarlukic.info@gmail.com](mailto:aleksandarlukic.info@gmail.com), ORCID ID: <https://orcid.org/0000-0002-4922-2937>

<sup>3</sup> Dragan Milačić, Professor of Applied Studies, Higher vocational school of economics Belgrade, Gradski Park 2, Zemun, Serbia; e-mail: [milacicdragan@gmail.com](mailto:milacicdragan@gmail.com), ORCID ID: <https://orcid.org/0000-0002-3380-1678>

## **Introduction**

Tourism is one of the most dynamic sectors of modern economies. In addition to generating direct revenue through the spending of domestic and international visitors, tourism stimulates the growth of numerous related sectors - from transportation and trade to construction, services, and creative industries. Thanks to its wide range of direct, indirect, and induced effects, this sector is increasingly recognized as one of the key drivers of economic growth, structural transformation, and local development. Its role becomes particularly prominent in countries striving to diversify their economic structure, improve regional balance, and create new employment opportunities. In this context, tourism represents a potential not only for increasing gross domestic product and employment, but also for strengthening a country's international position through enhanced competitiveness and the attraction of foreign investment.

Tourism, therefore, plays a significant role in the modern economy, with the capacity to stimulate a broad spectrum of economic activities - from hospitality and transportation to trade and local employment. In the countries of Southeast Europe, including Serbia and its neighbors, tourism is gaining importance as a strategic development activity. Despite shared historical, cultural, and natural characteristics, each country in the region is developing at a different pace and based on distinct models of tourism valorization. Factors such as accessibility, infrastructure, marketing visibility, and political stability play a crucial role in shaping tourism flows and financial outcomes.

This paper analyzes Serbia's position in relation to neighboring countries by comparing the volume and quality of tourism traffic, considering both quantitative indicators and structural factors that influence the sustainability and competitiveness of the tourism sector. The focus is on assessing the financial impact of tourism and its role in the overall economic development of the region. Through this analysis, the aim is to identify opportunities for improving Serbia's tourism development policy, drawing on the experiences and results of its neighbors.

## **Literature review**

The analysis of the economic aspects of tourism flows requires reliance on a multidisciplinary body of literature, encompassing theoretical and empirical research in the fields of tourism, macroeconomics, regional development, and statistical modeling. A review of relevant literature highlights the importance of tourism as a driver of economic growth, a mechanism for increasing employment, and a tool for improving the current account balance - particularly in countries rich in natural and cultural resources. Studies focusing on the

economic contribution of tourism often point to a strong correlation between the growth of tourism activities, gross domestic product (GDP), and employment. Emphasis is placed on the direct and indirect effects tourism has on national and regional economies, especially in developing and tourism-dependent countries.

The classical theoretical framework for analyzing tourism's economic contribution is based on works such as Archer (1977) and Fletcher (1989), who laid the foundations for input-output analyses to assess the direct, indirect, and induced effects of tourism. These models were later refined through the application of the Tourism Satellite Account (TSA) methodology, developed by the World Tourism Organization in collaboration with the OECD and the European Commission. TSA represents a standardized approach to measuring tourism activity within the system of national accounts.

In the context of quantitative measurement of tourism's impact, numerous studies use data from the World Travel & Tourism Council (WTTC), which provides reliable indicators of tourism's direct and total contribution to GDP and employment. In 2024, tourism generated approximately 10% of global GDP and supported over 357 million jobs (Travel & Tourism Economic Impact Research – EIR). These figures confirm the systemic importance of the sector, not only in developed but also in transitional economies. An empirical study by Čerović et al. (2015) shows that an increase in tourist arrivals positively affects economic growth in Western Balkan countries, particularly in Montenegro. The authors use a panel regression model to assess tourism's impact on GDP and highlight differences among countries in their degree of tourism dependence. Similarly, Vuković et al. (2023) examine the effect of employment growth in tourism on GDP using a dynamic panel threshold model. Their results indicate that a 1% increase in tourism employment can raise GDP by between 0.15% and 0.61%, depending on the country's institutional and market context.

Beyond contemporary analyses, a meta-analysis conducted by Giotis (2022), covering 36 studies, shows an average regression coefficient of 0.9 between tourism and employment. The author concludes that most research confirms tourism's significant impact on the labor force, especially in regions with well-developed tourism products. In the case of Western Balkan countries, a longitudinal analysis by Selimi et al. (2017) reveals that a 1% increase in international tourist arrivals can contribute approximately 0.08% to the growth of real per capita income, with North Macedonia standing out as a statistically significant example.

Regarding Southeast European countries, research by Burlea-Schiopoiu and Ozuni (2021) emphasizes the potential of Albania's tourism sector, while Csapó and Marton (2017) highlight the role of spa and wellness tourism in Hungary. Additionally, Novović and Lukić (2025) conduct a comparative analysis of the

impact of tourism flows on macroeconomic indicators in Serbia and Bosnia and Herzegovina, while Ružić and Demonja (2013) examine the natural and anthropogenic foundations of tourism in Croatia, emphasizing the uneven spatial distribution of tourism flows. In the context of Serbia and neighboring countries, the literature underscores the importance of strategic investments in infrastructure, sustainable tourism development, and international market promotion as key competitiveness factors (Hall, 1998; Ubavić, 2016; Jankovic et al., 2017). These analyses point to the significance of institutional frameworks, investment climate, and marketing strategies in shaping tourism demand.

In Serbia and its neighboring countries, protected natural areas hold significant potential, as discussed by Štetić et al. (2019), who highlight opportunities for developing sustainable tourism based on natural values. A special contribution to understanding the financial aspect of tourism is provided by studies analyzing tourism revenues, expenditures, investments in the hospitality sector, and the sustainability of tourism-driven economic development (Mihalič, 2000; Dwyer et al., 2003; Palazov & Stanchev, 2007). This literature emphasizes the need for balancing tourism growth with resource preservation, as well as strengthening institutional support for collecting, analyzing, and utilizing statistical data in decision-making processes. Furthermore, contemporary research highlights the connection between tourism and broader macroeconomic indicators, including various methods used to measure tourism's impact on economic growth (Ivanov & Webster, 2013; Brida et al., 2016; Temjanovski et al., 2018). These studies provide an empirical foundation for understanding how tourism functions as a transmission mechanism within national economies.

For the purposes of this research, official statistical publications from national statistical offices of Serbia (Republički zavod za statistiku, 2024a), Bosnia and Herzegovina (Agencija za statistiku Bosne i Hercegovine, 2024; Federalni zavod za statistiku Bosne i Hercegovine, 2024; Republički zavod za statistiku, 2024b), Albania (INSTAT, 2022, 2025), North Macedonia (Државен завод за статистика, 2025), Montenegro (Monstat, 2024), and other countries in the region were used, along with databases from Eurostat. These sources enable valid comparative analysis and contribute to the standardization of indicators used in regional research.

Based on the reviewed literature, it can be concluded that there is a solid theoretical and empirical foundation for studying tourism flows through a financial-economic approach. However, there remains a need for deeper research into specific factors influencing divergences among countries in the region, particularly regarding the structure of tourism supply, seasonality, and investment capacity.

## **Research methodology**

The methodological framework of this research is based on a comparative quantitative analysis of key indicators of tourism flows and their economic significance in Serbia and neighboring countries. The aim is to identify similarities, differences, and development trends in the field of tourism, with particular emphasis on financial aspects, including international tourism revenues and tourism's contribution to gross domestic product (GDP) and employment. The analysis relies on secondary data collected from reliable and publicly available sources. Key data sources include reports from Eurostat, national statistical offices of the analyzed countries, and publications from the World Travel & Tourism Council (WTTC). WTTC estimates of the direct and total economic contribution of Travel & Tourism are treated as standardized estimates for comparative purposes and are not assumed to be identical in methodological terms to tourism indicators derived directly from national statistical accounts. Additionally, the study incorporates findings from previous academic and professional research in the field of tourism, which supports and enables comparison of the obtained results. The analysis covers the period from 2019 to 2023, allowing for an overview of the pre-pandemic, pandemic, and post-pandemic phases. This timeframe was carefully selected to provide relevant insights into the transformation and recovery of the tourism sector in the region. Countries included in the comparative analysis, alongside Serbia, are Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Hungary, Montenegro, North Macedonia, and Romania. The selection criteria for these countries are based on geographic proximity, similar historical and economic contexts, and the comparability of tourism indicators. Descriptive statistical methods were applied in the analytical process, focusing on absolute and relative indicators (number of tourist arrivals, number of overnight stays, tourism revenues, contribution of tourism to gross domestic product (GDP), and jobs supported by tourism), as well as rates of change during the analyzed period. Based on these indicators, a comparative analysis of Serbia's position relative to other countries in the region was conducted, identifying key factors influencing the success of tourism development. The results are presented in tabular and narrative form for clarity and ease of interpretation. Special attention was given to the analysis of relevant economic parameters that reflect the economic importance of tourism. The methodological framework also considers potential limitations related to data reliability, including differences in statistical methodologies among countries and constraints of secondary sources. The application of this methodology enables not only a quantitative assessment of tourism's economic contribution but also a deeper understanding of the factors shaping tourism demand and its significance for the region. The methodology provides a

descriptive empirical basis for comparing tourism performance across the selected countries and for identifying areas that warrant further investigation.

## Results and discussion

Serbia and the countries in its vicinity together form a region with an exceptionally favorable tourism position, thanks to the diversity of natural and cultural-historical resources, as well as well-developed transportation connections that enable easy access to various attractions. Their Central European and Balkan location makes the region accessible to a large number of tourists from across Europe, especially via highways, railways, and air routes, while the Danube River further connects multiple countries through river tourism.

The combination of mountainous, continental, and Mediterranean environments offers opportunities for various forms of tourism, ranging from cultural and religious, to spa and rural, as well as summer and winter tourism. Proximity to developed markets and the EU membership of certain countries enhance the tourism significance of this area, enabling regional cooperation and joint promotion of the countries involved. Table 1 presents the basic socio-economic characteristics of the analyzed area.

Table 1: Basic Data for Serbia and Neighboring Countries (2023)

| Country                | Area (km <sup>2</sup> ) | Population (2023) | Population density (people/km <sup>2</sup> ) | GDP (EUR million, 2023) | GDP per capita (EUR) | Employment Rate (% of working-age population) |
|------------------------|-------------------------|-------------------|----------------------------------------------|-------------------------|----------------------|-----------------------------------------------|
| Serbia                 | 88,499*                 | 6,641,197         | 74.8                                         | 75,204                  | 11,355               | 69.6                                          |
| Albania                | 28,789                  | 2,761,785         | 95.9                                         | 21,782                  | 7,887                | 53.5                                          |
| Bosnia and Herzegovina | 51,197                  | 3,345,818         | 65.4                                         | 25,524                  | 7,438                | 55.9                                          |
| Bulgaria               | 110,370                 | 6,447,710         | 58.6                                         | 94,709                  | 14,691               | 76.2                                          |
| Montenegro             | 13,812                  | 616,695           | 45.6                                         | 6,964                   | 10,988               | 48.3                                          |
| Croatia                | 56,594                  | 3,850,894         | 69.0                                         | 78,060                  | 19,798               | 70.8                                          |
| Hungary                | 93,011                  | 9,599,744         | 105.1                                        | 197,902                 | 20,500               | 80.7                                          |
| North Macedonia        | 25,713                  | 1,829,954         | 71.2                                         | 14,583                  | 7,977                | 45.7                                          |
| Romania                | 238,391                 | 19,054,548        | 81.4                                         | 324,369                 | 17,015               | 68.7                                          |
| Region (Total)         | 706,376                 | 54,148,345        | 76.7                                         | 839,097                 | 15,496               | 63.3                                          |

\* Including Kosovo and Metohija.

Source: Authors based on Eurostat data and national statistical reports

The data from Table 1 indicate that Serbia and its neighboring countries represent a territorially and demographically diverse area. Serbia has approximately 6.6 million inhabitants (excluding Kosovo and Metohija), placing it among the medium-sized countries in the region. Hungary (over 9.5

million) and Romania (over 19 million) have larger populations, while Montenegro is the smallest, with only 616,000 inhabitants. The highest population densities are found in Hungary and Albania - 105.1 and 95.9 people per km<sup>2</sup> respectively - while Montenegro has the lowest (45.6). The region is demographically varied, with just over 54 million inhabitants, and is marked by trends of depopulation and migration present in nearly all countries. Covering more than 700,000 km<sup>2</sup>, the region holds significant strategic and developmental potential.

Serbia has a notable GDP within the region - €75.2 billion - but still lags behind more developed neighbors such as Romania (€324.4 billion), Hungary (€197.9 billion), and Croatia (€78 billion). Romania has the largest economy in the region, while Montenegro has the smallest, with only €7 billion. These figures highlight the economic disparities among geographically close countries with vastly different levels of development. Serbia's GDP per capita stands at approximately €11,355, similar to Montenegro's (€10,988). Higher GDP per capita values are recorded in Hungary (€20,500), Croatia (€19,798), Romania (€17,015), and Bulgaria (€14,691), while the lowest are in Bosnia and Herzegovina (€7,438) and Albania (€7,887). The total regional GDP amounts to €839 billion, with an average GDP per capita of €15,496.

