South East European Journal of Economics and Business

ISSN 2233-1999

Volume 18 (2) 2023

COPYRIGHT

The South East European Journal of Economics and Business (SEEJ) focuses on issues important to various economics and business disciplines, with a special emphasis on South East European. For articles to be considered for the SEE Journal, authors should submit manuscripts electronically, as MS Word attachments through the following web page: seejournal.efsa.unsa.ba/submission. Submissions should include supplementary files with an indication of the author's background or position. Articles are considered for publication if they have not been published or accepted for publication elsewhere and have not been concurrently submitted elsewhere. For more information, please see the Guide for Submission of Manuscripts at the end of each issue or on the SEEJ website.

The South East European Journal of Economics and Business, ISSN 2233-1999, is published semiannually by the School of Economics and Business, University of Sarajevo, Trg Oslobodjenja - Alija Izetbegovic 1, 71000 Sarajevo, Bosnia and Herzegovina.

All correspondence should be addressed to The South East European Journal of Economics and Business. School of Economics and Business, Trg Oslobodjenja-Alija Izetbegovic 1, 71 000 Sarajevo, Bosnia and Herzegovina, telephone: 00-387-33-275-965, e-mail: seejournal@efsa.unsa.ba .

Abstracting and Indexing: This Journal is regularly indexed and abstracted by databases:

- Baidu Scholar
- Cabell's Directory
- CEJSH (The Central European Journal of Social Sciences and Humanities)
- Celdes
- CNKI Scholar (China National Knowledge Infrastructure)
- CNPIEC
- DOAJ (Directory of Open Access Journals)
- EBSCO (relevant databases)
- EBSCO Discovery Service
- EconBiz
- ECONIS
- EconLit
- Elsevier - SCOPUS
- Genamics JournalSeek
- Google Scholar
- International Abstracts in Operations Research
- J-Gate
- JournalTOCs
- KESLI-NDSL (Korean National Discovery for Science Leaders)
- Microsoft Academic
- Naviga (Softweco)
- Primo Central (ExLibris)
- ProQuest (relevant databases)
- ReadCube
- Research Papers in Economics (RePEc)
- ResearchGate
- SCImago (SJR)
- Sherpa/RoMEO
- Summon (Serials Solutions/ProQuest)
- TDNet
- Ulrich's Periodicals Directory/ulrichsweb
- WanFang Data
- Web of Science - Emerging Sources Citation Index
- WorldCat (OCLC)

Content

sciendo

South East European Journal of Economics and Business
Volume 18 (2) 2023, vi-ix
DOI: 10.2478/jeb-2023-0028

NAVIGATING DIVERSE FRONTIERS IN ECONOMICS AND BUSINESS OF SEE REGION - EDITORIAL

Adnan Efendić, Ljiljan Veselinović

The current issue of the South East European Journal of Economics and Business publishes thirteen contributions from diverse economic and business empirical studies focusing primarily on South East European region. We categorize published papers into five groups to help readers identify fields and papers of interest more easily, although these borders are sometimes challenging to establish. In doing so, we recognize two papers that address the themes of organizational behaviour and management, including *Taborosi et al. (2023)* and *Krasniqi, Kotorri, and Aliu (2023)*. Five papers deal with public finance and general economics, where we include papers by *Mourão, Bronić, and Stanić (2023), Paleka, Karanović, and Štambuk (2023), Hunady et al. (2023), Muminović (2023)* and *Stanić, Cita, and Stanić Šulentić (2023)*. Three papers contribute to the field of marketing and consumer behaviour, including *Torma, Barbić, and Ivanov (2023), Užar and Filipović (2023),* and *Cuic Tankovic, Perišić Prodan, and Benazić (2023)*. A study by *Škrinjarić (2023)* focuses on labour market, while *Lushi et al. (2023)* address issues in agricultural development. Finally, one study is in the field of tourism (*Karma, 2023*). We provide a summary table with basic information on the papers published in this issue, while a more detailed overview of each contribution is below.

Authors	Unit of analysis and sample size	Data source
Taborosi et al. (2023)	Employees (313)	B&H, Croatia, Montenegro, North Macedonia, and Serbia
Mourão, Bronić, and Stanić (2023)	Cities and municipalities (556)	Croatia
Paleka, Karanović, and Štambuk (2023)	Taxpayers (862)	Croatia
Krasniqi, Kotorri, and Aliu (2023)	SME loans granted by the bank (2,320)	Kosovo
Torma, Barbić, and Ivanov (2023)	Students (890)	Croatia
Užar and Filipović (2023)	Consumers (806)	Serbia
Hunady et al. (2023)	Panel data with countries (23)	EU countries
Muminović (2023)	Business students (146)	Bosnia and Herzegovina
Stanić, Cita, and Stanić Šulentić (2023)	Large companies (124)	Croatia
Škrinjarić (2023)	Economics and business graduates (1,009) and firms (112)	Croatia
Cuic Tankovic, Perišić Prodan, and Benazić (2023)	Users (934)	Croatia
Lushi et al. (2023)	Farmers (640)	Albania
Karma (2023)	Panel data with countries (20)	Albania and EU countries

Organizational behaviour and management

The research conducted by *Taborosi et al. (2023)* on the sample of teleworkers from the Western Balan's countries (Bosnia and Herzegovina, Croatia, Montenegro, North Macedonia, and Serbia) finds that national culture and emotional intelligence have a greater impact on job performance and organizational commitment for employees in conventional working arrangements than teleworkers. *Krasniqi, Kotorri, and Aliu (2023)* examine the role of relationship banking, i.e., building trust between firm and bank, as an effective tool to mitigate credit risks (loan default). The authors use a sample of 2,320 SME loans stemming from a bank in Kosovo. The results indicate that stronger firm-bank relationships reduce the probability of default and tighter credit policies regarding higher collateral requirements, while interest rates have the opposite effect.

Public finance and general economics

Mourão, Bronić, and Stanić (2023) empirically analyse a panel dataset of 556 Croatian cities and municipalities over the 2014-2021 period and find that local governments with higher budget transparency have higher revenues since budget transparency reduces information asymmetry between incumbents and citizens. This suggests that budget transparency can help local governments to achieve better control of opportunistic borrowing as well as increase revenues. *Paleka, Karanović, and Štambuk (2023)* examine the role of age, gender, and educational level with the taxpayers' compliance behaviour, confirming the statistically significant relationship between these socioeconomic variables and their level of compliance on the sample of 862 taxpayers in Croatia. These sociodemographic variables are also found to moderate the relationship between tax rates, tax morale, and tax compliance. Such results are beneficial for policy-decision makers to create efficient fiscal strategies.

Hunady et al. (2023) investigate whether government and business funding sources for university research and development represent complements or substitutes. The results of the panel data analysis suggest that government funding of R&D complements business funding, indicating that rising government financial support for research in higher education can lead to higher funding from the business sector. These results provide important implications for the SEE region, which typically needs to invest more in R&D. *Muminović (2023)* explores the consequences of war by using primary data collected through a controlled experiment amongst business students at three universities dominated by three ethnicities across Bosnia and Herzegovina. The author finds that those students who were exposed to fictional media reports discussing the possibility of a new war reported lower entrepreneurial intentions than other business students. As such, the author argues that permanent warmongering is not just an empty rhetoric but can cause severe economic consequences in this society.

Stanić, Cita, and Stanić Šulentić (2023) analyze the impact of receivables, inventories, payables, sales growth, and GDP growth on the profitability of companies. The authors use panel data between 2018 and 2021 on the sample of large companies in Croatia. Among other conclusions, the results of this paper indicate that payment in the agreed term will not create additional costs such as default interest.

Marketing and consumer behaviour

Torma, Barbić, and Ivanov (2023) examine students' financial literacy levels in Croatia by using a randomized field experiment. While students' financial literacy is generally perceived to be low and different between male and female students, factors such as age, student's GPA, whether students took some form of personal finance course, a proxy for numeracy, and place of birth in terms of a capital city might influence financial literacy, as well as a training intervention. However, education is considered insufficient for making better financial decisions since students did not report less impulsive buying or higher hypothetical saving. By applying the extended model of the theory of planned behaviour to the sample of 806 consumers across Serbia, the results of *Užar and Filipović (2023)* show that attitude, subjective norms, perceived behavioural control, trust, loyalty, education, and monthly income have significant impacts on intention to purchase cheeses with geographical indications of origins. As such, the study contributes to a better theoretical understanding of individuals' intentions regarding food with geographical indications of origins.

Cuic Tankovic, Perišić Prodan, and Benazić (2023) analyse 934 questionnaires to identify user segments concerning blockchain technology adoption, and a total of four segments were identified with the use of hierarchical and K-Means cluster analysis and contingency analysis. As such, the findings offer valuable

insights for comprehending behavioural intentions, laying a foundation for future research endeavours.

Labour market

Škrinjarić (2023) analyse the mismatch in the labour market between the competencies that employers require and those that graduates acquire by using primary data collected from 1,009 students and 112 firms. The results show the existence of a mismatch between the competencies required and those acquired, with motivation and organization competence and project management and professional competence showing the greatest mismatch. The consequence of such a mismatch is represented in lower employability and wage penalties.

Agricultural development

Lushi et al. (2023) explore the link between farmers' bargaining power in trade and their future economic plans. After utilizing data from questionnaire with 640 Albanian farmers, the findings reveal that those with investment plans demonstrate higher trading power, emphasizing the link between increased farm activity and enhanced bargaining power. This study contributes to the agribusiness field, particularly from the perspective of a transition and developing country.

Tourism

The study by *Karma (2023)* assesses the determinants of international tourism demand in Albania through a dynamic panel data analysis from 2011 to 2019. Utilizing the Two-Step GMM Model on a sample of 20 countries, the study underscores the significance of word-of-mouth effects and the dual nature of inferior goods and services in the Albanian tourism sector. It emphasizes the social cohesion role of tourism while highlighting its potential for general economic development. Furthermore, the study stresses the relative importance of government spending, suggesting that the national tourism strategy must prioritize sustainable and high-value tourism segments.

On behalf of Editorial Board

Adnan Efendić, *Editor-in-chief*
Ljiljan Veselinović, *Production Editor*

University of Sarajevo,
School of Economics and Business

References

Taborosi, S., Poštin, J., Terek Stojanović, E., Rajković, J., Berber, N., and Nikolić, M. 2023. The Influence of Cultural and Personal Properties on Job Performances and Organizational Commitment in Teleworkers. The South East European Journal of Economics and Business 18 (2): 1-20.

Mourão, P., Bronić, M., and Stanić, B. 2023. The Impact of Local Governments' Budget Transparency on Debt in Croatia. The South East European Journal of Economics and Business 18 (2): 21-33.

Paleka, H., Karanović, G., and Štambuk, A. 2023. The Direct and Moderating Effect of Sociodemographic Variables on Tax Compliance Behaviour. The South East European Journal of Economics and Business 18 (2): 34-48.

Krasniqi, B., Kotorri, M., and Aliu, F. 2023. Relationship Banking, Collateral, and The Economic Crisis As Determinants of Credit Risk: An Empirical Investigation of SMEs. The South East European Journal of Economics and Business 18 (2): 49-62.

Torma, Barbić, and Ivanov, M. 2023. Analyzing the Effects of Financial Education on Financial Literacy and Financial Behaviour: A Randomized Field Experiment in Croatia. The South East European Journal of Economics and Business 18 (2): 63-86.

Užar, D. and Filipović, J. 2023. Understanding Consumers' Intention to Purchase GI Cheeses Based on The SEM-Logit Model. The South East European Journal of Economics and Business 18 (2): 87-96.

Hunady, J., Pisar, P., Jošić, H., Žmuk, B., and Pejić Bach, M. 2023. Government and Business Funding of Sources of Funds for R&D at Universities: Complements or Substitutes? The South East European Journal of Economics and Business 18 (2): 97-111.

Muminović, A. 2023. Not Just Empty Rhetoric: The Economic Cost of Warmongering in a Post-Conflict Environment. The South East European Journal of Economics and Business 18 (2): 112-125.

Stanić, M., Cita, M., and Stanić Šulentić, M. 2023. The Influence of Working Capital Management on the Profitability of Manufacturing Enterprises - The Case of Croatia. The South East European Journal of Economics and Business 18 (2): 126-139.

Škrinjarić, B. 2023. Competence Proximity to Employers' Requirements and Labour Market Success of Economics and Business Graduates. The South East European Journal of Economics and Business 18 (2): 140-161.

Cuić Tanković, A., Perišić Prodan, M., and Benazić, D. 2023. Consumer Segments In Blockchain Technology Adoption. The South East European Journal of Economics and Business 18 (2): 162-172.

Lushi, Cera, Murrja, and Ujkani, S. (2023). Linking Farmers' Bargaining Power in Trade to Their Plans for Future Economic Activities. The South East European Journal of Economics and Business 18 (2): 173-185.

Karma, E. (2023). Patriotic Tourism Demand in Albania: A System GMM Model Approach. The South East European Journal of Economics and Business 18 (2): 186-196

sciendo

South East European Journal of Economics and Business
Volume 18 (2) 2023, 1-20
DOI: 10.2478/jeb-2023-0015

THE INFLUENCE OF CULTURAL AND PERSONAL PROPERTIES ON JOB PERFORMANCES AND ORGANIZATIONAL COMMITMENT IN TELEWORKERS

Taboroši Srđana, Poštin Jasmina, Terek Stojanović Edit, Rajković Avdija Jelena, Berber Nemanja, Nikolić Milan

Abstract

The paper presents the results of research on the impact of national culture, big five personality traits, and emotional intelligence on job performances and organizational commitment in teleworkers in West Balkan countries. These impacts were also determined for employees in conventional working arrangements, which enabled a comparison of the results for these two groups of respondents. The research was conducted in the countries of the West Balkan and included 313 respondents. National culture and emotional intelligence have a greater impact on job performances and organizational commitment for employees in conventional working arrangements than in teleworkers. Big five personality traits in some cases affect stronger for employees in conventional working arrangements, while in some cases they affect more powerfully in teleworkers. Teleworkers are less influenced by the environment, and thus less influenced by national culture. Also, teleworkers have fewer opportunities to use emotional intelligence in achieving business goals.

Keywords: *national culture, emotional intelligence, job performances, organizational commitment, teleworkers*

JEL classification: *D91, E71, M14, M15, M54*

Taboroši Srđana, MSc, PhD student
(corresponding author)
The University of Novi Sad
Technical faculty "Mihajlo Pupin", Zrenjanin, Serbia
E-mail: srdana.taborosi@gmail.com
ORCID: 0000-0003-3826-3116
Address: Srđana Taboroši, Đure Đakovića bb,
23000 Zrenjanin, Serbia

Poštin Jasmina, MSc, Assistant
The University "Union - Nikola Tesla" Belgrade
Faculty of Management in Sremski Karlovci
Sremski Karlovci, Serbia
E-mail: famzr.edu@gmail.com
ORCID: 0000-0003-3707-7522

T**erek Stojanović Edit**, PhD, Associate Professor
The University of Novi Sad
Technical faculty "Mihajlo Pupin", Zrenjanin, Serbia
E-mail: terekedita@gmail.com,
ORCID: 0000-0003-0013-8141

Rajković Avdija Jelena, PhD, Assistant
The University "Union - Nikola Tesla" Belgrade,
Faculty of Engineering Management, Belgrade,
Serbia
E-mail: j.rajkovic24@gmail.com
ORCID: 0000-0002-3862-0681

Berber Nemanja, PhD, Associate Professor
The University of Novi Sad
Faculty of Economics in Subotica, Subotica, Serbia
E-mail: nemanja.berber@ef.uns.ac.rs
ORCID: 0000-0002-1433-6416

Nikolić Milan, PhD, Full Professor
The University of Novi Sad
Technical faculty "Mihajlo Pupin", Zrenjanin, Serbia
E-mail: mikaczr@sbb.rs,
ORCID: 0000-0001-6643-1442

1. Introduction

The outbreak of the Covid-19 pandemic has inevitably brought to the fore new ways of working, which may become quite common after the pandemic ends, on a global scale (Narayanamurthy and Tortorella 2021). The changes caused by the Covid-19 pandemic have brought a "new normal" to which people are getting used to. One of these things is telework Hermann and Paris 2020). According to Leonardi (2020), there are opinions that telework will become "new normal", but there are also opinions that telework will not become mainstream soon, but that most workers will return to offices when the pandemic passes. In any case, the Covid-19 pandemic has shown that things are changing (and should change) in the areas of business and management. This is important for both researchers and organizations, and future research should focus on what is the essence of HR research: improving performance (individual and organizational) in a business environment, which is increasingly based on telework (Nyberg, Shaw, and Zhu 2021).

Several studies have focused on the effects of telework, in terms of business outcomes, but also the quality of life of people who telework. In essence, working from home has both negative and positive consequences. Negative consequences are workload pressure, task interdependence, professional isolation, and family interference. The positive consequences are autonomy in work, schedule flexibility, strong technological resources improve work-life balance, and then productivity, performance, and job satisfaction (Jamal et al. 2021). It is also advantageous that telework saves time on commuting, which improves the lifestyle of people who work this way (Hardill and Green 2003). Diab-Bahman and Al-Enyi (2020), based on a sample among teleworkers in Kuwait, state that telework and conventional working arrangements conditions provide similar efficiencies, but most teleworkers prefer flexible teleworking opportunities. However, the problem may be maintaining the unity and cohesion of the dispersed teams (Ruiller et al. 2018), as well as lack of physical contact with others, which can lead to reduced engagement and poorer career advancement (Yarberry and Sims 2021). It is obvious that, at the organizational and individual level, telework can work in different ways, depending on the type of activity of organizations, business priorities of organizations, as well as personal preferences and lifestyle.

The question arises as to how telework affects job performance and organizational commitment (in teleworkers). Based on a review of a large number of papers, it can be concluded that these impacts range from favorable and neutral to unfavorable. Research among employees in service organizations, who teleworked, showed that the work consequences of Covid-19 (such as working from home, job insecurity) have an impact on employee job performance (Narayanamurthy and Tortorella 2021). According to Kelliher and Anderson (Kelliher and Anderson 2009), teleworkers have greater job satisfaction and organizational commitment, and this is a consequence of the flexibility that telework implies. Similarly, Martin, and MacDonnell (2012) find a positive relationship between telework and organizational commitment. Based on a meta-analysis, Gajendran and Harrison (2007) conclude that telework is positively associated with job performance, but in the case of evaluation performed by supervisors, while in the case of self-rated work performances, this relationship is not significant. Telework is associated with greater job satisfaction and organizational commitment, but these benefits come at the cost of more workload and reduced opportunities for switch off (Felstead and Henseke 2017). Contrary to the previous, Choudhury et al. (2020) reported that, due to reduced exposure to organizational symbols and poorer contact with leaders, telework can interfere with organizational identification, the only question is to what extent this occurs. Employees will be more motivated for digital workplace transformation if it creates conditions for them to achieve better work performance and satisfaction (Selimović, Pilav-Velić, and Krndžija 2021). Finally, Wang et al. (2020) believe that working from home is reflected in a worker's job performance in a way that depends on the circumstances that accompany is implementing telework (social support, job autonomy, monitoring, and workload). The more favorable these circumstances are, the better the job performance.

Most existing research is based solely on job performance and organizational commitment in teleworking conditions. Significant for this paper is that studies, which take into account the influences of national culture, big five personality traits, and emotional intelligence on job performances and organizational commitment in teleworkers, are almost completely nonexistent. Few studies can be considered similar. For example, research conducted among Generation Z teleworkers shows that out of the big five dimensions, only openness has a strong positive impact on attitudes toward telework (Marhadi and Hendarman 2020). Clark, Karau, and Michalisin (2012) came to a different result, according to which agreeableness is positively related to telecommuting attitudes. Emotional intelligence provides mechanisms for overcoming work-related stress in teleworking employees and for preventing unwanted behavior (Neary and

Hingst 2014). The role of emotional stability in these processes is also interesting: teleworkers, who have high emotional stability, find it easier to withstand higher workload and additional work effort (Perry, Rubino, and Hunter 2018), where emotional stability is negatively related to telecommuting attitudes (Clark, Karau, and Michalisin 2012). These results may seem contradictory, but in fact, they are different influences. Finally, a case study (Iglesias-Pradas et al. 2021) showed that there is an increase in students' academic performances in emergency distance teaching (due to the Covid-19 pandemic), to which well-established organizational factors contribute significantly.

These findings indicate the potential importance of organizational and individual factors for job performance and commitment in teleworking conditions, but these links have been poorly explored. Certain papers deal with the influences of national culture, big five personality traits, and emotional intelligence on job performances and commitment, but in employees in conventional working arrangements. Thus, in general conditions, the effects of national culture on job performances and commitment were examined (Valliere 2019; Wong, Everett, and Nicholson 2008; Top et al. 2015), the effects of the big five on job performances and commitment (Yang and Hwang 2014; Mammadov 2021; Erdheim, Wang, and Zickar 2006), as well as the effects of emotional intelligence on job performances and commitment (Goleman 2005; Weinberger 2002; Skipper and Brandenburg 2013).

This paper aims to investigate the impact of national culture, big five personality traits, and emotional intelligence on job performances and organizational commitment in teleworkers. In addition, the observed impacts were examined in employees in conventional working arrangements as well, so it is possible to compare the results for employees in conventional working arrangements and teleworking employees. In essence, the working method (conventional working arrangements/teleworking) is the moderator in the given relations. The first contribution of the paper is that not only the state of job performances and organizational commitment in employees in conventional working arrangements and teleworkers was researched, but also what and how it affects that state. This fills the gap, which exists due to the lack of similar research. Another contribution of the paper is that three groups of influential variables (national culture, big five personality traits, and emotional intelligence) are examined simultaneously. In this way, a wide range of influential variables is covered, both socio-cultural and individual. In previous research, the observed impacts were most often examined partially (for employees in conventional working arrangements). This broader approach provides a more complete picture of what affects and what does not, which effects dominate, what direction and intensity they have. The research was conducted among employees (conventional working arrangements and teleworking) in the countries of the West Balkan (Bosnia and Herzegovina, Croatia, Montenegro, North Macedonia, and Serbia). The theory, hypotheses, results, discussion, and conclusions are presented below.

2. Theory and hypothesis

2.1. The importance of job performance and organizational commitment

Job performance is the total expected value that the organization receives from each employee (Weiner, Schmitt, and Highhouse 2012). According to the same authors, job performance is seen as the behavior of an employee. Researchers agree that job performance has to be observed as a multi-dimensional concept (Barling and Cooper 2008), which includes more than work performance. Therefore, in this paper, job performance is observed through the following dimensions: work performance, risk-taking, innovativeness, proactiveness, and achievement. In this way, the broader picture of the overall outcome of the employee's behavior, i.e. job performance, is seen.

Job performance influences many aspects of business including reaching professional goals, fulfilling professional expectations, improving business results of the company (Hogan and Shelton 2012), defining human resource management (Davidescu, Apostu, Paul, and Casuneanu 2020), environmental sustainability, but also aggression, stealing, withdrawal behavior and other negative aspect of employee behavioral (Bohlmann, van der Bosch, and Zacher 2018). As job performance is behavioral, it can be influenced by various external and internal aspects of the organization and private aspects of each employee. Due to the complexity of the impact on business results, it is especially important to examine the aspects that affect job performance and can predict it, especially in a teleworking environment, because this way of working is becoming more and more dominant.

Organizational commitment represents the employee's willingness and desire to make sacrifices for the benefit of the company in which they work (Weiner 1982). Employees with high organizational commitment dimensions accept the company's values and goals, have a strong sense of belonging, and are ready to increase their active involvement in business and directly help the company in times of crisis (Liou

2008). Active involvement and emotional connection with one's job or company are key elements of organizational commitment, and as such they strongly influence job performance (Ganic, Babic-Hodovic, and Arslanagic 2018). Employees are of great importance for every company, and in today's conditions of continuous and accelerated changes, it is necessary to have employees who are dedicated to their work and organization.

It is clear that organizational commitment is important for doing business, achieving company goals, progressing, overcoming problems, and surviving in times of crisis (Al-Jabari, and Ghazzawi 2019). Dedicated employees are also more willing to share knowledge (Imamoglu, et al. 2019), which can significantly facilitate the company's internal communication. The impact of organizational commitment is multi-dimensional and strong, and it is important to study how commitment can be strengthened among employees, as well as which variables have positive or negative impacts on organizational commitment. This is especially important in the context of teleworking, given that teleworking employees have significantly fewer opportunities to connect with their organization, their colleagues, and feel emotional belonging to the company they work for. Due to their working method, teleworking employees may show different reactions to certain measures implemented by the company to increase their commitment, that may show good results in conventional working arrangements.

2.2. The influence of national culture on job performance and organizational commitment

In business terms, national culture emerges as a factor influencing organizational and job performance. Thus, knowledge-friendly organizational culture is positively related to overall organizational performance, financial and non-financial. This is especially emphasized in restrained cultures (Liu, Tsui, and Kianto 2021). Elements of national culture can influence how individual employees establish their job performance management preferences (Ellis 2012). According to Prince, Prince and Kabst (2020), the link between profit sharing and job performance is stronger in cultures with high power distance, high in-group collectivism, and low uncertainty avoidance. In contrast, the link between individual bonuses and job performance is supported by an almost inverse cultural profile: low power distance, low in-group collectivism, and high uncertainty avoidance.

Culture is multidimensional and heterogeneous, and one of the reflections of this fact is that national culture dimensions are reflected in individual traits and characteristics (Valliere 2019). Psychological factors, which originate from national culture, influence risk-taking. Thus, individualism, due to its association with optimism and self-confidence, significantly enhances financial risk-taking readiness (Breuer, Riesener, and Salzmann 2012). In contrast, Based on a global sample of commercial banks from 56 countries (Illiashenko and Laidroo 2019), it has been shown that there is a negative link between individualism and bank risk-taking. This is explained by the assumption that people in collectivist societies are more willing to take risks because they expect the support of the collective, in case of an unfavorable outcome. Also, uncertainty avoidance and power distance have a significant negative impact on risk-taking (Kreiser et al. 2010).

There is an influence of national culture on national innovativeness (Deckert and Schomaker 2018). Rossberger (2014) points to the connection between national culture and personality profiles and national innovativeness. Research by Chinese, USA, and Chinese-American cultures (Wong, Everett, and Nicholson 2008), reveals that there is a cultural influence on innovation capability. Firm innovating is higher in individualistic, indulgent, and long-term oriented societies, than in conditions of low power distance, low uncertainty avoidance, and low masculine cultures (Boubakri et al. 2020). Societies with low power distance, a higher degree of individual freedom, as well as long-term orientation, generate a significantly higher number of innovations and patents (Jang, Ko, and Kim 2016). High power distance and high uncertainty avoidance reduce countries' innovation efficiency levels (Halkos and Tzeremes 2013).

National culture can also be associated with proactiveness and achievement. Uncertainty avoidance, power distance, and individualism negatively affect proactiveness (Kreiser et al. 2010). The cultural dimensions of masculinity and uncertainty avoidance are barriers to corporate green proactivity, with power distance achieving a U-shape relationship with proactivity (Wang, Guo, and Tang 2021). National culture influences how individuals define career success. Among other things, high assertiveness, high uncertainty avoidance, and high power distance cause the preference of achievement-oriented outcomes (Benson et al. 2020).

Researches around the world link national culture and organizational commitment. Research in Turkey (Top et al. 2015), reveals a strong relationship between national culture and organizational commitment. The effect of national culture also occurs in LMX relations,

person-organization fit, and work attitudes (job satisfaction and organizational commitment) in Japan and Korea (Jung and Takeuchi 2013). National culture also appears as a moderator in influencing organizational commitment. For example, satisfaction with job characteristics has an impact on organizational commitment, and national culture emerges as a moderator in this relationship (Gelade, Dobson, and Auer 2008).

Previous considerations show that national culture has an impact on different job performances and organizational commitment dimensions, in the general case. It is assumed that similar relationships exist in teleworkers, as well as that there are differences in the observed relationships in employees in conventional working arrangements and teleworkers. Accordingly, in this section, three hypotheses are posed:

H1a: There are statistically significant correlations between some dimensions of national culture and some of the job performance and organizational commitment dimensions, in teleworking employees in the West Balkan region.

H1b: There is a statistically significant predictive effect of some national culture dimensions on some of the job performance and organizational commitment dimensions, in teleworking employees in the West Balkan region.

H1c: Working method (conventional working arrangements or teleworking) moderates the relationship between national culture and job performance and organizational commitment, in the West Balkan region.

2.3. The influence of Big Five on job performance and organizational commitment

The Big Five represents the "scientific standard" when discussing personality (Paleczek, Bergner, and Rybnicek 2018). Also, the big five is the most widely accepted and most widely used personality taxonomy for predicting occupational behavior and work success (Barrick, Mount, and Judge 2001). For example, the big five personality traits affect the level of job performance and satisfaction of hotel employees in Hong Kong, with the degree of this impact depending on the employees' frequency of contact with hotel guests (Lan, Wong, and Zeng 2021). According to (Perera, Granziera, and McIlveen 2018), teachers' big five personality profiles affect teaching self-efficacy, work engagement, and job satisfaction. The Big Five personality traits are viewed as a constant behaviour paterns with a stable effects on person's behaviuor and feelings (Tutar et al. 2020), so it can be presumed that their influence in the work place and on job performance and commitment is constant as well.

The results of researches on the impact of the big five dimensions on different business outcomes and job performance often indicate various effects of individual dimensions, which can be positive, negative, or neutral. Research in China shows that all big five dimensions have a significant impact on job performance, especially agreeableness and extraversion, while only extraversion has an impact on job satisfaction (Yang and Hwang 2014). The big five dimensions are significant predictors of job performance and career success, with the strongest positive influences manifested by emotional stability, extraversion, and conscientiousness (Paleczek, Bergner, and Rybnicek 2018).

According to Ono et al. (2011), neuroticism negatively affects job performance and conscientiousness modestly. Similarly, Cubel et al. (2016) find that conscientiousness affects positively, and neuroticism affects negatively job performance. According to Van Aarde, Meiring, and Wiernik (2017), job performance is mostly affected by conscientiousness.

The big five personality traits (conscientiousness, disagreeableness, and emotional stability) have an impact on job performance, with the mediation of intrapreneurial behavior (Mahmoud, Ahmad, and Poespowidjojo 2020). The strongest positive predictor of team performance is conscientiousness, while openness to experience has a modest negative prediction on team performance (O'Neill and Allen 2011). Alessandri and Vecchione (2012) examined the impact of stability and plasticity (the two higher-order factors of personality) on job performance: stability is significantly associated with job performance, while this is not the case with plasticity.

One group of studies deals with the effects of the big five personality traits on innovativeness, motivation, and intrapreneurial characteristics. In software engineers, the big five and proactive personalities are significant predictors of individual job performance (Rodrigues and Rebelo 2019). Also, national culture and personality profiles have an impact on national innovativeness (Rossberger 2014). The big five personality dimensions affect motivation as well as job satisfaction (Furnham, Eracleous, and Chamorro-Premuzic 2009).

The impact of the big five model on organizational commitment can still be considered. According to Erdheim, Wang and Zickar (2006), extroversion is significantly associated with all organizational commitment dimensions; neuroticism, conscientiousness, and openness to experience are related to continuance commitment; agreeableness is significantly related to normative commitment. In the higher institutes

in Pakistan, it has been found that the big five personality traits have an impact on organizational commitment: extroversion, agreeableness, and conscientiousness positively affect affective commitment; neuroticism and openness to experience negatively affect affective commitment; neuroticism, extroversion, and agreeableness negatively affect continuance commitment (Farrukh, Ying, and Mansori 2017). Similarly, some more research confirms high extraversion enhances affective commitment (Choi, Oh, and Colbert 2015; Syed, Saeed, and Farrukh 2015). Tziner et al. (2008) found that the big five personality traits affect job satisfaction and organizational commitment. Some big five dimensions have an impact on organizational commitment dimensions, in addition to mediating the role of work satisfaction (Spagnoli and Caetano 2012).

There is no doubt that, in the general case, there are influences of individual big five dimensions on job performance and organizational commitment. It is assumed that similar relationships exist in teleworking persons, as well as that there are differences in the given relations in employees in conventional working arrangements and teleworkers. In this section, three hypotheses are posed:

H2a: There are statistically significant correlations between some of the big five dimensions and some of the job performance and organizational commitment dimensions, in teleworking employees in the West Balkan region.

H2b: There is a statistically significant predictive effect of some big five dimensions on some of the job performance and organizational commitment dimensions, in teleworking employees in the West Balkan region.

H2c: The working method (conventional working arrangements or teleworking) moderates the relationship between the big five dimensions and job performance and organizational commitment, in the West Balkan region.

2.4. The influence of emotional intelligence on job performance, and organizational commitment

Emotional intelligence is a useful tool for improving the quality of life, as well as raising the level of job performance (Ignat and Clipa 2012). According to Goleman (2005), emotional intelligence enhances job performance and effectiveness. Many researchers in the field of organizational behavior recognize the importance that emotional intelligence has in achieving employees' job performance (Weinberger 2002). Even in practical conditions, "soft skills", such as emotional intelligence, are becoming increasingly important in assessing the potential work performance of future workers, compared to classical professional knowledge (Skipper and Branddenburg 2013).