The highest employment rate among the working-age population (ages 20–64) is found in Hungary (80.7%), followed by Croatia (70.8%), Serbia (69.6%), and Romania (68.7%). The lowest employment rates are in Montenegro (48.3%) and North Macedonia (45.7%). Overall, the region is highly diverse in terms of economic indicators, which influences economic, political, and regional cooperation - where tourism plays a particularly important role.

Due to its central position in the Balkans and its proximity to a number of countries in Southeast and Central Europe, Serbia has considerable potential for developing regional tourism. Good relations with neighboring and nearby states can facilitate border crossings, joint tourism projects, the promotion of cultural and natural diversity, and the development of cross-border routes, such as cycling, wine, and hiking trails. Additionally, countries with higher GDP per capita, such as Croatia and Hungary, represent important potential outbound markets. Strong transportation connectivity and joint promotional efforts can facilitate tourist arrivals, while political stability and perceptions of safety may further contribute to the attractiveness of the region. Many visitors also combine several countries within a single trip, creating opportunities for regional tourism cooperation.

## Dynamics of tourism flows - Quantitative comparative aspect

Tourism flows in Serbia and neighboring countries have undergone significant changes in recent years due to global and regional factors, including the pandemic, geopolitical events, and economic conditions. This is best illustrated by the tabular overview of the total number of tourists (domestic and foreign) and overnight stays.

Table 2: Tourist Arrivals and Overnight Stays – Serbia and Neighboring Countries (2019–2023)

| Country            | Indicator       | 2019        | 2020       | 2021        | 2022        | 2023        | % Change 2023–2019 |
|--------------------|-----------------|-------------|------------|-------------|-------------|-------------|--------------------|
| Serbia             | Arrivals        | 3,689,983   | 1,817,929  | 2,589,400   | 3,869,235   | 4,192,797   | 13.6               |
|                    | Overnight stays | 10,073,299  | 6,201,290  | 8,162,430   | 12,245,613  | 12,440,935  | 23.5               |
| Albania*           | Arrivals        | 12,103,767  | 5,419,417  | 9,616,679   | 13,009,619  | 17,125,595  | 41.5               |
| B. and Herzegovina | Arrivals        | 1,641,226   | 501,026    | 971,604     | 1,477,189   | 1,754,882   | 6.9                |
|                    | Overnight stays | 3,374,751   | 1,242,519  | 2,258,373   | 3,221,691   | 3,690,900   | 9.4                |
| Bulgaria           | Arrivals        | 8,187,634   | 4,023,763  | 5,647,634   | 7,621,234   | 8,640,448   | 5.5                |
|                    | Overnight stays | 27,154,791  | 11,968,483 | 17,620,268  | 24,173,291  | 26,865,046  | -1.1               |
| Montenegro         | Arrivals        | 2,645,217   | 444,065    | 1,670,879   | 2,183,975   | 2,613,306   | -1.2               |
|                    | Overnight stays | 14,455,920  | 2,587,255  | 9,872,573   | 12,428,787  | 16,389,279  | 13.4               |
| Croatia            | Arrivals        | 19,553,495  | 6,997,382  | 12,778,754  | 17,769,145  | 19,486,573  | -0.3               |
|                    | Overnight stays | 91,178,083  | 40,771,344 | 70,171,684  | 90,005,383  | 92,341,148  | 1.3                |
| Hungary            | Arrivals        | 13,454,090  | 5,638,715  | 6,565,870   | 11,287,199  | 12,202,877  | -9.3               |
|                    | Overnight stays | 33,199,961  | 14,598,682 | 17,370,771  | 29,446,040  | 30,488,308  | -8.2               |
| North Macedonia    | Arrivals        | 1,184,963   | 467,514    | 702,463     | 969,277     | 1,168,730   | -1.4               |
|                    | Overnight stays | 3,262,398   | 1,697,535  | 2,313,543   | 2,848,604   | 3,135,767   | -3.9               |
| Romania            | Arrivals        | 13,277,449  | 6,398,137  | 10,042,590  | 12,374,615  | 13,665,729  | 2.9                |
|                    | Overnight stays | 29,889,894  | 14,454,464 | 22,422,471  | 26,614,221  | 29,205,568  | -2.3               |
| Region (Total)#    | Arrivals        | 75,737,824  | 31,707,948 | 50,585,873  | 70,561,488  | 80,850,937  | 6.8                |
|                    | Overnight stays | 212,589,097 | 93,521,572 | 150,192,113 | 200,983,630 | 214,556,951 | 0.9                |

\* For Albania, the number of arrivals refers to entries of Albanian and foreign citizens recorded at the national border, as reported by INSTAT, and therefore is not fully comparable with tourist arrivals recorded through accommodation statistics in the other countries. Data on overnight stays from the accommodation statistics were not incorporated into Table 2 because a fully harmonized annual series comparable with the data used for the other countries was not available in the source set used for this analysis.

# Accordingly, the regional total for tourist arrivals should be interpreted as an aggregate of reported national indicators rather than as a fully harmonized regional measure of tourist arrivals. The regional total for overnight stays excludes Albania because a comparable annual series was not incorporated into the analysis.

Source: Authors, based on Eurostat and national statistical reports

Based on the data on tourist arrivals and overnight stays for Serbia and the region from 2019 to 2023, the following conclusions and country-specific comments can be drawn, with emphasis on post-pandemic recovery and tourism trends.

Serbia shows a stable recovery and growth. Between 2019 and 2023, tourist arrivals increased by 13.6%, while overnight stays increased by 23.5%. These growth rates were higher than the corresponding regional aggregate changes reported in Table 2, although the regional figures should be interpreted with caution because of differences in statistical coverage, particularly in the case of Albania. The growth in tourism activity was accompanied by an increase in foreign tourist arrivals and a broader diversification of source markets. Major tourism destinations include Belgrade (urban tourism, nightlife, and conferences), Novi Sad (cultural events and festivals), Zlatibor, Kopaonik and Tara (mountain and winter tourism), and Vrnjačka Banja and Sokobanja (spa tourism). The available data indicate continued development of rural, spa, cultural, and gastronomic tourism, while improved air connectivity may also have contributed to the expansion of international visitor flows.

Albania records the highest increase in the reported arrival indicator among the countries included in the comparison, with a 41.5% increase between 2019 and 2023. However, this indicator is not fully comparable with the tourist-arrival statistics reported for the other countries, as it refers to entries of Albanian and foreign citizens recorded at national border points rather than arrivals recorded through accommodation statistics. Consequently, the Albanian figure should be interpreted as an indicator of cross-border movements rather than as a fully harmonized measure of tourist arrivals. Albania nevertheless recorded strong growth in international tourism revenues during the same period, suggesting a substantial expansion of its international tourism activity. The country's coastline and cultural and natural attractions contribute to its tourism potential, although differences in infrastructure and statistical coverage should be taken into account when comparing Albania with the other countries in the sample. It stands out as one of the most promising destinations, especially among young travelers, digital nomads, and tourists from Western Europe, thanks to competitive prices and an attractive coastline. Popular coastal areas include Durrës, Sarandë, and Vlorë. Challenges remain in underdeveloped infrastructure, which may limit full growth potential (Burlea-Schiopoiu & Ozuni, 2021).

Bosnia and Herzegovina shows steady recovery, with a 6.9% increase in arrivals and 9.4% in overnight stays. The development of tourism may be influenced by factors such as the level of international promotion, infrastructure, and the

broader institutional and political environment (Novović & Lukić, 2025). The country is increasingly positioned as a destination for sustainable and authentic tourism, known for its preserved nature and rich cultural heritage. Historic towns, natural landscapes, and wine-adventure routes make it a serious regional competitor.

Bulgaria shows a modest increase in arrivals (5.5%) but a decline in overnight stays (-1.1%), suggesting shorter average stays. The simultaneous increase in arrivals and decline in overnight stays indicates a reduction in average length of stay. The available data alone do not establish whether this resulted from changes in destination attractiveness, source markets, travel behavior, or other factors. Tourism is traditionally focused on summer (Black Sea) and winter (Bansko) tourism, especially among Eastern European visitors (Palazov & Stanchev, 2007). Affordable prices remain a key advantage.

Montenegro's tourist arrivals in 2023 are slightly below 2019 levels (-1.2%), but overnight stays increased by 13.4%, indicating longer visitor stays. Tourism represents one of the most important sectors of the Montenegrin economy, with a particularly high total contribution to GDP. Main sources of tourists: Serbia, Russia, Ukraine, EU countries. Popular destinations: Budva, Kotor, Herceg Novi, Ulcinj, Durmitor. Besides coastal tourism, mountain and adventure tourism are growing (Jankovic et al., 2017).

Croatia had broadly returned to its pre-pandemic level by 2023, with arrivals remaining 0.3% below and overnight stays 1.3% above the 2019 level. The relatively limited change compared with 2019 may reflect a combination of market maturity, changing travel patterns, price conditions, and competitive pressures within the regional tourism market. Still, Croatia is one of the leading tourist destinations in the Balkans, recording approximately 19.5 million tourist arrivals in 2023. Focus: coastal tourism (Dubrovnik, Split, Zadar, Istria) and inland tourism (Zagreb, Plitvice).

Hungary, despite being one of the more developed countries in the region, recorded the largest decline: -9.3% in arrivals and -8.2% in overnight stays. The slower recovery may be associated with changes in travel restrictions, inflationary pressures, and changes in international travel demand; however, the present analysis does not allow these factors to be identified as causal determinants. Still, Hungary remains a major Central-Eastern European destination. Key trends: wellness and health tourism, digital technologies, smart-city initiatives in Budapest, and domestic tourism incentives (Csapó & Marton, 2017). EU membership supports promotion and tourism development.

North Macedonia recorded a near-complete recovery in tourist arrivals by 2023. The number of tourist arrivals reached 1,168,730, approximately 1.4% below the 2019 level of 1,184,963. However, the number of overnight stays amounted

to 3,135,767 in 2023, which was approximately 3.9% below the 2019 level of 3,262,398. The available data therefore indicate that, although the number of tourist arrivals had almost returned to its pre-pandemic level, overnight stays had not yet fully recovered. The divergence between the two indicators suggests that the post-pandemic recovery in North Macedonia was characterized by a relatively stronger recovery in the number of visitors than in the total volume of overnight stays. However, the available aggregate indicators alone do not allow a precise determination of the factors underlying this development. The country's major tourism destinations include Skopje and Ohrid, while cultural, lake, mountain, and nature-based tourism represent important components of its tourism offer (Temjanovski et al., 2018). The observed results therefore indicate that North Macedonia had largely restored its pre-pandemic tourist-arrival volume by 2023, while the number of overnight stays remained slightly below the 2019 level.

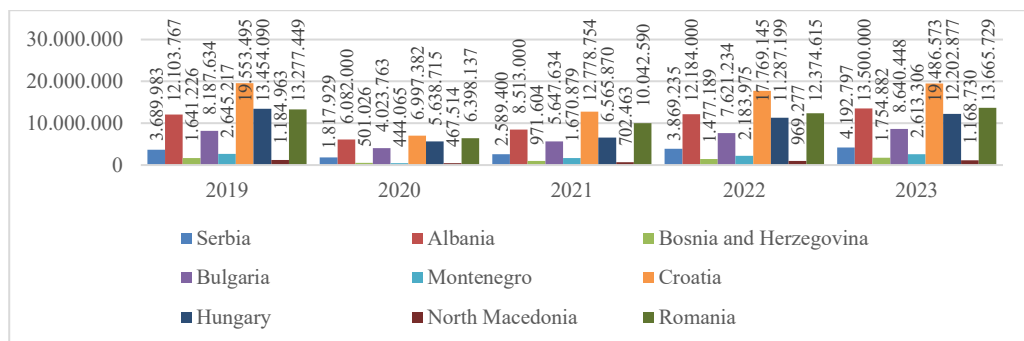
Romania records a modest increase in arrivals (2.9%) and a slight decline in overnight stays (-2.3%), indicating a reduction in the average number of overnight stays per arrival. Tourism focuses on nature and culture, with attractions like Transylvania, Bucharest, and the Danube Delta. Policy priorities identified in national tourism-development documents include sustainable development and digitalization. Challenges include uneven infrastructure outside urban centers and the need for stronger international promotion. Specialized tourism (wine, rural, adventure) has strong growth potential (Government of Romania, 2024).

Overall, the data indicate a broad recovery of tourism activity in the observed region between 2019 and 2023. Tourist arrivals increased by approximately 6.8%, while overnight stays increased by approximately 0.9% based on the corrected country-level data. These aggregate figures should nevertheless be interpreted with caution because the indicators are not fully harmonized across all countries, most notably in the case of Albania, where the reported arrival indicator is based on border-crossing records rather than accommodation statistics. Within this context, Serbia recorded stronger growth in both arrivals and overnight stays than the regional aggregate, while substantial differences remained among individual countries.

Serbia and Albania contribute substantially to the increase in the reported arrival indicators, although the Albanian figure is not directly comparable with accommodation-based tourist arrivals. Hungary recorded declines in both arrivals and overnight stays relative to 2019, while North Macedonia showed a mixed pattern, with tourist arrivals remaining slightly below the 2019 level and overnight stays declining by approximately 3.9%. For Serbia, further development of rural, spa, cultural, and gastronomic tourism, together with

efforts to extend visitor stays, may strengthen the economic effects of tourism. The comparative dynamics of tourist arrivals are presented in Graph 1.

Graph 1: Tourist Arrivals in Serbia and Neighboring Countries, 2019–2023



Source: Authors based on Table 2

### Tourism revenues – Financial aspect of comparative analysis

Tourism revenues represent a significant component of the economy of Serbia and its neighboring countries. In recent years, the region has experienced a steady increase in interest from both domestic and international visitors, contributing to the development of hospitality, transportation, trade, and other related sectors. Natural beauty, rich cultural and historical heritage, and culinary diversity in Serbia and surrounding countries are key factors in their positioning on the international tourism market. Although there are differences in the level of development of tourism infrastructure, these countries are investing in promotion, modernization of services, and preservation of attractive destinations, with the aim of making tourism an even more important driver of economic growth. A comparative overview of international tourism revenues over a five-year period is presented in the following table.

Table 3: International Tourism Revenues (in million USD) – Serbia and Neighboring Countries, 2019–2023

| Country                | 2019   | 2020   | 2021   | 2022   | 2023   | % Change 2023–2019 |
|------------------------|--------|--------|--------|--------|--------|--------------------|
| Serbia                 | 1,604  | 1,245  | 1,882  | 2,576  | 2,770  | 72.7               |
| Albania                | 2,332  | 1,129  | 2,262  | 2,990  | 4,512  | 93.5               |
| Bosnia and Herzegovina | 1,173  | 431    | 967    | 1,414  | 1,619  | 38.0               |
| Bulgaria               | 4,294  | 1,693  | 2,483  | 3,413  | 4,032  | -6.1               |
| Montenegro             | 1,230  | 165    | 896    | 1,111  | 1,630  | 32.5               |
| Croatia                | 11,753 | 5,493  | 10,773 | 13,445 | 15,785 | 34.3               |
| Hungary                | 7,283  | 3,229  | 4,157  | 5,573  | 7,954  | 9.2                |
| North Macedonia        | 396    | 252    | 385    | 481    | 599    | 51.3               |
| Romania                | 3,576  | 1,441  | 3,294  | 4,711  | 4,975  | 39.1               |
| Region (Total)         | 33,641 | 15,078 | 27,099 | 35,714 | 43,876 | 30.4               |

Source: Authors, based on World Tourism Organization, 2024.

The data presented show that all analyzed countries experienced a sharp decline in international tourism revenues in 2020, as a direct consequence of the COVID-19 pandemic, border closures, and restrictions on international movement. However, the following three years saw a gradual - and in some cases accelerated - recovery, with certain countries surpassing their pre-pandemic revenue levels by 2023.

Between 2019 and 2023, Serbia's international tourism revenues demonstrated significant growth dynamics despite the crisis. In 2019, revenues amounted to USD 1,604 million, dropping to USD 1,245 million in 2020 due to international travel restrictions. A steady recovery followed: USD 1,882 million in 2021, USD 2,576 million in 2022, and a record USD 2,770 million in 2023 - an increase of 72.7% compared to 2019. The increase may be associated with the broader recovery of international travel and the continued development and promotion of Serbia as a regional tourism destination; however, the present analysis does not establish a causal relationship.

Albania recorded exceptionally strong growth in international tourism revenues during the same period, despite the pandemic-induced decline. Revenues fell from USD 2,332 million in 2019 to USD 1,129 million in 2020, nearly halved due to global travel restrictions. By 2021, revenues nearly recovered to USD 2,262 million, rising to USD 2,990 million in 2022 and peaking at USD 4,512 million in 2023 - an increase of 93.5% compared to 2019. This substantial growth suggests Albania has become one of the fastest-growing tourism destinations in the region, owing to its natural assets, competitive pricing, and enhanced international recognition.

Bosnia and Herzegovina showed a clear recovery trend between 2019 and 2023. Revenues dropped from USD 1,173 million in 2019 to just USD 431 million in 2020, reflecting the impact of global health measures and border closures. Partial recovery followed: USD 967 million in 2021, USD 1,414 million in 2022, and USD 1,619 million in 2023. The total increase of 38% compared to 2019 indicates a stable but slower recovery, with potential for further development and stronger international promotion.

Bulgaria's international tourism revenues followed global trends of pandemic-induced decline and gradual recovery. Revenues fell from USD 4,294 million in 2019 to USD 1,693 million in 2020. Recovery progressed through USD 2,483 million in 2021 and USD 3,413 million in 2022, reaching USD 4,032 million in 2023 - nearly returning to pre-pandemic levels. Although not yet exceeding 2019 figures, Bulgaria demonstrates stable growth, reaffirming its position as a key tourism destination in Southeast Europe, particularly due to its Black Sea resorts and developed infrastructure.

Montenegro experienced pronounced fluctuations in international tourism revenues, with a sharp decline during the pandemic and gradual recovery thereafter. Revenues dropped from USD 1,230 million in 2019 to just USD 165 million in 2020 - one of the steepest declines in the region. Recovery followed: USD 896 million in 2021, USD 1,111 million in 2022, and USD 1,630 million in 2023 - a 32.5% increase compared to 2019. This growth is consistent with a strong recovery of international tourism activity in Montenegro.

Croatia recorded the highest international tourism revenues among regional countries during the observed period, with a strong recovery and growth trend. Revenues fell from USD 11,753 million in 2019 to USD 5,493 million in 2020. By 2021, revenues nearly doubled to USD 10,773 million, surpassing pre-pandemic levels in 2022 with USD 13,445 million, and reaching a record USD 15,785 million in 2023 - an increase of 34.3% compared to 2019. The country's developed coastal tourism base and strong international market position provide an important context for interpreting these results.

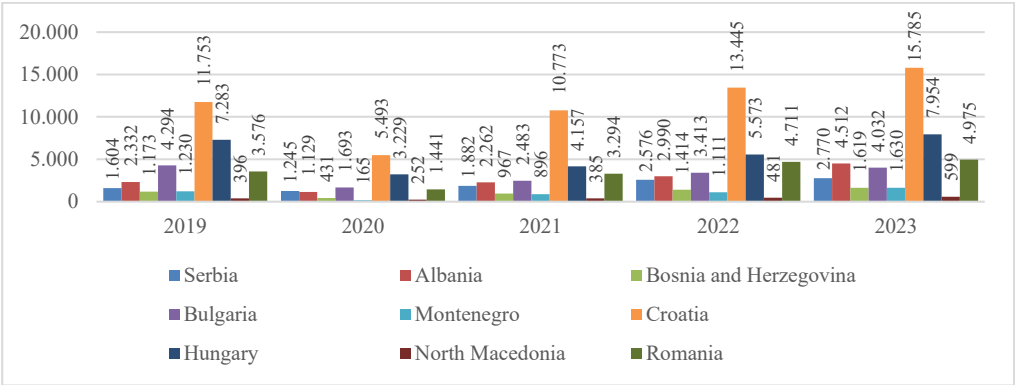
Hungary underwent a phase of sharp decline and gradual recovery in international tourism revenues between 2019 and 2023, with moderate growth compared to pre-pandemic levels. Revenues dropped from USD 7,283 million in 2019 to USD 3,229 million in 2020. Recovery followed: USD 4,157 million in 2021, USD 5,573 million in 2022, and USD 7,954 million in 2023 - an increase of 9.2% compared to 2019. This moderate growth reflects the stability of Hungary's tourism sector, which relies on rich cultural offerings, spa tourism, and urban destinations like Budapest, within a tourism structure that includes cultural, wellness, and urban tourism.

North Macedonia recorded a gradual recovery in international tourism revenues between 2019 and 2023. Revenues fell from USD 396 million in 2019 to USD 252 million in 2020. By 2021, revenues approached pre-pandemic levels at USD 385 million, rising to USD 481 million in 2022 and USD 599 million in 2023 - an increase of 51.3% compared to 2019. This growth indicates increasing tourist interest, driven by cultural and historical attractions, natural beauty, affordable prices, and efforts to improve infrastructure and international promotion.

Romania demonstrated strong recovery and moderate growth in international tourism revenues after the pandemic-induced decline. Revenues dropped from USD 3,576 million in 2019 to USD 1,441 million in 2020. By 2021, revenues nearly doubled to USD 3,294 million, rising to USD 4,711 million in 2022 and USD 4,975 million in 2023 - an increase of 39.1% compared to 2019. The recovery occurred alongside continued efforts to promote destinations and improve tourism services, although the contribution of these factors cannot be isolated using the present methodology.

Total international tourism revenues for the region encompassing Serbia and neighboring countries amounted to USD 33,641 million in 2019, serving as a pre-pandemic benchmark. In 2020, revenues fell to USD 15,078 million due to the COVID-19 pandemic - a decline of over 50% compared to the previous year. A significant recovery followed in 2021, with revenues increasing to USD 27,099 million, followed by a further rise to USD 35,714 million in 2022 and USD 43,876 million in 2023. Compared with 2019, total international tourism revenues increased by 30.4% in 2023. The comparative dynamics of international tourism revenues are presented in Graph 2.

Graph 2: International Tourism Revenues (in Millions of USD) in Serbia and Neighboring Countries, 2019–2023



Source: Authors based on Table 3

In general, the region has demonstrated a high degree of recovery in the post-pandemic period, with most countries surpassing their previous levels of tourism revenues. However, there are pronounced differences in the intensity and structure of this growth, shaped by varying national policies, the degree of destination attractiveness, available capacities, and the effectiveness of adaptation to new demands and expectations in the tourism market.

### Contribution of tourism to gross domestic product and employment

In Serbia and neighboring countries, tourism is increasingly recognized as one of the pillars of sustainable economic development. Despite varying levels of development in tourism offerings, most of these countries recorded an increase in the absolute economic contribution of tourism in the post-pandemic period, although its relative contribution to GDP did not increase uniformly across all countries. Examining these trends through a comparative analysis of key macroeconomic indicators - especially tourism’s share in gross domestic product (GDP) and employment - provides deeper insight into the significance

and potential of tourism as a driver of economic growth at both national and regional levels.

Table 4: Contribution of Tourism to GDP – Serbia and Neighboring Countries in 2022 and 2023

| Country                   | Direct Contribution to GDP |                           | Total Contribution to GDP  |                            |
|---------------------------|----------------------------|---------------------------|----------------------------|----------------------------|
|                           | 2022                       | 2023                      | 2022                       | 2023                       |
| Serbia                    | RSD 166.4 bn<br>(2.6%)     | RSD 192.9 bn<br>(2.3%)    | RSD 444.3 bn<br>(6.9%)     | RSD 531.2 bn<br>(6.4%)     |
| Albania                   | ALL 193.1 bn<br>(9.4%)     | ALL 244.7 bn<br>(10.7%)   | ALL 444.3 bn<br>(21.6%)    | ALL 564.7 bn<br>(24.6%)    |
| Bosnia and<br>Herzegovina | BAM 1,285.5 mil<br>(2.8%)  | BAM 1,677.4<br>mil (3.4%) | BAM 3,477.1 mil<br>(7.4%)  | BAM 4,403.2<br>mil (8.8%)  |
| Bulgaria                  | BGN 2.8 bn<br>(1.8%)       | BGN 3.5 bn<br>(2.0%)      | BGN 10.0 bn<br>(6.5%)      | BGN 12.3 bn<br>(6.9%)      |
| Montenegro                | EUR 411.5 mil<br>(7.7%)    | EUR 619.3 mil<br>(9.3%)   | EUR 1,300.9 mil<br>(24.5%) | EUR 1,944.8<br>mil (29.1%) |
| Croatia*                  | HRK 8.2 bn<br>(12.2%)      | HRK 9.0 bn<br>(12.0%)     | HRK 17.3 bn<br>(25.8%)     | HRK 19.3 bn<br>(25.8%)     |
| Hungary                   | HUF 1,533.6 bn<br>(2.3%)   | HUF 1,818.8<br>bn (2.4%)  | HUF 4,395.6 bn<br>(6.6%)   | HUF 5,544.5<br>bn (7.4%)   |
| North<br>Macedonia        | MKD 18.0 bn<br>(2.3%)      | MKD 16.8 bn<br>(1.9%)     | MKD 45.1 bn<br>(5.6%)      | MKD 44.4 bn<br>(5.1%)      |
| Romania                   | RON 23.0 bn<br>(1.6%)      | RON 25.8 bn<br>(1.6%)     | RON 78.3 bn<br>(5.5%)      | RON 90.0 bn<br>(5.6%)      |

\* For Croatia, the 2022 and 2023 WTTC estimates are presented in HRK, following the currency denomination used in the original WTTC dataset. This does not imply that HRK remained the official currency of Croatia in 2023.

Source: Authors, based on World Travel & Tourism Council (2024, 2023). Travel & Tourism Economic Impact – Serbia and Neighboring Countries

The analysis of direct and total contributions of tourism to GDP across the region reveals significant differences in the development level and importance of the tourism sector within national economies. Two representative years - 2022 and 2023 - were selected for this analysis.

In 2022, Serbia recorded a direct tourism contribution to GDP of RSD 166.4 billion, accounting for 2.6% of total GDP. In 2023, this amount increased to RSD 192.9 billion, although its relative share declined slightly to 2.3%. The total contribution was more substantial: RSD 444.3 billion (6.9%) in 2022 and RSD 531.2 billion (6.4%) in 2023. These figures indicate stable growth in absolute terms, but also a partial deceleration in tourism's relative significance within the overall economic structure.