Consistent with the above, it is logical that there is a large number of research examining the links between emotional intelligence and different job performance. These researches occur in organizations of different industries, with people of different professions, as well as in different countries. A strong link between emotional intelligence and job performance has also been confirmed in call center agents in the UK (Higgs 2004). Emotional intelligence affects job performance, in employees in the Indian insurance sector (Ahuja 2011). Mishra and Mohapatra (2010) showed that in India there is a positive relationship between emotional intelligence and job performance. Another study in India (Gunavathy and Ayswarya 2011) concludes that emotional intelligence positively affects job satisfaction and job performance, in women employed in the IT sector in India. Similarly, in librarians in Pakistan, emotional intelligence affects job satisfaction, and this can then have a beneficial effect on job performance (Khan, Masrek, and Nadzar 2016).

In nurses in Japan, emotional intelligence positively influences nursing performance (Fujino et al. 2014). Likewise, in student nurses, emotional intelligence has a predictive effect on practice and academic performance (Rankin 2013). Blaik Hourani, Litz and Parkman (2020) found that emotional intelligence can influence a school leader's overall performance. A positive relationship between emotional intelligence and job performance exists in criminal investigation officers (Sembiring et al. 2020).

Also important for this paper are the effects of emotional intelligence on risk-taking, innovativeness, proactiveness, and achievement. There is a positive correlation between emotional intelligence and financial risk-taking, and emotional intelligence is a key determinant of risk-taking (Bucciol, Guerrero, and Papadovasilaki 2021). People with lower levels of emotional understanding are less willing to risk take (Yip and Côté 2012). According to Zhang, Chen, and Sun (2015), emotional intelligence encourages employees' innovation performance. In sales representatives, emotional intelligence encourages creativity, innovation, and key work outcomes (Lassk and Shepherd 2013), adaptability and proactivity (Bande and Fernández-Ferrín 2015), and successful sales performance (De La Cruz, D'Urso, and Ellison 2014).

In addition to the above, emotional intelligence also appears as a significant predictor of organizational commitment. For example, according to Naderi

Anari (2012), emotional intelligence achieves a significant relationship on teachers' job satisfaction and organizational commitment. In nurses, emotional intelligence, among other things, contributes to greater commitment (Faria, Ramalhal, and Bernardes Lucas 2019; Levitats and Vigoda-Gadot 2017). Nicholls et al. (2012) associate skills with emotional intelligence, such as organizational commitment, public speaking, teamwork, and leadership. Workers with greater emotional intelligence also show greater affective commitment, as well as better job performance (Sastre Castillo and Danvila Del Valle 2017). Similarly, compassion at work develops a positive work-related identity, and this, in turn, leads to the strengthening of affective organizational commitment (Moon et al. 2016). According to Gelaidan, Al-Swidi and Mabkhot (2018), emotional intelligence has a significant impact on employees' readiness for change, with organizational commitment being the mediator in this relationship. Also, emotional intelligence enables the achievement of organizational commitment in conditions of unfavorable leadership (Jabbar et al. 2020).

In general, emotional intelligence has significant effects on job performance and organizational commitment. It is not difficult to assume that similar relationships occur in teleworkers, as well as that there are differences between the given relations in employees in conventional working arrangements and teleworkers. In this section, three hypotheses are posed:

H3a: There are statistically significant correlations between some of the emotional intelligence dimensions and some of the job performance and organizational commitment dimensions, in teleworking employees in the West Balkan region.

H3b: There is a statistically significant predictive effect of some emotional intelligence dimensions on some of the job performance and organizational commitment dimensions, in teleworking employees in the West Balkan region.

H3c: Working method (conventional working arrangements or teleworking) moderates the relationship between the emotional intelligence dimensions and job performance and organizational commitment, in the West Balkan region.

3. Method

3.1. Survey instruments (measures)

National culture. The instrument of the GLOBE project was used to measure national culture (House et al. 2002). The "as is" condition is examined. Respondents answer the questions via a seven-point Likert scale, and the completed questionnaires are processed according to GLOBE Syntax. The questionnaire has 39 questions, which make up nine dimensions of national culture (House et al. 1999; House et al. 2002; House et al. 2004).

Big Five. The Big Five personality traits were measured using the Ten Item Personality Inventory instrument, developed by Gosling, Rentfrow and Swann (Gosling et al. 2003). Respondents form their answers according to the seven-point Likert scale. Each personality type is determined by two questions, one of which is inverse.

Emotional intelligence. The employees' emotional intelligence is measured through Weisinger's (1998) EI model as a personality trait. The respondents made their evaluations on a five-point Likert scale. The questionnaire consists of 25 items and five dimensions.

Work performances. A questionnaire was used to measure work performance according to references (Williams and Anderson 1991; Welbourne, Johnson, and Erez 1998; Kwahk and Park 2018). Responses were evaluated via a five-point Likert scale. The questionnaire has five items, which make up one dimension.

Risk-taking, Innovativeness, and Proactiveness were measured using the Individual Entrepreneurial Orientation (EMI) questionnaire (Bolton and Lane 2012). Respondents assess a seven-point Likert scale. The questionnaire has 10 items that makeup three dimensions.

Achievement. To measure achievement, the eponymous dimension from the Attitude Toward Enterprise (ATE) Test questionnaire was used (Athayde 2009). Respondents assess a seven-point Likert scale. The dimension consists of four items.

Organizational commitment. Cook and Wall (1980) developed an instrument that measured Organizational Commitment. Responses were evaluated via a five-point Likert scale. The instrument has 9 items and three dimensions.

3.2. Participants and data collection

The research was carried out in organizations from five West Balkan countries: Bosnia and Herzegovina, Croatia, Montenegro, North Macedonia, and Serbia. Respondents were employed in organizations in these countries, with the sample comprising employees in conventional working arrangements and teleworking employees. Respondents completed the questionnaires online. 450 questionnaires were sent, a total of 324 questionnaires arrived, out of which 11 questionnaires were rejected because they were incomplete. Thus, the final sample consisted of a total of 313 valid

questionnaires. Of these, the sample has 151 employees in conventional working arrangements (48.24%), and 162 teleworking employees (51.76%). This sample distribution allows for comparative analysis between the two groups of employees.

4. Results

4.1. Descriptive statistics

The results of descriptive statistics, for national culture, big five, emotional intelligence, job performance, and organizational commitment dimensions, are given in Table 1. In this table, you can see the names dimensions, abbreviations, mean, standard deviation, and Cronbach's alpha for each dimension. Cronbach's alpha values range from 0.712 to 0.892.

4.2. Impact of national culture on job performance and organizational commitment

Coefficients of correlation between national culture and job performance and organizational commitment dimensions are given in Table 2 (for employees in conventional working arrangements and teleworking employees separately). Pearson correlation was used, * $p < 0.05$; ** $p < 0.01$. At the same time, in Table 2, the results of the examination of the moderator effect of the working method on the observed relations are presented. Hierarchical regression analysis was used. Pairs with a confirmed moderating effect are marked with shaded fields.

Although only three pairs in which a moderator effect occurs have been confirmed (Table 2), it is easy to see that the correlations are significantly stronger in employees in conventional working arrangements,

Table 1. Desriptive statistics

Dimensions	Abbr.	N	Min	Max	Mean	Std. Deviation	Cronbach's alpha
Uncertainty Avoidance	NC1	313	1.000	6.250	3.226	1.072	0.745
Future Oriented	NC2	313	1.000	6.000	2.648	0.982	0.792
Power Distance	NC3	313	1.600	7.000	6.161	0.851	0.830
Collectivism 1 - Institutional	NC4	313	1.500	7.000	4.065	0.985	0.737
Humane Orientation	NC5	313	1.000	6.200	3.719	0.987	0.720
Performance Orientation	NC6	313	1.000	6.667	2.577	1.134	0.712
Collectivism 2 - In-group	NC7	313	2.000	7.000	5.067	0.835	0.751
Gender Egalitarianism	NC8	313	1.000	6.500	3.278	1.380	0.746
Assertiveness	NC9	313	1.000	6.500	3.257	0.981	0.754
Extroversion	E	313	1.000	7.000	5.102	1.373	0.767
Agreeableness	A	313	1.500	7.000	5.477	1.122	0.795
Conscientousness	C	313	1.500	7.000	5.635	1.239	0.849
Neuroticism	N	313	1.000	7.000	3.298	1.440	0.823
Openness to experience	O	313	1.000	7.000	5.755	1.142	0.796
Self-awareness	EI1	313	2.000	5.000	4.157	0.587	0.715
Self-regulation	EI2	313	1.400	5.000	3.824	0.668	0.785
Motivation	EI3	313	1.800	5.000	3.956	0.650	0.859
Empaty	EI4	313	2.200	5.000	4.125	0.595	0.739
Social skill	EI5	313	1.800	5.000	4.103	0.613	0.731
Work performances	WP	313	3.600	7.000	6.281	0.785	0.876
Risk-taking	RT	313	1.000	7.000	4.773	1.363	0.801
Innovativeness	IN	313	1.000	7.000	5.003	1.246	0.817
Proactiveness	PR	313	1.000	7.000	5.550	1.120	0.777
Achievement	ACH	313	1.000	7.000	5.083	1.339	0.892
Organizational identification	OCM1	313	1.000	5.000	3.696	1.212	0.868
Organizational involvement	OCM2	313	1.000	5.000	4.020	0.942	0.785
Organizational loyalty	OCM3	313	1.000	5.000	2.915	1.332	0.758
Valid N (listwise)		313					

while in teleworking employees there are almost no statistically significant correlations. Also, in teleworking employees there is no strong influence on organizational commitment, these effects are concentrated with employees in conventional working arrangements. This can be explained by the fact that employees in conventional working arrangements are far more in touch with national culture, they feel it more directly and more strongly, and they transfer that emotion to their organization in which they are physically much more present. There are two exceptions. First, teleworking employees are more affected by NC3 - Power Distance on ACH - Achievement. Secondly, in teleworking employees NC7 - Collectivism 2 - In-group has a much stronger effect on PR - Proactiveness. These relations are explained below when discussing the results of regression analysis.

Using Multiple Regression analysis, the predictive effect of the national culture dimensions (independent variables) on the job performance and organizational commitment (dependent variables) was examined. These results are given in Table 3. Bold font and shaded fields indicate results in which there is a statistically significant predictive effect.

Regression analysis in teleworking employees (Table 3) reveals somewhat more statistically significant predictive effects. Thus, NC2 - Future-Oriented reduces RT - Risk-taking, and NC5 - Humane Orientation reduces RT - Risk-taking and IN - Innovativeness.-The perception that society is future-oriented and people-oriented can lead to certain drowsiness, relaxation, and a reduced need to take risks and strive for innovation. Further, NC3 - Power Distance reduces RT - Risk-taking and ACH-Achievement. Teleworking employees may have a greater fear of power distance, precisely because they do not feel it directly: they know it exists, but they do not see it and do not know it, they are not used to dealing with it, so it makes them feel even more uncomfortable, unwillingness to take risks and futile struggles to achieve some personal goals. Then they close themselves even more in their safe zone of telework and watch their jobs, without too much desire to take risks, to fight, and invest too much energy. NC4 - Collectivism 1 - Institutional reduces OCM2 - Organizational involvement: the perception of increased institutional collectivism in society and commitment to the collective, in teleworkers can contribute to the expression of their weak involvement in achieving the well-being of the organization in which they telework. Only NC7 - Collectivism 2 - In-group has a positive predictive effect, on IN - Innovativeness and PR - Proactiveness. To understand this, it should be recalled that one typical item in the NC7 construct reads: "In this society, children generally live at home

Table 2. Coefficients of correlation between the national culture and job performance and organizational commitment dimensions (employees in conventional working arrangements and teleworking employees)

Working method		WP	RT	IN	PR	ACH	OCM1	OCM2	OCM3
Conv.	NC1	-0.045	0.031	0.043	0.030	0.075	0.195*	0.161*	0.205*
	NC2	-0.049	**0.090**	0.143	0.057	0.063	0.221**	0.191*	**0.218****
	NC3	0.052	-0.051	-0.031	-0.083	-0.089	-0.192*	-0.126	-0.222**
	NC4	0.049	-0.003	-0.017	-0.013	0.088	-0.061	-0.043	-0.125
	NC5	-0.020	0.021	-0.085	-0.012	0.038	0.207*	0.107	0.117
	NC6	-0.080	0.087	0.051	0.031	0.078	0.278**	0.196*	0.230**
	NC7	0.083	0.084	0.045	0.035	0.150	0.065	0.072	0.022
	NC8	0.093	-0.006	-0.036	**0.149**	0.117	0.196*	0.156	0.168*
	NC9	0.100	0.062	0.034	0.005	0.036	0.230**	0.218**	0.156
Telework	NC1	-0.129	-0.022	-0.016	-0.059	0.035	0.078	0.052	0.088
	NC2	0.011	**-0.113**	0.038	-0.014	-0.039	0.036	-0.001	**-0.052**
	NC3	0.132	-0.152	-0.096	-0.056	-0.194*	-0.100	-0.029	-0.094
	NC4	-0.078	0.065	0.099	0.053	0.071	-0.072	-0.130	-0.075
	NC5	-0.009	-0.149	-0.089	-0.037	-0.116	0.111	0.052	0.088
	NC6	-0.076	0.027	0.025	-0.062	-0.052	0.124	0.065	0.063
	NC7	0.059	-0.020	0.138	0.184*	-0.020	0.015	0.095	-0.047
	NC8	-0.015	0.033	-0.061	**-0.113**	-0.037	0.107	0.077	0.044
	NC9	0.010	-0.052	0.017	0.018	-0.103	0.147	0.110	0.025

*p<0.05; **p<0.01

Table 3. Regression analysis (independent variables: national culture dimensions; dependent variables: job performance and organizational commitment dimensions) (teleworking employees)

Depend.	Indep. β									R^2	F	Sig.
	NC1	NC2	NC3	NC4	NC5	NC6	NC7	NC8	NC9			
WP	-0.141	0.078	0.139	-0.071	0.040	-0.021	0.078	0.014	0.041	0.049	0.872	0.552
RT	-0.005	**-0.181**	**-0.220**	0.095	**-0.248**	0.062	-0.002	0.060	0.018	0.100	1.876	0.060
IN	-0.037	0.000	-0.120	0.081	**-0.179**	0.060	**0.166**	-0.099	0.040	0.067	1.219	0.288
PR	-0.052	-0.027	-0.113	0.037	-0.063	-0.056	**0.214**	-0.149	0.071	0.075	1.366	0.208
ACH	0.093	-0.057	**-0.309**	0.078	-0.139	-0.122	-0.004	-0.004	-0.078	0.102	1.912	0.054
OCM1	0.024	-0.037	-0.044	-0.088	0.031	0.037	-0.023	0.033	0.101	0.037	0.658	0.746
OCM2	0.029	-0.045	0.006	**-0.147**	-0.019	0.035	0.088	0.014	0.095	0.042	0.734	0.677
OCM3	0.091	-0.098	-0.093	-0.083	0.085	0.010	-0.065	0.000	-0.024	0.039	0.678	0.728

with their parents until they get married". Thus, the perception of high group collectivism may also indicate a perception of low standard, so teleworkers become motivated by innovativeness and proactiveness. The values of the corrected determination indexes R^2 are not statistically significant.

4.3. Impact of Big Five personality traits on job performance and organizational commitment

Coefficients of correlation between the big five and job performance and organizational commitment dimensions are given in Table 4 (for employees in conventional working arrangements and teleworking employees separately). Pearson correlation was used, * p <0.05; ** p <0.01. At the same time, in Table 4, the results of the examination of the moderator effect of the working method on the observed relations are presented. Hierarchical regression analysis was used. Pairs with a confirmed moderating effect are marked with shaded fields.

Hierarchical regression analysis confirmed only three pairs in which a statistically significant moderating effect occurs (Table 4). In other cases, not only is there no moderating effect, but the impacts are variable: some are stronger in employees in conventional working arrangements and some in teleworking employees. That is why the focus is on three relations where there is moderation. First, C-Conscientiousness has a stronger effect on WP-Work performances in employees in conventional working arrangements. Teleworkers usually have some deadlines within which they have to do their part of the job, so whether they are conscientious or not, they usually have to finish the job. Second, A - Agreeableness has a greater impact on OCM2 - Organizational involvement in teleworking

Table 4. Coefficients of correlation between the big five personality traits and job performance and organizational commitment dimensions (employees in conventional working arrangements and teleworking employees)

Working method		WP	RT	IN	PR	ACH	OCM1	OCM2	OCM3
Conv.	E	0.056	0.329**	0.297**	0.094	0.451**	0.167*	0.238**	0.103
	A	0.244**	0.099	0.145	0.177*	0.140	-0.049	**0.009**	-0.011
	C	**0.624****	0.180*	0.106	0.430**	0.346**	0.079	0.284**	0.078
	N	-0.265**	-0.262**	-0.177*	-0.259**	-0.339**	-0.071	-0.073	-0.076
	O	**0.181***	0.398**	0.545**	0.347**	0.480**	0.154	0.173*	0.007
Telework	E	0.176*	0.224**	0.256**	0.200*	0.441**	0.208**	0.209**	0.048
	A	0.430**	-0.013	0.001	0.100	0.017	0.124	**0.227****	0.054
	C	**0.475****	0.164*	0.160*	0.470**	0.312**	0.101	0.227**	-0.015
	N	-0.211**	-0.205**	-0.018	-0.162*	-0.150	-0.129	-0.177*	-0.071
	O	**0.371****	0.467**	0.517**	0.423**	0.513**	0.125	0.173*	-0.036

*p<0.05; **p<0.01

employees. In conventional conditions, "agree employees" are desirable to most bosses because of their cooperation, tolerance, and altruism. Then, knowing they are a favorite with supervisors, "agree" employees in conventional working arrangements can relax and be less involved. "Agree" teleworking employees do not have as much opportunity to please bosses, they have to do their part of the job, so their conciliation certainly contributes to the engagement for the benefit of the organization. Third, O - Openness has a stronger effect on WP - Work performances in teleworking employees. Telework usually involves the application of modern IC technologies, new approaches to problem-solving, continuous learning, and improvement, which suits better to open people. They, as creative and unconventional people, can especially stand out in performances, if their way of working is like that - unconventional, remote.

Using Multiple Regression analysis, the predictive effect of the national culture dimensions (independent variables) on the job performance and organizational commitment (dependent variables) was examined. These results are given in Table 5. Bold font and shaded fields indicate results in which there is a statistically significant predictive effect.

Regression analysis for teleworking employees (Table 5) reveals several predictive effects. They are most concentrated in dimension O - Openness (the explanation is similar to correlation analysis). It is obvious that this attitude is further transferred to the job performance of open people. The influence of Dimension C - Conscientiousness is also expressed: reliability, self-discipline, and organization can only have a favorable effect on job performances. A - Agreeableness statistically significantly and positively predicts WP - Work performances, but statistically significantly and negatively predicts RT - Risk-taking and ACH - Achievement. Finally, E - Extroversion has a beneficial effect on ACH - Achievement, but also on OCM1 - Organizational identification. Extrovert people, as optimists, assertive and dominant, may have an increased desire to stand out in society, and therefore have greater achievement. Also, due to their friendliness and communication, they can more easily feel like part of the company and be proud of their work, and as a result, their identification with the organization grows. The values of the corrected determination indexes R^2 are relatively high and statistically significant for all job performances and OCM2 - Organizational involvement.

4.4 Impact of emotional intelligence personality traits on job performance and organizational commitment

Coefficients of correlation between emotional intelligence and job performance and organizational commitment dimensions are given in Table 6 (for employees in conventional working arrangements and teleworking employees separately). Pearson correlation was used, * $p < 0.05$; ** $p < 0.01$. At the same time, in Table 6, the results of the examination of the moderator effect of the working method on the observed relations are presented. Hierarchical regression analysis was used. Pairs with a confirmed moderating effect are marked with shaded fields.

Hierarchical regression analysis revealed a slightly higher number of pairs with a moderating effect of the working method (Table 6). As a rule, correlations are stronger in employees in conventional working arrangements than in teleworking employees, and the same tendency occurs in cases where there is no statistically significant moderating effect. This can be explained by the reduced direct social interaction in teleworking employees, who actually need emotional

Table 5. Regression analysis (independent variables: big five dimensions; dependent variables: job performance and organizational commitment dimensions) (teleworking employees)

Depend.	Indep. E β	A	C	N	O	R^2	F	Sig.
WP	-0.041	**0.307**	**0.358**	0.075	**0.217**	**0.360**	17.516	0,000
RT	0.066	**-0.179**	0.011	-0.118	**0.449**	**0.253**	10.566	0.000
IN	0.087	-0.126	0.057	0.131	**0.533**	**0.305**	13.662	0.000
PR	0.012	-0.078	**0.411**	0.065	**0.326**	**0.315**	14.323	0.000
ACH	**0.293**	**-0.189**	**0.184**	0.024	**0.394**	**0.382**	19.257	0.000
OCM1	**0.173**	0.055	0.014	-0.072	0.020	0.056	1.853	0.106
OCM2	0.128	0.139	0.129	-0.054	0.032	**0.103**	3.570	0.004
OCM3	0.065	0.047	-0.050	-0.088	-0.082	0.016	0.492	0.782

Table 6. Coefficients of correlation between the emotional intelligence and job performance and organizational commitment dimensions (employees in conventional working arrangements and teleworking employees)

Working method		WP	RT	IN	PR	ACH	OCM1	OCM2	OCM3
Conv.	EI1	0.378**	0.321**	0.280**	0.309**	0.367**	0.255**	0.201*	0.136
	EI2	0.322**	0.389**	**0.489****	0.365**	**0.523****	0.295**	0.263**	0.263**
	EI3	**0.513****	0.405**	0.284**	0.511**	0.507**	0.208*	0.267**	0.141
	EI4	0.244**	**0.349****	**0.363****	0.293**	0.377**	0.254**	0.243**	0.199*
	EI5	0.266**	0.332**	**0.351****	0.251**	0.346**	0.266**	0.249**	0.164*
Telework	EI1	0.323**	0.223**	0.185*	0.203**	0.241**	0.115	0.185*	0.015
	EI2	0.167*	0.358**	**0.234****	0.237**	**0.286****	0.222**	0.207**	0.139
	EI3	**0.343****	0.335**	0.328**	0.401**	0.328**	0.176*	0.243**	0.052
	EI4	0.278**	**0.142**	**0.169***	0.246**	0.287**	0.121	0.191*	0.050
	EI5	0.267**	0.195*	**0.179***	0.294**	0.302**	0.180*	0.261**	0.130

*p<0.05; **p<0.01

intelligence less and it helps them less at work. In telework, things are based on electronic communication, and very importantly, on results. There is no room to directly influence superiors and associates in a direct conversation with an emotional skill: the work done speaks for itself. It should not be forgotten that correlations in teleworking employees are still statistically significant and positive, just weaker than in employees in conventional working arrangements. At the same time, emotional intelligence influences job performances more than organizational commitment, which is more influenced by organizational and social aspects. The biggest impact is on ACH - Achievement, and the smallest on OCM3 - Organizational loyalty, so loyalty does not depend too much on personality traits and emotional intelligence. EI3 - Motivation and EI2 - Self-regulation have the greatest impact: motivated people will achieve the best performances, as well as people who are calm and know how to work under pressure.

Using Multiple Regression analysis, the predictive effect of the national culture dimensions (independent variables) on the job performance and organizational commitment (dependent variables) was examined. These results are given in Table 7. Bold font and shaded fields indicate results in which there is a statistically significant predictive effect.

Regression analysis for teleworking employees (Table 7) shows statistically significant predictive effects in a significant number of cases. Following the results of the correlation analysis, the predictive effects of EI3 - Motivation and EI2 - Self-regulation stand out. It is interesting that now, due to the effect of a large number of independent variables, EI2 - Self-regulation has a negative effect on WP - Work performances. Too much composure and cold-bloodedness may lead to calmness and relaxation, which results in a drop in work performance. It should also be noted that EI2 - Self-regulation has a positive effect on OCM3 - Organizational loyalty: stability can lead to the desire to stay in the organization.

Dimension EI5 - Social skill also appears as a significant predictor, on OCM2 - Organizational involvement and OCM3 - Organizational loyalty. Teleworking employees with better social skills understand that their involvement is necessary because of colleagues, since in teleworking conditions usually, everyone works as part of a team. For the same reason, EI5 - Social skill has a positive effect on PR - Proactiveness. Also, social skills contribute to the establishment of quality communication and good relations with colleagues, which means that such employees are attached to people in the organization, so their loyalty may stem from there. Finally, there is the negative effect of EI1 - Self-awareness on OCM3 - Organizational loyalty. Self-conscious teleworking employees, who know themselves and their emotions, may be dissatisfied because they think they deserve more and better, so their loyalty declines. In support of this statement is the fact that EI1 - Self-awareness has a negative (but not statistically significant) effect on other organizational commitment dimensions, and especially on involvement: as if they do not even want to identify, so as not to "admit" that they are satisfied with the organization and to leave room for eventual departure. The positive effect on WP - Work performances, shows that high self-awareness teleworkers can be diligent, efficient, and high quality, but they certainly think they deserve better. The values of the corrected determination indexes R^2 are statistically significant for all observed dependent variables, except for OCM3 - Organizational loyalty.

Table 7. Regression analysis (independent variables: emotional intelligence dimensions; dependent variables: job performance and organizational commitment dimensions) (teleworking employees)

Depend.	Indep. EI1	EI2	EI3 β	EI4	EI5	R^2	F	Sig.
WP	**0.238**	**-0.279**	**0.354**	0.074	0.009	**0.175**	6.603	0.000
RT	-0.123	**0.285**	0.187	-0.085	0.135	**0.151**	5.562	0.000
IN	-0.105	0.037	**0.329**	0.045	0.043	**0.113**	3.960	0.002
PR	-0.216	-0.045	**0.453**	0.009	**0.241**	**0.200**	7.819	0.000
ACH	-0.164	0.130	**0.217**	0.121	0.154	**0.150**	5.492	0.000
OCM1	-0.192	**0.247**	0.044	-0.062	0.229	**0.074**	2.503	0.033
OCM2	-0.101	0.067	0.161	-0.083	**0.293**	**0.095**	3.277	0.008
OCM3	**-0.254**	**0.277**	-0.074	-0.121	**0.309**	0.065	2.175	0.060

5. Discussion

5.1. Discussion of relations between national culture and job performance and organizational commitment

In Table 2, this research showed that national culture has a much greater impact on organizational commitment among employees in a conventional workking arrangements. This finding is a natural sequence because these employees are more exposed to the national culture in the workplace, share their values with colleagues and engage in cultural exchange at work. Such findings have been confirmed in other studies (Liu Tsui, and Kianto 2021; Breuer, Riesener, and Salzmann 2012; Top et al. 2015; Jung and Takeuchi 2013; Gelade, Dobson, and Auer 2008). Unlike them, national culture has a negative effect on certain dimensions of job performance, such as RT - Risk Taking, among teleworkers. Teleworking employees are significantly less connected with colleagues and national culture has no significant impact on their overall work performance and organizational commitment. National culture can affect the percentage of teleworkers (Wojčák, and Baráth 2017), but in the absence of research, it is not clear whether the influence of national culture manifests itself in job performance and organizational culture among teleworking employees.

In Table 3, we can clearly see the negative influence of the dimensions of national culture among teleworking employees: NC2 - Future oriented on RT - Risk-taking, NC5 - Human orientation on RT - Risk-taking, and IN - Innovativeness and NC3 - Power distance on RT - Risk-taking and ACH - Achievement. Such influences can be explained by the fact that in a society that is too oriented towards people and the future people may more often strive for security, so it will be less willing to take risks. It is natural that teleworking employees are afraid of power distance, because they are not exposed to colleagues and subordinates every day. At the same time, NC 4 – Collectivism 1 Institutional reduces OCM 2 - Organizational involvement among teleworking employees. These employees generally like their way of working and it is possible that their orientation towards the company reduces their desire for additional involvement, they just want to do their job. On the other hand, NC7 - Collectivism 2 In Group, has a positive effect on IN - Innovativeness and PR - Proactiveness, which additionally indicates that teleworking employees focus on their work, and that interaction with colleagues inspires them to work better.

Based on the above, it can be concluded that hypothesis H1a has not been confirmed, but hypothesis H1b has been partially confirmed because there are certain statistically significant predictive effects. Hypothesis H1c is partially confirmed because the working method (conventional working arrangements/teleworking) is not a strong moderator in the observed relations. Statistically significant moderating effects exist in only a few cases, so the impacts are generally stronger in employees in conventional working arrangements.

5.2. Discussion of relations between Big Five personality traits and job performance and organizational commitment

In the Table 4 within employees in conventional working arrangements, there is a stronger influence of C - Conscientiousness on WP - Work Performances, than in their teleworking colleagues. This can be justified by the fact that they are more exposed to the work environment and are directly informed about their

deadlines, as well as other people's activities, so they can have a better understanding of the complexity of certain work tasks. Research already confirms the impact of the Big Five on Job Performance in conventional working arrangements (Lan, Wong, and Zeng 2021; Perera, Granziera, and McIlveen 2018; Yang and Hwang 2014; Paleczek, Bergner, and Rybnicek 2018). A similar conclusion was presented in (Bakker, Demerouti, and ten Brummelhuis 2012). Social skills can have a great influence in this relationship in employees in conventional working arrangements (Witt, and Ferris 2003).

Within teleworking employees, the impact of O - Openness on WP - Work Performance is significantly greater than within employees in conventional working arrangements. Teleworking employees must be ready for changes, they must be open to learning and improving themselves, and this can certainly have a positive effect on their work performance. Torten, Reaiche, and Caraballo (2016) make a similar point. Within teleworking employees, A - Agreeableness has a great influence on OCM2 - Organizational involvement. These employees are more engaged in work, less exposed to distractions, and must make an extra effort in communication to clearly demonstrate their commitment, because they do not have the advantage of being surrounded by their colleagues and superiors.

Table 5 shows the predictive effects, most of which are gathered around the O - Openness dimension. First of all, this result can be considered consistent with the findings of Marhadi and Hendarman (2020), who found that openness has a positive effect on attitudes toward telework. O - Openness has a positive effect on all dimensions of Job performance. Also, a positive impact on job performance among teleworking employees was observed in the dimensions of C - Conscientiousness, A - Agreeableness, and E - Extroversion. The negative influence of A - Agreeableness was observed for the dimensions RT - Risk-taking and ACH - Achievement. "Agree" people can easily have a more emphasized fear of risk, or simply, a lower need to take risks, as well as a lower need to achieve because they are generally satisfied with what they are, but they can certainly have high job performance. Clark, Karau, and Michalisin (2012) found that agreeableness causes positive attitudes toward telecommuting. Perhaps these favorable attitudes support the previous statements: "agree people" are by nature conciliatory, relatively easily become satisfied, do not want to take risks, and do not have a high need for achievement, but a positive attitude still leads them to good work performance. E - Extroversion, on the other hand, has a positive effect on ACH - Achievement and OCM1 - Organizational identification, which is natural; extroverted employees have a desire to stand out, and will achieve this in a teleworking work environment.

Based on the above, it can be concluded that hypothesis H2a and H2b have been confirmed, because there are statistically significant influences and predictive effects, in a large number of cases. Hypothesis H2c is partially confirmed because the working method (conventional working arrangements/teleworking) is not a strong moderator in the observed relations. Statistically significant moderating effects exist in only a few cases.

5.3. Discussion of relations between emotional intelligence and job performance and organizational commitment

Table 6 shows the correlations of emotional intelligence and job performance and organizational commitment. All significant correlations are on the side of the employees in conventional working arrangements, which is natural, because they are directly exposed every day to the work environment and engage in interactions in which they must use their emotional and social intelligence. It is interesting to note that emotional intelligence has a greater influence on job performance than on organizational commitment, and the weakest influence is on the dimension of OCM3 - Organizational loyalty. Motivated employees are the most goal-oriented. When talking about teleworking employees, it is EI3 - Motivation and EI2 - Self-regulation that have the most positive effects on job performance. It is surprising that EI2 - Self-regulation has a negative effect on the WP - Work Performance dimension, but according to Clark, Karau, and Michalisin (2012), emotional stability negatively affects attitudes toward telework, so even such an attitude can adversely affect the work performance of high self-regulation people, in teleworking conditions. But, such people take risks more easily (positive predictive effect on RT - Risk-taking) and have higher values of OCM3 - Organizational Loyalty. In general, these results of the emotional intelligence dimensions can be considered consistent with the results of Neary and Hingst (2014), who found that emotional intelligence reduces work-related stress in teleworking employees and prevents unwanted behavior.

EI5 - Social Skills have a positive effect on OCM2 - Organizational involvement, OCM3 - Organizational loyalty, and PR - Proactiveness, which is a very natural sequence, because employees with good social skills

create better teams. This is especially important for teleworking employees, who, due to the way they work, are not in a situation to socialize sufficiently with their colleagues. EI1 - Self-awareness has a positive impact on WP - Work Performance, but a negative impact on all other dimensions of job performance and organizational commitment, which shows that employees who know their worth and do their job well will not be loyal to their company.