Albania reported a significantly higher share of tourism in GDP, with direct contributions of ALL 193.1 billion (9.4%) in 2022 and ALL 244.7 billion (10.7%) in 2023. The total contribution was even more pronounced: ALL 444.3

billion (21.6%) in 2022 and ALL 564.7 billion (24.6%) in 2023, highlighting a high degree of dependence of the Albanian economy on tourism. This trend reflects the country's strong orientation toward developing tourism as a key source of national income.

Bosnia and Herzegovina achieved notable growth - direct contribution increased from BAM 1,285.5 million (2.8%) in 2022 to BAM 1,677.4 million (3.4%) in 2023, while total contribution rose from BAM 3,477.1 million (7.4%) to BAM 4,403.2 million (8.8%). These indicators are consistent with a broader recovery of tourism activity; however, the present analysis does not establish whether infrastructure investment or changes in urban tourism were specific determinants of this growth.

Bulgaria recorded moderate growth - direct contribution amounted to BGN 2.8 billion (1.8%) in 2022 and increased to BGN 3.5 billion (2.0%) in 2023. Total contribution rose from BGN 10.0 billion (6.5%) to BGN 12.3 billion (6.9%), with seasonal tourism, particularly along the Black Sea coast, representing an important component of the country's tourism activity.

Montenegro experienced pronounced growth - direct contribution rose from EUR 411.5 million (7.7%) in 2022 to EUR 619.3 million (9.3%) in 2023, while total contribution increased from EUR 1,300.9 million (24.5%) to EUR 1,944.8 million (29.1%). These figures confirm tourism's pivotal role in Montenegro's economy and its dependence on the success of the summer season.

Croatia traditionally stands out as the country with one of the highest shares of tourism in GDP in the region. In 2022, direct contribution reached HRK 8.2 billion (12.2%), increasing to HRK 9.0 billion (12.0%) in 2023. Total contribution amounted to HRK 17.3 billion (25.8%) and HRK 19.3 billion (25.8%) in 2022 and 2023, respectively. These data underscore the high and stable importance of tourism as a structural component of Croatia's GDP, reflecting its long-term strategic focus on developing the Adriatic coast as a competitive tourist destination.

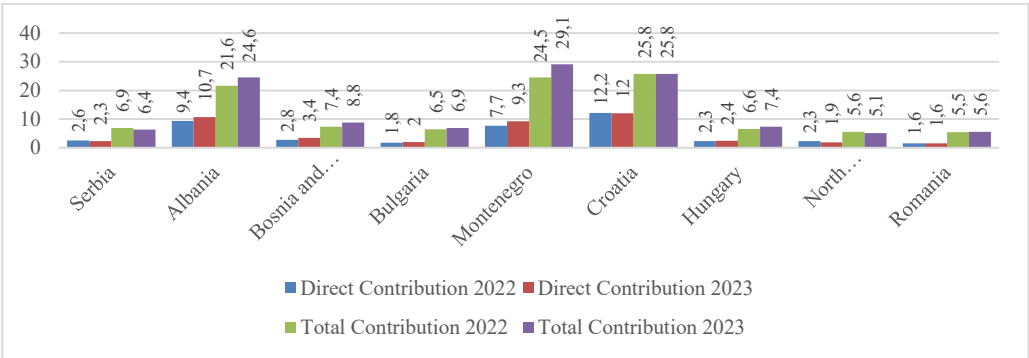
Hungary showed stable growth both in absolute and relative terms - direct contribution increased from HUF 1,533.6 billion (2.3%) in 2022 to HUF 1,818.8 billion (2.4%) in 2023. Total contribution rose more strongly - from HUF 4,395.6 billion (6.6%) to HUF 5,544.5 billion (7.4%). These developments reflect the strengthening of tourism as a support sector for the Hungarian economy, particularly through cultural and conference tourism in Budapest.

North Macedonia recorded a slight decline - direct contribution to GDP fell from MKD 18.0 billion (2.3%) in 2022 to MKD 16.8 billion (1.9%) in 2023. Total contribution also decreased slightly - from MKD 45.1 billion (5.6%) to MKD

44.4 billion (5.1%). These figures point to the need for enhanced institutional support and modernization of the tourism offering.

Romania experienced moderate growth, with direct contribution amounting to RON 23.0 billion (1.6%) in 2022 and RON 25.8 billion (1.6%) in 2023, maintaining a stable share. Total contribution increased from RON 78.3 billion (5.5%) to RON 90.0 billion (5.6%). These data suggest a modest strengthening of the sector, but also highlight potential for further development, particularly in rural and cultural tourism segments. The estimated contribution of tourism to GDP is presented in Graph 3.

Graph 3: Tourism Contribution to GDP (in %) in Serbia and Neighboring Countries, 2022–2023



Source: Authors based on Table 4

Comparative analysis of tourism’s contribution to employment

The comparative analysis reveals significant differences in tourism’s contribution to the economies of the observed countries. While nations such as Croatia, Albania, and Montenegro exhibit a high level of reliance on tourism - entailing greater vulnerability in the event of disruptions to international mobility - countries like Serbia, Romania, and Hungary maintain moderate yet stable sectoral growth, with clear potential for further development. These trends affirm the growing importance of tourism as a factor of economic development and underscore the necessity of strategic planning to maximize its positive effects. Following the analysis of tourism’s impact on gross domestic product, it is equally important to examine its role in employment generation.

Table 5: Tourism Contribution to Employment (Jobs Supported) – Serbia and Neighboring Countries, 2022–2023

| Country | Direct Contribution to Employment |                | Total Contribution to Employment |                 |
|---------|-----------------------------------|----------------|----------------------------------|-----------------|
|         | 2022                              | 2023           | 2022                             | 2023            |
| Serbia  | 57,943 (2.5%)                     | 54,839 (2.3%)  | 167,831 (7.3%)                   | 164,006 (7.0%)  |
| Albania | 97,658 (8.4%)                     | 106,012 (8.3%) | 246,695 (21.2%)                  | 268,666 (21.0%) |

|                        |                 |                 |                 |                 |
|------------------------|-----------------|-----------------|-----------------|-----------------|
| Bosnia and Herzegovina | 28,366 (3.4%)   | 30,177 (3.5%)   | 83,917 (10.0%)  | 89,515 (10.5%)  |
| Montenegro             | 14,500 (6.6%)   | 15,608 (6.5%)   | 50,000 (22.7%)  | 53,453 (22.1%)  |
| Bulgaria               | 93,087 (2.7%)   | 98,274 (2.8%)   | 270,016 (7.8%)  | 283,326 (8.0%)  |
| Croatia                | 216,718 (12.5%) | 223,858 (12.7%) | 428,633 (24.7%) | 448,173 (25.4%) |
| Hungary                | 195,980 (4.2%)  | 203,210 (4.3%)  | 396,857 (8.4%)  | 419,699 (8.9%)  |
| North Macedonia        | 18,764 (2.6%)   | 12,502 (1.8%)   | 51,402 (7.1%)   | 38,478 (5.6%)   |
| Romania                | 143,429 (1.7%)  | 143,652 (1.7%)  | 559,660 (6.6%)  | 573,097 (6.7%)  |

Source: Authors, based on World Travel & Tourism Council (2024, 2023). Travel & Tourism Economic Impact – Serbia and Neighboring Countries

The analysis of direct and total contributions of tourism to employment across the region highlights variations in the sector's role in job creation, which are closely linked to differing levels of sectoral development and the economic structures of the observed countries.

In Serbia, the direct contribution of tourism to employment amounted to 57,943 jobs (2.5%) in 2022, declining slightly to 54,839 (2.3%) in 2023. The total contribution was significantly higher, with 167,831 jobs (7.3%) in 2022 and 164,006 (7.0%) in 2023. These figures indicate a modest decline in absolute employment directly within the tourism sector, yet affirm its stable role as a major employer within the broader tourism-related value chain.

Albania recorded substantial growth in tourism-related employment, with direct employment rising from 97,658 jobs (8.4%) in 2022 to 106,012 (8.3%) in 2023. The total contribution reached an impressive 246,695 jobs (21.2%) in 2022 and further increased to 268,666 (21.0%) in 2023, reflecting the Albanian economy's strong dependence on tourism as a source of employment - both in service industries and related sectors.

Bosnia and Herzegovina experienced growth in direct tourism employment, increasing from 28,366 jobs (3.4%) in 2022 to 30,177 (3.5%) in 2023. The total contribution rose from 83,917 (10.0%) to 89,515 (10.5%), indicating steady sectoral development and its importance in national job creation.

Bulgaria also recorded growth, with direct employment rising from 93,087 (2.7%) in 2022 to 98,274 (2.8%) in 2023. Total employment contribution increased from 270,016 (7.8%) to 283,326 (8.0%), with seasonal employment along the Black Sea coast playing a particularly significant role in boosting local labor markets.

Montenegro, despite relatively small absolute figures, demonstrates tourism's substantial role in employment. Direct employment rose slightly from 14,500 jobs (6.6%) in 2022 to 15,608 (6.5%) in 2023. Total employment contribution increased from 50,000 (22.7%) to 53,453 (22.1%), confirming tourism as a key segment of Montenegro's labor market, especially during peak tourist seasons.

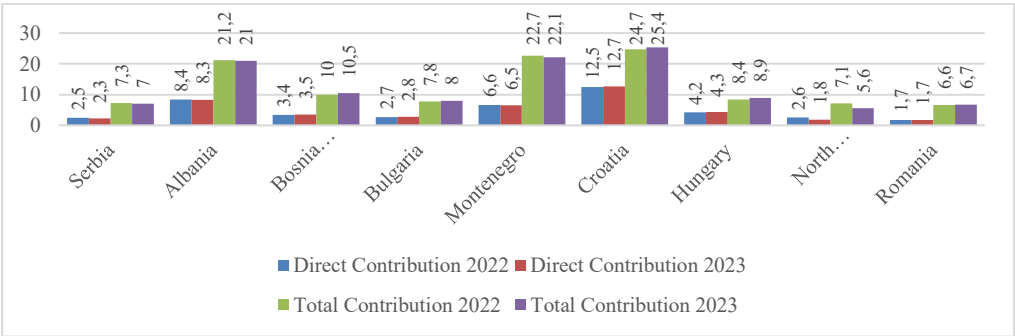
Croatia traditionally stands out as a regional leader in tourism-related employment, with 216,718 jobs (12.5%) directly in tourism in 2022, increasing to 223,858 (12.7%) in 2023. The total contribution was exceptionally high - 428,633 jobs (24.7%) in 2022 and 448,173 (25.4%) in 2023 - indicating that tourism accounts for nearly a quarter of total employment in the country. These figures underscore tourism’s critical role in Croatia’s labor market, particularly in coastal regions.

Hungary shows stable growth in direct tourism employment, rising from 195,980 jobs (4.2%) in 2022 to 203,210 (4.3%) in 2023. Total employment contribution increased from 396,857 (8.4%) to 419,699 (8.9%), reflecting the sector’s progressive strengthening, especially in cultural and conference tourism, with positive effects on the labor market.

North Macedonia experienced a notable decline in tourism-related employment between 2022 and 2023. Direct tourism employment fell from 18,764 jobs (2.6%) to 12,502 jobs (1.8%), while the total employment contribution decreased from 51,402 jobs (7.1%) to 38,478 jobs (5.6%). This development contrasts with the recovery observed in tourist arrivals and the increase in overnight stays in 2023. The divergence between tourism activity and tourism-related employment indicates that changes in employment cannot be explained solely by the volume of tourist flows and may also reflect changes in labor productivity, employment structures, statistical measurement, or other economic factors. Further research would be required to identify the underlying causes of this divergence.

Romania maintained stability in direct tourism employment, with 143,429 jobs (1.7%) in 2022 and 143,652 (1.7%) in 2023. The total contribution was more pronounced, rising modestly from 559,660 (6.6%) to 573,097 (6.7%). These results indicate the sector’s consistency and its relevance for both rural and urban areas, with potential for further development. The estimated contribution of tourism to employment is presented in Graph 4.

Graph 4: Tourism Contribution to Employment (in %) in Serbia and Neighboring Countries, 2022–2023



Source: Authors based on Table 5

The comparative analysis of tourism's contribution to employment across the region reveals substantial differences in the extent to which national economies rely on this sector as a generator of jobs. While Croatia, Albania, and Montenegro clearly dominate with high shares of employment in tourism, countries such as Serbia, Romania, and Hungary exhibit stability or moderate growth, whereas North Macedonia requires additional attention due to a noticeable decline in sectoral employment. These findings underscore the importance of strategic planning, investment in infrastructure, and the development of human resources to enable tourism to more effectively contribute to both local and national labor markets.

### **Conclusion**

This study provides a comparative assessment of tourism flows and their economic significance in Serbia and selected neighboring and nearby countries in Southeast and Central Europe over the period 2019–2023. Its main scientific contribution lies in the integration of several dimensions of tourism performance—tourist arrivals, overnight stays, international tourism revenues, and the direct and total contributions of tourism to GDP and employment - within a common comparative framework. By combining physical tourism indicators with economic and financial measures, the study provides a broader basis for assessing the relative position of Serbia within the observed regional context.

The results indicate substantial differences in the intensity of tourism development and in the economic dependence on the sector. Serbia recorded growth in both tourist arrivals and overnight stays between 2019 and 2023, while the WTTC estimates indicate considerably higher levels of tourism's relative contribution to GDP and employment in countries such as Croatia, Montenegro, and Albania. The revised data for North Macedonia indicate that the country had largely restored its pre-pandemic level of tourist arrivals by 2023, while overnight stays remained approximately 3.9% below the 2019 level. This finding further illustrates the importance of considering several tourism indicators simultaneously rather than relying on a single measure of sectoral performance.

The analysis also demonstrates that strong tourism growth does not necessarily imply an equivalent increase in the sector's relative contribution to GDP or employment. Differences between direct and total contributions further indicate the importance of tourism-related linkages with other sectors of national economies. At the same time, these indicators should primarily be interpreted as descriptive measures of the economic significance of tourism rather than as

evidence of causal relationships. The present study does not employ econometric models capable of identifying the independent effects of infrastructure, tourism policy, prices, political conditions, destination attractiveness, or other explanatory factors.

Several limitations should therefore be acknowledged. First, the study relies predominantly on secondary statistical data obtained from national statistical offices, Eurostat, and the World Travel & Tourism Council. Differences in definitions, coverage, statistical procedures, reference populations, and estimation methods may limit the comparability of indicators across countries. This issue is particularly relevant for Albania, where the arrival indicator used in the comparison refers to entries of Albanian and foreign citizens recorded at national border points and is therefore not fully comparable with accommodation-based tourist-arrival statistics used for the other countries. For this reason, Albania's arrival figures should be interpreted with caution and its overnight-stay data were not included in the comparative table.

Second, the use of aggregate indicators limits the ability of the study to capture qualitative aspects of tourism development, including sustainability, innovation, service quality, seasonality, informal economic activity, and regional differences within countries. Third, the period 2019–2023 is particularly useful for observing the disruption caused by the COVID-19 pandemic and the subsequent recovery, but it is relatively short for identifying long-term structural trends. Finally, the study is descriptive and comparative in nature and therefore cannot establish causal relationships between tourism performance and specific economic, political, infrastructural, or institutional factors.

Despite these limitations, the research provides an empirical comparative baseline for understanding the position of Serbia within the regional tourism system. The findings suggest that Serbia has achieved a relatively strong post-pandemic recovery while maintaining a lower degree of economic dependence on tourism than several highly tourism-oriented economies in the region. Future research could extend the analysis by using longer time series, harmonized tourism indicators, panel-data or econometric methods, and country-level case studies. Such approaches would enable a more precise assessment of the factors that determine differences in tourism competitiveness, resilience, and economic contribution across the region.

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# KOMPARATIVNI EKONOMSKI I FINANSIJSKI ASPEKTI TURISTIČKIH TOKOVA U SRBIJI I SUSEDNIM ZEMLJAMA

## *Apstrakt*

*Ovaj rad predstavlja komparativnu ekonomsku i finansijsku analizu turističkih tokova u Srbiji i odabranim susednim i okolnim zemljama jugoistočne i centralne Evrope, uključujući Albaniju, Bosnu i Hercegovinu, Bugarsku, Crnu Goru, Hrvatsku, Mađarsku, Severnu Makedoniju i Rumuniju. Analizirani su dolasci turista i noćenja, prihodi od međunarodnog turizma, kao i direktni i ukupni doprinos turizma bruto domaćem proizvodu (BDP) i zaposlenosti. Posebna pažnja posvećena je periodu od 2019. do 2023. godine, koji obuhvata period pre pandemije, poremećaje izazvane pandemijom COVID-19 i naknadni oporavak turizma. Istraživanje se zasniva na sekundarnim podacima nacionalnih statističkih zavoda, Eurostata i Svetskog saveta za putovanja i turizam (WTTC), uz primenu deskriptivne komparativne metodologije. Rezultati ukazuju na značajne razlike u intenzitetu turizma i ekonomskoj zavisnosti od ovog sektora, dok je Srbija ostvarila relativno snažan postpandemijski oporavak. Analiza istovremeno ukazuje na značaj metodoloških razlika među nacionalnim statističkim sistemima, posebno u tumačenju podataka o dolascima za Albaniju. Rezultati predstavljaju komparativnu empirijsku osnovu za sagledavanje položaja Srbije i dalja istraživanja turističke konkurentnosti i ekonomskog značaja turizma.*

**Ključne reči:** turistički tokovi, Srbija, bruto domaći proizvod, zaposlenost, susedne zemlje

**JEL:** F20, F30, M20, Z32



# THE SIGNIFICANCE AND ROLE OF QUALITY MANAGEMENT FOR PROJECT SUCCESS

Nedeljka Živković<sup>1</sup>

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Review Article

## ***Abstract***

*Project management involves ensuring project quality from initiation through to completion. During project quality planning, it is essential to define quality standards across all processes involved in project development. Monitoring project process performance and implementing continuous performance improvements are key aspects of project success. Project success also involves delivering the expected level of project quality to all relevant stakeholders. Throughout the entire project life cycle, it is important to analyse the influence of all stakeholders. The aim of this paper is to highlight the significance and role of project quality management systems in order to provide a better understanding and assessment of the key factors that influence project success. Developing project management strategies enables a better understanding of all relevant stakeholders and an analysis of their expectations. Project quality planning, assurance, and control are key aspects that influence project success.*

**Keywords:** *project management, quality management, project*

**JEL:** *M11, M12, M15, M16*

## **Introduction**

Project quality management involves clearly defining the concept of quality upon project initiation (Ouabira & Fakhravar, 2021; Project Quality Management, 2016; Jainendrakumar, 2015; Mosadeghrad, 2012). The project leader/manager, together with the members of the project team, should determine the quality standards that will be applied during project implementation (Mosadeghrad, 2012). The requirements for project funding, customers, the organisation, as well as other relevant project stakeholders should be taken into account in order to formulate appropriate definitions of project quality (Rose, 2014). In certain situations, the organisation itself or the specific field in which the project is carried out, as is the case with economic

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<sup>1</sup> Nedeljka Živković, Lecturer, Belgrade Academy of Business and Arts Applied Studies, Belgrade, Serbia, [nedeljka.zivkovic@bpa.edu.rs](mailto:nedeljka.zivkovic@bpa.edu.rs), ORCID: 0000-0001-6663-7467

activities according to Ouabira & Fakhravar (2021), but also according to many researchers, for example education Jääskä & Aaltonen (2022), healthcare, Mosadeghrad (2012), Perez et al. (2022), construction Jallow et al. (2014), the automotive industry Kolter et al. (2025), and similar, may already possess established quality standards that can be directly applied to the initial project development (Jainendrakumar, 2015).

The concept of quality is defined in different ways. According to the definition of the author and quality pioneer Joseph M. Juran, quality is fitness for use (Juran, 1999). In addition, other prominent quality pioneers define quality differently: W. Edwards Deming defines quality as not only meeting customer requirements but also exceeding those requirements, while Philip B. Crosby defines quality as conformance to specifications (Živković, 2025; Suarez, 1992). Armand V. Feigenbaum defines quality as customer orientation (Feigenbaum, 1991), while Kaoru Ishikawa clearly emphasises that proof of a high level of quality is customer satisfaction, whose expectations continuously change (Suarez, 1992; Ishikawa & Loftus, 1990).

One of the models for ensuring project quality is the application of standards in order to meet the requirements and objectives of project implementation (Ouabira & Fakhravar, 2021; Project Quality Management, 2016). According to the ISO 21500 standard (Project, programme and portfolio management – Context and concepts, a project is defined as a temporary initiative undertaken to achieve one or more set objectives (ISO, 21500). Project quality is defined as the level to which the project fulfils requirements. Requirements refer to the establishment and application of policies and procedures in order to ensure that the project satisfies the defined needs for which it was conceived (Basu, 2014). According to the ISO 9000:2015 standard, requirements are defined as needs or expectations that are stated, generally implied, or obligatory (ISO, 9000). In the context of project management, requirements include the following (ISO, 9000):

- the requirements of relevant stakeholders, that is, what stakeholders expect from the project outcomes,
- legal requirements – obligations arising from laws or regulations related to the project,
- internal organisational system requirements – internal policies, procedures and standards that define quality during project implementation.

These requirements must be managed throughout the entire project implementation cycle (Jallow et al., 2014). Project requirements include the specified requirements in the project documentation (Basu, 2014). Project

quality requirements are specific criteria and standards that the project must fulfil in order to ensure a higher level of quality and customer satisfaction (Ouabira & Fakhravar, 2021). They focus not only on the successful implementation of the project but also on ensuring that the results or outcomes satisfy defined standards, procedures and customer needs, and that the project also complies with legal regulations (Jallow et al., 2014).

According to the ISO 10006:2021 standard project management encompasses planning, organising, monitoring, controlling, and reporting on all aspects of the project, as well as motivating all participants in order to achieve objectives related to project quality (ISO, 10006).

The most important aspects of the significance of quality level according to this standard include the following (ISO, 10006):

- a) understanding the needs and expectations of relevant stakeholders,
- b) establishing or applying project quality management processes necessary to achieve the planned results,
- c) identifying risks and opportunities associated with project processes and planned deadlines.

The role of project quality management involves managerial activities related to the project life cycle: from assessment, programme design, and pilot projects, up to the actual project implementation (Jainendrakumar, 2015; Jallow et al., 2014). In other words, these activities include the phases from project conception and development to its implementation in order to fulfil the requirements of relevant stakeholders. There is a lack of literature on project management, as well as a lack of broader discussion on whether this field belongs to practice or to wider academic circles (Davis, 2014). Therefore, the aim of this paper is to identify the key factors that influence project success in order to achieve a better understanding and insight into these factors through the significance and role of quality management, which has a substantial impact on project success.

The review and selection of relevant literature were conducted through a systematic search of available scientific and professional sources using the *Kobson* and *Web of Science* services, with the aim of identifying studies directly relevant to the subject and objectives of this review paper. The literature selection was based on the following criteria: relevance to the research topic related to project management, the scientific rigour of the sources, the currency of the publications, and their direct relevance to the key aspects of the issue under consideration. The review included articles published in relevant scientific journals, as well as other appropriate scholarly publications, with

preference given to sources that provide theoretical and empirical contributions to the understanding of the topic under investigation.

### **Defining relevant project stakeholders**

According to ISO 9000, relevant stakeholders are defined as parties that currently have or may have an impact on the organisational system. Project stakeholders include all members of the project team. These parties can be internal or external, with internal stakeholders encompassing members within the organisation, while external stakeholders include outside members. Furthermore, if many relevant stakeholders are involved in the project development process, they must be timely informed and engaged in all project development processes (Jallow et al., 2014). Project stakeholders include groups or individuals who invest resources in the project and expect potential benefits from them, most often financial compensation (Jääskä & Aaltonen, 2022). According to the ISO 21500 standard, project stakeholders are defined as a person, group, or organisation that has an interest in the project (ISO, 9000; ISO, 21500). The same standards further notes that stakeholders can also directly or indirectly influence the project, its performance, or outcome, either positively or negatively (ISO, 9000; ISO, 21500). Throughout the project duration, the different impacts of relevant stakeholders are analysed and defined as a method of data collection to determine whose interests should be considered (Jallow et al., 2014). This data collection method may include both quantitative and qualitative information. Stakeholders can influence many aspects of the project, some of which are highlighted (Project Management Institute, 2021; Jainendrakumar, 2015; Assudani & Kloppenborg, 2010):

- requirements – adding, removing, or adjusting project requirements,
- timeline – influence on accelerating or delaying the execution of project activities,
- project team – effective and efficient communication is needed to establish responsibilities and authorities,
- costs – impact on decreasing/increasing expenditures,
- planning – the achieved timeline should be in accordance with the planned activities,
- outcomes – results of the project implementation.

Quality culture includes knowledge-sharing activities and the promotion of interactive communication among stakeholders. Quality culture represents a

way of thinking, behaving, and valuing within an organisation or project team that places quality at the centre of everything that is done.

Project stakeholders can include customers, the organisation entrusted with the project, financial organisations, the project team, legal government bodies, the wider community, and so on (Karlsen, 2002). Project managers should take into account the requirements of all relevant stakeholders (Jainendrakumar, 2015).

For a party to be considered a project stakeholder, it must possess one, two, or all three of the following aspects (Živković, 2012):

- power to influence project outcomes,
- legitimacy in relation to the project, and
- urgency of its claims in relation to the project.

The power to influence project outcomes indicates how much a stakeholder can affect the project or make decisions. Relevant stakeholders with significant power can directly or indirectly change the course of project development. Legitimacy as an aspect shows whether a stakeholder's interest in the project is justified. If a relevant stakeholder is legitimate, this implies that their interest has the right to be considered. Urgency as an aspect indicates how important or time-sensitive it is to respond to the stakeholder's demands. Urgency means that, if not addressed appropriately, problems may arise for subsequent activities during project implementation. For project quality management, it is very important to determine which relevant stakeholders have power, legitimacy, and urgency, as this forms the basis for prioritising whom to focus on, deciding how to communicate with them, and reducing the risk of potential non-conformities.

For the successful implementation of a project, the following stakeholders are most often identified according to Jainendrakumar (2015) and Karlsen (2002):

- project managers,
- project team,
- customers.