Based on the above, it can be concluded that hypothesis H3a and H3b have been confirmed, because there are statistically significant influences and predictive effects, in a large number of cases. Hypothesis H3c was confirmed because the working method (conventional working arrangements/teleworking) is the moderator in the observed relations. Statistically significant moderating effects exist in several cases, with correlations being stronger in employees in conventional working arrangements than in teleworking employees.

6. Conclusion

In teleworking employees, national culture has very little influence on job performances and organizational commitment, but there are some negative predictive effects NC2 - Future-Oriented, NC5 - Humane Orientation, NC3 - Power Distance and NC4 - Collectivism 1 - Institutional, as well as positive effect NC7 - Collectivism 2 - In-group. The big five dimensions have a significant impact on the observed dependent variables, in teleworking employees, and especially the positive predictive effects O - Openness, C - Conscientiousness, and E - Extroversion, as well as the effects of the variable direction A - Agreeableness. Emotional intelligence has a strong and positive effect on job performances and organizational commitment in teleworking employees, especially EI3 - Motivation and EI2 - Self-regulation, but there are also some negative effects. Regression analysis showed that EI2 - Self-regulation, and EI1 - Self-awareness can also have a negative effect on some dimensions. In general, in teleworking employees, of the three groups of observed independent variables, personal variables (the big five personality traits and emotional intelligence) have a stronger effect on job performances and organizational commitment than national culture. By comparing employees in conventional working arrangements and teleworking employees, it can be concluded that national culture and emotional intelligence have a greater impact on job performances and organizational commitment in employees in conventional working arrangements than in teleworking employees. Big five personality traits in some cases work more strongly in employees in conventional working arrangements, while in some cases they work more powerfully in teleworking employees. Teleworking employees are less influenced by the environment, and thus less influenced by national culture. There are also some exceptions. Due to the direct social interaction, emotional intelligence helps employees in conventional working arrangements work more, while teleworkers value more the results of their work. Teleworking employees have fewer opportunities to use emotional intelligence in achieving business goals.

The theoretical contribution of the paper is that the influences of three groups of factors on job performances and organizational commitment in teleworking employees have been established, which has not been done enough so far. In this way, the theoretical basis is deepened and new relations between constructs are established because the topic of telework is very important and has proven to be a trend that will continue to grow even after the pandemic. Therefore, it is very important to explore these relationships. Thus, the national culture in the area of the Western Balkans does not have a great influence on job performance and organizational commitment among teleworking employees, but it is necessary to examine whether it affects decision-making, human resource management, leadership style, communication, and motivation among teleworking employees. Also, emotional intelligence and big five can influence problem-solving and communication, and these relationships have not been sufficiently investigated in teleworking employees, which can be important, due to the specificity of communication of these employees. Examining the aforementioned relationships are recommendations for further research.

The practical significance of the paper is that managers, taking into account the presented results and discussions, can better understand the needs, abilities, and preferences of teleworking employees. In particular, the results can be applied in the process of recruiting and selecting when hiring teleworkers, so that the employer would decide what kind of employees they want, in terms of some personal traits. Also, the obtained data can be used in determining the appropriate responsibilities, predicting certain behaviors and capabilities of individual teleworkers, as well as their organizational commitment (identification, involvement, and loyalty). Teleworking managers can use some of these findings to create better management techniques, a better communication system between teleworking employees, but also to create a reward system that will be suitable for this method of work, because remote employees show lower levels of

loyalty in certain cases. All this is especially important in the conditions of the Covid-19 pandemic when telework became an increasingly dominant form of work in Balkan and world.

The limitation of the research is the sample, which comes from the countries of the West Balkan region, and which is characterized by a certain national culture and standard of living. It can be assumed that similar relations could occur in some other countries and regions, especially where there are similar cultural and economic conditions. These limitations can also serve as recommendation for future research: these relations can be inspected in a different culture.

This paper was supported by the Provincial Secretariat for Science and Technological Development, Autonomous Province of Vojvodina, Republic of Serbia; Project number: 142-451-2706/2021; Project name: Analysis of entrepreneurial activity aspects in the context of society 5.0 - the possibility of implementation in AP Vojvodina.

References

Ahuja, A. (2011). Emotional Intelligence as a Predictor of Performance in Insurance Sector. *Asia Pacific Business Review 7 (2): 121–135.*

Alessandri, G. and Vecchione, M. (2012). The higher-order factors of the Big Five as predictors of job performance. *Personality and Individual Differences 53 (6): 779–784.*

Al-Jabari, B. and Ghazzawi, I. (2019). Organizational Commitment: A Review of the Conceptual and Empirical Literature and a Research Agenda. *International Leadership Journal 11 (1): 78-119.*

Athayde, R. (2009). Measuring Enterprise Potential in Young People. *Entrepreneurship Theory and Practice 33 (2): 481-500.*

Bakker, A.B., Demerouti, E., and ten Brummelhuis, L.L. (2012). Work engagement, performance, and active learning: The role of conscientiousness. *Journal of Vocational Behavior 80 (2): 555-564.*

Bande, B., and Fernández-Ferrín, P. (2015). How and When Does Emotional Intelligence Influence Salesperson Adaptive and Proactive Performance? *European Management Review 12 (4): 261–274.*

Barling, J. and Cooper, C.L. (2008). *The SAGE handbook of organizational behavior.* SAGE Publications Ltd: Thousand Oaks, California, US.

Barrick, M.R., Mount, M.K., and Judge, T.A. (2001). Personality and performance at the beginning of the new millennium. what do we know and where do we go next? *International Journal of Selection and Assessment 9 (1/2): 9-30.*

Benson, G. S., McIntosh, C. K., Salazar, M., and Vaziri, H. (2020). Cultural values and definitions of career success. *Human Resource Management Journal 30 (3): 392-421.*

Blaik Hourani, R., Litz, D. R., and Parkman, S. (2020). Linking emotional intelligence to professional leadership performance standards. *International Journal of Leadership in Education: 1–32.*

Bohlmann, C., van der Bosch, J., and Zachen, H. (2018). The relative importance of employee green behavior for overall job performance ratings: A policy-capturing study. *Corporate Social Responsibility and Environmental Management 25: 1002-1008.*

Bolton, D.L. and Lane, M.D. (2012). Individual Entrepreneurial Orientation: development of a measurement instrument. *Education + Training 54 (2/3): 219-233.*

Boubakri, N., Chkir, I., Saadi, S., and Zhu, H. (2020). Does national culture affect corporate innovation? International evidence. *Journal of Corporate Finance 101847.*

Breuer, W., Riesener, M., and Salzmann, A. J. (2012). Risk aversionvs.individualism: what drives risk taking in household finance? *The European Journal of Finance 20 (5): 446–462.*

Bucciol, A., Guerrero, F., and Papadovasilaki, D. (2021), Financial risk-taking and trait emotional intelligence. *Review of Behavioral Finance 13 (3): 259-275*.

Choi, D., Oh, I.-S., and Colbert, A.E. (2015). Understanding organizational commitment: a meta-analytic examination of the roles of the five-factor model of personality and culture. *Journal of Applied Psychology 100 (5): 1542-1567*.

Choudhury, P., Crowston, K., Dahlander, L., Minervini, M. S., and Raghuram, S. (2020). GitLab: work where you want, when you want. *Journal of Organization Design 9 (1)*.

Clark, L.A., Karau, S.J., and Michalisin, M.D. (2012). Telecommuting Attitudes and the 'Big Five' Personality Dimensions. *Journal of Management Policy and Practice 13 (3): 31-46*.

Cook, J. and Wall, T. (1980). New Work Attitude Measures of Trust, Organizational Commitment and Personal Need Non-Fulfilment. *Journal of Occuptational Psychology 53: 39-52*.

Cubel, M., Nuevo-Chiquero, A., Sanchez-Pages, S., and Vidal-Fernandez, M. (2016). Do Personality Traits Affect Productivity? Evidence from the Laboratory. *The Economic Journal 126 (592): 654–681*.

Davidescu, A.A.-M., Apostu, S.-A., Paul, A., and Casuneanu, I. (2020). Work flexibility, Job Satisfaction, and Job Performance among Romanian Employees – Implications for Sustainable Human Resource Management. *Sustainability 12 (15): 6086*.

De La Cruz, H., D'Urso, P. A., and Ellison, A. (2014). The Relationship Between Emotional Intelligence and Successful Sales Performance in the Puerto Rico Market. *Journal of Psychological Issues in Organizational Culture, 5(3), 6–39*.

Deckert, C. and Schomaker, R. M. (2018). Cultural Impacts on National Innovativeness: Not Every Cultural Dimension Is Equal. *Cross-Cultural Research 106939711879970*.

Diab-Bahman, R. and Al-Enzi, A. (2020). The impact of COVID-19 pandemic on conventional work settings, *International Journal of Sociology and Social Policy 40 (9/10): 909-927*.

Ellis, D. R. (2012). Exploring cultural dimensions as predictors of performance management preferences: the case of self-initiating expatriate New Zealanders in Belgium. *The International Journal of Human Resource Management 23 (10): 2087–2107*.

Erdheim, J., Wang, M., and Zickar, M. J. (2006). Linking the Big Five personality constructs to organizational commitment. *Personality and Individual Differences 41 (5): 959–970*.

Faria, N., Ramalhal, T., and Bernardes Lucas, P. (2019). Scoping review: the emotional intelligence of nurses in the clinical care environment. *Annals of Medicine 51 (1): 206–206*.

Farrukh, M., Ying, C. W., and Mansori, S. (2017). Organizational commitment: an empirical analysis of personality traits. *Journal of Work-Applied Management 9 (1): 18–34*.

Felstead, A. and Henseke, G. (2017). Assessing the growth of remote working and its consequences for effort, well-being and work-life balance. *New Technology, Work and Employment 32 (3): 195–212*.

Fujino, Y., Tanaka, M., Yonemitsu, Y., and Kawamoto, R. (2014). The relationship between characteristics of nursing performance and years of experience in nurses with high emotional intelligence. *International Journal of Nursing Practice 21 (6): 876–881*.

Furnham, A., Eracleous, A., and Chamorro-Premuzic, T. (2009). Personality, motivation and job satisfaction: Hertzberg meets the Big Five. *Journal of Managerial Psychology 24 (8): 765-779*.

Gajendran, R. S. and Harrison, D. A. (2007). The good, the bad, and the unknown about telecommuting: Meta-analysis of psychological mediators and individual consequences. *Journal of Applied Psychology 92: 1524–1541*.

Ganic, E., Babic-Hodovic, V., and Arslanagic-Kalajdzic, M. (2018). We are happz and we will stay, what about you? The cross-level impact of employee loyalty and performance on student loyalty. *South European Journal of Economics and Business 13 (2): 7-18*.

Gelade, G. A., Dobson, P., and Auer, K. (2008). Individualism, Masculinity, and the Sources of Organizational Commitment. *Journal of Cross-Cultural Psychology 39 (5): 599–617*.

Gelaidan, H.M., Al-Swidi, A., and Mabkhot, H.A. (2018) Employee Readiness for Change in Public Higher Education Institutions: Examining the Joint Effect of Leadership Behavior and Emotional Intelligence. *International Journal of Public Administration 41: 150-158*.

Goleman, D. (2005). *Emotional intelligence*. U.S.A: Bentam book.

Gosling, S.D., Rentfrow, P.J., and Swann, W.B.Jr. (2003). A very brief measure of the Big-Five personality domains. *Journal of Research in Personality 37: 504-528*.

Gunavathy, D. J. S. and Ayswarya, M. R. (2011). Emotional Intelligence And Job Satisfaction As Correlates Of Job Performance - A Study Among Women Employed In The Indian Software Industry. *Paradigm 15 (1-2): 58–65*.

Halkos, G. E. and Tzeremes, N. G. (2013). Modelling the effect of national culture on countries' innovation performances: A conditional full frontier approach. *International Review of Applied Economics 27 (5): 656–678*.

Hardill, I. and Green, A. (2003). Remote working-altering the spatial contours of work and home in the new economy. *New Technology, Work and Employment 18 (3): 212–222*.

Hermann, I. and Paris, C. M. (2020). Digital Nomadism: the nexus of remote working and travel mobility. *Information Technology & Tourism 22 (3): 329–334*.

Higgs, M. (2004), A study of the relationship between emotional intelligence and performance in UK call centres. *Journal of Managerial Psychology 19 (4): 442-454*.

Hogan, R. and Shelton, D. (2011). A socioanalytic perspective on job performance. *Human Performance 11 (2/3): 129-144.*

House, R. J., Hanges, P. J., Ruiz-Quintanilla, S. A., Dorfman, P. W., Falkus, S. A., and Ashkanasy, N. M. (1999). *Cultural influences on leadership and organizations: Project Globe*. In W. H. Mobley, M. J. Gessner and V. Arnold (Ed.), *Advances in Global Leadership 2 ed*. (171-233) Bingley, UK: Emerald Group Publishing Ltd.

House, R.J., Hanges, P.J., Javidan, M., Dorfman, P.W., and Gupta. V. (2004). *Leadership, culture, and organizations: The GLOBE study of 62 societies*. Thousand Oaks, CA: Sage.

House, R.J., Javidan, M., Hanges, P., and Dorfman, P. (2002). Understanding Cultures and Implicit Leadership Theories Across the Globe: An Introduction to Project GLOBE. *Journal of World Business 37 (1) 3-10.*

Iglesias-Pradas, S., Hernández-García, Á., Chaparro-Peláez, J., and Prieto, J. L. (2021). Emergency remote teaching and students' academic performance in higher education during the COVID-19 pandemic: A case study. *Computers in Human Behavior 119: 106713.*

Ignat, A. A., and Clipa, O. (2012). Teachers' satisfaction with life, job satisfaction and their emotional intelligence. *Procedia - Social and Behavioral Sciences 33: 498–502.*

Illiashenko, P., and Laidroo, L. (2019). National Culture and Bank Risk-taking:Contradictory case of individualism. *Research in International Business and Finance 101069.*

Imamoglu, S.Z., Ince, H., Turkcan, H., and Atakay, B. (2019). The Effect of Organizational Justice and Organizational Commitment on Knowledge Sharing and Firm Performance. *Procedia Computer Science 158: 899-906,*

Jabbar, U. B., Saleem, F., Malik, M. I., Qureshi, S. S., and Thursamy, R. (2020). Abusive leadership and employee commitment nexus: Conservation of resources theory perspective. *Cogent Business & Management 7 (1): 1857993.*

Jamal, M.T., Anwar, I., Khan, N.A., and Saleem, I. (2021), Work during COVID-19: assessing the influence of job demands and resources on practical and psychological outcomes for employees. *Asia-Pacific Journal of Business Administration 13 (3): 293-319.*

Jan, S. U. and Anwar, M. A. (2019). Emotional Intelligence, Library use, and Academic Achievement of University Students. *Journal of the Australian Library and Information Association: 1–18.*

Jang, Y., Ko, Y., and Kim, S. Y. (2016). Cultural correlates of national innovative capacity: a cross-national analysis of national culture and innovation rates. *Journal of Open Innovation: Technology, Market, and Complexity 2 (1): 23.*

Jung, Y. and Takeuchi, N. (2013). Relationships among leader–member exchange, person–organization fit and work attitudes in Japanese and Korean organizations: testing a cross-cultural moderating effect. *The International Journal of Human Resource Management 25 (1): 23–46.*

Kelliher, C. and Anderson, D. (2009). Doing more with less? Flexible working practices and the intensification of work. *Human Relations 63 (1): 83–106.*

Khan, A., Masrek, M. N., and Nadzar, F. M. (2016). Emotional intelligence and job satisfaction of academic librarians: An assessment of the relationship. *Journal of Librarianship and Information Science 49 (2): 199–210.*

Kreiser, P. M., Marino, L. D., Dickson, P., and Weaver, K. M. (2010). Cultural Influences on Entrepreneurial Orientation: The Impact of National Culture on Risk Taking and Proactiveness in SMEs. *Entrepreneurship Theory and Practice 34 (5): 959–983.*

Kwahk, K.Y. and Park, D.H. (2018). Leveraging your knowledge to my performance: The impact of transactive memory capability on job performance in a social media environment. *Computer in Human Behavior 80: 314-330.*

Lan, J., Wong, C.-S., and Zeng, G. (2021). Personality profiles for hospitality employees: Impact on job performance and satisfaction. *International Journal of Hospitality Management 98: 103018.*

Lassk, F. G. and Shepherd, C. D. (2013). Exploring the Relationship Between Emotional Intelligence and Salesperson Creativity. *Journal of Personal Selling & Sales Management 33 (1): 25–37.*

Leonardi, P. M. (2020). COVID and the New Technologies of Organizing:Digital Exhaust, Digital Footprints, and Artificial Intelligence in the Wake of Remote Work. *Journal of Management Studies*.

Levitats, Z. and Vigoda-Gadot, E. (2017). Yours emotionally: How emotional intelligence infuses public service motivation and affects the job outcomes of public personnel. *Public Administration 95 (3): 759–775.*

Liou, S.-R. (2008). An analysis of the concept of organizational commitment. *Noursing Forum 43 (3): 116-125.*

Liu, G., Tsui, E., and Kianto, A. (2021). Knowledge-friendly organisational culture and performance: A meta-analysis. *Journal of Business Research 134: 738–753.*

Mahmoud, M.A., Ahmad, S. and Poespowidjojo, D.A.L. (2020). Intrapreneurial behavior, big five personality and individual performance. *Management Research Review 43 (12): 1499-1516.*

Mammadov, S. (2021). Big Five personality traits and academic performance: A meta-analysis. *Journal of Personality 90: 222-255*.

Marhadi, A.B. and Hendarman, A.F. (2020). Identifying the Relationship between The Big Five Personality Traits and Attitudes towards Teleworking of Generation Z. *American International Journal of Business Management (AIJBM) 3 (7): 76-85.*

Martin, B. and MacDonnell, R. (2012). Is telework effective for organizations? A meta-analysis of empirical research on perceptions of telework and organizational outcomes. *Management Research Review 35: 602–616.*

Mishra, P. S., and Mohapatra, A. K. D. (2010). Relevance of Emotional Intelligence for Effective Job Performance: An Empirical Study. *Vikalpa 35 (1): 53–62*.

Moon, T.-W., Hur, W.-M., Ko, S.-H., Kim, J.-W., and Yoo, D.-K. (2016). Positive Work-Related Identity as a Mediator of the Relationship between Compassion at Work and Employee Outcomes. *Human Factors Management 26 (1): 84-94*.

Naderi Anari, N. (2012). Teachers: emotional intelligence, job satisfaction, and organizational commitment. *Journal of Workplace Learning 24 (4): 256-269*.

Narayanamurthy, G. and Tortorella, G. (2021). Impact of COVID-19 outbreak on employee performance – Moderating role of industry 4.0 base technologies. *International Journal of Production Economics 234: 108075*.

Neary, L. and Hingst, R. (2014). *Beyond the borders: the three Ts of contemporary protocols for efficient teleworking*. In: World Business, Finance and Management Conference (WBFM 2014): Research for Progress, 8-9 December 2014, Auckland, New Zealand.

Nicholls, S., Wegener, M., Bay, D., and Cook, G. L. (2012). Emotional Intelligence Tests: Potential Impacts on the Hiring Process for Accounting Students. *Accounting Education 21 (1): 75–95*.

Nyberg, A. J., Shaw, J. D., and Zhu, J. (2021). The People Still Make the (Remote Work-) Place: Lessons from a Pandemic. *Journal of Management 014920632110235*.

O'Neill, T. A., and Allen, N. J. (2011). Personality and the prediction of team performance. *European Journal of Personality 25 (1): 31–42*.

Ono, M., Sachau, D. A., Deal, W. P., Englert, D. R., and Taylor, M. D. (2011). Cognitive Ability, Emotional Intelligence, and the Big Five Personality Dimensions as Predictors of Criminal Investigator Performance. *Criminal Justice and Behavior 38 (5): 471–491*.

Paleczek, D., Bergner, S., and Rybnicek, R. (2018). Predicting career success: is the dark side of personality worth considering? *Journal of Managerial Psychology 33 (6): 437–456*.

Perera, H. N., Granziera, H., and McIlveen, P. (2018). Profiles of teacher personality and relations with teacher self-efficacy, work engagement, and job satisfaction. *Personality and Individual Differences 120: 171–178*.

Perry, S. J., Rubino, C., and Hunter, E. M. (2018). Stress in remote work: two studies testing the Demand-Control-Person model. *European Journal of Work and Organizational Psychology 5 (2): 40–55*.

Prince, N. R., Bruce Prince, J., and Kabst, R. (2020). National culture and incentives: Are incentive practices always good? *Journal of World Business 55 (3): 101075*.

Rankin, B. (2013). Emotional intelligence: enhancing values-based practice and compassionate care in nursing. *Journal of Advanced Nursing 69 (12): 2717–2725*.

Rodrigues, N. and Rebelo, T. (2019). Predicting innovative performance through proactive personality: Examining its criterion validity and incremental validity over the five-factor model. *International Journal of Selection and Assessment 27 (1): 1-8*.

Rossberger, R. J. (2014). National Personality Profiles and Innovation: The Role of Cultural Practices. *Creativity and Innovation Management 23 (3): 331–348*.

Ruiller, C., Van Der Heijden, B., Chedotel, F., and Dumas, M. (2018). You have got a friend. *Team Performance Management: An International Journal 25 (1/2): 2-29*.

Sastre Castillo, M.Á. and Danvila Del Valle, I. (2017). Is emotional intelligence the panacea for a better job performance? A study on low-skilled back office jobs. *Employee Relations 39 (5): 683-698*.

Selimović, J., Pilav-Velić, A., and Krndžija, L. (2021). Digital workplace transformation in the financial service sector: Investigating the relationship between employees' expectations and intentions. *Technology in Society 66: 101640*.

Sembiring, N., Nimran, U., Astuti, E.S., and Utami, H.N. (2020). The effects of emotional intelligence and organizational justice on job satisfaction, caring climate, and criminal investigation officers' performance. *International Journal of Organizational Analysis 28 (5): 1113-1130*.

Skipper, C. O. and Brandenburg, S. (2013). Emotional intelligence and academic performance of engineering students. *Engineering Project Organization Journal 3 (1): 13–21*.

Spagnoli, P. and Caetano, A. (2012). Personality and organisational commitment: The mediating role of job satisfaction during socialisation. *Career Development International 17 (3): 255-275*.

Syed, N., Saeed, A., and Farrukh, M. (2015). Organization commitment and five factor model of personality: theory recapitulation. *Journal of Asian Business Strategy 5 (8): 183-190*.

Torten, R., Reaiche, C., and Caraballo, E. (2016). Teleworking in the new milleneum. *The Journal of Developing Areas 50 (5): 317-326*.

Top, S., Öge, E., Atan, Ö., and Gümüş, S. (2015). Investigation Relational Levels of Intensity between Paternalistic and Servant Leadership Styles and National Culture, Organizational Commitment and Subordinate Responses or Reactions to the Leaders Style. *Procedia - Social and Behavioral Sciences 181 (1): 12–22*.

Tutar, H., Oruç, E., Tuncay Erdem, A., and Serpil, H. (2020). Big Five personality traits and workplace spirituality: A mixed method study. *South East European Journal of Economics and Business 15 (2): 96-108*.

Tziner, A., Waismal-Manor, R., Vardi, N., and Brodman, A. (2008). The Personality Dispositional Approach to Job Satisfaction and Organizational Commitment. *Psychological Reports 103 (2): 435–442*.

Valliere, D. (2019). Refining national culture and entrepreneurship: the role of subcultural variation. *Journal of Global Entrepreneurship Research 9 (1): 47-69*.

Van Aarde, N., Meiring, D., and Wiernik, B. M. (2017). The validity of the Big Five personality traits for job performance: Meta-analyses of South African studies. *International Journal of Selection and Assessment 25 (3): 223–239*.

Wang, B., Liu, Y., Qian, J., and Parker, S. K. (2020). Achieving effective remote working during the COVID-19 pandemic: A work design perspective. *Applied Psychology 70 (1): 16-59*.

Wang, H., Guo, T., and Tang, Q. (2021). The effect of national culture on corporate green proactivity. *Journal of Business Research 131: 140–150*.

Weinberger, L (2002). Emotional Intelligence: Its Connection to HRD Theory and Practice. *HRD Review 1 (2): 215-243*.

Weiner, I.B., Schmitt, N.W., Highhouse, S. (2012). *Handbook of Psychology*. Wiley: New York, New York, US.

Weiner, Y. (1982). Commitment in organizations: A normative view. *Academy of Management Review 7: 418–428*.

Weisinger, H. (1998). *Emotional Intelligence at Work: The untapped edge for success*. San Francisco: Jossey-Bass.

Welbourne, T.M., Johnson, D.E., and Erez, A. (1998). The Role-Based Performance Scale: Validity analysis of a theory-based measure. *Academy of Management Journal 41 (5): 540-555*.

Williams, L.J. and Anderson, S.E. (1991). Job Satisfaction and Organizational Commitment as Predictors of Organizational Citizenship and In-Role Behaviors. *Journal of Management 17 (3): 601-617*.

Witt, L.A. and Ferris, G.R. (2003). Social skill as moderator of the conscientiousness-performance relationship: Convergent results across four studies. *Journal of Applied Psychology 88 (5): 809–820*.

Wojčák, E. and Baráth, M. (2017). National Culture and Application of Telework in Europe. *European journal of Business Science and Technology 3 (1): 65-74*.

Wong, Y., Everett, A.M., and Nicholson, J.D. (2008), National culture and innovation capability: some observations concerning Chinese-Americans. *Management Research News 31 (9): 697-712*.

Yang, C.-L. and Hwang, M. (2014). Personality traits and simultaneous reciprocal influences between job performance and job satisfaction. *Chinese Management Studies 8 (1): 6-26*.

Yarberry, S. and Sims, C. (2021). The Impact of COVID-19-Prompted Virtual/Remote Work Environments on Employees' Career Development: Social Learning Theory, Belongingness, and Self-Empowerment. *Advances in Developing Human Resources 23 (3): 237–252*.

Yip, J. A. and Côté, S. (2012). The Emotionally Intelligent Decision Maker. *Psychological Science 24 (1): 48–55*.

Zhang, S.J., Chen, Y.Q. and Sun, H. (2015). Emotional intelligence, conflict management styles, and innovation performance: An empirical study of Chinese employees. *International Journal of Conflict Management 26 (4): 450-478*.

sciendo

South East European Journal of Economics and Business
Volume 18 (2) 2023, 21-33
DOI: 10.2478/jeb-2023-0016

THE IMPACT OF LOCAL GOVERNMENTS' BUDGET TRANSPARENCY ON DEBT IN CROATIA

Paulo Reis Mourão, Mihaela Bronić, Branko Stanić

Abstract

We investigate the impact of the budget transparency of local governments on debt using a panel data analysis of all 556 Croatian cities and municipalities over the 2014-2021 period. The analysis shows that increased budget transparency is associated with lower local government debt, i.e., budget transparency enables better public control of unnecessary debt. Additionally, regarding the legal regulation according to which higher own revenues enable higher borrowing, we examine the link between budget transparency and own revenues. The results show that local governments with higher budget transparency have higher own revenues, i.e., budget transparency can help local governments better control opportunistic borrowing and simultaneously increase their own revenues. Finally, we detect political budget cycles related to local government revenues and debt. This paper constitutes the first attempt to explore the effect of budget transparency on debt and own revenues in all local governments in one young democracy.

Keywords: *local governments; debt; own revenues; budget transparency; Croatia*

JEL Classification Code*: H71, H74*

1. Introduction

When public sector expenditures are greater than public sector revenues, the result is a public sector deficit. The sum of all public sector deficits incurred in the current and previous periods financed by borrowing constitutes the amount of public debt. Since overly high levels of debt are not good for economic growth, the public is often rightly concerned about the levels and sustainability of public debt (Cuadrado-Ballesteros and Bisogno 2022). Some established good governance practices can be perceived as effective options for monitoring and controlling excessive and/or opportunistic public debt levels (Akitoby et al. 2020). In this context, (online) fiscal transparency (FT) or budget transparency (BT)[1] stands out in the literature as one of the basic pillars of modern good governance. In fact, it is generally argued that greater FT/BT leaves room for the studious observation

Paulo Reis Mourão, PhD
Associate Professor with Habilitation
Department of Economics, Economics & Management School, University of Minho
Country: Portugal
E-mail: paulom@eeg.uminho.pt
ORCID: 0000-0001-6046-645X

Mihaela Bronić, PhD
Science Advisor
Institute of Public Finance
Country: Croatia
E-mail: mihaela.bronic@ijf.hr
ORCID: 0000-0002-0863-2040

Branko Stanić, PhD (corresponding author)
Research Associate
Institute of Public Finance
Smičiklasova 21, 10000 Zagreb
Country: Croatia
E-mail: branko.stanic@ijf.hr
ORCID: 0000-0002-8746-6764

of political actions and decisions, i.e., rising public scrutiny (Prijaković 2022). In particular, by publishing budgetary documents online, continuously creating channels, and encouraging participation, the executive can pave the way and greatly facilitate citizens' scrutiny, monitoring, and constructive participation in government decisions and budgetary processes (Wu and Wang 2012). FT/BT also makes policymakers more accountable and motivates them to implement more credible, efficient, and effective public policies (de Renzio and Wehner 2017; Kopits and Craig 1998; Milesi-Ferretti 2004; Montes, Bastos, and de Oliveira 2019). Recently, authors such as Cuadrado-Ballesteros and Bisogno (2022) have presented evidence that government BT can also positively impact government financial sustainability.

The evidence drawn from previous studies mostly supports the idea that FT/BT leads to lower public debt (Alt and Lassen 2003, 2006a, 2006b; Gerunov 2016; Montes, Bastos, and de Oliveira 2019). The research thus far has been mostly focused on the impacts of FT on the national or state debt level (Alt and Lassen 2006a; Arbatli and Escolano 2015; Jarmuzek 2006) and on the impacts of online BT on the national debt level (Arbatli and Escolano 2015; Cuadrado-Ballesteros and Bisogno 2022; Gerunov 2016; Montes, Bastos, and de Oliveira 2019; Sedmihradská and Haas 2013). To the best of our knowledge, there are no studies on the effects of online BT on debt at the local government (LG) level.

To fill this gap, this paper aims to determine the impact of BT on LG debt using a panel data analysis of all 128 Croatian cities and 428 municipalities over the 2014-2021 period. The variable of interest is the Open Local Budget Index (OLBI) developed by the Croatian Institute of Public Finance (IPF), which in this study is used as a measure of LG BT (see Ott, Mačkić, and Bronić (2018)). The OLBI is measured annually based on the online availability of five key budgetary documents – the budget proposal, enacted budget, citizens' budget, mid-year report and year-end report – on official LG websites. The originality of this paper lies in its use of a unique and new measure of LG BT (OLBI) and a unique panel dataset of all 556 Croatian LGs over the 2014-2021 period. It contributes to the literature by constituting, to the best of our knowledge, the first attempt to explore the effect of LG BT on LG debt and own revenues in all LGs in one young democracy.

Section two details the theoretical framework and discusses previous empirical findings. Section three discusses our data and the empirical analysis supported by conditional fixed-effects negative binomial regression. Section four discusses the results and offers conclusions and recommendations.

2. Literature review

There are numerous definitions of FT/BT, and consequently, there are several methods of measuring FT/BT (International Budget Partnership 2008; OECD 2002; World Bank n.d.). Kopits and Craig (1998, p. 1) define FT "as openness toward the public at large about government structure and functions, fiscal policy intentions, public sector accounts, and projections. It involves ready access to reliable, comprehensive, timely, understandable, and internationally comparable information on government activities … so that the electorate and financial markets can accurately assess the government's financial position and the true costs and benefits of government activities, including their present and future economic and social implications." In contrast, the definition of BT is usually much narrower, focusing on the availability of budgetary documents and elements (e.g., types of revenues and expenditures, and narrative explanations). BT can be seen as making it possible for citizens to obtain complete, accurate, and timely information about government budgets presented in an understandable form (Ott, Mačkić, and Bronić 2018). Similar to da Cruz et al. (2016), this paper's measure of BT includes specific dimensions (timely publication (availability) and an understandable form for documents). Measurement of the completeness and accuracy dimensions is beyond the possibilities and scope of this research, as it would require exceptional human and financial capacity from our small team, especially given the large number of observed LGs.

There are several explanations for why and how better FT/BT might impact public debt. *Principal-agent theory* explains that voters (principals) normally want more competent politicians (agents) in office, as they will provide increasingly better public services for given levels of taxation (Alt and Lassen 2006b; Besley 2011; Ferejohn 1999; Shi and Svensson 2006). Since voters are less informed than politicians, problems arise when "bad" politicians are motivated to act in their own interest and meet the needs of their voters for local services by issuing debt. Such politicians provide more public services while not making voters aware, at the moment of debt issuance, that they will eventually have to repay that debt. Increased FT/BT contributes to solving citizens' problems by reducing information asymmetry and the incentives for "bad" politicians to seemingly mimic good and more competent politicians, thus limiting the extent to which an incumbent can use debt accumulation for opportunistic behaviour, i.e., to appear more competent than they truly are (Alt and Lassen 2003; de Araujo and Tejedo-Romero 2016; Laswad, Fisher, and Oyelere

2005). In some cases, FT/BT might also lead to an increase in taxes, expenditures and debt since, according to Ferejohn (1999), "increased transparency produces lower uncertainty about a political incumbent's actions, leading to increased voter confidence in the incumbent (or in voters' ability to distinguish good performance from bad performance), and therefore higher investment in public goods, that is, a willingness to pay higher taxes" (Alt, Lassen, and Skilling 2002, p. 233).

Additionally, the public choice school (e.g., Buchanan and Wagner 1977) argues that self-interested politicians and bureaucrats, whose aim is to secure re-election, are the reason for an excessive budget deficit and debt accumulation. The emergence of excessive deficits and public debt is explained by *fiscal illusion theory*, i.e., citizens do not like an increase in their tax liabilities, which is why opportunistic, self-interested, and re-election-seeking politicians try to avoid tax increases through opportunistic borrowing. Essentially, politicians try to hide the tax burden and increase the benefits of public expenditures (Campbell 2004). Puviani (1903) argued that the problem occurs when citizens do not have any insight into budgetary revenues (thus, they overestimate them), which in turn leads to a misperception about public expenditures because they want increasingly better public services. This results in budget overspending and higher deficits and/or debts (Benito and Bastida 2009; Dollery and Worthington 1996). Increasing FT/BT leaves room for in-depth budget examination by citizens, who have a better opportunity to examine the justification for borrowing, which can help them assess incumbent candidates more wisely. On the other hand, a lack of FT/BT and, thus, of citizens' knowledge of budget revenues and expenditures, accompanied by debt accumulation, significantly increases the likelihood of deception by self-interested and opportunistic incumbents (Jordan et al. 2017).

Finally, and similarly, according to *political budget cycle (PBC) theory*, politicians alter budgets before elections to deceive voters into believing that the economy is doing better than it actually is and to thus secure voter support (Philips 2016). In the pre-election period, politicians offer tax reductions, increase expenditures and/or reallocate expenditures towards more visible services in an effort to increase their chances of re-election (e.g., Rogoff 1990; Shi and Svensson 2003, 2006). Doing so may lead to unnecessary debt (Shi and Svensson 2003; Veiga and Veiga 2007). The assumption is that voters prefer competent incumbents who offer more public services for less tax paid, but due to information asymmetries in the pre-election period, voters usually do not know incumbents' competences. Thus, opportunistic incumbents try to manipulate and use the above-mentioned techniques to increase their chances of re-election. Indeed, in a meta-analysis of PBCs across 88 studies, Philips (2016) found evidence that "fiscal expenditures and government borrowing increase around elections, while revenues and fiscal balance decline" and that countries with low levels of democracy and development tend to show more evidence of PBCs. Shi and Svensson (2006) found that the absence of PBCs in developed countries can be partly explained by a larger proportion of informed voters, which alleviates the problems of asymmetric information that allow PBCs to take place. Similarly, Alt and Lassen (2006b) also found evidence that the FT level might have an effect on PBC manipulations, i.e., the higher the FT is, the lower the motivation and opportunity of incumbents to behave opportunistically.

The previous findings for advanced countries generally support the theoretical underpinnings by showing that an improvement in FT leads to public debt reduction (Alt and Lassen 2003, 2006b; Arbatli and Escolano 2015). However, the research focused on transitional countries (Jarmuzek 2006) or on the impacts of online BT on debt levels (Arbatli and Escolano 2015; Cuadrado-Ballesteros and Bisogno 2022; Gerunov 2016; Montes, Bastos, and de Oliveira 2019; Sedmihradská and Haas 2013) is inconclusive.

Using indicator based on the International Monetary Fund (IMF) Report on the Observance of Standards and Codes (ROSC) index, Jarmuzek (2006) analysed 27 transitional countries (including Croatia) and concluded that FT has not yet proven to be a very significant factor in shaping fiscal performance in transition economies. He found a nonsignificant negative relationship between FT and debt accumulation, arguing that "this may be a result of lack of consensus among politicians to restrain fiscal policy and/or no incentives for politicians to conceal fiscal laxity. The other reason why fiscal transparency is not statistically significant may stem from difficulties in measuring fiscal transparency and the relatively short time span of the rapid structural changes that have taken place in both macroeconomic and political environments." Arbatli and Escolano (2015) analysed the impact of both FT and BT for a sample of developing economies using the ROSC index and the Open Budget Index (OBI), which is focused on the online availability of eight key budgetary documents. For all specifications using the OBI, the effects of BT on debt were small and nonsignificant. The authors argued that perhaps the effect of BT/FT on fiscal performance depends on other variables or becomes significant only when the

economic and institutional development of a country is above a certain threshold. Sedmihradská and Haas (2013) analysed the impact of BT on public debt (using the sample of countries for which the OBI was calculated, including Croatia) and did not find a significant relationship. They argued that BT without the engagement of civil society or advocacy groups is insufficient to improve governance. Gerunov (2016) also investigated the effect of BT (using OBIs) on government debt in a sample of 57 countries (including Croatia). Analysing the full sample, he found a significant negative effect of OBI on debt. However, checking whether the BT effects are the same in countries with different levels of income, he found that only in the first- and fourth-income quartiles did the effects of BT on debt reach statistical significance. He explained this result as likely reflecting variance in the institutional environments. Using the OBI and analysing 82 countries (developing and developed, including Croatia) over the 2006-2014 period, Montes, Bastos, and de Oliveira (2019) concluded that BT has a negative and statistically significant effect on debt, regardless of which sample is considered. Finally, using the OBI and analysing 110 counties (including Croatia) over the 2006-2019 period, Cuadrado-Ballesteros and Bisogno (2022) also concluded that BT has a statistically significant negative effect on debt.

To the best of our knowledge, no previous papers have focused on the impact of online BT/FT on debt at the lowest level of government (cities and municipalities). In line with the above-mentioned theoretical underpinnings and previous empirical findings, we hypothesize that there is a negative relationship between LG BT and debt.

In addition to investigating the impact of BT on the debt of Croatian LGs, given the Croatian context and legal regulations (which are explained below) in which higher own revenues enable higher borrowing, we want to examine whether this is true for both more transparent and less transparent LGs. In other words, we are interested in determining whether BT in the Croatian context can be a catalyst for reducing opportunistic debt and, simultaneously, increasing own revenues. Thus, since according to principal-agent theory voters can be expected to entrust greater resources to more transparent politicians (Alt, Lassen, and Skilling 2002; Ferejohn 1999), we hypothesize that LGs with higher BT also have higher own revenues because citizens place greater trust in them and are more willing to pay higher taxes.

3. Data and research methodology

3.1. The Dependent Variables, Reasoning and Contextual Factors

Most previous papers analysing the effect of FT/BT on debt levels have used the debt-to-GDP ratio variable (Alt and Lassen 2003, 2006b; Arbatli and Escolano 2015; Gerunov 2016; Jarmuzek 2006; Montes, Bastos, and de Oliveira 2019), while only a few have used variables related to the costs of debt financing (Chen et al. 2016; Wang and Shields 2014). Since there are no calculations of GDP at the local level in Croatia, we use the *debt-to-revenue* ratio of each city/municipality. As the variance in the *debt-to-revenue* ratio variable is greater than the mean, overdispersion is present; thus, we opt to use a negative binomial distribution.

As an EU country, Croatia must formally follow the guidelines of the Stability and Growth Pact, limiting annual total public debt and budget deficits (to 60% and 3% of GDP, respectively). Croatian LG debt was relatively low, e.g., in the 2018-2020 period, it was only 35% of the EU27 LG average (Eurostat 2021). Furthermore, Croatian annual LG debt was stable from 2014 to 2019 in absolute amounts, changing little over the years. On average, the total annual debt of cities was approximately HRK 3.3 bn, and that of municipalities was approximately HRK 414 mil (Ministry of Finance 2023). However, in 2020, because of problems caused by COVID-19, the central government offered additional loans to LGs, which is why LG annual debt exceptionally increased on average by 50%. However, as Croatian total public debt is greater than 60% of GDP, the national government has strictly limited LG borrowing through a conservative, rigid and centralized regulatory framework (NALAS 2018).

The Croatian Budget Act stipulates a balanced budget rule, i.e., the representative body of LGs can only pass a balanced budget, but LGs are allowed to run unanticipated deficits/surpluses occurring during the fiscal year. Furthermore, the same Act stipulates that LGs may incur short-term debt for their regular activities in cases of uneven revenue collection over the year (without any consent) and long-term debt for capital investments but only with the consent of the relevant local representative body and approval by the national government. The total annual debt service arising from borrowing for each LG may not exceed 20% of its revenues realized in the year preceding the fiscal year (we call them own revenues). Own revenues are calculated as total current revenues reduced by a) domestic and foreign grants and donations; b) co-financing by citizens for purposes of community self-government; and c) additional shares in both personal income tax (PIT) and equalization

grants used for decentralized public services. LGs' own revenues are mostly PIT revenues. LG borrowing is regulated in detail by additional rules and other legislation, particularly the Rules on the procedure for borrowing, and issuing guarantees and granting approvals by units of local and regional self-government (2022). Furthermore, the Annual National Budget Execution Act sets an overall annual limit on the borrowing of all LGs (e.g., for 2021, up to a maximum of 3% of their total operating (current) revenues in 2020).

As mentioned above, given the Croatian context and legal regulations in which higher own revenues enable higher borrowing, we also analyse the impact of LG BT on the own revenues of LGs.

3.2. The Variable of Interest and Controls

The variable of interest is the IPF-developed *OLBI*, which represents the annual availability of five key budgetary documents on the official websites of Croatian LGs (the year-end report, mid-year report, enacted budget, budget proposal, and citizens' budget). This index takes a value from 0 to 5 based on the number of published documents. LGs are *legally obliged* to publish the year-end report, mid-year report and enacted budget by the Budget Act (2015) and the Act on the Right of Access to Information (2015). However, despite legal obligations, there are no sanctions for nondisclosure. The publication of the budget proposal and citizens' budget is only *recommended* by the Ministry of Finance. Consequently, three of the documents are subject to mandatory disclosure, and two are subject only to voluntary disclosure.

IPF researchers search LG websites at the same time each year and calculate the index on an annual basis, e.g., the OLBI 2021 contains the 2020 year-end report, 2021 mid-year report, 2022 budget proposal, 2022 enacted budget, and 2022 citizens' budget (Bronić et al. 2022). All of these documents were published in 2021; thus, OLBI 2021 represents the BT in 2021. These five documents were selected not only on the basis of the Croatian legislative framework but also following international practices (IBP 2015; OECD 2002), as each of them has a purpose and plays an important role in the democratic performance of the local budgetary process.

Regarding the described contextual framework related to own revenues and borrowing, as well as accounting for the previous theoretical and empirical findings, the control variables were chosen to cover both debt and own revenues since these two variables are inextricably linked in the Croatian context. Additionally, not changing the control variables allows us to establish whether BT can be a catalyst for better LG governance and LG financial sustainability, i.e., increasing own revenues and better control of unnecessary debt.

In accordance with PBC theory and related research, we also want to explore the existence of PBCs in Croatian LGs. Thus, we include dummies for *pre-election*, *election*, and *post-election* years, expecting that LG debt levels will be higher in (pre-)election years and lower in post-election years (Bastida, Beyaert, and Benito 2013). Conversely, we expect that own LG revenues will be lower in (pre-)election years and higher in post-election years.

Residents' *income pc* is a proxy for the overall development of the local economy. According to Wagner's law, the demand for government services is income elastic; thus, the share of goods and services provided by the government is expected to rise with income (Gupta 2007). Farnham (1985) also noted that per capita income reflects the positive income elasticity of demand for capital goods, which would imply a positive link between this variable and debt. Since in Croatia PIT (which is the most important source of own revenues) is progressive, we also expect that residents' income will be positively related to LGs' own revenues.

Chang et al. (2020) found that the operational capacity of tax administrations plays an important role in revenue collection and distribution performance, revealing a positive association between administrative capacity and tax performance. In fact, in Croatia, LGs can indeed have an impact on the tax collection process since it is stipulated by the Local Taxes Act (2022) that they can choose to either collect their local taxes themselves or pay the Tax Administration to collect those taxes for them. Thus, we include the number of *employees* in each LG as a proxy for the administrative capacity of LGs, hypothesizing that having a higher operational (administrative) capacity has a positive effect on the level of an LG's own revenues and therefore might also indirectly impact the level of debt.

As the total annual debt service arising from an LG's borrowing may not exceed 20% of its own revenues in the year preceding the fiscal year and LGs primarily borrow for long-term purposes, it is expected that LGs with higher own revenues will be able to borrow more and finance capital expenditures more easily. Accordingly, we aim to control for this connection between *capital expenditures pc* and LG's own revenue levels, expecting a positive association, as found by Pagano (2002) and Arimah (2005). For the same reasons, we expect a positive link between *capital expenditures pc* and debt.

Ferejohn (1999) argued that left-wing governments are more inclined to expand the public

sector, thus possibly having an impact on budget size. Piotrowski and Van Ryzin (2007) also stressed that the direction of influence of political ideology may depend on the party in power. As noted by Benito and Bastida (2004), political theory has traditionally claimed that left-wing governments are laxer in their governmental financial discipline. Left-wing governments therefore advocate a larger public sector than right-wing governments and ultimately become more indebted. Consequently, we cannot neglect the political ideology of the LG; thus, we include the dummy variable *left-wing*, expecting a positive link between left-wing government and debt. Since left-wing governments prefer a larger public sector, we also expect a positive relationship between own revenues and left-wing government.

Table 1. Definitions of the variables

Variable	Description	Source	Expected sign with *debt-to revenue*
Dependent variables			
Debt-to-revenue	Share of total direct debt in total LG revenues	Ministry of Finance (2023)	
Own revenues pc	Total current revenues reduced by domestic and foreign grants and donations; the co-financing of citizens for purposes of community self-government; and additional shares in PIT and equalization grants for decentralized functions	Ministry of Finance (2023)	
Independent variable of interest			
OLBI	Open Local Budget Index, which annually captures the online availability of 5 key budgetary documents: the year-end report, mid-year report, budget proposal, enacted budget and citizens' budget	Bronic, Stanić, and Prijakovic (2022)	-
Control variables			
Pre-election year	Binary PBC variable (value of 1 in the year before local elections)	State Electoral Commission (2023)	+
Election year	Binary PBC variable (value of 1 in the year of local elections)		+
Post-election year	Binary PBC variable (value of 1 in the year after local elections)		-
Income pc	Residents' average annual pc income for each LG.	Ministry of Regional Development and EU Funds (2022); pc amounts are based on the CBS population estimates	+
Left wing	Dummy variable that takes the value of 1 if the local incumbent comes from the left of the political spectrum	State Electoral Commission (2023)	+
Employees	Number of employees in LG based on working hours	Ministry of Finance (2023)	+
Capital expenditures pc	Pc capital expenditures	Ministry of Finance (2023)	+
Interest share	Share of interest payments on debt in total expenditures	Ministry of Finance (2023)	+/-
Municipality	Dummy variable that takes the value of 1 if it is a municipality and 0 otherwise (city)	Authors' calculation	-
2020_year	Dummy variable that takes the value of 1 if it is 2020 year and 0 otherwise	Authors' calculation	-

Source: Authors

Finally, we want to control for the size of local self-government. According to the Croatian Law on Local and Regional Self-Government (2020), a municipality is a local self-government unit that is established for an area containing several inhabited settlements representing a natural, economic, and social whole connected by the common interests of the population. A city is a local self-government unit in which the county[2] seat is situated, that has more than 10,000 inhabitants and that represents an urban, historical, natural, economic, and social whole. In 2021, the average municipality had 2,556 inhabitants, and the average city had 15,833 inhabitants (CBS 2023). Since by law Croatian cities have more citizens and are responsible for a larger level of services, as argued by Cropf and Wendel (1998), it is reasonable to expect that they need to borrow more to keep up with this demand. It is also expected that as smaller local self-government units, municipalities will collect smaller amounts of own revenues. Thus, we include a dummy *municipality* to discern between cities and municipalities, expecting a negative relationship between own revenues and municipalities and between debt and municipalities. Additionally, we control for the share of interest payments on debt in total expenditures and the possible impact of the pandemic year on the debt levels due to the lockdown during the pandemic (*2020_year*). For a detailed description of the variables, data sources and expected sign related to our primary dependent variable, i.e., debt, see Table 1.

4. Results

Table 2 presents the descriptive statistics for all variables.

Panel A displays the continuous variables with basic summary statistics, and panel B displays the discrete variables with frequency tables. Regarding the dependent variable, *debt-to-revenue*, there are large

Table 2. Descriptive statistics

Panel A: Continuous variables					
Variable	Obs.	Mean	Std. Dev.	Min.	Max.
Debt-to-revenue	4,448	12.48	21.39	0	277.48
Own revenues pc	4,448	3,295	2,409	232	20,977
Income pc	4,448	28,033	7,412	8,633	57,896
Employees (ln)	4,448	2.49	0.99	0	8.03
Capital expenditures pc	4,448	1,496	1,600	0	23,384
Interest share (%)	4,448	0.05	0.18	0	6.99
Panel B: Discrete variables					
	Frequency	Percentage	Cumulative		
OLBI					
0	347	7.80	7.80		
1	380	8.54	16.34		
2	423	9.51	25.85		
3	789	17.74	43.59		
4	928	20.86	64.46		
5	1,581	35.54	100.00		
Pre-election year (1)	1,112	25.00	25.00		
otherwise (0)	3,336	75.00	100.00		
Election year (1)	1,112	25.00	25.00		
otherwise (0)	3,336	75.00	100.00		
Post-election year (1)	1,112	25.00	25.00		
otherwise (0)	3,336	75.00	100.00		
Left-wing (1)	1,101	24.75	24.75		
otherwise (0)	3,347	75.25	100.00		
Municipality (1)	3,424	76.98	76.98		
otherwise (0)	1,024	23.02	100.00		
2020_year (1)	556	12.50	12.50		
otherwise (0)	3,892	87.50	100.00		

Source: Authors' calculations

differences among LGs in the share of direct debt in total revenues (from 0 to 277%). Although some LGs have extremely high debt levels, the mean still shows a more realistic picture (approximately 12%) and is similar to the other variables, especially the economic and fiscal variables (a large disparity in the level of *capital expenditures pc* and in *residents' income pc*). This result confirms the ongoing issue of unequal regional development in Croatia (Klarić 2017) and the fragmentation of socioeconomic dimensions in the present Croatian territorial organization (Nejašmić and Njegač 2001). Regarding the variable of interest, i.e., *OLBI*, there is a higher frequency of the publication of a larger number of budgetary documents: approximately 36% of all LGs disclose all five documents, while 8% have none of the five documents available.

The main goal is to establish the impact of BT on debt levels in Croatian LGs. To do so, we use a unique database for the 2014-2021 period with highly balanced panel data covering an eight-year period (time-series dimension) and 556 Croatian LGs (cross-sectional dimension). We employ conditional fixed-effects negative binomial regression, which is a standard technique for working with overdispersed outcome variables, as in our case.

Tables 3 and 4 present the regression analysis results. Higher levels of LG BT are found to be associated with lower LG debt, as previously found by several authors (Cuadrado-Ballesteros and Bisogno 2022; Gerunov 2016; Montes, Bastos, and de Oliveira 2019). According to principal-agent theory, when voters are less informed than politicians, problems arise if "bad" politicians are motivated to act in their own interest and meet the needs of their voters for local services by issuing opportunistic debt. Our results show that an increase in BT reduces both this information asymmetry and the incentives for "bad" politicians to mimic good politicians, thus limiting the extent to which incumbents can use debt accumulation for opportunistic behaviour, i.e., to appear more competent than they actually are (Alt and Lassen 2003; de Araujo and Tejedo-Romero 2016; Laswad, Fisher, and Oyelere 2005).

We also find that LGs with higher BT have higher own revenues. This result is in line with the results obtained by Cuadrado-Ballesteros and Bisogno (2022) and with principal-agent theory. Thus, we show that BT can be a catalyst for both reducing opportunistic debt and, simultaneously, increasing own revenues. We find that BT not only reduces information asymmetry between citizens and incumbents but also increases citizens' trust in LGs, as voters are willing to pay higher taxes and entrust greater resources to more transparent politicians (Alt, Lassen, and Skilling 2002; Ferejohn 1999).

Table 3. Results of the conditional fixed-effects negative binomial regression for debt

Dependent variable: *debt-to-revenue*	Negative binomial	Marginal effects
OLBI	-0.039**	-0.039**
	(-2.40)	(-2.40)
Pre-election year	0.149**	0.149**
	(2.20)	(2.20)
Election year	0.291***	0.291***
	(5.78)	(5.78)
Post-election year	-0.009	-0.009
	(-0.17)	(-0.17)
Income pc	0.000***	0.000***
	(10.74)	(10.74)
Left-wing	0.086	0.086
	(1.49)	(1.49)
Employees	0.256***	0.256***
	(6.65)	(6.65)
Capital expenditures pc	0.000***	0.000***
	(7.79)	(7.79)
Interest share	0.000***	0.000***
	(4.43)	(4.43)
Municipality	-0.621***	-0.621***
	(-6.92)	(-6.92)
2020_year	0.174**	0.174**
	(2.31)	(2.31)
Intercept	-2.439***	
	(-12.75)	
No. of observations	4,448	
No. of groups	556	
Wald chi^2	849.69***	

Source: Authors' calculations

Note: *z*- statistics in parentheses. Significance levels: *** 1%; ** 5%; * 10%.

Moreover, similar to Binet and Pentecôte (2004), Ashworth, Geys, and Heyndels (2005) and Bastida, Beyaert, and Benito (2013), we detect the existence of PBCs in Croatian LGs. In pre-election and election years, the debt level of Croatian LGs is higher since borrowing enables higher spending and the provision of more services, which may ultimately increase the probability of re-election for a politician. Bonfatti and Forni (2019) similarly stressed that the increased borrowing for greater spending in election and pre-election years is driven by the incumbent's desire for re-election.

Table 4. Results of the conditional fixed-effects negative binomial regression for own revenues

Dependent variable: *own revenues pc*	Negative binomial	Marginal effects
OLBI	0.027*** (7.27)	0.027*** (7.27)
Pre-election year	-0.064*** (-4.73)	-0.064** (-6.21)
Election year	-0.270*** (-26.09)	-0.270*** (-26.09)
Post-election year	0.029*** (2.97)	0.029*** (2.97)
Income pc	0.000*** (40.04)	0.000*** (40.04)
Left-wing	-0.007 (-0.43)	-0.007 (-0.43)
Employees	0.064*** (5.68)	0.064*** (5.68)
Capital expenditures pc	0.000*** (7.23)	0.000*** (7.23)
Interest share	0.000** (2.74)	0.000** (2.74)
Municipality	-0.300*** (-5.19)	-0.300*** (-5.19)
2020_year	0.005 (0.32)	0.005 (0.32)
Intercept	1.569*** (23.35)	
No. of observations	4,448	
No. of groups	556	
Wald chi2	5,170***	

Source: Authors' calculations

Note: *z*- statistics in parentheses. Significance levels: *** 1%; ** 5%; * 10%.

We also find that opportunism comes on the revenue side as well. That is, local incumbents reduce LGs' own revenues, i.e., the tax burden on citizens, in (pre-) election years. This finding is in line with several previous studies (e.g., Aidt and Mooney 2014; Barberia and Avelino 2011; Katsimi and Sarantides 2012; Pettersson-Lidbom 2000; Tabellini and Persson 2003) that showed that revenues tend to decline in pre-election and/or election years. Furthermore, Philips (2016) concluded that in most cases, revenue-side gimmicks around elections are carried out with tax revenues (such as tax breaks to key voter groups, as shown by Khemani (2004)). As expected by PBC theory, we find that in post-election years, LGs return to the previous levels of their own revenues.

As expected, we find a positive association between *capital expenditures* and debt, as law establishes that LGs can resort to long- or short-term credit in any of its forms to finance their investment expenditure. The same positive association is also confirmed in the case of capital expenditures and own revenues, which is in line with previous studies (see, e.g., Arimah 2005; Pagano 2002).

We also show that the overall development of the local economy affects an LG's debt and own revenue levels. Using *income pc* as a proxy for local development, as expected, we find that there is a positive and significant effect of income on the level of debt and own revenues. This result can be explained in accordance with Wagner's law – the share of goods and services provided by the government is expected to rise with income (Gupta 2007); thus, citizens demand more capital goods. Additionally, since Croatian PIT (a major part of LGs' own revenues) is progressive, an increase in residents' income has a positive effect on LGs' own revenues.

As expected, the administrative capacity of an LG influences its performance in collecting its own revenues, and therefore, it can also indirectly influence the LG's debt. We find that the number of LG *employees* is positively associated with both debt and own revenue levels. Indeed, the operational strength of local administrations improves revenue performance (as suggested by Chang et al. (2020)), which also indirectly impacts the higher level of debt. As Croatian LGs can collect local taxes themselves, this result is expected.

Our dummy variable *municipality* shows that smaller amounts of own revenues pc and, consequently, debt levels are present at the municipal level, as a municipality is by definition smaller and performs a smaller number of functions/tasks than a city. Finally, as expected, we find that the share of debt in the revenues of local governments is significantly higher in the pandemic year 2020, which is explainable considering the relaxation of strict LG fiscal rules in Croatia due to the possibility of additional extraordinary borrowing.

5. Discussion and conclusion

Based on a panel data analysis of 556 Croatian LGs, we found a significant negative relationship between BT and debt. This finding means that increasing BT can serve as a good instrument for controlling and reducing opportunistic local debt levels. This is possible because BT reduces information asymmetry between citizens and incumbents, thus preventing the harmful intentions of opportunistic politicians to borrow in the pre-election period to increase services and,

ultimately, the probability of their re-election.

Considering the legal framework in which higher own revenues enable higher borrowing, we wanted to examine whether this is true for both more transparent and less transparent LGs. We found that more transparent LGs have more own revenues, which can be interpreted as citizens having greater confidence in more transparent incumbents and tending to pay more taxes in a more transparent environment, expecting better local services. Therefore, our results show that BT can be a catalyst for more sustainable LG management, thus both reducing the opportunistic debt and increasing the own revenues of LGs.

We also demonstrated the presence of PBCs in Croatian LG debt and revenues. In pre-election and election years, the debt level of Croatian LGs is higher since borrowing enables politicians to increase the quantity and/or quality of local services (by increasing total LGs expenditures and deficits, as proven by Bronic, Stanić, and Prijakovic (2022)) and, thus, their chances of re-election. Opportunistic local politicians also manipulate own revenues in (pre-)election years. They reduce own revenues, i.e., the tax burden on citizens, in pre-election and election years to appear more competent to their constituencies. Consequently, they increase these revenues in post-election years so that they can borrow more in the upcoming (pre-)election period, thus demonstrating the standard political revenue cycle.

In addition to these main findings, from the other control variables, we can single out higher overall development of the local economy (proxied by *income pc*), which provides room for higher borrowing (debt) and higher own revenues, as is the case with higher operational (administrative) capacity (*employees*).

The main policy implication is the necessity for constant improvements in local BT, given that BT contributes to lower unnecessary debt and higher own revenues. By developing and expanding BT and introducing new ways of reporting and technological innovations, which is accompanied by an improvement in budget literacy and constructive public participation mechanisms, good governance, such as low debt and high own revenues, can be even more significantly affected.

Therefore, the national government, media, experts, nongovernmental organizations (NGOs) and all interested citizens should constantly pressure LGs to continuously improve their BT and include citizens in the budgetary process. At the same time, all actors, particularly national governments and LGs, should actively promote and implement programmes to improve the budget literacy of all citizens, especially of local representatives and media, so that they can scrutinize budgetary figures in depth and participate as constructively as possible in the budgetary process. In this way, citizens will not only be able to influence budgetary figures but also recognize opportunistic intentions and PBCs among local incumbents and evaluate them in local elections accordingly.

The main limitations of the paper are reflected in the quantitative nature of the BT measure and the use of a methodology that enables the association/relationship between the variables to be proven without a causal connection necessarily being shown. Therefore, future studies can examine the impact of a broader aspect of FT (or include qualitative dimensions of the OLBI) on the debt levels or debt determinants of LGs and use different methods to examine the causal relationships among the variables. Additionally, it would be interesting to see a similar study concerning another country with different contextual factors regarding fiscal rules.

Endnotes

1 The abbreviation FT encompasses both terms since FT is a broader term that also includes government structure and functions. The abbreviation BT solely represents budget transparency.

2 In addition to local self-government, the territorial organization of Croatia involves regional self-government units, consisting of 20 counties and the City of Zagreb, which has the status of both a city and a county. In this paper, the City of Zagreb is included as a city.

FUNDING

This research was funded by the Croatian Science Foundation (CSF) project IP-2019-04-8360. Our opinions, findings, conclusions, and recommendations do not necessarily reflect the views of the CSF.

This paper was financed by National Funds of the FCT – Portuguese Foundation for Science and Technology within the project «UIDB/03182/2020».

References

Act on the Right of Access to Information. 2015. Zakon o pravu na pristup informacijama, pročišćeni tekst zakona NN 25/13, 85/15. https://www.zakon.hr/z/126/Zakon-o-pravu-na-pristup-informacijama (accessed January 22, 2023).

Aidt, T. S. and Mooney, G. 2014. Voting suffrage and the political budget cycle: evidence from the London Metropolitan Boroughs 1902-1937. Journal of Public Economics 112: 53-71.

Akitoby, B., Cui, L. Q., Domit, S., Meng, J., Slavov, S. T.. Su-Phaphiphat, N. and Zhang, H. 2020. Improving fiscal transparency to raise government efficiency and reduce corruption vulnerabilities in Central, Eastern, and Southeastern Europe. Washington, DC, United States: IMF.

Alt, J. E. and Lassen, D. D. 2003. Fiscal transparency and fiscal policy outcomes in OECD countries. EPRU Working Paper Series No. 2003-02 https://www.econstor.eu/handle/10419/82020.

Alt, J. E. and Lassen, D. D. 2006a. Fiscal Transparency, Political Parties, and Debt in OECD Countries. European Economic Review 50 (6): 1403-39.

Alt, J. E. and Lassen, D. D. 2006b. Transparency, political polarization, and political budget Cycles in OECD countries. American Journal of Political Science 50 (3): 530-50.

Alt, J. E., Lassen, D. D. and Skilling, D. 2002. Fiscal transparency, gubernatorial approval, and the scale of government: evidence from the states. State Politics & Policy Quarterly 2 (3): 230-50.

Arbatli, E. and Escolano, J. 2015. Fiscal transparency, fiscal performance and credit ratings. Fiscal Studies 36 (2): 237-70.

Arimah, B. C. 2005. What drives infrastructure spending in cities of developing countries? Urban Studies 42 (8): 1345-68.

Ashworth, J., Geys, B. and Heyndels, B. 2005. Government weakness and local public debt development in flemish municipalities. International Tax and Public Finance 12 (4): 395-422.

Barberia, L. G. and Avelino, G. 2011. Do political budget cycles differ in latin american democracies? Economía 11 (2): 101-34.

Bastida, F., Beyaert, A. and Benito, B. 2013. Electoral cycles and local government debt management. Local Government Studies 39 (1): 107-32.

Benito, B. and Bastida, F. 2004. The determinants of the municipal debt policy in Spain. Journal of Public Budgeting, Accounting & Financial Management 16 (4): 492-525.

Benito, B. and Bastida, F. 2009. Budget transparency, fiscal performance, and political turnout: an international approach. Public Administration Review 69 (3): 403-17.

Besley, T. 2011. Principled agents? The political economy of good government. Oxford, UK: Oxford University Press.

Binet, M. E. and Pentecôte, J. S. 2004. Tax degression and the political budget cycle in French municipalities. Applied Economics Letters 11 (14): 905-8.

Bonfatti, A. and Forni, L. (2019). Fiscal rules to tame the political budget cycle: Evidence from Italian municipalities. European Journal of Political Economy 60. https://www.sciencedirect.com/science/article/abs/pii/S0176268019300230 (accessed December 20, 2022).

Bronić, M., Opačak, M., Ott, K., Petrušić, M., Prijaković, S. and Stanić, B. 2022. Budget transparency in croatian counties, cities and munic-ipalities: November 2021–april 2022. IPF Notes 15 (126): 1-16.

Bronic, M., Stanić, B. and Prijakovic, S. 2022. The effects of budget transparency on the budget balances and expenditures of croatian local governments. South East European Journal of Economics and Business 17 (1): 111-24.

Buchanan, J. M. and Wagner, R. E. 1977. Democracy in deficit: the political legacy of lord keynes. New York, NY: Academic Press, Harcourt Brace Jovanovich.

Budget Act. 2015. Zakon o proračunu pročišćeni tekst zakona NN 87/08, 136/12, 15/15. https://www.zakon.hr/z/283/Zakon-o-proračunu (accessed April 12, 2021).