However, for different stakeholders, there is insufficient consensus regarding success factors, and deeper research is needed to address this complexity and the diversity of project success perceptions (Karlsen, 2002).

### **Project quality management system**

To gain a competitive advantage in project implementation, organisational systems entrusted with the project invest significant efforts in improving quality at all levels of its development. Project teams should carry out intensive activities focused on investing in project quality in order to achieve the best

possible performance. The modern business environment imposes the need for new, advanced, and innovative approaches to quality management for successful project implementation (Živković & Glogovac, 2015). Organisations in the public and private sectors should expand their business objectives to achieve the satisfaction of all project stakeholders through the application of sustainable approaches to the project quality management system (Filipović & Đurić, 2009). Such approaches enable continuous improvement of project performance, which can result in excellence in its implementation.

The project quality management system can be viewed as a system that has the commitment of the project’s top management and involves all members of the project team in order to achieve the defined project quality objectives (Filipović & Đurić, 2010). In this context, the quality management system gains increasing importance throughout the entire project life cycle. It can also be defined as an approach aimed at fulfilling, and preferably exceeding, the requirements, needs, and expectations of customers, as well as other project stakeholders (Filipović & Đurić, 2010). In earlier periods, the particular importance of developing a quality management system within a project was recognised. The concept of the project quality management system has a long historical foundation and has developed alongside societal progress and market changes. Organisational systems in the public and private sectors, to which the project is assigned, continuously seek new approaches that will enable more efficient and effective project implementation (Karlsen, 2002). Table 1 presents different definitions of project management.

Table 1. Different definitions of project management

| Definition and extended description                                                                       | Source                                                                                                    |
|-----------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|
| Project management involves the accumulation of human, material, and financial resources.                 | Ostapenko et al (2024)                                                                                    |
| Project management involves defined activities for creating or delivering the project objectives.         | Marnada et al (2022)                                                                                      |
| Project management involves clearly setting the quality objectives of project execution.                  | Ouabira & Fakhravar (2021), Project Quality Management (2016), Jainendrakumar (2015), Mosadeghrad (2012). |
| Project management is defined as a temporary initiative undertaken to achieve one or more set objectives. | ISO, (2021)                                                                                               |
| Project management involves adequate planning and control of project execution at all levels.             | Ciric Lalic et al (2022)                                                                                  |
| Project management involves increasing the efficiency and effectiveness of project execution.             | Shokouhi & Bachari (2025)                                                                                 |

|                                                                                                                                                                        |              |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| Project management is defined as organising the project team to achieve shared objectives and project execution values while delivering the expected level of quality. | Tuman (1983) |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|

### **Fundamentals of project management based on the ISO 9001 standard**

One way to achieve efficiency and effectiveness in project implementation could be the application of the ISO 9001 standard. This standard represents a generally accepted international standard used as a model for establishing and applying a project quality management system. The standard is generic and can be applied in any organisation, regardless of its manufacturing or service activities (Živković, 2025; ISO, 9001). This standard defines the requirements of a quality management system and provides a clear framework for its implementation (ISO, 9001). A quality management system in accordance with ISO 9001 is based on key quality management principles, including customer orientation, leadership, active employee involvement, process approach, system approach, continuous improvement, decision-making based on facts, and relationship management ISO, 9001).

The principles of quality management within project management are based on a focus on customers and stakeholders, with the project’s objective being to meet, and where possible, exceed their requirements and expectations (ISO, 9001). Project management leadership provides a clearly defined vision, guidance, and motivation to the project team to achieve quality objectives. Active participation of project team members at all levels contributes to more efficient use of their knowledge and skills. A process approach in project management enables systematic planning, monitoring, and control of project activities. Continuous improvement forms the basis for enhancing project performance throughout the entire project life cycle (ISO, 9001). Decision-making based on relevant data and facts increases the reliability of managerial decisions, while effective stakeholder relationship management contributes to more successful and sustainable project implementation. The adoption of these principles is encouraged by the numerous benefits that organisational systems can achieve through the application of the ISO 9001 standard.

Among the most significant effects of applying this standard is the achievement of a higher level of quality in project development and implementation. ISO 9001 is part of the ISO 9000 series of standards, which is considered the most widely adopted series within the International Organization for Standardization. These standards do not focus exclusively on the quality of products and services but also on process management, the satisfaction of relevant stakeholders, and comprehensive management of the project quality management system. The application of this standard is aimed at improving the performance of project

development and implementation. This standard is intended for certification. In addition to the ISO 9001 standard, there is also a standard adapted and intended specifically for projects, such as ISO 10006.

The basis for ISO 9001 as a management process is the iterative application of four steps: „Plan“, „Do“, „Check“, „Act“ cycle (Živković & Glogovac, 2015; Živković, 2012).

This iterative cycle is also called the continuous improvement cycle and consists of the following steps (Živković, 2012):

„Plan” – establish the project quality objectives,

“Do” – implement the processes related to project execution,

“Check” – monitor and measure the project processes,

“Act” – take actions for the continuous improvement of project performance.

### **Fundamentals of project management based on the ISO 10006 standard**

ISO 10006 is an international standard that provides guidelines for the project quality management system (ISO, 10006). This standard relates to the establishment and maintenance of a project quality management system. Unlike the ISO 9001 standard, which defines requirements, this standard contains guidelines for achieving project sustainability (ISO, 10006). Both the project organisation and the parent organisation should implement this international standard, which can influence the project in achieving its planned results. The application of this standard consists of key aspects, including defining the project quality management system, the responsibility of the project's top management, project resource management, and the realisation of products or services in projects, which involves planning, developing, and delivering products or services in accordance with defined procedures and quality standard guidelines. In addition, for potential improvements, a segment involving measurement, analysis, and enhancement of project performance should also be applied (ISO, 10006).

### **Project Quality Planning**

According to the research by Zwikael & Globerson (2006), project quality planning achieved the highest success in the fields of engineering and construction, while the lowest success was recorded in manufacturing organisations. To achieve project objectives, it is necessary to manage all project processes within the project quality management system (Pellerin & Perrier, 2019; Jainendrakumar, 2015). If the project organisation operates within a parent organisation, the project quality management system should be aligned, to the greatest possible extent, with the quality management system of the parent

organisation. In cases where part or all of the project organisation is external to the executing organisation, it may be necessary to define the requirements of the quality management system (Pellerin & Perrier, 2019).

According to the ISO 9000 standard, quality planning is a part of quality management focused on establishing plans and objectives related to achieving quality goals (ISO, 9000). Project quality planning should identify the activities and resources necessary to achieve the project's quality objectives (Zwikael, 2009). In addition, quality planning should address the following questions regarding the project:

- What is the objective of the project?
- Who are the customers and other relevant project stakeholders?
- What do the customers and other relevant project stakeholders want?
- What should the project solution deliver?
- What?, Who?, Where?, Why?, When?, and How? represent the key questions that need to be answered regarding project quality planning.

In developing the quality plan, both the parent and project organisations should apply risk-based thinking in the processes of the quality management system that are involved in achieving project objectives. Risks and opportunities should be considered in planning and supporting processes, as well as in processes related to project risks (Pellerin & Perrier, 2019). The foundation of effective project leadership and management is based on the competence of the project team in project execution (Pellerin & Perrier, 2019). There is a positive relationship between planned project development activities and project success (Serrador, 2013). Furthermore, the integration of human knowledge and artificial intelligence (AI) contributes to improving project planning success (Barcaui & Monat, 2023). An improved project plan unequivocally contributes to project success (Ayele, 2023). Project team skills, enhanced communication, and the efficiency and effectiveness of teamwork are key factors influencing the success of project planning (Kolter et al., 2025).

### **Project Quality Management**

Project quality management involves all activities and processes aimed at ensuring that the project's product, service, or outcome meets the defined requirements and expectations of relevant project stakeholders (Pellerin & Perrier, 2019). The goal is to ensure that the project is successfully executed in accordance with quality standards while minimising errors and risks. According to the ISO 9000 standard, quality management is a part of overall quality management focused on fulfilling quality requirements (ISO, 9000).

Project quality management comprises (ISO, 10006):

- project quality planning,
- project quality assurance,
- project quality control,
- project quality improvement.

Project quality management is a systematic approach that ensures all aspects of a project – from planning to execution and delivery of results – meet specific quality standards and the expectations of project stakeholders through the dynamic capabilities of the project team (Barbosa & Carvalho, 2024). It is not only about controlling the final product or service depending on the project's objective, but also involves planning, monitoring, and continuously improving all processes within the project. Project quality management covers all project phases, aiming to ensure that the results achieve the highest possible level of quality, are reliable, and acceptable to all relevant project stakeholders, while continuously improving processes and preventing errors.

### **Project Quality Improvement**

Organisations, whether parent or those entrusted with the project, invest continuous efforts in improving its quality. Project quality improvement encompasses all activities aimed at the continuous enhancement of project execution processes to meet the requirements of customers and other relevant project stakeholders (Pellerin & Perrier, 2019). The concept of continuous improvement used in quality management and project management is specific and characteristic of the Japanese term *Kaizen*, which translates as “continuous improvement or change for the better,” emphasising in practice that it is not a one-time improvement but involves ongoing enhancements (Vieira et al., 2022).

Project quality improvement includes the following steps:

- Reducing variation or deviations in project execution;
- Applying new ideas and innovations in project solutions;
- Eliminating existing and potential non-conformities during project work;
- Applying Kaizen throughout all project management processes.

According to the ISO 9000 standard, quality improvement represents an increase in the ability to meet quality objectives. Project quality improvement is a continuous process of enhancing project performance, enabling all project team members to consistently raise the level of quality, ensure the satisfaction of customers and other relevant project stakeholders, and minimise errors and deviations from the planned initial concepts (Moso & Olanrewaju, 2024).

Project quality improvement means making intensive efforts to ensure that the project is better planned, organised, and executed so that the final result achieves a higher level of quality and meets the needs and requirements of customers, other project stakeholders, or project objectives (Pellerin & Perrier, 2019).

In other words, project quality improvement involves investing significant effort to make the project function better, become more efficient, and deliver improved outcomes. According to ISO 9001, project quality improvement refers to the continuous enhancement of the project quality management system, enabling the organisation to consistently meet the requirements of customers and other relevant stakeholders, as well as legal obligations, while also continuously improving the project's results or outcomes. ISO 9001 not only ensures that the project's quality level is maintained but also that it is continuously improved throughout all project activities (Moso & Olanrewaju, 2024).

### **Discussion and conclusions**

The aim of this study was to examine the key aspects that influence the success of project outcomes. Project management is a managerial discipline whose application increases the likelihood of project success. Many factors affect project success, including adequate planning, management, and improvement of project execution. In addition, relevant stakeholders play a crucial role, such as the project team, customers, and regulatory bodies. As noted by researchers such as Davis (2014), different stakeholders and their perceptions influence project success. The establishment of strategic and operational plans is highly significant for project success. Project teams, led by efficient and effective management, also contribute to achieving project goals. Furthermore, a focus on quality and the application of quality standards represent a widely accepted model for improving process performance. Establishing a quality culture within project execution, which encourages teamwork, also contributes to enhancing project performance. Within the project team and among all relevant stakeholders, establishing efficient and effective communication is essential. Long-term success in project execution results from the synergy of strategy and planning, competent project team members, effective and efficient leadership, and the continuous improvement of project performance. Effective project execution is based on an innovative strategy as well as effective risk management, as suggested by Hindarto (2023). An innovative project strategy also involves integrating digital technologies with human knowledge (Tran & Nguyen, 2024). Through these approaches, project managers can respond more efficiently and effectively to new challenges in project management.

The synthesis of the reviewed literature shows that quality management is an important determinant of project success. The key factors identified include top management support, clearly defined quality objectives and standards, effective

quality planning and control, continuous monitoring and improvement, effective communication and stakeholder collaboration, employee competence and involvement, and proactive risk management. The scientific contribution of this study lies in the systematic synthesis of existing findings and the identification of these interrelated factors as key mechanisms through which quality management contributes to successful project outcomes. The findings confirm that quality management should be integrated throughout the project life cycle rather than treated solely as a control activity.

This study has certain limitations. Firstly, no empirical research was conducted in specific project areas that would allow for a deeper understanding of the key factors influencing project success, which also represents directions for future research. Future studies could cover various areas, such as economic projects funded by non-repayable grants from EU funds aimed at improving infrastructure or addressing specific issues in the field of digitalisation.