Campbell, R. J. 2004. Leviathan and fiscal illusion in local government overlapping jurisdictions. Public Choice 120 (3/4): 301-29.

CBS. 2023. Procjena stanovništva prema spolu, po gradovima/općinama, 31.12. Croatia: Croatian Bureau of Statistics.

Chang, E. S., Gavin, E., Gueorguiev, N. and Honda, J. 2020. Raising tax revenue: how to get more from tax administrations? (20 No. 142). https://www.imf.org/en/Publications/WP/Issues/2020/07/24/Raising-Tax-Revenue-How-to-Get-More-from-Tax-Administrations-49584.

Chen, Z., Pan, J., Wang, L. and Shen, X. 2016. Disclosure of government financial information and the cost of local government's debt financing—Empirical evidence from provincial investment bonds for urban construction. China Journal of Accounting Research 9 (3): 191-206.

Cropf, R. A. and Wendel, G. D. 1998. The determinants of municipal debt policy: a pooled time-series analysis. Environment and Planning C: Government and Policy 16 (2): 211-24.

Cuadrado-Ballesteros, B. and Bisogno, M. 2022. Budget transparency and financial sustainability. Journal of Public Budgeting, Accounting & Financial Management 34 (6): 210-34.

da Cruz, N. F., Tavares, A. F., Marques, R. C., Jorge, S. and de Sousa, L. 2016. Measuring local government transparency. Public Management Review 18 (6): 866-93.

de Araujo, J. F. F. E. and Tejedo-Romero, F. 2016. Local government transparency index: determinants of

municipalities' rankings. International Journal of Public Sector Management 29 (4): 327-47.

de Renzio, P. and Wehner, J. 2017. The impacts of fiscal openness. The World Bank Research Observer 32 (2): 185-210.

Dollery, B. E. and Worthington, A. C. 1996. The empirical analysis of fiscal illusion. Journal of Economic Surveys 10 (3): 261-97.

Eurostat. 2021. Government deficit/surplus, debt and associated data. https://ec.europa.eu/eurostat/databrowser/view/GOV_10DD_EDPT1__custom_1149668/default/table?lang=en (accessed January 14, 2023).

Farnham, P. G. 1985. Re-examining local debt limits: a disaggregated analysis. Southern Economic Journal 51 (4): 1186-201.

Ferejohn, J. 1999. Accountability and authority: toward a theory of political accountability. In Democracy, accountability, and representation, edited by A. Przeworski, S. C. Stokes, and B. Manin, 131-53. Cambridge, UK: Cambridge University Press.

Gerunov, A. 2016. Financial effects of fiscal transparency : a critique publication: January 2016 financial effects of fiscal transparency : a critique (Bulgarian Economic Papers No. bep-2016-01). Bulgaria: Sofia University St Kliment Ohridski.

Gupta, A. S. 2007. Determinants of tax revenue efforts in developing countries (07 No. 184). https://www.imf.org/external/pubs/ft/wp/2007/wp07184.pdf (accessed December 15, 2022).

IBP. 2015. Open budget survey 2015 report. International Budget Partnership. https://internationalbudget.org/wp-content/uploads/OBS2015-Report-English.pdf (accessed January 12, 2023).

International Budget Partnership. 2008. Open budgets. Transform lives. The Open Budget Survey 2008, 60. https://www.internationalbudget.org/publications/open-budget-survey-2008/ (accessed December 19, 2022).

Jarmuzek, M. 2006. Does fiscal transparency matter ? The evidence from transition economies. https://www.cerge-ei.cz/pdf/gdn/rrc/RRCV_77_paper_03.pdf (accessed January 30, 2023).

Jordan, M. M., Yusuf, J. E., Berman, M. and Gilchrist, C. 2017. Popular financial reports as fiscal transparency mechanisms: an assessment using the fiscal transparency index for the citizen user. International Journal of Public Administration 40 (8): 625-36.

Katsimi, M. and Sarantides, V. 2012. Do elections affect the composition of fiscal policy in developed, established democracies? Public Choice 151 (1-2): 325-62.

Khemani, S. 2004. Political cycles in a developing economy: effect of elections in the Indian States. Journal of Development Economics 73 (1): 125-54.

Klarić, M. 2017. Problems and developments in the croatian local self-government. Zbornik Radova Pravnog Fakulteta u Splitu 54 (4): 807-23.

Kopits, G. and Craig, J. D. 1998. Transparency in government operations (IMF occasional papers no. 158). Washington, DC: International Monetary Fund.

Laswad, F., Fisher, R. and Oyelere, P. 2005. Determinants of voluntary Internet financial reporting by local government authorities. Journal of Accounting and Public Policy 24 (2): 101-21.

Law on Local and Regional Self-Government. 2020. Zakon o lokalnoj i područnoj (regionalnoj) samoupravi. https://www.zakon.hr/z/132/Zakon-o-lokalnoj-i-područnoj-(regionalnoj)-samoupravi (accessed February 10, 2023).

Local Taxes Act. 2022. Zakon o lokalnim porezima, pročišćeni tekst zakona, NN 115/16, 101/17, 114/22. https://www.zakon.hr/z/875/Zakon-o-lokalnim-porezima (accessed January 17, 2023).

Milesi-Ferretti, G. M. 2004. Good, bad or ugly? On the effects of fiscal rules with creative accounting. Journal of Public Economics 88 (1-2): 377-94.

Ministry of Finance. 2023. Financijski izvještaji JLP(R)S, Bilanca 2002. - 2020. https://mfin.gov.hr/istaknute-teme/lokalna-samouprava/financijski-izvjestaji-jlp-r-s/203 (accessed February 13, 2023).

Ministry of Regional Development and EU Funds. 2022. Average residents income per capita 2014-2019. Unemployment rate 2014-2019. Zagreb: Ministry of Regional Development and EU Funds.

Montes, G. C., Bastos, J. C. A. and de Oliveira, A. J. 2019. Fiscal transparency, government effectiveness and government spending efficiency: some international evidence based on panel data approach. Economic Modelling 79: 211-25.

NALAS. 2018. Fiscal decentralisation indicators for South-East Europe. http://www.nalas.eu/Publications/Books/FDReport_18 (accessed January 22, 2023).

Nejašmić, I. and Njegač, D. 2001. Spatial (regional) differences of demographic development of the Republic of Croatia. In 41st congress of the European regional science association: "European regional development issues in the new millennium and their impact on economic policy". https://www.econstor.eu/handle/10419/115281 (accessed January 12, 2023).

OECD. 2002. OECD best practices for budget transparency. OECD Journal on Budgeting 1 (3): 7-14.

Ott, K., Mačkić, V. and Bronić, M. 2018. Budget transparency of local governments: the political economy of city and municipality budgets in Croatia. Drustvena istrazivanja 27 (4): 629-47.

Pagano, M. A. 2002. Municipal capital spending during the "boom". Public Budgeting & Finance 22 (2): 1-20.

Pettersson-Lidbom, P. 2000. A test of the rational electoral-cycle hypothesis. in Elections, party politics and economic policy, edited by P. Pettersson-Lidbom, 1-26. Stockholm: IIES, Stockholm University.

Philips, A. Q. 2016. Seeing the forest through the trees: a meta-analysis of political budget cycles. Public Choice 168 (3-4): 313-41.

Piotrowski, S. J. and Van Ryzin, G. G. 2007. Citizen attitudes toward transparency in local government. The American Review of Public Administration 37 (3): 306-23.

Prijaković, S. 2022. Impacts of budget transparency on economic and political outcomes: a review of empirical evidence. Croatian and Comparative Public Administration 22 (4): 633-65.

Puviani, A. 1903. Teoria della illusione finanziaria. Palermo: Palermo University Press.

Rogoff, K. 1990. Equilibrium political budget cycles. The American Economic Review 80 (1): 21-36.

Rules on the procedure for borrowing, and issuing guarantees and granting approvals by units of local and regional self-government (2022). Pravilnik, NN 67/2022-996. https://narodne-novine.nn.hr/clanci/sluzbeni/2022_06_67_996.html.

Sedmihradská, L. and Haas, J. 2013. Budget transparency and fiscal performance: do open budgets matter? ACTA VŠFS, Economic Studies and Analyses 7 (2): 109-22.

Shi, M. and Svensson, J. 2003. Political budget cycles: a review of recent developments. Nordic Journal of Political Economy 29: 67-76.

Shi, M. and Svensson, J. 2006. Political budget cycles: do they differ across countries and why? Journal of Public Economics 90 (8-9): 1367-89.

State Electoral Commission. 2023. Arhiva izbora republike hrvatske; lokalni izbori 2013. i 2017. i 2021. https://www.izbori.hr/arhiva-izbora/index.html#/app/home (accessed February 21, 2023).

Tabellini, G. and Persson, T. 2003. Do electoral cycles differ across political systems? (No. 232). IGIER (Innocenzo Gasparini Institute for Economic Research), Bocconi University. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=392643 (accessed February 16, 2023).

Veiga, L. G. and Veiga, J. F. 2007. Political business cycles at the municipal level. Public Choice 131 (1/2): 45-64.

Wang, T. and Shields, P. 2014. The effects of fiscal transparency on municipal bond issuances. Municipal Finance Journal 35: 25-44.

World Bank. n.d. Budget transparency initiative. Budget transparency: what, why, and how? Using budgets to empower people. https://siteresources.worldbank.org/EXTSOCIALDEVELOPMENT/Resources/ 244362-1193949504055/4348035-1352736698664/BT_What_Why_How.pdf (accessed December 19, 2022).

Wu, Y. and Wang, W. 2012. Does participatory budgeting improve the legitimacy of the local government? A comparative case study of two cities in China. Australian Journal of Public Administration 71 (2): 122-35.

sciendo

South East European Journal of Economics and Business
Volume 18 (2) 2023, 34-48
DOI: 10.2478/jeb-2023-0017

THE DIRECT AND MODERATING EFFECT OF SOCIODEMOGRAPHIC VARIABLES ON TAX COMPLIANCE BEHAVIOUR

Hana Paleka, Goran Karanović, Ana Štambuk

Abstract

The purpose of this study is to empirically examine whether taxpayers' age, gender, income, and education level impact their (non)compliance. It expands the analysis through the investigation of the moderating role of selected sociodemographic variables. This research was operated in Croatia and in total it comprised 862 fully completed questionnaires. Based on this sample of individual taxpayers (income tax), to interpret the obtained results, OLS regression analysis was employed. The moderation model has been used to explore the influence of sociodemographic variables on tax compliance. The study discloses several results. First, it demonstrates that taxpayers' age, gender, and education level are significantly associated with their compliance behaviour. In addition to this, the results confirm moderating role of gender, education level, and income level on chosen tax compliance determinants. The findings of this research contribute to policy implications in understanding the groups that require additional attention to create adequate and efficient fiscal strategies.

Keywords: *tax compliance; age; gender; income level; education level; fiscal strategies*

JEL classification: *D91; H26*

Hana Paleka, PhD Student
(corresponding author)
University of Rijeka, Faculty of Tourism and Hospitality Management
Naselje Ika, Primorska 46
HR – 51410 Opatija
E-mail: hberbic@hotmail.com
ORCID: 0000-0002-7983-1434

Goran Karanović, PhD
Associate Professor
University of Rijeka, Faculty of Tourism and Hospitality Management
Croatia
E-mail: gorank@fthm.hr
ORCID: 0000-0002-6515-935X

Ana Štambuk, PhD
Associate Professor
University of Rijeka, Faculty of Economics and Business
Croatia
E-mail: ana.stambuk@efri.hr
ORCID: 0000-0002-5138-1662

1. Introduction

According to Eurostat data for the European Union (27 member states - EU-27), tax revenues (including social contributions) amounted to 6.058 billion EUR in 2021. The average percentage of income from taxes and social contributions in the EU-27 in 2021 was 41.7% of GDP. In 2021, tax revenue to GDP ratio was highest in Denmark (48.8 % of GDP), France (47.0 % of GDP) and Belgium (46.0 % of GDP), while being the lowest in Ireland (21.9 % of GDP), Romania (27.3 % of GDP), and Bulgaria (30.7 % of GDP) (Eurostat 2023).

Despite these differences in percentages, it is obvious that the tax revenues form the basis of governments' budgets. Therefore, the issue of achieving

appropriate tax compliance levels is a universal challenge and a basic prerequisite for a stable society and its economy. Ensuring an adequate amount of public revenues through taxes cannot be simplified and observed as fighting the tax evasion and tax avoidance. Governments can surely increase their necessary revenues by achieving better tax compliance, without raising tax rates (D'attoma, Volintiru, and Malézieux 2020). Given its importance, taxpayers' behaviour should be analysed and the results of this should be an important guideline for policy makers.

Taxpayers' motivation to behave as compliant differs in many ways. Some are motivated by purely economic factors, others are influenced mostly by social or psychological determinants while in many situations there are various combinations of these motivational postures that play a role in taxpayers' behaviour (Alm 2019). While there is still no consent regarding the crucial tax compliance determinants, the debate is quite active on the role of sociodemographic categories such as age, gender, income, and education level as well. There is a vast amount of literature demonstrating that sociodemographic variables play a significant role in tax compliance levels (Eriksen and Fallan 1996; Hasseldine 1999; Chung and Trivedi 2003; Bobek, Roberts, and Sweeney 2007; Kastlunger et al. 2010; Doerrenberg and Peichl 2013; Hofmann et al. 2017; Bruner, D'Attoma, and Steinmo 2017). However, there are also studies that found no evidence of the relationship between sociodemographics and tax compliance (Wenzel 2002; Ashby, Webley, and Haslam 2009; Richardson 2006). Even though the research has not yet resulted in consensus, in their meta-analysis Hofmann et al. (2017) conclude that these variables are an indispensable component of the tax compliance models and might even interact with other tax compliance variables.

After evaluating the effect that age, gender, education level, and income level have on the tax compliance, this study highlights the importance of including sociodemographics when analysing taxpayers' behaviour. It also points to the fact that taxation authorities need to employ different strategies that take into account the fact that taxpayers are a dynamic and heterogenous group.

The paper is organised as follows. After exposing a brief framework of the topic through the introductory section, a summary of theoretical background and presentation of the hypotheses is given. Section 3 describes the methodological part, while section 4 elaborates empirical results. Finally, concluding remarks are given in the last section.

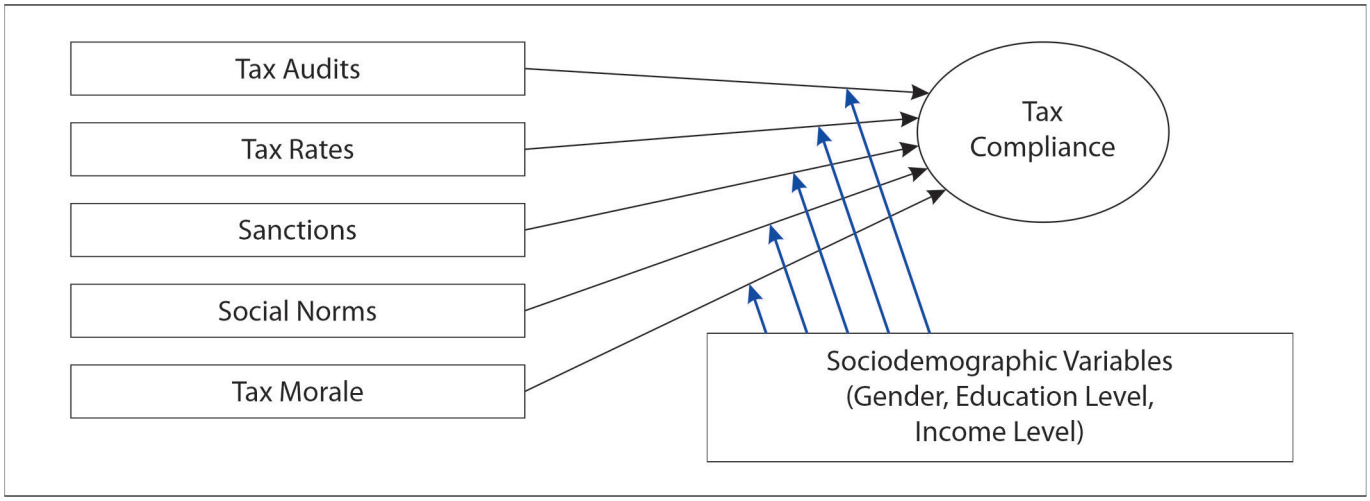
2. Literature Review and Hypothesis Development

Prior research reveals two main approaches towards the issue of taxpayers' behaviour. Conventional ones are based mostly on enforcement mechanisms (Allingham and Sandmo 1972; Andreoni, Erard, and Feinstein 1998; Slemrod and Yitzhaki 2002; Devos 2007; Bruno 2019). In the core of these models is the idea that, to ensure tax compliance, fiscal authorities should use deterrence and punishment as their key tools. According to these, more traditional and mainly economic models, determinants of compliance behaviour are factors such as tax audits, penalties, tax rates and evasion opportunity. Even though these models still form a basis regarding tax compliance research and have evolved through the years, they faced a significant amount of criticism. Main arguments emphasize the fact that economic approach ignores the human element in the complex process of tax compliance decision (Cullis and Lewis 1997; Alm 2012).

As a response to this criticism, behavioural approach emerged in the tax compliance research. A large number of studies have demonstrated that taxpayers' behaviour is determined by a combination of a different sociological and psychological factors such as tax morale, norms, fairness, or tax knowledge (Jackson and Milliron 1986; Torgler and Schneider 2007; Kirchler, Hoelzl, and Wahl 2008; Richardson 2008; Braithwaite 2009; Olsen et al. 2018; Hartmann et al. 2022; Levenko and Staehr 2022).

Among these new ideas about involving the behavioural component into tax compliance model, the idea of including the sociodemographic variables also became a hot topic. Studies provide mixed evidence (positive, negative and no influence) of age, gender, income, and education level and tax compliance relationship (Warneryd and Walerud 1982; Christian and Gupta 1993; Hite 1997; Park and Hyun 2003; Loo 2006; Torgler 2007; Bobek et al. 2007; Richardson 2008). In further sections more thorough literature review on the impact of sociodemographic variables on tax compliance is given. Jackson and Milliron (1986) pointed out that sociodemographics should be included in tax compliance research. According to Fischer, Wartick, and Mark (1992), the above-mentioned variables do not directly influence taxpayers' compliance. However, in their study they claim there is a significant indirect impact, evident through evasion opportunity as well as attitudes. The proposed research model is shown in Figure 1.

Figure 1. Proposed research model



2.1. Age and Tax Compliance

Results of previous studies indicated that the profile of compliant taxpayers could be described as: younger individuals (versus older), who describe their marital status as unmarried (versus married), and who are self-employed (versus employed) (Wahlund 1992; Beron, Tauchen, and Witte 1992; Erard 1993; Erard and Ho 2001; Alm, Bloomquist, and McKee 2017). However, there are also studies providing evidence that older taxpayers are significantly more compliant (Eriksen and Fallan 1996; Andreoni, Erard, and Feinstein 1998; Orviska and Hudson 2002; Cummings et al. 2009). In addition to this, Muehlbacher, Kirchler, and Schwarzenberger (2011) noted that voluntary tax compliance was positively related to age, while there is no relationship between enforced tax compliance and age. McKerchar (2002) and Kirchler, Niemirowski, and Wearing (2006) offer the explanation that younger taxpayers possess less knowledge about taxation, and they consider this as an obstacle to more compliant behaviour. Some studies have found a connection between a less developed sense of moral obligation and the tax compliance of younger taxpayers (Orviska and Hudson 2002). In their meta-analysis, Hofmann et al. (2017) confirmed that older taxpayers have a disposition to comply more. We, therefore, hypothesise that:

H1. There is a relationship between taxpayers' tax compliance and their age structure.

2.2. Gender and Tax Compliance

Literature offers strong evidence that women are less likely to involve in any kind of risky situation (Seid and Fissha 2020; Clarke 2021). Research on tax compliance behaviour and gender further emphasizes their risk aversity by suggesting that women are more willing to cooperate and less prone to tax evasion than men (Hasseldine 1999; Hasseldine and Hite 2003; Gërxhani 2007; Torgler and Schneider 2007; Kastlunger et al. 2010). Kastlunger et al. (2010) based their explanation on socialization context and biological differences. Furthermore, Bruner, D'Attoma, and Steinmo (2017) analysed tax compliance and gender differences in the United States of America, Sweden, the United Kingdom, and Italy. Authors concluded that women are less likely to cheat on taxes than men are, despite regional and cultural differences. Sunardi et al. (2022) empirically examined implications of female top managers' presence regarding corporate tax compliance. Their results suggested that female presence in the above-mentioned firm levels is a significant factor that stimulates tax compliance. In their meta-analysis, Hofmann et al. (2017) concluded that women are prone to comply with tax liabilities more than men, but the impact of gender was defined as rather small.

However, Jackson and Milliron (1986) presented mixed results on gender as a predictor of compliance. Chung and Trivedi (2003) concluded that women are more compliant only after being offered a plausible explanation to pay taxes. Wenzel (2002) reported no gender differences regarding the process of reporting extra income. The author only found women to be more compliant about reported income and deduction claims.

Despite the fact that there is a significant number of studies showing the differences between women and men in tax compliance behaviour, the OECD (2019) emphasizes the need for more detailed research and actual data on tax and gender topics. Following this, we hypothesise that:

H2. There is a relationship between taxpayers' tax compliance and their gender structure.

2.3. Education Level and Tax Compliance

Education plays an important role in the decision process of complying with tax laws or not (Jackson and Milliron 1986). More precisely, it is the level of education that contributes towards the taxpayers' greater understanding of taxation laws and regulations (Eriksen and Fallan 1996).

Empirical results regarding this topic are ambiguous. Chan, Troutman, and O'Bryan (2000) suggest that educated taxpayers are more aware of their responsibility and the sanctions in the case of noncompliance with tax laws. Although it is often implied that higher educated people possess a better comprehension of the law and are less prone to making mistakes regarding tax declaration, this is also related to better access to information. Such information surely includes opportunities regarding tax evasion and avoidance (Torgler and Murphy 2004; Torgler and Schneider 2005; Torgler 2006). In a study by Hofmann et al. (2017), a small but significant negative correlation was identified between education and tax compliance.

After conducting a study in 45 countries worldwide, Richardson (2006) concluded that education in general has a negative influence on tax evasion. The author found evidence that the tendency to evade taxes reduces with the level of education. Bobek, Roberts, and Sweeney (2007) suggest that there might be a correlation between a low level of education and low tax compliance. As for gender, future studies with more reliable information about the impact of the level of informal and formal education on tax compliance could be very useful. According to this, we hypothesise as follows:

H3. There is a relationship between taxpayers' tax compliance and their educational structure.

2.4. Income Level and Tax Compliance

Although Allignham and Sandmo's (1972) model found ambiguous results regarding the tax compliance and income relationship, a broad scope of the literature has examined its effects.

Some studies have researched income levels, while a significant number has also focused on income sources. Jackson and Milliron (1986) made the first significant contribution to this topic by including both income level and source into a model of tax evasion. Their results suggested that both determinants are significant for tax evasion.

Mason and Lowry (1981) as well as Witte and Woodbury (1983) concluded that income level is a significant factor affecting tax compliance. They pointed out that middle-income taxpayers are the most compliant group, while low-income taxpayers and high-income taxpayers are significantly less compliant. Efebera et al. (2004) analysed tax compliance intentions of low-income taxpayers, claiming that earlier research had largely ignored this group of taxpayers. Empirical data from this study suggests that the motivation for tax non-compliance increases with income level. This is consistent with the Hofmann et al. (2017) meta-analysis, suggesting that income and self-reported tax compliance are negatively correlated. The study also revealed spatial differences, since the negative correlation was of greater significance in Eastern Europe and Central Asia, than in any other area.

Despite the importance of this topic, social science remains uncommonly quiet on this matter. The majority of the research in this field concentrates on compliance by average taxpayers, with only a limited number of studies specifically aimed at comparing the compliance behaviour between the wealthy and the middle or lower classes (Gangl and Torgler 2020). Therefore, we hypothesise that:

H4. There is a relationship between taxpayers' tax compliance and their income level.

3. METHODOLOGY

This is research with a quantitative approach that was carried out through a survey applied to Croatian income taxpayers. To validate the data, a structural questionnaire in Croatian language was piloted and pretested. Although it was designed according to measuring instruments and scales from the relevant literature (Kirchler, Niemirowski, and Wearing 2006; Hauptman, Gürarda, and Korez-Vide 2015; Tenidou et al. 2015; Onu, Oats, and Kirchler 2019; van Dijke, Gobena, and Verboon 2019), certain specificities of the Croatian tax system indicated the need for a moderate adjustment.

In the questionnaire (see Appendix 1), 27 items were used. Those were divided into: economic determinants (9 items), psychological determinants (15 items), and tax compliance (3 items). Sanctions (Appendix 1 – statements 1-3 in section number 2), tax audits (Appendix 1 – statements 4-6 in section number 2), and tax rates (Appendix 1 – statements 7-9 in section number 2), were chosen as economic determinants and each measured with 3 items. Regarding the psychological determinants, questionnaire comprised tax system complexity (Appendix 1 – statements 1-3 in section number 3), tax morale (Appendix 1 – statements 4-9 in section number 3), fairness perceptions (Appendix 1 – statements 10-12 in section number 3), and social norms (Appendix 1 – statements 13-15 in section number 3). However, for the purpose of this analysis, only

tax morale (6 items) and social norms (3 items) were included in the model of tax compliance. The dependent variable, tax compliance (Appendix 1 – statements 1-3 in section number 4), was measured with 3 items.

First question in the survey was eliminating, respondents were asked whether they were earning any income in Croatia. For all those participants who answered no, survey ended. As in prior studies, the respondents were asked to indicate their answers on a five-point Likert scale, from "I completely disagree" (1) to "I completely agree" (5) (Hauptman, Gürarda, and Korez-Vide 2015; Tenidou et al. 2015). To collect data regarding sociodemographic characteristics (gender, education level, employment status, monthly income, seniority), multiple-choice questions were employed.

Data collection was carried out between October 2021 and January 2022. Research was conducted in the Republic of Croatia on a random sample of Croatian individual taxpayers (income tax). Since the data was not officially available regarding the number of Croatian taxpayers, it was decided to take into consideration the available data about the Croatian citizens older than 18 years. According to the latest census data from the Croatian Bureau of Statistics (2022), Croatia has 3,210,287 citizens older than 18 years. After the elimination of all partly fulfiled questionnaires, the final sample comprised 862 valid cases. The sample size is adequate for this kind of research since the sample is bigger than 384 as suggested by Meyer (1979) and Fox, Hunn, and Mathers (2007), for populations above 500,000.

To maximize representativeness of the sample and in the circumstances of COVID-19, it was decided to employ a mixed sampling design according to Rinken et al. (2020). For that reason, participants from the first subsample were invited to the research through SMS invitations to a mobile phone, in a way that mobile phone numbers were obtained by a digit randomisation. After checking the validity of a mobile phone number through phone book online available (to avoid sending the invitation to inactive numbers), SMS invitations were sent to 699 respondents. Out of this number of invitations, 327 questionnaires were fully completed. The first subsample comprises 37.9% of the total sample.

After detecting some minor discrepancy in respondents' age structure regarding a sample representativeness, participants from the second subsample were invited through social network invitations. These networks nowadays offer possibility to target advertisements to preferentially reach people based on demographics, location, interests, and behaviours (Shaver et al. 2019). This subsample, gathered through Facebook and Instagram advertisements, had a higher representation of younger population. Out of 716 invitations to a Croatian Facebook and Instagram user older than 18, 535 fully completed questionnaires were obtained. The second subsample comprises 62.1% of the total sample. In total, 1415 respondents were invited, and 862 responded, which represents a response rate of 60.9%. The summary of the respondents' characteristics is shown in Table 1.

Table 1. Sociodemographic characteristics of respondents

Category		Frequency	Percentage
Age	18 – 34	131	15,2
	35 – 44	289	33,5
	45 – 54	148	17,2
	> 55	294	34,1
	Total	862	100
Gender	Male	372	43,2
	Female	490	56,8
	Total	862	100
Education level	High school or less	251	29,1
	Diploma / Bachelor's	121	14,1
	Master	363	42,1
	Postgraduate	127	14,7
	Total	862	100,0
Income level	< 5.000 HRK (0-664€)	209	24,2
	5.001 – 8.000 HRK (665-1.062€)	305	35,4
	> 8.001 HRK (>1.063€)	348	40,4
	Total	862	100,0

Source: Authors' compilation

To estimate the direct effects of economic, psychological and sociodemographic variables on tax compliance, following model is framed as shown in regression equation:

$$Tax\ compl = i_Y + b_1 Age + b_2 Age^2 + b_3 Sanc + b_4 Male + b_5 Rates + b_6 Morale + b_7 Inc_{below} + b_8 Inc_{above} + b_9 Audit + b_{10} Edu_{BS} + b_{11} Edu_{MS} + b_{12} Edu_{postg} + b_{13} SocNorm + e_Y$$

In the mentioned model, we have tested sociodemographic and economic, as well as psychological variables. Where, Age represents participants' age with which we examined the effect of ages on taxpayers' compliance. Rates is latent variable related with the taxpayers' attitude toward tax rates. Morale variable is latent variable that we used to measure tax morale, Sanc is latent variable with which we examined taxpayers' relationship towards sanctions, while SocNorm is latent variables that deals with taxpayers' Social Norms, and Audit is a latent variable used to measure taxpayers' audit perceptions. We have measured the influence of all these latent variables towards the tax (non)compliance. Variable Male is a gender variable used to examine gender differences on tax compliance behaviour. Variable Inc represents household monthly income. We have categorized variable Inc in three classes: below average (0-5.001 HRK, approximately 0-664€), average (5.001-8.000 HRK, approximately 665-1.062€), and above average, (above 8.001 HRK, approximately >1.063€). Average monthly income (664€-1.062€) is chosen as the base category. We would like to highlight that survey included participants from developed and less developed country regions, so the base category for the monthly average income represents average income from all parts of the country. Variable Edu represents participants' education level used to examine the influence of education level towards tax (non)compliance. The education variable was divided into four categories: the base category was elementary to high school degree, second was Edu_BS - bachelor's degree, Edu_MS - master's degree and Edu_postg - postgraduate degree that included population with Master of Science, specialists, and PhD degrees.

To estimate the moderating effect of gender, education and income level on the relationship between economic and psychological determinants and tax compliance, the following regression model is used as shown in equation:

$$Tax\ compl = i_Y + b_1 Age + b_2 Age^2 + b_3 Sanc + b_4 Male + b_5 Rates + b_6 Rates \cdot Male + b_7 Morale + b_8 Morale \cdot Male + b_9 Inc_{below} + b_{10} Inc_{above} + b_{11} Audit + b_{12} Audit \cdot Inc_{below} + b_{13} Audit \cdot Inc_{above} + b_{14} Sanc \cdot Inc_{below} + b_{15} Sanc \cdot Inc_{above} + b_{16} Edu_{BS} + b_{17} Edu_{MS} + b_{18} Edu_{postg} + b_{19} SocNorm + b_{20} SocNorm \cdot Edu_{BS} + b_{21} SocNorm \cdot Edu_{MS} + b_{22} SocNorm \cdot Edu_{postg} + e_Y$$

The regression moderation model has been used to explore the influence of sociodemographic variables on tax compliance. Hayes defined moderation (2018, p.220): "The effect of X on some variable Y is moderated by W if its size, sign, or strength depends on or can be predicted by W. In that case, W is said to be a moderator of X's effect on Y, or that W and X interact in their influence on Y." Basically, identifying moderator could help us to determine influence of moderator on direct effects (variables) and to explain the impact that they have regarding the observed effects. It enables the analysis of not only the direct effect of those variables on tax compliance, but also discovers the influence they have by modifying effect of different psychological (tax morale, social norms) and economic (tax audits, tax rates, sanctions) variables of tax compliance called the moderation effect.

The model was built as a path model of various psychological and economic latent constructs as explanatory variables, together with sociodemographic variables and interaction of sociodemographic and psychological/economic variables, and latent construct of tax compliance as response variable. Results for sociodemographic variables represent the direct effect, while results of interaction variables show the moderation effect of sociodemographic variables on tax compliance.

4. Results

The focus of this analysis is to examine the direct effects of sociodemographic variables, latent economic and psychological variables on taxpayers' compliance. In other words, whether variables such as age, gender, income, education level, sanctions, rates, tax morale, social norms, and audits impact taxpayers' compliance. The results of the tested model with only direct effects are presented in Table 2.