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# ZNAČAJ I ULOGA MENADŽMENTA KVALITETA ZA USPEH PROJEKTA

## *Apstrakt*

*Upravljenje projektom podrazumeva način obezbeđivanja kvaliteta projekta od iniciranja do realizacije. Tokom planiranja kvaliteta projekta veoma je značajno definisanje standarda kvaliteta u svim procesima koji prate izradu projekta. Praćenje performansi procesa projekta i sprovođenje kontinuiranih poboljšanja performansi su ključni aspekti upeha projekta. Uspeh projekta podrazumeva i isporučivanje očekivanog nivoa kvaliteta projekta za sve relevantne zainteresovane strane. Tokom celog životnog ciklusa projekta važno je analiziranje uticaja svi zainteresovanih strana. Cilj ovog rada je ukazivanje na značaj i ulogu sistema menadžmenta kvaliteta projekta u cilju boljeg razumevanja i sagledavanja ključnih faktora koji utiču na uspeh projekta. Razvijanje strategija upravljanja projektom omogućava bolje razumevanje svih relevantnih zainteresovanih strana kao i analiziranje očekivanja ovih zainteresovanih strana. Planiranje, obezbeđenje i kontrola kvaliteta projekta su ključni aspekti koji imaju uticaj na uspeh projekta.*

**Ključne reči:** *upravljanje projektom, menadžment kvaliteta, projekat*

**JEL:** *M11, M12, M15, M16*



## ANTI-MONOPOLY LAW AND MARKET ECONOMIC EFFICIENCY – LEGAL ACCOUNTING FRAMEWORK AND PRACTICE IN THE REPUBLIC OF SERBIA

Ivica Matović<sup>1</sup>, Radovan Damnjanović<sup>2</sup>, Marija Ilievska Kostadinović<sup>3</sup>

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Review Article

### ***Abstract***

*The paper examines the legal and accounting system for preserving competition in the Republic of Serbia within the framework of market economic efficiency. Special attention is paid to illegal restrictive agreements, abuse of dominant position and merger control, which are the main instruments of market regulation. Through the analysis of relevant domestic and international literature, the paper examines the effect of legal norms on the behavior of economic entities and market movements, emphasizing the importance of transparency and accounting procedures in the evaluation of market power. It also considers the relationship between legal certainty and economic efficiency, with a critical analysis of the trade-off between strict regulation and free market action. The paper provides a theoretical and analytical framework for understanding how anti-monopoly rules promote sustainable competition and efficient market functioning and serves as a basis for future empirical research.*

**Keywords:** *antimonopoly law, economic efficiency of the market, competition, legal certainty, accounting framework.*

**JEL:** *K21, L40, L41*

### **Introduction**

The role of antitrust law in modern market economies is manifested through its capacity to ensure fair and effective competition, which is the basis of economic development and technological progress. A functional market implies that

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<sup>1</sup> Ivica Matović, doktorand, School of Engineering Management, University “Nikola Tesla”, Belgrade, Serbia Email: [ivicamatovickv@yahoo.com](mailto:ivicamatovickv@yahoo.com), ORCID ID: <https://orcid.org/0009-0004-4697-9389>

<sup>2</sup> Radovan Damnjanović, assistant professor, Military Academy, University of Defense, Belgrade, Email: [radovandamjan@gmail.com](mailto:radovandamjan@gmail.com), ORCID ID: <https://orcid.org/0000-0002-4574-5546>

<sup>3</sup> Marija Ilievska Kostadinović, associate professor, MB Faculty of Business and Law, MB University, Belgrade. Email: [marija.ilievska.kostadinovic@ppf.edu.rs](mailto:marija.ilievska.kostadinovic@ppf.edu.rs), ORCID ID: [orcid.org/0000-0001-7137-6177](https://orcid.org/0000-0001-7137-6177)

economic entities compete with each other on the quality of the offer, innovation and price level, and not by relying on monopoly power or restrictive agreements. In this sense, antimonopoly regulations constitute an important mechanism of public policy, the purpose of which is to prevent abuse of a dominant position, protect the interests of consumers and preserve equal market competition. In the Republic of Serbia, the competition protection system establishes a normative framework in which companies operate, which is harmonized with the legal acquis of the European Union and the practice of relevant international bodies.

The purpose of this work is to analyze the legal and accounting system of competition protection in the Republic of Serbia, as well as to examine its effect on the overall economic efficiency of the market. Special attention is paid to the impact of legal norms and regulatory procedures on the behavior of market participants, the degree of their contribution to fair competition, as well as the way in which accounting and financial elements enable the perception of market power and ensure the transparency of business activities. In addition, the paper discusses the theoretical foundations of antitrust law through the prism of economic principles of efficiency and general social benefit.

From a methodological point of view, the research relies on a systematic analysis of relevant sources from the field of competition law and economic theory, the study of key legal solutions in the Republic of Serbia, as well as available examples from the practice of the Commission for the Protection of Competition (CPC). The focus of the work is on the unification of existing scientific works and legal interpretations, with a critical analysis of the theoretical and practical consequences of the application of regulations, without conducting own empirical research.

The main questions to which the paper tries to provide answers are:

- How does the current legal framework in the Republic of Serbia affect the state of competition and the behavior of companies on the market?
- What potential economic effects can violations of antimonopoly regulations have on market efficiency and overall economic development?

Answers to the above questions enable a deeper understanding of the relationship between legal regulation and the economic dynamics of the market, as well as recognition of key challenges and opportunities for further improvement of the competition protection system in the Republic of Serbia.

## **Legal and accounting framework of competition protection in the Republic of Serbia**

The protection of market competition in the Republic of Serbia is normatively regulated primarily by the Law on the Protection of Competition (ZZK), which is the fundamental regulation in this sphere. This law specifies the basic concepts of competition, the prohibition of monopolistic activity and restrictive agreements, as well as the procedures for monitoring the concentration of market participants. In addition to the ZZK, the relevant rules and guidelines of the commission, which additionally elaborate the practical application of legal norms, also play an important role.

In its legislative development, the Republic of Serbia respects certain regulations of the European Union, especially in the area of concentration control and prevention of abuse of a dominant position, with the aim of harmonizing the domestic system with EU law. In this sense, the solutions from Directive 2014/104/EU on compensation for damage caused by violation of competition rules, as well as the guidelines of the European Commission related to the interpretation of Articles 101 and 102 of the Treaty on the Functioning of the European Union, are applied. These documents enable the application of modern standards when assessing market concentrations and restrictive agreements (Penezic & Soljaga, 2020).

The existing legal framework in the Republic of Serbia has a direct impact on the functioning of competition, as it establishes clear rules of conduct for business entities and sanctioning mechanisms, thereby reducing the possibility of monopolistic action and encouraging the dynamism of the market.

The institutional system of competition protection in Serbia is based on the work of the commission, as an independent regulatory body responsible for the implementation and control of the implementation of the commission. The basic responsibilities of the commission include:

- implementation of examination and inspection procedures in connection with restrictive agreements;
- analysis of concentrations and decision-making on permission to merge market participants;
- imposition of measures due to abuse of a dominant position;
- adoption of guidelines and recommendations intended for business entities in the field of competition.

The Commission has an extremely important role in preserving market efficiency, since its decisions directly affect the structure of the market, the possibilities of entry of new competitors and the prevention of anti-competitive

behavior. According to the relevant literature, the level of KPC efficiency largely depends on the degree of legal and accounting transparency of companies and their ability to provide reliable and precise data (Milojević & Milanović, 2025).

The accounting system represents one of the key means for detecting and limiting monopoly power in the market (Savić et al., 2025a). Financial statements, transfer prices and consolidation procedures allow regulatory authorities to monitor the market influence of companies and detect potential violations of competition rules.

- Financial reports are used to analyze income, market share and level of profitability, which is the basis for establishing a dominant position.
- Transfer prices may conceal or expose internal transactions that affect price formation and market behavior, while economically unjustified prices may indicate abuse of a dominant position.
- Consolidation and business groupings make it possible to identify related companies that, through joint action, can achieve market power beyond legally permitted limits.

Previous research indicates that transparent and properly managed accounting directly contributes to efficient market regulation, because it enables competent institutions to recognize restrictive agreements or concentrations that distort competition in a timely manner (Andreja et al., 2024).

Empirical research conducted in Serbia and the countries of the region confirm that an adequate legal and accounting framework is essential for preserving competition, but also that there are numerous problems in its application. Kovačić & Hyman (2022) emphasize the need for further harmonization of national legislation with the practice of the European Union, while OECD (2014) emphasize the importance of financial transparency of companies for the success of regulatory supervision. Regional analyzes show that business entities often do not apply accounting standards in accordance with competition regulations, which can reduce the overall economic effects of the law (Pantić et al., 2025).

Violations of antimonopoly regulations have an immediate negative impact on economic development, since monopoly structures reduce market competition, lead to price increases and discourage investment activities. Scientific literature indicates that clearly defined legal rules and a functional accounting system can significantly increase market efficiency, encourage competition and contribute to sustainable economic growth (Ignjatijević et al., 2010).

## **Prohibited restrictive agreements**

Restrictive agreements mean agreements between economic entities that are in a competitive relationship, and the intention or consequence of which is to limit, deform or threaten the free functioning of market competition. In the economic-legal theory of competition, the aforementioned agreements are usually divided into horizontal (concluded between companies operating at the same level of production or distribution) and vertical (concluded between subjects located at different levels of the supply chain) (Dobrić, 2023). Examples of restrictive agreements include:

- Cartel - concerted action of companies with the aim of harmonizing prices or volume of production, in order to completely or partially exclude competition from the market.
- Price fixing – direct or indirect determination of minimum, maximum or uniform product prices among competing entities.
- Market division – geographic or market demarcation of the market between participants in order to avoid competitive struggle.
- Limitation of production – an agreement on the reduction of production capacity in order to maintain a higher level of prices on the market.

The aforementioned forms of behavior, although they may bring short-term profits to companies, in the long term reduce market efficiency, result in rising prices for consumers and negatively affect innovation potential (Baum et al., 2023; OECD, 2022). In the Republic of Serbia, prohibited restrictive agreements are regulated by the Law on Protection of Competition. The provisions of Articles 13-15 of this law prescribe the prohibition of agreements which:

- directly or indirectly determine prices or other conditions of sale;
- restricts or controls production, distribution or technological progress;
- divides the market or source of supply among the participants;
- pressures or influences third parties to accept restrictions on competition.

The application of the aforementioned normative framework is entrusted to the commission, which has the authority to:

- initiation and implementation of proceedings against business entities;
- imposition of monetary sanctions;

- providing opinions and recommendations regarding the legality of contractual practices.

The application of legal provisions in practice includes a unified analysis of the accounting and financial statements of the company, a review of contractual relations and an assessment of the market power of the parties to the agreement (Hustedt & Spangehl, 2024).

The theoretical literature on restrictive agreements points to their pronounced negative impact on market efficiency. OECD (2026) emphasize that cartel arrangements distort the allocative efficiency of the market, while OECD (2014) point out that agreements on market sharing and price fixing lead to a long-term weakening of competition and innovation. The works of regional authors, especially from Serbia and the countries of Southeast Europe, indicate the same patterns of behavior. Pascallanda & Sihombing (2025) discuss the cases of cartels in the field of construction and telecommunications in Serbia, concluding that restrictive agreements cause an increase in prices and a decrease in product quality. Also, Sharma (2024) states that the existence of restrictive agreements in the food industry has negative consequences for consumers and reduces overall economic productivity. A concrete example from the practice of the Commission for the Protection of Competition concerns bid rigging in a public procurement procedure conducted by the “Nikola Tesla” Thermal Power Plant (TENT). The Commission established that the companies MIP-RŠV, Inter-mehanika, Tatravagonka Bratstvo and Šinvoz had coordinated their bid prices in the procurement procedure for the overhaul of Arbel-type railway wagons. The Commission qualified such conduct as a restrictive agreement prohibited under Article 10 of the Law on Protection of Competition. The purpose of the agreement was to eliminate competition among the bidders and enable the participants to achieve higher profits than would have been possible under competitive conditions. The Commission imposed competition protection measures on the participating companies in the amounts of RSD 2,320,480, RSD 1,475,000, RSD 2,138,900 and RSD 4,975,020, respectively. This case illustrates how coordination between competitors in public procurement can directly reduce competitive pressure and increase procurement costs, thereby negatively affecting market efficiency and public resources.

The normative framework in the Republic of Serbia has a significant impact on the state of market competition. Strict rules and their consistent application limit monopolistic behavior and encourage market dynamism. Business entities are moving towards transparent business and rational price formation. Violations of antimonopoly regulations produce multiple negative effects on economic development (Puisto & Alavi, 2025):

- reduction of market and allocative efficiency of resource distribution;

- rise in prices and decline in product quality for end consumers;
- reduction of innovation and competitiveness of domestic companies;
- unfavorable signal to potential foreign investors.

### **Abuse of dominant position**

Dominant position on the relevant market means a state in which one company, either independently or as part of a group of related companies, has the ability to significantly influence market conditions and thereby suppress effective competition. In the theory of competition law, dominance is described as the capacity of a company to influence the price, quantity of production or product characteristics, independently of the behavior of competitors (Gal, 2007). Therefore, a dominant position is not only linked to a high market share, but also to the existence of market power that enables limiting competitive pressure or controlling strategically important resources. Determining the existence of a dominant position is based on several criteria (Dielen & Mouton, 2025):

- Market share - the percentage participation of the company in the relevant market, whereby in the professional literature it is often pointed out that market shares higher than 40-50% can represent an indicator of dominance.
- Barriers to the entry of new competitors – legal, financial or technological obstacles that make it impossible or difficult to access the market.
- Negotiating power in relation to customers and suppliers - the possibility of imposing unfavorable business conditions.
- Control over key resources or technologies – exclusive or privileged access to resources that are essential for the functioning of the market.

Dominant position is, accordingly, evaluated through a combination of market share and the ability of the company to act independently of the competition. In the Republic of Serbia, issues of abuse of a dominant position are regulated by the Law on Protection of Competition. In accordance with Article 21 of the Law, any form of abuse of a dominant position is prohibited, including: imposing unfair prices, limiting production or markets, discrimination between business partners, as well as the application of unfavorable contractual provisions. The Commission has the authority to conduct proceedings and impose sanctions. The procedure itself usually includes:

- starting the initial investigation and collecting relevant data from the company;

- assessment of market power and the existence of a dominant position;
- determining the existence of abuse and its economic effects;
- making decisions and determining appropriate measures (eg imposing fines or ordering the cessation of illegal behavior).