Table 2. Results of the tested model – direct effects

Variables	Lat_TaxCompliance
Age	0.025**
	(0.010)
Age^2	-0.000*
	(9.68e-05)
Sanctions	0.037
	(0.025)
Gender (Male)	0.064
	(0.040)
Rates	-0.056**
	(0.027)
Morale	0.556***
	(0.030)
Income below	-0.032
	(0.056)
Income above	-0.012
	(0.048)
Audit	-0.007
	(0.028)
Education bachelor	0.009
	(0.065)
Education master	0.056
	(0.051)
Education postgraduate	0.056
	(0.070)
Social Norms	0.097**
	(0.027)
Constant	0.547*
	(0.296)
Observations	844

Notification: Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Source: Authors' calculations

As it can be seen from the Table 2, taxpayers' age is statistically significant for their tax compliance (-0.000*). Other sociodemographic variables of gender, income and education level do not appear to be associated with the tax compliance. Regarding the economic determinants of tax compliance, results confirm that tax audits are negatively related to tax compliance (-0.056**), while we did not find a significant effect of sanctions and tax rates on tax compliance. On the other hand, psychological determinants seem to be positively related to tax compliance (tax morale 0.556***, social norms 0.097**).

Additionally, the focus of this study was to investigate interactions (moderating effects) of these sociodemographic variables between psychological/economic determinants and tax compliance. For that reason, regression moderation model with moderating effects was employed (see methodology part). The results of the tested model are presented in Table 3.

The results are divided into two parts: a) direct effects, and b) interactions/moderators' effects. Tested direct effects suggested following results associated to the sociodemographic variables. Regarding the age variable, it has polynomial second order (quadratic) impact. The impact on latent variable tax compliance increases between 20 and 70 years, while after these years it is decreasing. Compared to the previous results (Table 2), it can be seen that gender variable in this model has a significant impact (-0.722**) on the taxpayers' compliance behaviour. The obtained result suggests that male taxpayers are less prone towards tax compliance, and they care less on tax compliance than women. The sociodemographic variable education has a significant negative effect (-0.614**), but just for category of taxpayers with bachelor's degree compared to basic category (those with elementary and high school). The result for the last sociodemographic variable, income, was not significant. Income categories are not significantly different than the base category (665€-1.062€).

Direct effects of the tested latent economic and psychological variables are as follows. Sanctions have a negative impact (-0.013) on tax compliance; however, the result is not significant. Rates have a significant negative impact (-0.100***) on tax compliance in this model, which implies that higher tax rates lead to noncompliance behaviour. Although, the results are consistent with previous research (Clotfelter 1983; Slemrod 1985) we must highlight that there are evident opposite studies (Allingham and Sandmo 1972; Gorecki and Letki 2020). Variable Audit and its direct effect were tested but results indicated that it was insignificant (0.057). Latent variables Social Norms (0.081*) and Tax Morale (0.507***) have positive significant impact on the tax compliance and this points out the fact that taxpayers with higher tax morale level and those who value social norms have higher tendency towards tax compliance. The findings are in line with previous results (Frey 1997; Franić 2020; Paleka, Karanović, and Badulescu 2023).

Additionally, in this study authors examined moderating effects of chosen sociodemographic variables on latent variables. The results regarding moderating effect analysis conducted in this study confirmed moderating effects of sociodemographic variables on relationship between latent variables and tax compliance. The model shows that gender positively moderates the correlation between both tax rates (0.094*), tax morale (0.108**) and tax compliance. Besides this,

Table 3. Results of the tested model – moderating effects

Variables	Lat_TaxCompliance
Age	0.024**
	(0.010)
Age^2	-0.000
	(9.77e-05)
Sanctions	-0.013
	(0.041)
Gender (Male)	-0.722**
	(0.295)
Rates	-0.100***
	(0.037)
Rates x Male	0.094*
	(0.052)
Morale	0.507***
	(0.040)
Morale x Male	0.108**
	(0.054)
Income below	-0.082
	(0.245)
Income above	0.020
	(0.192)
Audit	0.057
	(0.046)
Audit x Income below	-0.154**
	(0.077)
Audit x Income above	-0.068
	(0.062)
Sanctions x Income below	0.130**
	(0.066)
Sanctions x Income above	0.042
	(0.053)
Education bachelor	-0.614**
	(0.277)
Education master	0.148
	(0.194)
Education postgraduate	0.020
	(0.254)
Social Norms	0.081*
	(0.045)
Social Norms x Education bachelor	0.183**
	(0.081)
Social Norms x Education master	-0.027
	(0.058)
Social Norms x Education postgraduate	0.012
	(0.075)
Constant	0.974***
	(0.361)
Observations	844

Notification: Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Source: Authors' calculations

education level positively moderates (0.183**) the relationship between social norms and tax compliance. Specifically, this refers to the category of bachelor education level. The last sociodemographic variable with moderating effect was income, which exhibits a statistically significant negative moderating effect regarding the relationship between audits (-0.154**) and statistically significant positive moderating effect between sanctions (0.130**) and tax compliance.

Ramsey RESET test using powers of the independent variables is performed prior to the model testing. Here, the null hypothesis that the model has no omitted variables is not rejected ($F(47,775) = 1.30$, Prob > $F = 0.0871$). After establishing that there is no detectable non-linearity in the model, the model is tested.

The model is further evaluated, and all tests are performed at the $\alpha=0.10$ significance level. The evaluation begins with an estimate of the overall significance of the model. The F-test suggests that the model is significant: $F(22,81) = 31.87$, $p < 0.01$. The coefficient of determination $R^2 = 0.461$ and $R\_adjusted^2 = 0.446$ show a strong level of determination. The evaluation of the model continues with testing the assumptions of the model. The evaluation of the model continues with testing the assumptions of the model. Since the used sample is large, the central limit theorem applies, and there is no need to check normality assumption.

In moderation models there is high correlation between independent variables and interaction terms that could lead to misleading interpretation that because of multicollinearity it is not appropriate to build a model. In reality, multicollinearity is irrelevant for moderation testing (McClelland et al. 2017; Disatnik and Sivan 2016; Shiehm 2010).

The assumption of homoscedasticity is tested using Breusch-Pagan / Cook-Weisberg test for heteroskedasticity with the result χ^2 (1, N = 844) = 0.97, p = 0.326 that implies equality of variances.

5. Discussion and Conclusions

Because of its role in achieving economic sustainability, tax compliance is and will continue to be a hot topic for governments and policy makers, but for researchers as well. By using regression analysis, this research investigated how sociodemographic variables affect taxpayers' behaviour. Based on the relevant literature, age, gender, education level and income level were chosen and their direct impact on tax compliance was tested. Additionally, moderating role of gender, education level and income level were tested as well. Although numerous studies include and analyse effects of these variables on tax compliance, results

remain inconsistent.

The results suggest that taxpayers' characteristics such as age, gender, and education level are significantly associated with their compliance behaviour. The result regarding the impact of age variable on taxpayers' compliance is in line with previous results (McKerchar 2002; Kirchler, Niemirowski, and Wearing 2006). One of the reasons for the decreasing impact of this variable after 70 years may lie in the fact that most of the older population has low incomes (pensions) and attitude "nothing to lose" (associated with life expectancy). Similar to this, results point to a gender difference in tax compliance behaviours. These results are in line with the previous studies carried out (Hasseldine 1999, Hasseldine and Hite 2003; Gërxhani 2007; Kastlunger et al. 2010; Torgler and Schneider 2007, Bruner, D'Attoma, and Steinmo 2017).

Results regarding the education level and its impact on tax compliance confirm the findings of Hofmann et al. (2017). Population with a bachelor's degree has a lower tendency towards tax compliance than the base category (high school or less), while the impact of the categories with master's and postgraduate degree are not significantly different than base category. These results possibly arise from the differences in the wages between these categories.

Finally, although the results are insignificant regarding the income category, it should be mentioned that the lower income taxpayers' category has negative impact (-0.082) while category of higher income taxpayers has positive impact (0.020) towards tax compliance regarding base category. Allingham and Sandmo (1972) stated that under the pressure of the high tax rates taxpayers will be less wealthy, and that will eventually lead to lead to more risk-averse behavior. This is something that should be considered more in further research.

This research also provides evidence on moderating effects of chosen sociodemographic variables on latent variables. Findings suggest that gender moderates the relationship between both tax rates, tax morale, and tax compliance. To be more precise, this effect is significant and positive for males. This moderating effect could be explained by higher income of the males over females, but it would certainly be interesting to address this issue in future. Regarding the interaction of education level and social norms towards tax compliance, the results point to a significant and positive moderation (for respondents with bachelor degree). It can be suggested that more educated people have more knowledge about the taxation system and can easily cope with its complexity. But they also care more about their social status, and therefore comply voluntarily with tax regulations. Moreover, a more educated population has higher income and "more to lose" attitude.

The model shows that income significantly moderates the effect of two economic determinants (sanctions and tax audits) on tax compliance, for the category of taxpayers with the monthly income below the average. In other words, the moderating effect of income shows a statistically negative significant impact when interacting with audits, and a statistically positive significant impact when interacting with sanctions. The results are in line with previous studies, and they can be related to findings of Cox (1984, p.286) "…on average, the most noncompliant taxpayers are those with either very high or very meagre incomes, with middle-income taxpayers being the most compliant". The main difference between these two groups according Slemrod (2007, p.30) is in the context of performing "the poor evade, the rich avoid". Regarding the moderating effect of income towards the relationship between sanctions and tax compliance, findings are in line with previous ones and as stated before – those taxpayers with higher income have wealth to lose (unlike the lowest income level taxpayers), and that can lead to risky behaviour.

These findings provide further evidence about the importance of including sociodemographic variables in tax compliance research (Hofmann et al. 2017), based on confirmation of their direct and moderating effect on taxpayers' compliance. Empirical results also fill a gap by helping to clarify the question of the indirect effect of variables such as gender, education, and income level on the tax compliance. Results of this study provide an opportunity for policy makers to employ different tools that take into account the fact that taxpayers are a dynamic and heterogenous group and need to be approached through diverse strategies. In the context of these findings, it should be highlighted that government policies and initiatives should acknowledge the paradigm shift towards the behavioral approach to the tax compliance concept, because tax morale and social norms are determinants that cannot be neglected in future viewpoints.

There are several research limitations that should be mentioned. The authors are aware of the fact that taxpayers are not necessarily honest about their tax compliance intentions (but also regarding the data such as income source and level) since the topic is quite sensitive and personal. This is the reason to combine different data source as well as methodology in future research. Additionally, this research examined taxpayers' attitudes, and not their actual behaviour. Although it has been acknowledged in the previous literature that attitudes can be predictors of the future behaviour (Bobek and Hatfield 2003; Onu 2016),

it would be interesting to specifically analyse the taxation data from the audited taxpayers and compare their attitudes and exact behaviour. In this research, the sample is limited only to income taxpayers. In future research framework, it would be useful to view a wider context and analyse the tax compliance related to the overall tax burden.

References

Allingham, M. G. and Sandmo, A. 1972. Income tax evasion: A theoretical analysis. Journal of Public Economics 1: 323-338.

Alm, J. 2012. Measuring, explaining, and controlling tax evasion: lessons from theory, experiments, and field studies. International Tax Public Finance 19: 54-77.

Alm, J. 2019. What motivates tax compliance? Journal of Economic Surveys 33 (2): 353–388.

Alm, J., Bloomquist, K. M. and McKee, M. 2017. When you know your neighbor pays taxes: Information, peer effects, and tax compliance. Fiscal Studies 38: 587–613.

Andreoni, J., Erard, B. and Feinstein, J. 1998. Tax compliance. Journal of Economic Literature 36 (2): 818-860.

Ashby, J.S., Webley, P. and Haslam, A.S. 2009. The role of occupational taxpaying cultures in taxpaying behaviour and attitudes. Journal of Economic Psychology 30 (2): 216–227.

Beron, K. J., Tauchen, H. V. and Witte, A.D. 1992. The effect of audits and socioeconomic variables on compliance. In Why people pay taxes: tax compliance and enforcement. Edited by J. Slemrod, 67-89. University of Michigan Press, MI: Ann Arbor.

Bobek, D. D. and Hatfield, R. C. 2003. An investigation of the theory of planned behavior and the role of moral obligation in tax compliance. Behavioral Research in Accounting 15 (1): 13–38.

Bobek, D. D., Roberts, R. W. and Sweeney, J. T. 2007. The social norms of tax compliance: Evidence from Australia, Singapore, and the United States. Journal of Business Ethics 74 (1): 49–64.

Braithwaite, V. 2009. Defiance in taxation and governance. Cheltenham, UK: Edward Elgar.

Bruner, D. M., D'Attoma, J. and Steinmo, S. 2017. The role of gender in the provision of public goods through tax compliance. Journal of Behavioral and Experimental Economics 71: 45-55.

Bruno, R. L. 2019. Tax enforcement, tax compliance and tax morale in transition economies: a theoretical model. European Journal of Political Economy 56: 193-211.

Chan, C. W., Troutman, Coleen S. and O'Bryan, D. 2000. An expanded model of taxpayer compliance: Empirical evidence from the United States and Hong Kong. Journal of International Accounting, Auditing & Taxation 9: 83–103.

Christian, C., and Gupta, S. 1993. New evidence on secondary evasion. Journal of the American Taxation Association 15 (1): 72-93.

Chung, J. and Trivedi, V. U. 2003. The effect of friendly persuasion and gender on tax compliance behavior. Journal of Business Ethics 47: 133–145.

Clarke, G. R. G. 2021. How do women managers avoid paying bribes? Economies 9: 19.

Clotfelter, C. T. 1983. Tax evasion and tax rates: An analysis of individual returns. Review of Economics and Statistics 65 (3): 363–373.

Cox, D. 1984. Raising revenue in the underground economy. National Tax Journal 37 (3): 283–288.

Croatian Bureau of Statistics. 2022. Population Estimate of Republic of Croatia, 2021, https://podaci.dzs.hr/hr/statistika-u-nizu/ (accessed October 3, 2022).

Cullis, J. G. and Lewis, A. 1997. Why people pay taxes: from a conventional economic model to a model of social convention. Journal of Economic Psychology 18: 305-321.

Cummings, R. G., Martinez-Vazquez, J., McKee, M. and Torgler, B. 2009. Tax morale affects tax compliance: Evidence from surveys and an artefactual field experiment. Journal of Economic Behavior & Organization 70: 447-457.

D'attoma, J. W., Volintiru, C. and Malézieux, A. 2020. Gender, social value orientation, and tax compliance. CESifo Economic Studies 66 (3): 265–284.

Devos, K. 2007. Measuring and analysing deterrence in taxpayer compliance research. Journal of Australian Taxation 10 (2): 182-219.

Disatnik, D. and Sivan, L. 2016. The multicollinearity illusion in moderated regression analysis. Marketing Letters 27: 403-408.

Dörrenberg, P. and Peichl, A. 2018. Tax Morale and the Role of Social Norms and Reciprocity. Evidence from a Randomized Survey Experiment. CESifo Working Paper Series No. 7149.

Efebera, H., Hayes, D. C., Hunton, J. E., and O'Neil, C. 2004. Tax compliance intentions of low-income individual taxpayers. Advances in Accounting Behavioural Research 7: 1-25.

Erard, B. 1993. Taxation with representation: an analysis of the role of tax practitioners in tax compliance. Journal of Public Economics 52: 163-197.

Erard, B. and Ho. C. 2001. Searching for ghosts: who are the nonfilers and how much tax do they owe? Journal of Public Economics 81: 25–50.

Eriksen, K. and Fallan, L. 1996. Tax knowledge and attitudes towards taxation; A report on a quasi-experiment. Journal of Economic Psychology 17 (3): 387–402.

Eurostat. 2022. Tax revenue statistics, https://ec.europa.eu/eurostat/statisticsexplained/index.php?title=Tax_revenue_statistics (accessed on 11 December 2022).

Fischer, C.M., Wartick, M. and Mark, M. 1992. Detection probability and taxpayer compliance: A review of the literature. Journal of Accounting Literature 11: 1-49.

Fox, N., Hunn, A. and Mathers, N. 2007. Sampling and Sample Size Calculation. The NIHRRDS for the East Midlands / Yorkshire & the Humber.

Franić, J. 2020. Repression, voluntary compliance and undeclared work in a transition setting: Some evidence from Poland. Post-Communist Economies 32 (2): 250–266.

Frey, B. S. 1997. Not just for the money – An economic theory of personal motivation. Cheltenham: Edward Elgar Publishing.

Gangl, K. and Torgler, B. 2020. How to achieve tax compliance by the wealthy: a review of the literature and agenda for policy. Social Issues and Policy Review 14: 108-151.

Gërxhani, K. 2007. Explaining gender differences in tax evasion: the case of Tirana, Albania. Feminist Economics 13: 119-155.

Górecki, M. A. and Letki, N. 2020. Social norms moderate the effect of tax system on tax evasion: Evidence from a large-scale survey experiment. Journal of Business Ethics: 1-20.

Hartmann, A.J., Gangl, K., Kasper, M., Kirchler, E., Kocher, M. G., Mueller, M. and Sonntag, A. 2022. The economic crisis during the COVID-19 pandemic has a negative effect on tax compliance: Results from a scenario study in Austria. Journal of Economic Psychology 93: 102572.

Hasseldine, J. 1999. Gender differences in tax compliance. Asia-Pacific Journal of Taxation 3: 73–89.

Hasseldine, J. and Hite, P. A. 2003. Framing, gender and tax compliance. Journal of Economic Psychology 24: 517-533.

Hauptman, L., Gürarda, Ş. and Korez-Vide, R. 2015. Exploring voluntary tax compliance factors in Slovenia: Implications for tax administration and policymakers. Lex Localis 13 (3): 639–659.

Hayes, F. A. 2018. Introduction to mediation, moderation, and conditional process analysis: A regresion-based approach. The Guliford Press, New York.

Hite, P. 1997. Identifying and mitigating taxpayer compliance. Australian Tax Forum 13: 155-80.

Hofmann, E., Voracek, M., Bock, C. and Kirchler, E. 2017. Tax compliance across sociodemographic categories: Meta-analyses of survey studies in 111 countries. Journal of Economic Psychology 62: 63–71.

Jackson, B. R. and Milliron, V. C. 1986. Tax compliance research: findings, problems and prospects. Journal of Accounting Literature 5: 135-166.

Kastlunger, B., Dressler, S.G., Kirchler, E., Mittone, L. and Voracek, M. 2010. Sex differences in tax compliance: Differentiating between demographic sex, gender-role orientation, and prenatal masculinization (2D:4D). Journal of Economic Psychology 31 (4): 542- 552.

Kirchler, E., Hoelzl, E. and Wahl, I. 2008. Enforced versus voluntary tax compliance: The "slippery slope" framework. Journal of Economic Psychology 29 (2): 210–225.

Kirchler, E., Niemirowski, A. and Wearing, A. 2006. Shared subjective views, intent to cooperate and tax compliance: similarities between Australian taxpayers and tax officers. Journal of Economic Psychology 27: 502-17.

Levenko, N. and Staehr, K. 2022. Self-reported tax compliance in post-transition Estonia, Economic Systems: 101047.

Lilliefors, Hubert W. 1967. On the Kolmogorov-Smirnov Test for Normality with Mean and Variance Unknown, Journal of the American Statistical Association 62 (318): 399–402.

Loo, E.C. 2006. The influence of the introduction on self-assessment on compliance behaviour of individual taxpayers in Malaysia. PhD thesis. University of Sydney.

Mason, R. and Lowry, H. 1981. An estimate of income tax evasion in Oregon. Working Paper. Corvallis, Oregon: Survey Research Center, Oregon State University.

McClelland, G. H., Irwin, J. R., Disatnik, D. and Sivan, L. (2017). Multicollinearity is a red herring in the search for moderator variables: A guide to interpreting moderated multiple regression models and a critique of Iacobucci, Schneider, Popovich, and Bakamitsos. Behavior Research Methods 49: 394-402.

McKerchar, M. 2002. The effects of complexity on unintentional noncompliance for personal taxpayers in Australia. Australian Tax Forum 17: 131-138.

Meyer, J.T. 1979. Fundamental research statistics for the behavioural sciences. New York: Holt Rinehart & Winston.

Muehlbacher, S., Kirchler, E. and Schwarzenberger, H. 2011. Voluntary versus enforced tax compliance: Empirical evidence for the "slippery slope" framework. European Journal of Law and Economics 32: 89–97.

OECD. 2019. Tax Morale: What Drives People and Businesses to Pay Tax? OECD Publishing, Paris. https://www.oecd-ilibrary.org/taxation/tax-morale_f3d8ea10-en (accessed December 8, 2022).

Olsen, J., Kasper, M., Enachescu, J., Benk, S., Budak, T. and Kirchler, E. 2018. Emotions and tax compliance among small business owners: An experimental survey. International Review of Law and Economics 56: 42–52.

Onu, D. 2016. Measuring tax compliance attitudes: What surveys can tell us about tax compliance behaviour. Advances in Taxation 23: 173–190.

Onu, D., Oats, L. and Kirchler, E. 2019. The dynamics of internalised and extrinsic motivation in the ethical decision-making of small business owners. Applied Psychology 68 (1): 177–201.

Orviska, M. and Hudson, J. 2002. Tax evasion, civic duty, and the law-abiding citizen. European Journal of Political Economy 19 (1): 83–102.

Paleka, H., Karanović, G. and Badulescu, D. 2022. Tax compliance determinants: Empirical evidence from Croatia.

Technological and Economic Development of Economy 28 (6): 1915-1932.

Park, C., and Hyun, J.K. 2003. Examining the determinants of tax compliance by experimental data: A case of Korea. Journal of Policy Modelling 25: 673-684.

Richardson, G. 2006. Determinants of tax evasion: A cross-country investigation, Journal of International Accounting, Auditing and Taxation 15: 150-169.

Richardson, G. 2008. The relationship between culture and tax evasion across countries: Additional evidence and extensions. Journal of International Accounting, Auditing and Taxation 17 (2): 67–78.

Rinken, S., Domínguez-Álvarez, J.-A., Trujillo, M., Lafuente, R., Sotomayor, R., & Serrano-del-Rosal, R. 2020. Combined mobile-phone and social-media sampling for web survey on social effects of COVID-19 in Spain. Survey Research Methods 14 (2): 165–170.

Seid, Y. and Fissha, A. 2020. Gender and tax compliance: Firm level evidence from Ethiopia. Institute of Development Studies 113 (11): 1–46.

Shaver, L. G., Khawer, A., Yi, Y., Aubrey-Bassler, K., Etchegary, H., Roebothan, B., Asghari, S., and Wang, P. P. 2019. Using Facebook Advertising to Recruit Representative Samples: Feasibility Assessment of a Cross-Sectional Survey. Journal of medical Internet research 21 (8): e14021.

Shieh, G. 2010. On the misconception of multicollinearity in detection of moderating effects: Multicollinearity is not always detrimental. Multivariate Behavioral Research 45 (3): 483-507.

Slemrod, J. 1985. An empirical test for tax evasion. Review of Economics and Statistics 67 (2): 232–238.

Slemrod, J. 2007. Cheating ourselves: The economics of tax evasion. Journal of Economic Perspectives 21 (1): 25–48.

Slemrod, J. and Yitzhaki, S. 2002. Tax avoidance, evasion and administration. In Handbook of Public Economics, edited by A. J. Auerbach and M. S. Feldstein, 1423- 1470. New York: Elsevier.

Sunardi, S., Damayanti, T.W., Supramono, S. and Hermanto, Y.B. 2022. Gender, perception of audits, access to finance, and self-assessed corporate tax compliance. Economies 10: 65.

Tenidou, E., Valsamidis, S., Petasakis, I. And Mandilas, A. 2015. Elenxis, an effective tool for the war against tax avoidance and evasion. Procedia Economics and Finance 33: 303–312.

Torgler, B. 2006. The importance of faith: Tax morale and religiosity. Journal of Economic Behavior and Organization 61: 81-109.

Torgler, B. 2007. Tax Compliance and Tax Morale: A Theoretical and Empirical Analysis. Cheltenham: EE.

Torgler, B. and Murphy, K. 2004. Tax morale in Australia: What factors shape it and has it changed over time? Journal of Australian Taxation 7: 298-335.

Torgler, B. and Schneider, F. 2005. Attitudes towards paying taxes in Austria: An empirical analysis. Empirica 32: 231-250.

Torgler, B. and Schneider, F. 2007. What shapes attitudes toward paying taxes? evidence from multicultural European countries. Social Science Quarterly 88 (2): 443–470.

van Dijke, M., Gobena, L. B. and Verboon, P. 2019. Make me want to pay. A three-way interaction between procedural justice, distributive justice, and power on voluntary tax compliance. Frontiers in Psychology 10: 1632.

Wahlund, R. 1992. Tax changes and economic behavior: the case of tax evasion. Journal of Economic Psychology 13: 657-677.

Wärneryd, K.E., and Walerud, B. 1982. Taxes and economic behaviour: Some interview data on tax evasion in Sweden. Journal of Economic Psychology 2: 187-211.

Wenzel, M. 2002. The impact of outcome orientation and justice concerns on tax compliance: the role of taxpayers' identity. Journal of Applied Psychology 87: 629–645.

Witte, A. D. and Woodbury, D. F. 1985. The effect of tax laws and tax administration on tax compliance: the case of the U.S. individual income tax. National Tax Journal 38: 1 - 13.

APPENDIX 1 - Questionnaire

SURVEY OF ECONOMIC AND PSYCHOLOGICAL DETERMINANTS OF TAX COMPLIANCE IN CROATIA

This research is carried out for the purposes of the doctoral dissertation and aims to investigate the behavior of taxpayers and determine what determinants affect the fulfilment or non-compliance of tax obligations in the Republic of Croatia. You are invited to participate in this research on the assumption that you are a Croatian taxpayer on any basis, which is explained in the first question of the questionnaire.

It takes approximately 10 minutes to complete the questionnaire. Your participation is voluntary, and the questionnaire is entirely anonymous, and data protection is guaranteed under the GDPR 2016/679 General Data Protection Regulation. The inability to connect the response with the data subject is ensured at all stages of the survey, both during the collection of data and during the processing of data and the analysis of the results.

The collected data will be used exclusively for scientific research purposes and will contribute to the creation of a functional and satisfactory tax system for the state, but also for taxpayers. I kindly ask you to take your time, contribute to this research by answering all questions honestly and objectively to ensure the relevance of the research. If you need more information or if you have any questions, feel free to contact me.

I thank you for your participation, help and effort!

Hana Paleka
Doctoral student in postgraduate doctoral study "Business economics in tourism and hospitality"

Faculty of Tourism and Hospitality Management, Opatija, University of Rijeka
hberbic@hotmail.com

Note: The claims used in this questionnaire, regardless of whether used in male or female gender, cover male and female gender in the same way.

1. DO YOU EARN INCOME ON ANY BASIS IN THE REPUBLIC OF CROATIA?

SOURCES OF INCOME: A) income from independent work (salaries and pensions), B) income - self-employed, C) income from property and property rights, D) income from capital, E) other income.

☐ YES ☐ NO

2. These statements refer to the **economic determinants** of tax compliance. Choose only one answer for each statement: 1 – I strongly disagree; 2 - I disagree; 3 – I neither agree nor disagree; 4 - I agree; 5 - I strongly agree

STATEMENT	1	2	3	4	5
I fulfil my tax obligations because the penalties for tax evasion are very high.					
If a citizen of the Republic of Croatia withheld the entire and/or partial source of income from the tax authorities, he would be sanctioned.					
If a citizen of the Republic of Croatia gave tax authorities incorrect information about his income, he would be sanctioned.					
If a citizen of the Republic of Croatia did not declare income, the tax authorities would surely find out.					
Tax authorities in the Republic of Croatia carry out audits often and thoroughly.					
Thanks to their knowledge and expertise, tax authorities in the Republic of Croatia can detect almost any act of tax evasion.					
Income tax rates in the Republic of Croatia are too high.					
Higher income tax rates affect the shadow economy growth.					
I believe that the total tax burden on labour in the Republic of Croatia at rates of 56.5%, or 66.5% - is too high.					

3. These statements refer to the **psychological** determinants of tax compliance. Choose only one answer for each

statement: 1 – I strongly disagree; 2 - I disagree; 3 – I neither agree nor disagree; 4 - I agree; 5 - I strongly agree

STATEMENT	1	2	3	4	5
Tax laws are written in a simple language.					
Terms used in tax laws and tax authorities' publications are difficult to understand.					
I understand the current regulations regarding my tax liabilities.					
I believe I should declare my entire income and pay the appropriate income tax according to that.					
I find manipulating tax reliefs acceptable.					
I find 'envelope' wages acceptable way to avoid paying taxes.					
Cheating when fulfiling tax obligations is always justified.					
Sometimes there is a justification for non-payment of tax liabilities.					
Failure to meet tax obligations is never justified.					
Decision-making processes and tax audits are carried out fairly by the Croatian tax authorities.					
I find that the amount of tax I pay is generally fair.					
For the amount of tax I pay, I get proper public services.					
My family expects me to fulfil my tax obligations in accordance with the laws and regulations in the Republic of Croatia.					
My friends expect me to fulfil my tax obligations in accordance with the laws and regulations in the Republic of Croatia.					
If I didn't meet my tax obligations, the people in my surroundings would condemn me.					

4. These statements refer to the **tax compliance**. Choose only one answer for each statement: 1 – I strongly disagree; 2 - I disagree; 3 – I neither agree nor disagree; 4 - I agree; 5 - I strongly agree

STATEMENT	1	2	3	4	5
I think people who don't pay taxes do the right thing.					
I don't think people who pay taxes do the right thing, but I understand them.					
I believe that people who don't pay taxes don't do the right thing and should be sanctioned.					

SOCIODEMOGRAPHIC QUESTIONS:

1. PLEASE CHOOSE YOUR LOCATION (region):

- ☐ Bjelovarsko-bilogorska
- ☐ Brodsko-posavska
- ☐ Dubrovačko-neretvanska
- ☐ Grad Zagreb
- ☐ Istarska
- ☐ Karlovačka
- ☐ Koprivničko-križevačka
- ☐ Krapinsko-zagorska županija
- ☐ Ličko-senjska
- ☐ Međimurska
- ☐ Osječko-baranjska
- ☐ Požeško-slavonska
- ☐ Primorsko-goranska
- ☐ Sisačko-moslavačka
- ☐ Splitsko-dalmatinska
- ☐ Šibensko-kninska
- ☐ Varaždinska
- ☐ Virovitičko-podravska
- ☐ Vukovarsko-srijemska
- ☐ Zadarska
- ☐ Zagrebačka

2. YEAR OF BIRTH: _____

3. SEX:
   - ☐ Male
   - ☐ Female

4. LEVEL OF EDUCATION:
   - ☐ elementary education
   - ☐ secondary education
   - ☐ undergraduate study
   - ☐ graduate study
   - ☐ postgraduate study (specialist, scientific master's degree; doctoral)

5. WHAT IS YOUR MONTHLY INCOME?
   - ☐ up to 2 000 HRK
   - ☐ 2 001 – 5 000 HRK
   - ☐ 5 001 – 8 000 HRK
   - ☐ 8 001 – 11 000 HRK
   - ☐ 11 001 – 14 000 HRK
   - ☐ 14 001 HRK and more

APPENDIX 2 - Descriptive statistics of latent variables

Table 4. Descriptive statistics of latent variables

	Mean	Median	Mode	Standard Deviation
Lat_Compliance	3.59	3.67	4.00	0.75
Lat_Sanctions	3.50	3.67	4.00	0.95
Lat_Audits	2.66	2.67	2.00	0.79
Lat_Rates	4.25	4.33	5.00	0.74
Lat_Snormes	3.29	3.33	3.67	0.81
Lat_Morale	3.65	3.67	4.00	0.73

Source: Authors' calculations

sciendo

South East European Journal of Economics and Business
Volume 18 (2) 2023, 49-62
DOI: 10.2478/jeb-2023-0018

RELATIONSHIP BANKING, COLLATERAL, AND THE ECONOMIC CRISIS AS DETERMINANTS OF CREDIT RISK: AN EMPIRICAL INVESTIGATION OF SMEs

Besnik A. Krasniqi, Mrika Kotorri, Florin Aliu

Abstract

This study examines the impact of relationship banking and collateral on the probability of firm loan default in Kosovo. Using a sample of 2,320 loan-level data from an individual bank credit register, findings indicate that stronger firm-bank relationships reduce the probability of default, and tighter credit policies regarding higher collateral requirements and interest rates have the opposite effect. Re-specifying the model to control for the banking sector concentration Hirschman-Herfindahl Index (HHI) and the Net Interest Margin (NIM), the firm-bank relationship is no longer statistically significant. Results show that the crisis negatively impacts credit risk, while HHI positively affects the probability of loan default. This evidence suggests that banking relationship matters only in competitive markets. To test the potential interaction effect between relationship banking and collateral, Fairlie's (1999) decomposition technique is deployed. Our results imply that high concentration levels in the banking sector render firm-bank relationships relatively less important. This is of utmost importance for SMEs, banks, and policymakers.

JEL classification: *G21, O16*

Keywords: *SMEs, asymmetric information, banks, collateral, debt maturity, economic crises, relationship lending, banking market concentration*

Besnik A. Krasniqi, PhD
University of Prishtina, Faculty of Economy &
Kosovo Academy of Sciences and Arts
Republic of Kosovo
ORCID: 0000-0003-2440-3974

Mrika Kotorri, PhD (corresponding author)
University of Prishtina, Faculty of Economy
Agim Ramadani St, p.n. Prishtinë, 10000
Republic of Kosovo
E-mail: mrika.kotorri@gmail.com

Florin Aliu, PhD
School of Expertness and Valuation
Institute of Technology and Business
Ceske Budejovice, Czech Republic
Email: aliuf@mail.vstecb.cz
ORCID: 0000-0002-4876-6043

1. Introduction

The issue of small firm finance has intrigued researchers within both the entrepreneurship and finance literature. The role of bank finance in the growth of small and medium-sized enterprises (SMEs) is critical. For banks, particularly financial institutions involved in SME lending, a fundamental part of any lending process is the assessment and mitigation of the credit risk – the probability of loan default - which arises from asymmetric information (Krasniqi 2010a; Li et al. 2016; Zambaldi et al. 2011; Berger et al. 2011; Kärnä and Stephan 2022; Wernli and Dietrich 2022). Banks usually use collateral to alleviate information asymmetry of the issues relating to borrower quality, such as ex-ante adverse selection and/or ex-post moral hazard (Stiglitz and Weiss 1981; Bester 1987;

Besanko and Thakor 1987). Ex-ante, collateral is a signalling instrument of unobserved borrower characteristics, restricting adverse selection (Stiglitz and Weiss, 1981; Bester 1987; Chan and Thakor 1987; Berger et al. 2011; Agostino and Trivieri 2017). Ex-post, it is used as a mechanism to reduce the opportunistic behaviour of borrowers, inducing the alignment of interests between borrowers and banks and mitigating moral hazard problems. The mechanism of how banks mitigate credit risk has influenced the access and scope of the bank financing of SMEs. Collateral is expected to reduce credit risk and alleviate the negative impact of asymmetric information on equilibrium credit rationing arising from asymmetric information. Nevertheless, using collateral as an established device to mitigate risk has made it difficult for small firms to access external finance. From the perspective of the banks, the opaqueness of information of SMEs increases the risk associated with providing financing, inducing the bank to reduce loan maturity, increase the interest rate and introduce collateral requirements (Hernández-Cánovas and Koëter-Kant 2011). In the context of emerging countries and transitional economies, lending is particularly risky owing to information asymmetry problems in financial relations being potentially higher than in developed countries (Krasniqi 2010; Menkhoff, Neuberger, and Suwanaporn 2006). Other scholars point out the role of contextual factors and macroeconomic conditions, such as crises in bank lending policy (Peric et al. 2017). For example, lending to SMEs is even more risky during crises. This is particularly true for the 2008 global financial crisis, which resulted in banks tightening procedures and increasing requirements for lending to SMEs. Banks declined loans to firms with high credit risk due to their prudent lending, which typically increases during the recession (Hernández-Cánovas and Koëter-Kant, 2011). Small firms are the most likely to be affected by crises, as they cannot meet the higher collateral requirements and interest rates.

Given the above discussion, building trust through a bank-firm relationship, often referred to as relationship banking, is seen as an effective tool to mitigate credit risk, that is, the probability of loan default (Hernández-Cánovas and Martínez-Solano 2010; Jiménez and Saurina 2004; Kysucky and Norden 2015). Relationship banking serves as a mechanism to minimise adverse selection by facilitating the ex-ante screening of borrower creditworthiness by the bank and signalling trustworthiness by the borrower (Seijvers et al. 2010). Further, it minimises moral hazard by enabling closer ex-post monitoring by the bank. So, relationship lending alleviates information asymmetry, develops trust, ensures borrower discipline, and avoids borrowers' opportunistic behaviour, facilitating lending to SMEs in terms of lower interest rates and collateral requirements (Agostino and Trivieri 2017), reducing the probability of loan default. Relationship lending, however, may provide incentives to both borrowers and banks for opportunistic behaviour; the borrower may put less effort ex-post or take excessive risk, whilst the bank may exploit its power to increase interest rates and collateral requirements resulting in the hold-up problem (Berger et al. 2011; Agostino and Trivieri 2017; Seijvers et al. 2010). The elaboration above suggests potential endogeneity between relationship lending and collateral (Berger et al. 2011). Given the growing importance of relationship lending, examining its role in SME access to bank finance and, through that, the probability of loan default, especially in emerging markets and transition economies, is necessary.

The aim of this paper is not simply to disentangle the different information-asymmetry-related hypotheses from one another and empirically test them; instead, the article aims to investigate whether it is information asymmetry problems or higher levels of concentration in the banking sector that is critical to determining the probability of default. Further, it aims to empirically test the interaction effect between relationship banking and collateral. For this purpose, it uses an econometrics strategy different from that introduced in the existing literature, namely Fairlie's (1999) decomposition technique for non-linear models.

This study makes several contributions to the existing small firm finance literature. To the best of our knowledge, it is the first to estimate a model on the probability of loan default using a unique database of internal firm loan accounts from a commercial bank in the transitional economy of Kosovo. Further, it integrates banking sector competition and profitability measures (HHI and NIM) into the credit risk analysis, indicating that doing so improves the accuracy of results. Another contribution is that, unlike other studies in the existing literature, it is the first to deploy Fairlie's (1999) decomposition technique for non-linear models to investigate relationship-banking differences in the default probability concerning the impact of collateral. We find that relationship banking has a negative impact on the likelihood of default, suggesting that SMEs may benefit from building relational trust, which, in turn, enables banks to have more insider information for more accurate ex-ante evaluation and ex-post monitoring of loans. Findings indicate that tighter loan policies, that is, higher collateral and interest rate requirements, increase the probability of default. This suggests that, in the Kosovan context,

collateral is not used as a signal of more credible borrowers or to foster ex-post good behaviour among borrowers, which would enable banks to mitigate adverse selection and moral hazard problems; instead, results are in line with the "lazy bank hypothesis" and/or the ex-ante adverse selection hypothesis. Results, however, are largely not robust to specification changes. Upon including banking sector concentration and profitability measures, relationship banking is no longer statistically significant, while loan maturity has the opposite sign and is statistically significant. The effect of banking sector concentration is highly statistically significant and positively impacts credit risk. The crises resulted in the overall impact on banking policy, which caused banks to introduce more prudent lending policy resulted in better SME loan performance in both model specifications. No empirical support is found for the interaction effect between relationship banking and collateral in determining the probability of default.

The remainder of the article is structured as follows. The next section reviews the literature on the relationship between credit risk, collateral, and relationship banking. Section 3 presents the empirical methodology, and the empirical findings are discussed in Section 4. Section 5 draws concluding remarks and offers policy recommendations for banks and SME managers. It highlights limitations and suggestions for future research.

2. Theory and hypotheses

The small and medium-sized enterprises (SMEs) contribute substantially to jobs and income (Hashi and Krasniqi 2011; Audretsch et al. 2014; De Wit and De Kok 2014; Krasniqi 2010b; Peci 2015), innovation and export (Krasniqi and Desai 2017; Kotorri and Krasniqi 2018; Mahmutaj and Kransniqi 2020) leading to economic growth (Carree and Thurik 2010; Krasniqi and Desai 2016). Considering SMEs' contribution to economic growth, the literature was concerned with the factors preventing small firms from unlocking their full growth potential, and access to finance was among the first on the list. Since SMEs usually do not have access to capital markets, bank financing often remains the only option for external funding. This was particularly important for growth-oriented SMEs with higher capital requirements to support their growth strategies (Krasniqi 2012). Therefore, it was important for the literature to examine the determinants of small firms' access to bank finance, as bank financing constitutes the primary source of external funding (Behr et al. 2011). An essential aspect of financial relations between banks and SMEs is that the latter, owing to their size and lack of history and reputation, are characterised by data opaqueness, which leads to asymmetric information problems. Given these issues, one strand of the literature focused on collateral and relationship banking, as they are expected to impact not only access but also the loan performance of small firms. This, in turn, is likely to have long-term implications for banks' lending policies toward small firms. Following is a discussion of factors influencing loan default.

2.1. Collateral

The impact of collateral on credit risk has been the subject of burgeoning research. Explanations for the extensive use of collateral are founded in theories of banking and financial contracting which aim at reducing risk under asymmetric information about borrower quality based on the well-known Stiglitz-Weiss (1981) model. Owing to problems related to the market efficiency of the supply of finance to small firms and the potential problem of credit rationing, not all firms could access the funds they require (Berger and Udell 1998). The literature contains several attempts to theoretically and empirically explain the relationship between collateral and credit risk. Behr et al. (2011) and Berger et al. (2011) show that different theoretical views have been developed, leading to different empirical interpretations of the relationship between collateral and credit risk. The first view argues that the collateral pledged by borrowers serves as a signalling device, which reduces asymmetric information, and, in turn, may help mitigate ex-ante adverse selection faced by banks before the loan is contracted (Bester 1985; Stiglitz and Weiss 1981). The low-risk borrowers are expected to pledge more and better collateral, considering their lower risk, which implies that they are less likely to lose the collateral. So, "good borrowers" signal and help the bank to reduce the ex-ante adverse selection problem at the time of loan decision. This interpretation is challenged by the other group of studies claiming that collateral is a mechanism of sharing risk between the borrower and the bank, which gives incentives to the borrowers to act as per the lending contract and, in turn, may reduce ex-post moral hazard (Boot and Thakor 1994; Lacker 2001). According to these studies, even if the bank knows the borrower's credit quality, ex-ante collateral is used by banks to mitigate moral hazard problems once the loan has been disbursed, reducing monitoring costs. In doing so, the collateral pledged helps align the lenders' and borrowers' interests, reducing credit risk. The third group of studies combines the

two types of information asymmetry problems (Carlier and Renou 2005, 2006). In addition, collateral also represents a transaction cost for both banks and borrowers (Steijvers et al. 2010; Berger et al. 2011). The former incurs screening and monitoring costs, registration fees and other enforcement/disposal expenses. Monitoring costs are incurred ex-post, i.e. when banks try to ensure that customers act according to their contracts, while the rest is incurred prior to the bank's lending decision. Despite benefiting from the lower interest rates associated with collateralised assets, borrowers risk losing them if the return on the project is too low. Further, they incur opportunity costs associated with the collateralised assets, which may have been used more productively. Due to asymmetric information, banks will incur a relatively high transaction cost per unit if they deal with small firms compared to large firms, as banks' collateral-related costs depend on the number of loans made rather than the size of loans (Parker 2004). In competitive markets, aiming at minimising costs, banks prefer to make a few large loans rather than many small ones, yielding the required result. Storey (1994a) emphasises that due to collateral-related costs, banks' decisions are biased towards larger firms. These costs usually have an inverse relationship with the loan size (Krasniqi 2010). Firms with a lower likelihood of success will be willing to pay higher interest rates associated with riskier projects, as they may not perform consistently with the contract or in the worst-case scenario, may choose not to repay the loan at all (moral hazard problem). Owing to their limited ability to monitor investment projects (which may now include more risky ones,) banks decide on increasing interest rates and collateral requirements. This may push away good borrowers, who might choose not to apply for a loan (although they may have viable projects), as they might consider higher interest rates and collateral requirements too risky. Banks will ration the supply of credit and tighten credit conditions, such as collateral requirements to protect themselves against potential opportunistic behaviour of dishonest borrowers, that is, adverse selection and moral hazard. Simultaneously, as per the "lazy bank hypothesis" collateral reduces banks' incentives to assess and monitor, since they consider collateral as a substitute for ex-ante screening and ex-post monitoring, particularly when lending to small firms (Steijvers et al. 2010). Hence, banks have an increased incentive to engage in riskier projects. The higher collateral requirements and the associated costs pose a greater burden on small firms than larger firms. Following these arguments, one would expect a negative relationship between collateral and credit risk. Yet, the empirical evidence on the impact of collateral on loan default is inconclusive. According to Berger et al. (2011), the mixed empirical evidence results from the fundamental issue of identifying asymmetric information.

In closing this section, on the one hand, the collateral can make borrowers behave according to the contract and incentivises the borrower to repay the loan because they can lose the collateral. In this sense, the collateral can have a positive impact on reducing the default rates. On the other hand, there are also situations where borrowers have no choices to access external finance because they may face financial distress. Under these circumstances, the collateral may not have an expected positive effect on reducing the loan default. There are also situations, especially in a weakly installed institutional environment, where the enforcement of collateral rights is not adequate, and collateral cannot be used effectively to prevent opportunistic behaviour. Based on the arguments developed above, there is non-agreement in the literature on the impact of collateral on credit risk among small firms.

2.2. Relationship banking

Several studies examine the effect of relationship banking on credit risk arguing that it helps minimise adverse selection and moral hazard arising from information asymmetry. The borrowers provide, and the banks gather proprietary soft information about the borrowers, which may mitigate information asymmetry problems, convey information in support of the borrowers' creditworthiness, reduce incentives for opportunistic behaviour of both lenders and borrowers, ensure borrower discipline, prevent strategic default, secure better lending conditions, and develop mutual trust. Thus, the parties build a relationship which each party expects to be mutually beneficial. In this context, small and opaque borrowers have the incentive to build long-term lending relationships with banks aiming at minimising information asymmetry problems in exchange for better lending conditions (Chakraborty and Hu 2006; Jimenez et al. 2006; Hernández-Cánovas and Martínez-Solano 2010; Voordeckers and Steijvers 2006; Brick and Palia 2007; Steijvers et al. 2010; Bharath et al. 2011). Given the arguments favouring the relationship being mutually beneficial, a negative impact of relationship banking on credit risk is expected.

The foundation of relationship banking consists of the efforts of the borrowers to convey information about their creditworthiness to the banks in their attempts to minimise information asymmetry and benefit from better lending conditions. Relationship banking may take time to develop. Yet, once established, it implies that the borrower has enabled the

bank to have superior information compared to other potential lenders. Conditional on the strength of the relationship – duration and concentration - the bank's incentive to behave opportunistically increases. So, the bank may monopolise the information and lock the borrower into a credit relationship and exploit their market power to the detriment of the lending conditions, giving rise to the hold-up problem (Berger et al. 2011; Agostino and Trivieri 2017; Seijvers et al. 2010). Tighter lending conditions imply higher costs for the borrower, particularly small firms. Strong relationship banking may also cause the "soft-budget constraint problem". Given a strong lender-borrower relationship, the bank may agree to renegotiate the debt, increasing the borrower's incentive to behave opportunistically or engage in hazardous projects (Bolton and Scharfstein 1996). Contrary to the arguments elaborated above, the hold-up and the soft-budget constraint problems suggest a positive correlation between relationship lending and credit risk. Consequently, the a priori effect of relationship lending on the probability of loan default is inconclusive.

2.3. Banking sector concentration

Empirical analyses of the structure-conduct-performance paradigm have started with Bain's (1951) seminal work, followed by several other studies attempting to confirm the impact of concentration, efficiency, or both, on profitability. This has brought about two schools of thought with diametrically opposing views, the structure-conduct performance school of thought and the Chicago school. The former school of thought considers the positive relationship between concentration and profitability to be evidence of the ability of large producers to collude in an oligopoly context or concentrated markets, leading to output restrictions and increases in both prices and profits. The Chicago school challenged this view, arguing that a positive relationship is not per se evidence of market power but rather evidence of an efficiency-profitability relationship. Irrespective of which one of the explanations holds, market concentration may enhance banks' market power, which, when exploited, increases the burden on the clients. Accordingly, banks operating in highly concentrated markets have a larger room to manoeuvre in terms of increasing collateral requirements and interest rates. Thus, they have lower incentives to assess and monitor their clients/loans giving rise to the "lazy bank hypothesis". This suggests that in highly concentrated banking sectors, banks are more able to shift the burden of credit risk to their clients. Consequently, banks have a higher incentive to engage in more risky lending, increasing the probability of loan default. The findings of Akins et al. (2016) support the view that banks operating in more concentrated markets are more inclined to engage in risky projects, have higher loan losses, face more regulatory interventions, and are more likely to fail. Similar evidence is provided by Corvoisier and Gropp (2001). Using a Cournot model, they find reduced competition in the EU banking sector may have induced less competitive pricing practices among banks. Yet, Guerra, Tabak and Penaloza (2009) in their study of the Brazilian banking sector, find no support for the positive relationship between concentration and market power exploitation in terms of interest rate increases. Consequently, the a priori impact of the banking sector concentration on credit risk is inconclusive.

2.4. Endogeneity between collateral and relationship banking

The literature on credit risk is enriched by studies acknowledging the potential endogeneity between relationship banking and collateral. A pool of studies empirically examine the interaction effect of collateral and relationship lending on credit risk (e.g. Jiménez and Saurina 2004), while a separate stream of literature analyses the impact of the latter on collateral (Berger et al. 2011; Hanedar et al 2014; Steijvers et al. 2010). The theoretical underpinnings for the endogeneity between collateral and relationship lending are set by the "lazy bank hypothesis" (Berger et al. 2011). The hypothesis posits that in their efforts to resolve information opaqueness/asymmetry problems banks value collateral and screening as substitutes. As a result, when collateral is pledged banks' incentives for ex-ante efforts to build a relationship with the borrower are reduced, and hence they are more likely to engage in risky projects. The heavy reliance on collateral rather than relationship lending suggests a positive bias in the effect of collateral on credit risk.

As argued above, aiming at minimising information asymmetry problems both borrowers and banks invest in their financial relations, whereby the borrower secures the main bank information advantages over other banks. Depending on the breadth and depth of the relationship, borrowers may end-up "locked-in" to the financial relation increasing the bank's incentive to behave opportunistically. So, owing to a strong relationship, the bank may "misuse" its market power to increase interest rates and collateral requirements resulting in the hold-up problem (Berger et al. 2011; Agostino and Trivieri 2017). This potential endogeneity between relationship lending and collateral introduces a positive bias in the impact of collateral on credit risk.

In the presence of information opacity, borrowers consider collateral as a signalling tool, which enables them to convey information about their creditworthiness, and in exchange, benefit from lower interest rates and longer loan maturity. In doing so, they invest in their relationships with the banks. On the other hand, the banks use these relationships to lend to borrowers with higher information opacity (Berger and Udell 2002). Such borrowers, in turn, are expected to pledge more collateral, suggesting that relationship banking impacts collateral while being affected by unobserved firm opacity. According to Berger et al. (2011), a positive relationship between collateral and relationship strength is expected since they both correlate positively with unobserved firm opacity. As a result, again, there is a positive bias in the impact of collateral on credit risk.

Another source of endogeneity may be the soft-budget constraint problem arising from relationship banking. In their attempts to minimise borrowers' opportunistic behaviour and ensure their discipline, banks tighten lending conditions by requiring collateral (Hernandez-Canovas and Martinez-Solano 2006; Ono and Uesugi 2009; Kano et al. 2011), increasing interest rates (Hernández-Cánovas and Martínez-Solano 2010; Kano et al. 2011; Stein 2011) and/or reducing maturity. Consequently, the positive correlation between relationship lending and collateral causes an upward bias in the effect of collateral on credit risk.

2.5. Financial crises

Financial crises have an essential impact on banks' risk-averseness and lending policies, particularly towards SMEs. Studies provide empirical evidence that banks reduce their credit supply more during crises (Fraser 2009; Fraser et al. 2012; Iyer et al. 2013). The literature also suggests that SMEs show a higher level of distress, particularly at the peak of financial crises-a faster decline in profitability. Moreover, the ability of such firms to repay loans becomes a concern for banks (Udell 2015). Empirical evidence from the UK shows that during the recession of the early 1990s, the relationships between banks and SMEs deteriorated, with complaints that banks were too quick to foreclose on loans and did not fully pass on reductions in base rates (Fraser 2009). During the 2008 financial crisis, empirical evidence from the UK indicates that SMEs were strongly affected by the collapse in bank lending (Fraser 2012). According to this analysis, small firms in the UK faced several problems, such as greater difficulty in accessing finance, withdrawal of promised finance by banks, drastic interest rate increases, and arrangement fee increases. Further, at times of crises, as banks become more risk-averse and tighten their lending policies, small firms are more likely to be required to pledge collateral and find it more challenging to meet the higher collateral requirements. Considering these arguments, banks, due to their increased risk-averseness arising from financial crises, switch to tighter lending policies, increasing firms' credit risks. These effects are felt stronger by smaller firms with insufficient collateral, shorter history, and higher information opacity. Consequently, in the context of SME lending, the 2008 crisis is expected to positively impact small firms' credit risk.

2.6. Control variables

In developed countries, banks extensively use owners' characteristics to measure borrower creditworthiness (Berger and Udell 1998; Hartarska and Vega 2006). Given their importance, we control for a set of owner and firm characteristics in this study. Other control variables include the sector in which the firm operates, banking sector characteristics and macroeconomic indicators.

3. Methodology

3.1. Data and the sample

The database used for this study is based on a sample of 2320 SME loans stemming from a unique bank Credit Information Register (CIR) of one of the three key banks in Kosovo. This database records monthly information on all SME loans granted by the bank. The database provides information on the firm and entrepreneur level characteristics (firm size and firm, location, sector, number of owners, manager's age, and gender) as well as characteristics of SME loans (mainly the size of the loan, maturity, amount of lean, percentage value of collateral and default rates). An essential contribution of our study is that we rely on unique information from bank credit registries which is rarely used in the existing literature on small firms in transition. Most of the previous studies rely on an often small and biased sample of firms biased towards large borrowers (Jiménez and Saurina 2004). Most of the studies on small firms rely on survey responses collected from SMEs which sometimes is a cause of concern in terms of reliability. In this study, we take advantage of the CIR of the bank, and we have used data on all loan transactions carried out by a local bank in one specific year, 2016.

The data used have been subjected to firm-size filters. The analysis has been limited to firms with less than 250 employees. Also, only loans with Kosovo residents in the private sector have been included; hence loans with non-residents have been excluded from further analysis (less than 10 cases). The loan default definition is based on the IFRS definition.[1] The loan default is considered to have occurred when 90 days after the date of the maturity, the firm debt balance has not been paid, which usually is classified as category D and E. This definition is adopted by the Central Bank of Kosovo.

3.2. Model Specification

The probability of default can be analysed within the utility maximisation framework. Accordingly, the firm as the decision-making unit is assumed to maximise utility from current and future consumption, including in its choices the possibility of (1) defaulting on the loan or (2) not defaulting on the loan, subject to a set of constraints. The firm decides in favour of option one only if the positive effects resulting from this option outweigh the negative effects. This suggests that the firm chooses one of the options, conditional on a set of influencing factors. In Table 1, the variable labels and their respective definitions are listed.

Table 1. Variable Label and Variable Definition

Label	Definition
P	Equals 1 if the loan defaults
Loan characteristics	
Relationship_banking	Equals 1 if the firm has taken a loan from the bank in the past
Loan_amount	Size of the loan in Euros
Loan_interest	Effective interest rate at which the loan is issued
Loan_maturity	Equals 1 if the loan maturity is equal to or greater than one year
Loan_collateral	Collateral pledged by the firm as a share of the total loan amount, in per cent
After_crisis	Equals 1 if the firm loan was issued after 2008
Firm characteristics	
Firm_age	Firm age in years
Firm_age_sq	Firm age squared in years
Firm_size	Number of employees
Firm_size_sq	Number of employees squared
Gender	Equals 1 if the firm owner is female (in case of more than one owner, if the female owner hold majority of ownership, then equals 1, otherwise 0)
Manager_age	Age of the firm manager in years
No_owners	Number of owners within the firm
Urban	Equals 1 if the firm operates in an urban area
Industry characteristics	
Agriculture	Equals 1 if the firm operates in the agricultural sector
Production	Equals 1 if the firm operates in the production sector
Service	Equals 1 if the firm operates in the service sector
Construction	Equals 1 if the firm operates in the construction sector
Trade	Equals 1 if the firm operates in the trade sector
Market concentration characteristics	
HHI	Hirschman-Herfindahl Index in the year the loan was issued
NIM	Net Interest Margin in the year the loan was issued
Macroeconomic characteristics	
Growth	Annual economic growth rate in the year the loan was issued

Empirically, we investigate two alternative firm behaviours relating to loan repayment: whether the firm loan will default or not, implying that the outcome is dichotomous, bounded between 0 and 1. Hence, the probit specification will be used. In probit, the error term is independent of the explanatory variables and is symmetrically distributed around zero. Further, the error term is assumed to follow the normal distribution.

The objective of this model specification is to derive the probability of the firm loan default conditional on a set of explanatory variables:

$$\begin{aligned} &\mathrm{P_i}(Y=1|X)=\mathrm{P}(\mathrm{U_{A0}}\le U_{A1}) \\ &=P(Z_i\le\beta_i+\beta_iX_i)=F(\beta_1+\beta_2X_i) \end{aligned} \tag{1.1}$$

where P_i=Pr(Y=1|X) measures the probability of an outcome occurring given the values of X_i and Z_i denotes the standard normal variable, that is, $Z_i \sim N(0,\sigma_2)$ (Gujarati 2009). P_i gives the probability of loan default of firm i with i=1,…,N, where N denotes the total number of loans, which may fall in two alternative outcomes. Accordingly, a vector of observed explanatory variables describing loan, firm, industry, market concentration and macroeconomic characteristics is represented by X_i.

The probit distribution function, F, takes the form:

$$P_i=\Pr(y=1|x)=\frac{1}{\sqrt{2\pi}}\int_{-\infty}^{\beta_1+\beta_2x}e^{-z^2/2}dt \tag{1.2}$$

where P_i gives the probability of the company loan going into default compared to not going into default.

To get information about $U_{A1}(c)$ and β_1 and β_2 the inverse of (1.1) is taken:

$$U_{A1}=F^{-1}(U_{A1})=F^{-1}(P_i)=\beta_1+\beta_2X_i \tag{1.3}$$

where F^{-1} denotes the inverse of the normal cumulative distribution function. The vector of explanatory variables is represented by the term X_i, which is elaborated below.

Given the elaboration above, the econometrics proposition of the probability of loan default is as follows:

$$\begin{aligned} &P_i\ (Y=1|x)=r\ (\mathrm{loan_i},\ \mathrm{firm_i},\ \mathrm{industry_i},\\ &\mathrm{market\ concentration_i},\ \mathrm{growth},\ \omega_i) \end{aligned} \tag{1.4}$$

where $\mathrm{loan_i}$ is a vector of variables representing loan characteristics, $\mathrm{firm_i}$ is a vector of firm characteristics, $\mathrm{industry_i}$ is a vector of variables related to type of industry, $\mathrm{market\ concentration_i}$ is a vector of indicators of market concentration, growth stands for the annual economic growth rate, and ωi is the error term. The subscript i = 0, ..., n represents loans.

3.3. Empirical Results

In Table 2, under Model 1 (henceforth M1) and Model 2 (henceforth M2) the results of the probit estimation are reported. The last column shows the respective theoretical expectations regarding the impacts of the variables. The difference in specification between M1 and M2 is that the latter model controls for the impact of market concentration indicators in the banking sector, namely HHI and NIM. There are a few but, in the context of this analysis, highly important differences in results between the two specifications. Under M2, relationship banking is no longer statistically significant, maturity is statistically significant but has the opposite sign, whilst the HHI is highly statistically significant. For brevity, M2 results will be interpreted, and reference will be made to M1 only when there are significant differences.

Results are largely sensitive to specification changes. Upon controlling for the impact of banking sector concentration through HHI and NIM, contrary to findings of other studies and of M1, results do not suggest a statistically significant influence of relationship banking on the probability of loan default. Evidence shows a statistically significant and positive effect of the HHI, strongly supporting the 'lazy bank' hypothesis, that is, the hold-up problem arising from banks exploiting their market power. Given a high market concentration level, that is, a high HHI, banks' incentives to use their market power to the detriment of the lending conditions increase. This, in turn, reduces banks' incentives to evaluate and monitor the loans because they consider higher collateral requirements and interest rates as a substitute for ex-ante screening and ex-post monitoring, leading to a higher probability of loan default.

As regards collateral, its impact on credit risk was a priori inconclusive. Empirical evidence under both model specifications (M1 and M2), though, suggests a positive effect. This finding may align with either the adverse selection hypothesis or/and the lazy bank hypothesis developed above. The higher collateral requirements may lead to adverse selection whereby only riskier borrowers apply for loans, and/or to the "lazy bank problem" whereby banks have lower

Table 2. Probit estimation of the probability of loan default

	Model 1		Model 2	
Label	Dy/dx	P> | t |	Dy/dx	P> | t |
P				
Loan characteristics				
Relationship_banking	-0.02	0.03***	-0.006	0.51
Loan_amount	1.07E-07	0.76	-3.5E-07	0.48
Loan_interest	0.14	0.001***	0.32	0.001***
Loan_maturity	0.09	0.43	-0.75	0.001***
Loan_collateral	0.0007	0.001***	0.0004	0.05***
After_crisis	-3.1	0.001***	-2.85	0.001***
Firm characteristics				
Age	0.24	0.01***	0.12	0.31
Agesq	-0.01	0.01***	-0.01	0.30
size	-0.03	0.04***	-0.03	0.08*
Sizesq	0.0001	0.43	0.0001	0.48
Gender	0.16	0.37	0.15	0.47
Manager_age	-0.003	0.49	-0.7E-03	0.90
No_owners	-0.29	0.15	-0.29	0.23
Urban	-0.01	0.96	-0.04	0.77
Industry characteristics				
Agriculture	0.65	0.02***	0.62	0.05**
Production	0.21	0.37	0.14	0.60
Services	-0.11	0.61	-0.18	0.46
Construction	0.23	0.39	0.21	0.51
Trade	-0.11	0.58	-0.14	0.56
HHI			0.005	0.001***
NIM			0.19	0.45
Growth	-0.28	0.001***	-0.56	0.001***

incentives to evaluate ex-ante and/or monitor ex-post the behaviour of borrowers giving rise to the latter behaving opportunistically. Accordingly, if one or both hypotheses hold, pledging collateral will increase the probability of default.

Only the interest rate is statistically significant among the other three loan characteristics. As expected, higher interest rates increase the probability of loan defaults. Although results are broadly the same across specifications regarding the interest rate, it is essential to note that the impact of loan maturity has the opposite sign and is statistically insignificant when controlling for banking sector concentration, HHI.

The financial crisis has a statistically significant effect. Contrary to expectations, it has a negative sign under both model specifications. This empirical evidence suggests that the introduction of more prudent lending policies, that is, higher collateral requirements and interest rates, and more stringent monitoring rules, owing to banks becoming more risk-averse due to the crisis, leads to a reduction in the probability of default.

Among the dummy variables controlling for the sectors in which the firm that has been issued the loan operates, only the dummy capturing the effect of agriculture is statistically significant. As expected, loans issued for agriculture have a higher probability of default. Results are generally similar across specifications regarding the impact of the economic growth rate, at the time when the loan is issued. This variable has a negative and statistically significant impact suggesting that better macroeconomic conditions in the country reduce credit risk.

Contrary to the findings of the papers reviewed and to M1, results under M2 do not support firm characteristics being important determinants of credit risk. Out of the five variables capturing the effect of firm characteristics, only variable firm size is statistically

significant. Yet, the results do not support a non-linear relationship between firm size and the probability of default.

3.4. Fairlie's (1999) decomposition technique for non-linear models

As elaborated in the section on *endogeneity between collateral and relationship banking*, several studies have argued that endogeneity between relationship banking and collateral leads to an upward bias in the impact of collateral on credit risk. Without taking a critical view of the potential limitations of the technique, Jimenez and Saurina (2003) test for endogeneity by introducing an interaction term between the two variables. Kotorri (2010), in her analysis of model stability over time, critically examines the limitations of using interaction terms in non-linear models and provides arguments in favour of and deploys Fairlie's (1999) extension of the Blinder-Oaxaca decomposition to non-linear models.

In this paper, following the methodological discussion in Kotorri (2010) and given the binomial nature of the outcome variable, Fairlie's (1999) decomposition technique for non-linear models is used to investigate

Table 3. Fairlie's (1999) detailed decomposition technique for non-linear models

	Model 1		Model 2	
Overall difference	0.16		0.16	
Probability of default Group 1	0.21		0.21	
Probability of default Group 2	0.05		0.05	
Label	Coefficient	P> | t |	Coefficient	P> | t |
Loan characteristics				
Relationship_banking				
Loan_amount	8.36E-05	0.90	-9.1E-05	0.85
Loan_interest	-0.009	0.002***	-0.06	0.001***
Loan_maturity	-0.002	0.86	-0.08	0.001***
Loan_collateral	0.0009	0.33	-0.0005	0.46
After_crisis	0.11	0.001***	0.10	0.001***
Firm characteristics				
Firm_age	-0.07	0.10*	-0.002	0.84
Firm_age_sq	0.07	0.10*	0.001	0.90
Firm_size	0.008	0.03***	0.003	0.58
Firm_size_sq	-0.0001	0.96	0.0003	0.95
Gender	-0.0007	0.46	-0.0009	0.51
Manager_age	0.0002	0.71	-0.0002	0.74
No_owners	0.003	0.10*	0.0006	0.56
Urban	-0.0002	0.74	-0.0006	0.76
Industry characteristics				
Agriculture	0.001	0.16	0.001	0.26
Production	0.001	0.37	-0.0006	0.67
Service	-0.001	0.66	-0.002	0.55
Construction	-0.0006	0.50	-0.0013	0.52
Trade	0.001	0.61	0.001	0.61
Market concentration indicators				
HHI			0.22	0.001***
NIM			0.003	0.63
growth	0.001	0.54	-0.02	0.002***

relationship-baking differences in the default probability, in particular, whether the impact of collateral on credit risk varies depending on relationship banking. This technique provides a test of the statistical significance of the overall difference, in the probability of default between loans issued to borrowers that have a relationship with the bank (Group 1) and those that do not have a relationship with the bank (Group 2). Further, it identifies and quantifies the contributions of individual variables to the overall difference and tests the statistical significance of these individual contributions. To our knowledge, this technique has not been deployed in examining the potential interaction effect between collateral and relationship banking.