In past practice, the KPC imposed high fines on large business entities, especially in the areas of telecommunications, distribution and retail, where dominant companies can limit competition and increase costs for end consumers. Abuse of a dominant position has pronounced consequences for competition and the distribution of resources. According to economic theories, in situations where a company abuses its market position, the following effects occur (OECD, 2021):

- Price growth and consumption decline - a dominant monopolist can impose a price higher than that which would exist under conditions of perfect competition, which leads to a decrease in consumer welfare (consumer welfare loss).
- Inefficient allocation of resources – resources are used suboptimally, since the company may limit production or innovative activities in order to preserve market power.
- Reduction of market dynamics - the entry of new companies becomes difficult, while the level of innovation and competitiveness in the sector decreases.

The aforementioned consequences indicate that legal regulation that prevents the abuse of a dominant position is not only a legal issue, but also an important mechanism for preserving economic efficiency.

At the level of the European Union, Article 102 of the Treaty on the Functioning of the EU prohibits the abuse of a dominant position, as confirmed by numerous cases, including Microsoft, Google and Intel. Empirical analyzes show that regulatory interventions contribute to strengthening market competition and increasing consumer welfare (OECD, 2014). In the United States, competition protection is achieved through antitrust policy based on the Sherman Act, which allows judicial control of market behavior. Research indicates that the American model combines legal sanctions with a detailed economic analysis of market effects (Savić et al., 2025b). The works of European Commission (2023) and Krstić et al. (2025) examine the practice of the KPC in Serbia and conclude that the most common forms of abuse are discrimination between business partners and unfair contractual practices. Savić et al. (2024) emphasize that, although the regulatory framework is largely aligned with EU standards, practice still shows limited capacities in implementing measures, primarily due to lack of data and

insufficient accounting transparency of companies. Analysis of the relevant literature indicates that the synergy of the legal framework and economic analysis enables effective protection of competition and contributes to the optimal allocation of resources.

### **Concentration control**

Concentration control is a normative and institutional instrument through which the process of merging business entities and takeovers is monitored and evaluated in order to preserve the conditions of market competition. Concentrations can be classified as horizontal, vertical or conglomerate. Horizontal concentration exists when companies that operate on the same relevant market are connected, vertical concentration is created by merging entities that operate in different stages of production or distribution, while conglomerate means connecting companies from different economic branches.

The importance of concentration control is reflected in the prevention of the emergence of monopolies or the strengthening of a dominant market position, which can reduce competition, cause price increases, narrow the choice of consumers or slow down innovative processes. In modern market conditions, mergers and acquisitions represent a frequent strategy for the growth and international expansion of companies, but in the absence of an adequate regulatory framework, they can adversely affect the market balance and overall economic efficiency.

In the Republic of Serbia, the area of concentration control is governed by the Law on Protection of Competition. The participants of the concentration are obliged to submit an application to the commission if, based on the latest financial reports, they meet the conditions defined by law. Criteria for mandatory notification include (Obrić & Majstorović, 2023):

- The amount of the total annual income realized in the Republic of Serbia that exceeds the legally established threshold;
- Aggregate income that companies participating in the concentration achieve on the world market;
- Minimum market share after the implemented concentration, which may indicate a potential distortion of competition.

The commission can make the following types of decisions (Shcherbanyuk et al., 2023):

- Approval of the concentration - if it is determined that it does not endanger competition;

- Conditional approval - with the imposition of obligations such as alienation of part of the business, price policy control or other regulatory measures;
- Prohibition of concentration - if the association of entities would significantly impair competition or lead to the establishment of a dominant position.

In addition, the Commission considers the possible consequences of the concentration by applying criteria such as market share, potential competitive strength, barriers to the entry of new participants and long-term effects on consumers (Savić & Mihajlović, 2025).

Concentration control has a significant contribution to overall market efficiency. On the one hand, it prevents monopolization and protects competitive relations, which encourages lowering prices and improving the quality of products and services. On the other hand, an overly restrictive approach can limit the positive effects of mergers and acquisitions, such as:

- Achieving economies of scale – larger business systems can rationalize production and distribution costs;
- Strengthening of investment capacities - integrations enable greater investments and the development of innovations;
- Increasing international competitiveness - stronger and more efficient companies can more easily perform on the global market.

For this reason, establishing a balance between protecting competition and stimulating economic growth is of key importance. Effective concentration control tends to mitigate the negative consequences of monopolistic behavior, while at the same time enabling companies to use synergistic effects and improve overall economic efficiency.

Numerous researches in the field of economic and legal theory point to the importance of concentration control for preserving a functional market. Zupur et al. (2023) point out that the proper implementation of the merger notification and assessment procedure reduces the risk of abuse of a dominant position and contributes to market stability. In her analysis of competition policy, Ostapenko (2023) emphasizes the existence of a positive relationship between regulatory transparency and investment decisions of business entities. From the economic aspect, Vukša & Milojević (2024) examine the impact of concentration on productivity and innovation, indicating that balanced control of M&A transactions can increase efficiency, while excessive regulation can limit the development of companies. Domestic research, such as the study by Stanković (2023), shows that the decisions of the Commission in Serbia are increasingly

based on a combination of legal and economic criteria, which achieves a balance between the interests of the market and investors. At the same time, professional literature points to the importance of including accounting data in the process of evaluating concentrations, since transparent financial reports allow for a more accurate assessment of market share and potential merger effects (OECD, 1996).

### **The relationship between legal certainty and economic efficiency**

Legal certainty is considered a fundamental principle of the legal order and includes the precision, predictability and consistency of legal rules governing economic relations. Within a market-oriented economy, legal certainty plays a crucial role in attracting domestic and foreign investments, since investors prefer a stable and predictable regulatory environment that reduces the possibility of arbitrary actions by state institutions or undefined normative solutions (Marjanović, 2025).

In the domain of antimonopoly legislation, legal certainty enables business entities to shape business strategies based on clearly defined rules, especially with regard to market concentrations, mergers and restrictive agreements. The consistent and transparent application of competition protection regulations contributes to the reduction of legal uncertainty, which indirectly improves the economic efficiency of the market, because it facilitates the rational distribution of resources and encourages innovative activities (Cucić, 2024; Lalić & Trifunović, 2026a; Mihajlović et al., 2024).

In addition, legal certainty in the area of antimonopoly law also fulfills a preventive role: precisely established criteria and procedures, harmonized with international standards, reduce the risk of abuse of a dominant market position or agreements that distort competition. Such a degree of predictability provides an environment in which market processes take place without fear of retroactive punishment or unclear interpretations of legal norms. Although legal certainty contributes to the overall stability of the market, overly strict and inflexible regulation can narrow market adaptability and reduce the ability to respond to changes in demand and technological development. Intensive concentration control, restrictive attitude towards innovative business practices or rigid punishment mechanisms can negatively affect the motivation for investments and development of new solutions (Cao, 2022).

From an economic point of view, there is a permanent tension between the need to preserve competition and to allow companies to freely create new products and services. An excessively restrictive regulatory framework can lead to a weakening of market dynamics and loss of efficiency, while insufficient

regulation can result in monopoly structures and a decrease in consumer welfare.

Professional literature often emphasizes that establishing a balance between legal certainty and market flexibility requires selective application of norms: competent authorities should combine clear and predictable rules with detailed economic analysis of specific cases, especially in sectors where innovations rapidly transform market structures (Paspalj et al., 2024). This indicates that legal certainty does not necessarily imply rigid application of regulations, but consistent and transparent decision-making based on economic logic.

Numerous empirical studies indicate the existence of a strong connection between legal certainty and the innovation potential of the market “Numerous empirical studies indicate the existence of a strong connection between legal certainty and the innovation potential of the market (Lalić & Trifunović, 2026b). For example, OECD analyzes show that countries with clear and stable antitrust regimes record a higher level of investment in research and development (OECD, 2022). Similar findings emerge from comparative studies between the European Union and developing countries, where complex and unpredictable regulatory systems reduce the attractiveness of the market for domestic and foreign innovative companies.

At the same time, the theory of competition indicates that companies that operate in a stable legal framework have stronger incentives for technological progress and increased productivity, because they have greater certainty in terms of return on investment and lower legal risks (Mihajlović et al., 2025). These results confirm the importance of integrating legal and accounting procedures in the assessment of market trends, especially when considering concentrations and abuses of a dominant position. The analysis of the relevant literature also indicates that an effective antimonopoly policy not only ensures the preservation of competition, but also directly contributes to economic growth and innovation processes. Nevertheless, most authors point out that the key problem is the preservation of balance: legal certainty must be clear and consistent enough, but at the same time flexible enough so as not to limit market creativity and overall efficiency.

## **Conclusion**

Looking at the legal and accounting environment of competition protection in the Republic of Serbia indicates the existence of a built normative system, which is harmonized to a significant extent with the regulations of the European Union and relevant international practice. The analysis of professional literature and available documentation of the Commission for the Protection of Competition shows that the implementation of the Law on the Protection of Competition

through the supervision of restrictive agreements, prevention of abuse of a dominant position and control of concentrations of economic entities is the basic mechanism for preserving market efficiency and strengthening the competitive environment.

Although the current regulations are relatively clearly defined and elaborated, the literature points to the presence of certain practical problems, including reduced legal certainty for economic entities, uneven interpretation of dominant position criteria and lengthy merger approval procedures. On the other hand, accounting aspects, especially the obligation of transparent reporting and submission of data on market shares, contribute to a better assessment of the company's competitive position, but at the same time require additional professional training and greater standardization of practice.

From an economic point of view, the literature points out that the consistent application of antitrust rules can contribute to improving market efficiency, lowering prices for consumers and encouraging innovative activities, while inadequate application can result in uncertainty, reduced investment activity and weaker market functionality. A special challenge for the Republic of Serbia is the establishment of a balance between protecting competition and enabling the growth of companies, which requires the precise implementation of criteria and constant monitoring of the market effects of regulatory decisions.

Finally, the antimonopoly framework in Serbia has significant potential for improving the economic efficiency of the market, but its effectiveness depends on a combination of legal certainty, transparency of accounting procedures and professional capacities of regulatory institutions. Bearing in mind the current situation, future research should focus on the empirical analysis of the effects of the decisions of the Commission for the Protection of Competition on the structure of the market and its efficiency, including quantitative assessments of price changes, market shares and competitive dynamics. Such research would enable a more detailed understanding of the real consequences of antimonopoly measures and improve the creation of economic and legal policies in accordance with the goals of sustainable competition.

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# ANTIMONOPOLSKO PRAVO I EKONOMSKA EFIKASNOST TRŽIŠTA – PRAVNO RAČUNOVODSTVENI OKVIR I PRAKSA U REPUBLICI SRBIJI

## *Apstrakt*

*Rad ispituje pravni kao i računovodstveni sistem očuvanja konkurencije u Republici Srbiji u okviru tržišne ekonomske efikasnosti. Posebna pažnja usmerena je na nedozvoljene restriktivne ugovore, zloupotrebe dominantne pozicije i nadzor koncentracija, koji predstavljaju osnovne instrumente tržišne regulacije. Putem analize relevantne domaće i međunarodne literature, rad sagledava dejstvo pravnih normi na ponašanje privrednih subjekata i kretanja na tržištu, uz isticanje važnosti transparentnosti i računovodstvenih postupaka u vrednovanju tržišne snage. Takođe, razmatra se veza između pravne izvesnosti i ekonomske efikasnosti, uz kritičku analizu kompromisa između stroge regulacije i slobodnog tržišnog delovanja. Rad daje teorijski i analitički okvir za shvatanje kako antimonopolska pravila unapređuju održivu konkurenciju i efikasno funkcionisanje tržišta i služi kao osnova za buduća empirijska istraživanja.*

**Ključne reči:** antimonopolsko pravo, ekonomska efikasnost tržišta, konkurencija, pravna sigurnost, računovodstveni okvir.

**JEL:** K21, L40, L41

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<sup>1</sup> Nikola Nikolić, Full Professor, University Business Academy in Novi Sad, Faculty of Social Sciences, Bulevar Umetnosti 2a, Belgrade, Serbia, E-mail: [nikola.nikolic@fdn.edu.rs](mailto:nikola.nikolic@fdn.edu.rs), ORCID ID: <https://orcid.org/0000-0001-0000-0000>

<sup>2</sup> Petar Petrović, Associate Professor, University Business Academy in Novi Sad, Faculty of Social Sciences, Bulevar Umetnosti 2a, Belgrade, Serbia, E-mail: [petar.petrovic@fdn.edu.rs](mailto:petar.petrovic@fdn.edu.rs), ORCID ID: <https://orcid.org/0000-0002-0000-0000>

<sup>3</sup> Marko Marković, Assistant Professor, University Business Academy in Novi Sad, Faculty of Social Sciences, Bulevar Umetnosti 2a, Belgrade, Serbia, E-mail: [marko.markovic@fdn.edu.rs](mailto:marko.markovic@fdn.edu.rs), ORCID ID: <https://orcid.org/0000-0003-0000-0000>

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