The table 3 reports the results of Fairlie's (1999) decomposition for the difference between relationship banking/no relationship banking using the independent variables of M1 and M2. For brevity, again, only the results of M2 will be interpreted.

Results suggest that the overall difference in the default probability between Group 1 and Group 2 is 0.16, with Group 1 having a higher credit risk (0.21). The decomposition estimates by individual variables indicate that only group differences in five independent variables make statistically significant contributions to the overall difference. Contrary to Jimenez and Saurina (2003), group differences in collateral do not create a statistically significant contribution to the overall difference and thus do not provide empirical support for the interaction effect between relationship banking and collateral.[2] This evidence, however, is in line with M2 results, given the statistically insignificant impact of collateral when controlling for the effect of banking sector concentration. Only group differences in loan characteristics, namely loan maturity and interest rate, contribute statistically significantly to the overall difference. The key factor in explaining the overall difference in the probability of default is the market concentration index, HHI. This finding indicates a strong interaction effect between HHI and relationship banking. Finally, the group differences in the two macroeconomic indicators, growth rate and crisis effect, account for statistically significant contributions to the overall difference in credit risk.

4. Concluding remarks and policy implications

This study has sought to evaluate the impact of relationship banking, collateral, economic crisis, and concentration and profitability in the banking sector on the probability of loan default in the post-conflict-economy settings of Kosovo. This study shows that stronger firm-bank relationships reduce the probability of default, and tighter credit policies regarding higher collateral requirements and interest rates have the opposite effect.

From the policy perspective, the study suggests that in the broader context of Kosovo's economy, relationship banking can be helpful for SMEs, which can build on relational trust, which, in turn, enables banks to have more insider information for more accurate ex-ante evaluation and ex-post monitoring of loans. In addition, SME owners/managers can benefit from networking with banks and building relationships and trust through which they can provide information and facilitate banks' decisions making access to loans easier. Further, as results indicate tighter loan policies, that is, higher interest rates and collateral requirements, increase the probability of default, suggesting that in the Kosovan context, collateral is not used as an ex-ante signal of more credible borrowers or to impose good behaviour among borrowers' ex-post. As such, banks cannot use collateral to mitigate adverse selection and moral hazard problems but should opt for alternative ways of mitigating risk, such as ex-ante adverse selection mechanisms (e.g., better screening and loan analysis of investment projects).

Yet, results on the role of banking relationships are sensitive to model specifications. Including banking sector concentration and profitability measures into the equation, relationship banking loses its statistical significance, while loan maturity has the opposite sign and is statistically significant. The effect of banking sector concentration is highly statistically significant and positively associated with credit risk, that is, the probability of loan default. This finding in line with the empirical evidence in Akins et al. (2016) and Corvoisier and Gropp (2001), suggesting that banks operating in concentrated markets may exploit their dominant position by increasing the burden on the clients (manoeuvre in terms of increasing collateral requirements and interest rates), and thus have lower incentives to assess and monitor their clients/loans giving rise to the 'lazy bank hypothesis" - shifting the burden of the credit risk to their clients.

Another interesting finding of the study is the very large negative and highly statistically significant effect of the 2008 global financial crisis on loan default. According to the empirical results of both model specifications, the crisis may encourage banks to introduce more prudent lending policies, resulting in better SME loan performance. Contrary to the literature on the endogeneity between collateral and relationship banking, empirical results do not support this hypothesis.

Regarding policy implications, the results indicate

that more prudent lending policies and baking sector concentration can increase banks' requirements on SMEs, which may constrain SMEs' access to bank debt differently than larger firms. This is important for SMEs, banks, and policymakers. Using bank relationships to enable banks easier, less costly, and more reliable access to information for firms, making loans for SMEs more accessible is not very useful for SME managers if banks operate in concentrated markets.

This study provides some preliminary insights into the association between relationship banking, collateral, economic crisis, and concentration and profitability in the banking sector on the probability of loan default. Considering the limitation of cross-sectional data, future analyses could extend our research by using panel data and including other country-specific variables related to institutional factors, which are highly important in determining the role of relationship banking under different institutional quality settings. Also, we acknowledge the limitations of our sample of SMEs that belong only to one bank in Kosovo, thus, making difficult any generalisability of the results; thus, we encourage scholars to use the data set of SMEs in all banks in future studies.

Endnotes

1 IFRS is a international financial reporting standard developed and approved by the International Accounting Standards Board (IASB), an independent, private-sector body that develops and approves International Financial Reporting Standards. IFRS 9 concerns the accounting and reporting specifically of financial instruments (see http://archive.ifrs.org/current-projects/iasb-projects/financial-instruments-a-replacement-of-ias-39-financial-instruments-recognitio/Pages/financial-instruments-replacement-of-ias-39.aspx , accessed on 10.02.2019)

2 The same holds when applying Fairlie's (1999) decomposition technique to M1 - group differences in collateral do not make a statistically significant contribution to the overall difference.

Acknowledgement:
This research was supported by the project: IVSUZO2301 - The impact of the circular economy on the share prices of companies listed on the stock exchange.

References

Agostino, M. and Trivieri, F. 2017. Collateral in lending relationships. A study on European SMEs microdata. *International Review of Applied Economics 31 (3): 339-356.*

Akins, B., Li, L., Ng, J., and Rusticus, T. O. 2016. Bank competition and financial stability: evidence from the financial crisis. *Journal of Financial and Quantitative Analysis 51 (1): 1-28.*

Ang, J. S. 1991. Small business uniqueness and the theory of financial management. *Journal of Small Business Finance 1 (1): 1-13.*

Audretsch, D. B., Coad, A., and Segarra, A. 2014. Firm growth and innovation. *Small Business Economics* 1-7.

Bain, J. S. (1951). Relation of profit rate to industry concentration: American manufacturing, 1936–1940. *The Quarterly Journal of Economics* 65 (3): 293-324.

Behr, P., Entzian, A., and Güttler, A. 2011. How do lending relationships affect access to credit and loan conditions in microlending?. *Journal of Banking & Finance 35 (8): 2169-78.*

Berger, A. N. and Udell, G. F. 1998. The economics of small business finance: The roles of private equity and debt markets in the financial growth cycle. *Journal of Banking & Finance 22 (6-8): 613-73.*

Berger, A. N., Espinosa-Vega, M. A., Frame, W. S., and Miller, N. H. 2011. Why do borrowers pledge collateral? New empirical evidence on the role of asymmetric information. *Journal of Financial Intermediation 20 (1): 55-70.*

Besanko, D. and Thakor, A. V. 1987. Collateral and rationing: sorting equilibria in monopolistic and competitive credit markets. *International Economic Review 671-689.*

Bester, H. 1985. Screening vs. rationing in credit markets with imperfect information. American economic review 75 (4): 850-55.

Bester, H. 1987. The role of collateral in credit markets with imperfect information. *European Economic Review 31 (4): 887-99.*

Bharath, S. T., Dahiya, S., Saunders, A., and Srinivasan, A. (2011). Lending relationships and loan contract terms. The Review of Financial Studies, 24(4), 1141-1203.

Bolton, P. and Scharfstein, D. S. (1996). Optimal debt structure and the number of creditors. *Journal of Political Economy* 104 (1): 1-25.

Boot, A. W. and Thakor, A. V. 1994. Moral hazard and secured lending in an infinitely repeated credit market game. *International Economic Review 899-920.*

Brick, I. E. and Palia, D. 2007. Evidence of jointness in the terms of relationship lending. *Journal of Financial Intermediation 16(3): 452-476.*

Carbo-Valverde, S., Rodriguez-Fernandez, F., and Udell, G. F. 2016. Trade credit, the financial crisis, and SME access to finance. *Journal of Money, Credit and Banking, 48(1):113-43.*

Carlier, G. and Renou, L. 2005. A costly state verification model with diversity of opinions. *Economic Theory 25(2): 497-504*.

Carree, M. A. and Thurik, A. R. 2010. *The impact of entrepreneurship on economic growth.' Handbook of entrepreneurship research*: 557-94. Springer.

Chakraborty, A. and Hu, C. X. 2006. Lending relationships in line-of-credit and nonline-of-credit loans: Evidence from collateral use in small business. *Journal of Financial Intermediation 15 (1): 86-107*.

Chan, Y. S. and Thakor, A. V. 1987. Collateral and competitive equilibria with moral hazard and private information. *Journal of Finance 42 (2): 345-363*.

Corvoisier, S. and Gropp, R. 2001. Contestability. Technology, and Banking. Frankfurt: European Central Bank.

De Wit, G. and De Kok, J. 2014. Do small businesses create more jobs? New evidence for Europe. *Small Business Economics, 42 (2) 283-95*.

Fairlie, R. W. 1999. The absence of the African-American owned business: An analysis of the dynamics of self-employment. *Journal of Labor Economics 17 (1): 80-108*.

Fraser, D. R., Rhee, S. G., and Shin, G. H. 2012. The impact of capital market competition on relationship banking: Evidence from the Japanese experience. *Journal of Empirical Finance 19 (4): 411-426*.

Fraser, S. 2009. Small firms in the credit crisis: Evidence from the UK survey of SME finances. Warwick Business School, University of Warwick.

Gujarati, D. (2009). *Econometrics by example*. Bloomsbury Publishing.

Hanedar, E. Y., Broccardo, E., and Bazzana, F. 2014. Collateral requirements of SMEs: The evidence from less-developed countries. *Journal of Banking & Finance 38: 106-121*.

Hartarska, V. and Gonzalez-Vega, C. 2006. What affects new and established firms' expansion? Evidence from small firms in Russia. *Small Business Economics 27 (2-3): 195-206*.

Hashi, I. and Krasniqi, B.A. 2011. Entrepreneurship and SME growth: evidence from advanced and laggard transition economies. International Journal of Entrepreneurial Behavior & Research 17 (5): 456-487.

Hernández-Cánovas, G. and Koëter-Kant, J. 2011. SME financing in Europe: Cross-country determinants of bank loan maturity. *International Small Business Journal 29 (5): 489-507*.

Hernández-Cánovas, G. and Martínez-Solano, P. 2010. Relationship lending and SME financing in the continental European bank-based system.' Small Business Economics 34 (4): 465-82.

Hernández-Cánovas, G., and Martínez-Solano, P. 2006. Banking relationships: effects on debt terms for small Spanish firms. *Journal of Small Business Management 44 (3): 315-333*.

Iyer, R., Peydró, J.-L., da-Rocha-Lopes, S., and Schoar, A. 2013. Interbank liquidity crunch and the firm credit crunch: Evidence from the 2007–2009 crisis. *The Review of Financial Studies 27 (1):347-72*.

Jiménez, G. and Saurina, J. 2004. Collateral, type of lender and relationship banking as determinants of credit risk. *Journal of Banking & Finance 28 (9): 2191-212*.

Jimenez, G., Salas, V., and Saurina, J. 2006. Determinants of collateral. *Journal Of Financial Economics 81 (2): 255-281*.

Kano-Nakata, M., Inukai, Y., Wade, L. J., Siopongco, J. D. C., and Yamauchi, A. 2011. Root development, water uptake, and shoot dry matter production under water deficit conditions in two CSSLs of rice: Functional roles of root plasticity. *Plant Production Science 14 (4): 307-317*.

Kärnä, A., and Stephan, A. 2022. Do firms in rural regions lack access to credit? Local variation in small business loans and firm growth. *Regional Studies 56 (11): 1919-1933*.

Kotorri, M. 2010. The probability of economic emigration in Kosovo. *Eastern European Economics 48 (6): 17-35*.

Kotorri, M. and Krasniqi, B. A. 2018. Managerial characteristics and export performance–empirical evidence from Kosovo. *South East European Journal of Economics and Business 13 (2): 32-48*.

Krasniqi, B. A. 2007. Barriers to entrepreneurship and SME growth in transition: the case of Kosova. *Journal of Developmental Entrepreneurship 12 (01): 71-94*.

Krasniqi, B. A. 2010a. Are small firms really credit constrained? Empirical evidence from Kosova. *International Entrepreneurship and Management Journal 6 (4): 459-79*.

Krasniqi, B. A. 2010b. *Determinants of Entrepreneurship and Small Business Growth in Transition Economies: The Case of Kosova*. PhD Thesis, Stoke on Trent: Staffordshire University.

Krasniqi, B. A. 2012. Building an expanded small firm growth model in a transitional economy: Evidence on fast growing firms. *Journal of East-West Business 18 (3): 231-273*.

Krasniqi, B. A. and Desai, S. 2016. Institutional drivers of high-growth firms: country-level evidence from 26 transition economies. *Small Business* Economics 47 (4): 1075-1094.

Krasniqi, B. A. and Desai, S. 2017. Institutions and export performance in 26 transition economies. *Entrepreneurship in transition economies: Diversity, trends, and perspectives*, 57-73.

Kysucky, V. and Norden, L. 2016. The benefits of relationship lending in a cross-country context: A meta-analysis. *Management Science 62* (1): 90-110.

Lacker, J. M. 2001. Collateralized debt as the optimal contract. *Review of Economic Dynamics 4 (4): 842-859*.

Li, K., Niskanen, J., Kolehmainen, M., and Niskanen, M. 2016. Financial innovation: Credit default hybrid model for SME lending. *Expert Systems with Applications 61: 343-55*.

Mac an Bhaird, C. 2013. Demand for debt and equity before and after the financial crisis. *Research in International Business and Finance 28: 105-17*.

Mahmutaj, L. R. and Krasniqi, B. 2020. Innovation types and sales growth in small firms evidence from Kosovo. *The*

South East European Journal of Economics and Business 15 (1): 27-43.

Menkhoff, L., Neuberger, D., and Suwanaporn, C. 2006. Collateral-based lending in emerging markets: Evidence from Thailand. *Journal of Banking & Finance 30 (1): 1-21*.

Ono, A. and Uesugi, I. 2009. Role of collateral and personal guarantees in relationship lending: Evidence from Japan's SME loan market. *Journal of Money, Credit and Banking 41 (5): 935-960*.

Parker, S. C. 2004. *The economics of self-employment and entrepreneurship*. Cambridge: Cambridge University Press.

Peci, F. (2015). What determines the allowance of bank loans for investment–an overview of Kosovo SMEs. *International Journal of Innovation and Economic* Development 1 (1): 27-35.

Peric, B. S. and Konjusak, N. (2017). How did rapid credit growth cause non-performing loans in the CEE countries?. *South East European Journal of Economics and Business 12 (2): 73-84.*

Steijvers, T., Voordeckers, W., and Vanhoof, K. 2010. Collateral, relationship lending and family firms. *Small Business Economics 34(3): 243-259.*

Stein, J. C. 2011. Liquidity regulation. In Federal Reserve Bank of Chicago Proceedings No. 1120.

*S*tiglitz, J. E. and Weiss, A. 1981. Credit rationing in markets with imperfect information. *The American Economic Review 71(3): 393-410.*

Storey, D. J. 1994. *Understanding the small business sector*. London: Routledge.

Tabak, B. M., Guerra, S. M., and de Souza Peñaloza, R. A. 2009. Banking concentration and the price-concentration relationship: the case of Brazil. *International Journal of Accounting and Finance 1 (4): 415-435.*

Udell, G. F. 2015. Issues in SME access to finance. European Economy 2: 61.

Voordeckers, W., and Steijvers, T. 2006. Business collateral and personal commitments in SME lending. *Journal of Banking & Finance 30 (11): 3067-3086.*

Zambaldi, F., Aranha, F., Lopes, H. and Politi, R. 2011. Credit granting to small firms: A Brazilian case. *Journal of Business Research 64 (3): 309-15.*

sciendo

South East European Journal of Economics and Business
Volume 18 (2) 2023, 63-86
DOI: 10.2478/jeb-2023-0019

ANALYZING THE EFFECTS OF FINANCIAL EDUCATION ON FINANCIAL LITERACY AND FINANCIAL BEHAVIOUR: A RANDOMIZED FIELD EXPERIMENT IN CROATIA

Jasena Torma, Dajana Barbić, Marijana Ivanov

Abstract

In this paper, we examined the financial attitude and financial behavior of students and determined their level of financial literacy through a survey. We found that female students report less interest in finance, have less confidence in their financial abilities, and have a lower financial literacy score than male students. On average, we can conclude that students have a low level of financial literacy. In this study we found factors that influence financial literacy which are age, student's GPA, whether they already took some form of personal finance course, a proxy for numeracy, and place of birth in terms of a capital city. Furthermore, based on controlled experimental field research, we conducted financial training, and investigated causal evidence of the effectiveness of financial education. A training intervention to increase financial literacy was effective and improved financial attitude but increasing financial literacy through means of education was insufficient for making better financial decisions since students did not report a lower frequency of impulsive buying or a higher hypothetical savings rate. We found no evidence that female students were affected by this training any differently than male students.

Keywords: *Behavioral Finance, Field Experiment, Financial Literacy, Analysis of Education, Personal Finance, Croatia.*

JEL code: *C93, D14, G40, G53, I21, 052.*

Jasena Torma, PhD Candidate
(corresponding author)
University of Rijeka, Faculty of Economics and Business
Ivana Filipovića 4, 51 000 Rijeka, Croatia
E-mail: jtormaefri.hr
ORCID: 0000-0003-4679-1453

Dajana Barbić, PhD
Associate Professor
University of Zagreb, Faculty of Economics and Business
J.F.Kennedy 6 10000 Zagreb, Croatia
E-mail: dbarbic@efzg.hr
ORCID: 0000-0003-2580-0269

Marijana Ivanov, PhD
Full Professor
University of Zagreb, Faculty of Economics and Business
J.F.Kennedy 6 10000 Zagreb, Croatia
E-mail: mivanov@efzg.hr
ORCID: 0000-0002-2631-6586

1. Introduction

In the last decade, financial education has become much more important due to innovations, globalization, and the expansion of available financial products and services. Technological and technical development, new channels of distribution, and processes of financial integration have expanded the range of offered financial products and services as well as the ways they are made available to the final consumers. In the context of the increasing complexity and the availability of a large basket full of a broad range of financial products and services, the chore of managing money has become

even more difficult, particularly for the young. Surveys conducted in many countries have found that a significant proportion of consumers fail basic financial literacy tests (Lusardi and Mitchell 2008), with financial literacy being particularly low among young adults (Garg and Singh 2018; OECD 2020). Lusardi et al. (2010) found that two-thirds of young adults have inadequate knowledge about interest rates, inflation, and risk diversification. This makes their current, but also future capacity to make optimal decisions about savings and investments questionable, as well as their understanding of the fundamental economic relations, such as the real value of money and financial risks. Similarly, OECD/INFE (2020) research concluded that financial consumers have a low level of financial literacy and a significant deficit of knowledge, especially in terms of savings and pensions (Nieri 2007; Austin and Arnott-Hill 2014). Garg and Singh (2018) found that *„financial literacy level among the youth is low across the most part of the world"*.

The literature documents robust evidence on the influence of various socio-demographic, environmental, economic factors, and psychological variables on the level of acquired financial literacy such as age, gender, level of income, experience, etc. Strough et al. (2019) suggest that age and previous experience may be important factors affecting both financial literacy and financial behavior. They claim that older people have accumulated more knowledge about the importance of maximizing the present value of funds through their life experiences and therefore have higher levels of financial literacy and better money management skills.

The findings of other relevant studies point to a gender gap in financial literacy in favor of men, meaning that women in general show lower levels of financial literacy than men (OECD 2013; Bucher-Koenen et al. 2016; Mahdavi and Horton 2014). According to Bernheim (1998), males outperform females on both financial and macroeconomic concerns. Risk-taking and confidence have been connected to gender variations in financial literacy (Chen and Volpe 2002) where women were more risk-averse than men (Bajtesmit and Bernasek 1996; Powell and Ansic 1997). Specifically, Chen and Volpe (2002) found that female college students are less confident and enthusiastic about financial themes in the context of financial knowledge. According to Webster and Ellis (1996), even among financial experts, women have lower self-confidence in financial evaluations than males. Male and female variations in financial issues such as attitude, knowledge, and overall behavior are attributable to different financial socialization during childhood, according to a gender viewpoint (Lim et al. 2003). For example, in most societies, boys have grown up expecting to be the family earner, whilst girls have grown up expecting to be the carer (Wilhelm et al. 1993). As a result, gender role expectations vary, resulting in distinct financial socialization tactics for boys and girls, as well as different levels of financial awareness among them (Falahati and Paim 2011).

Environmental factors such as parents' educational levels, and financial education sources can all have an impact on a person's ability to learn, and thus the amount of knowledge and financial literacy they acquire. According to Mandell (2008), children of college graduates perform better on numeracy tests. Dahlia et al. (2009) found that the level of financial knowledge varies depending on the mother's educational degree.

Some studies have shown that financial education has a strong and positive impact on the financial knowledge and skills of individuals included in the program thus affecting the level of individuals' financial literacy (Danes et al. 1999; Mandell and Klein 2007; Gale and Levine 2010; Borden et al. 2008; Walstad et al. 2010; Batty et al. 2015; Kalwij et al. 2019). Financial education may be obtained in different forms; formal, and non-formal; with a very wide range of possible instruments; from institutionalized education in classrooms, the Internet, educational games, scientific and expert books, to newspapers, TV, mobile apps, and personal experiences. Educational programs may vary in terms of their content, and target population. These factors in the end significantly affect the level of acquired knowledge and skills of those included in the program. Financial education's ultimate purpose is to empower and encourage people to acquire new knowledge and skills and ultimately modify their financial behaviors, such as making well-informed financial decisions. The effectiveness of financial education should be examined in the context of improving financial literacy (financial knowledge and skills) and more importantly, in the context of improving financial behavior. According to (Johnson and Sheradden 2007), the main goal of financial education is to develop financial literacy and to help the young in making sound financial decisions. (Lučić et al. 2020) research studies the effectiveness of financial education programs. They reported that financial interventions based on systematized financial literacy literature contribute to the level of acquired financial knowledge among the youth. Other studies investigated the effectiveness of financial education on financial behavior. Boyce et al. (1998) confirmed the existence of a positive relationship between attending a seminar in the field of personal finance and the tendency

to save. Hilgert et al. (2003) and Sayingoza et al. (2016) provided some evidence of a relationship between financial knowledge and better financial practices. They concluded that greater knowledge of credit, saving, and investment practices is correlated with the corresponding index score behaviors. Lusardi et al. (2020) found that financial knowledge can help limit debt in retirement. Similarly, according to Brown et al. (2014), young people who participated in financial education programs had higher relative credit scores than those who did not. Less impulsive purchases were identified by Lührmann et al. (2015) as a beneficial effect of a financial education program.

On the other hand, some authors disagree with this thesis and have concluded that the effectiveness of financial education is very questionable (see for example Mandell 2008). The findings of two meta-analyses that focused solely on financial education efforts reveal that financial education has little impact on financial behavior (Fernandes et al. 2014, Miller et al. 2014). Drexler et al. (2014) examined the effect of two different financial programs to assess the impact of financial education. One group of respondents participated in a standardized training program based on economic and accounting principles, while the other group took part in a much simpler program that was focused on the use of the rule of thumb. The authors found that participants with lower skills or poor initial practices benefited significantly more from the simplified training program. In addition, they found no evidence of a statistically significant effect of financial education on improving financial behavior. Moreover, Gale and Levine (2010) found no evidence of a positive effect of financial education on improving financial literacy levels, even when traditional education methods are used. So far, there is no consensus in the existing literature regarding the effectiveness of financial education which uses rigorous evidence (Batty et al. 2015). However, one of the most recent and comprehensive studies investigating the effectiveness of financial literacy education programs conducted by Amagir et al. (2018), found some interesting conclusions. They included 60 articles in the study and examined programs in elementary and secondary schools as well as colleges. Their research found that most college financial education programs consist of stand-alone sessions such as short courses, seminars, or presentations. They concluded that financial education programs may improve the financial knowledge and attitudes of the youth. They reported that financial education programs in college, in particular, showed positive effects on students' understanding of concepts as well as their intentions to use credit cards responsibly, budget more effectively, and make fewer compulsive spending decisions, as well as developing more positive attitudes in these areas. According to their findings, the retention outcomes were tiny, and the research only examined short-term effects. Positive effects were also reported in studies that assessed intention to practice good behavior and in studies based on self-reported behaviors. They concluded that the evidence indicated that financial education programs in colleges could help close the gender gap. Furthermore, Amagir et al. (2018) emphasized that drawing inferences about the evaluated actual behavior of college students should be done with caution, because most of the studies rely solely on self-reported data concerning purpose and attitudes to engage in successful financial behavior, and they mainly used small non-randomized groups with no control groups.

In our study, we conducted controlled experimental field research with a training program for students in the field of financial literacy in Croatia. The purpose of this paper is three-fold; (1) to determine the level of financial literacy and financial habits of students; (2) to investigate the effectiveness of financial education based on experimental field research; (3) to provide recommendations for the educational policymakers regarding the future development of financial education programs intended for students, based on evidence-based policies and programs (Gertler 2016). Experimental studies in the field of financial literacy are relatively scarce even though they are the best measures of the effectiveness of financial literacy programs. Also, there is no consensus regarding the effectiveness of financial education in terms of responsible financial behavior. Understanding how financial literacy and capability are created is crucial for the creation of financially responsible citizens. To the best of our knowledge, this paper is the first experimental study in the field of financial literacy conducted in Croatia on a sample of students. Becchetti et al. (2013) and Lührmann et al. (2015) studies are the most similar to our field experiment, but they measured the effect of financial literacy training on the investment attitudes of high school students. In our research, participants in the financial training were students from the University of Zagreb. Brugiavini et al. (2015) and Barua et al. (2017) are two papers that use university students in a randomized treatment setting. Students as a subjective pool were chosen for the following reasons. First of all, unless current students had attended a vocational school that specialized in economics, none of the students ever received any instructions about personal finance during their secondary education. Secondly, the financial training program, as well

as the survey questions (pre and post-survey were the same) were specially structured for students because there is evidence that financial training programs which are the same for all groups (depending on age and occupation) do not suit everyone (Lusardi and Mitchell 2008). Thirdly, most Croatian university students have little exposure to most financial services. In other words, they are supported by their parents from their earnings (pocket money). Despite all of that, students make choices about mobile phone contracts, debit card use, food, and clothing purchases, so providing them with financial training can have a significant impact on their financial behavior. Finally, university students are a homogeneous group according to certain relevant factors, such as their year of birth, self-selection to attend a university program, and so on.

Jappelli (2010) examined economic literacy by using international data on 55 countries. Research showed that economic literacy varies substantially across countries: from the lowest scores in some Latin American and former socialist countries to very high scores in the Scandinavian countries and East Asia. Croatia was placed at the very bottom, taking the 51st place. Similarly, the OECD-PISA survey in 2013 (which included questions to measure financial literacy for the first time showed that Croatian high-school 15-year-old students were placed at the bottom, taking the 14th place out of 18 countries in the sample (OECD, 2014). Another wave of PISA in 2018 showed that Croatian high schools took 36th place out of 77 countries in science literacy, 29th place in reading literacy, and 40th in mathematics (PISA, 2018).

Lučić et al. (2020) emphasized that a comprehensive financial literacy campaign has never been conducted in Croatia. This means that there were no previous policy interventions aimed at increasing financial literacy - except published brochures and occasional public lectures by institutions like the Faculty of Economics and Business Zagreb, Croatian National Bank (CNB), Croatian Financial Services Supervisory Agency (HANFA), Association of Croatian Pension Funds Management Companies and Pension Insurance Companies (UMFO), Croatian Banking Union (HUB), some non-profit organizations, etc. The first institutional measuring of financial literacy in Croatia was conducted by the Croatian National Bank (CNB 2016); although several scientific types of research on financial literacy in Croatia were conducted earlier. Cvrlje et al. (2015) investigated the relationship between financial education and financial behavior and concluded that higher financial education is related to better investment behavior. Vehovec et al. (2015) analyzed regional differences in financial literacy among Croatian citizens concluding that socioeconomic variables significantly defined the financially literate population. Vukava et al. (2017) and Pavković et al. (2018) examined ned financial literacy of university students in Croatia. Pavković et al. (2018) concluded that students who have taken some financial education had higher levels of financial literacy. One of the most important studies of the financial literacy of the student population in Croatia was conducted by the Catholic University of Croatia in 2019. It included 7 Croatian universities and 1.700 students. The findings of this research showed that more than 70% of students stated that they were „rarely "or „almost never "informed about finances and two-thirds of the respondents stated they are unfamiliar with the concept of financial literacy. The survey showed that the level of financial literacy among the student population in Croatia is moderately low, where the lowest level of financial knowledge is reported on investments and credits (Catholic University of Croatia 2019).

In this study, we determined the level of financial literacy and examined the financial habits of Croatian students using a survey. Next, we examined which socio-economic factors influence financial literacy. Further, using a randomized field experiment we conducted a financial training where we investigated casual evidence of the effectiveness of financial education.

The remainder of this study is structured as follows. In the next section, we briefly explain the experimental design. Then, in section 3 we present the methodology. Results are discussed in section 4. The last section is the conclusion.

2. Experimental design

This section gives experimental design details and a test-based measure of financial literacy. We also describe and summarize variables that we obtained from the survey. Next, we provided a test of random assignment to the treatment group where we showed the treatment and control groups consisted of similar groups of students at the baseline.

2.1. Survey Construction and Financial Literacy Intervention

We conducted a randomized field experiment in the spring/summer semesters of 2016 and 2017 which was organized by the Faculty of Economics and Business, University of Zagreb. Students from the University of Zagreb were invited to participate in the

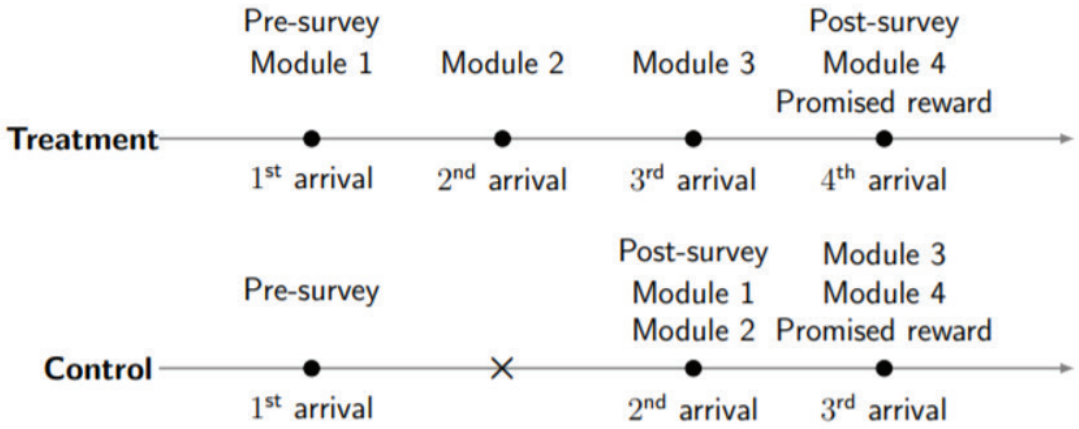
field experiment, meaning that all of them had the same motivation to participate. In our social media invitation, we included a detailed description of our research and stated that for a scientific purpose, we needed students who were willing to participate four times every other week. As a reward, we offered them four financial training lectures, two cinema tickets, and a certificate of completion.

Before students came into the classroom, we gave them a closed envelope so that we could randomly divide them into two groups. Those who got an envelope with number 1 were asked to stay in the classroom, and those who got number 2 in the envelope were asked to switch to another classroom. Students with number 1 were chosen as the treatment group, meaning that we measured the effect of the financial training, while students with number 2 were chosen to be the control group. At any moment, none of the students knew that they were in the treatment or the control group. Students from both groups received the same baseline survey to fill out. The survey was completely anonymous and no one was allowed to access other sources of information, for example, colleagues, books or to use a mobile phone. Each respondent got a unique key identifier so that we were able to match their answers from the beginning of the experiment and with later results.

This survey was constructed for this experiment, taking into account the characteristics of Croatian society. The survey included questions that measured the socio-economic status of the students but also contained questions on how students spent their hypothetical budget. The financial literacy test included ten questions and each correct answer was graded with one point. All questions were multiple choice questions (four possible answers given), except for the last question. The first three questions were standardized questions borrowed from Lussardi and Mitchell 2008 survey so that we could compare results internationally. The first two questions, which we refer to as Interest Rate and Inflation, helped us evaluate whether students had the basic knowledge of fundamental economic concepts and basic numeracy. The third question, which we refer to as Risk Diversification, evaluated students' knowledge of risk diversification. To supplement the findings from these three questions, we added more sophisticated concepts that we examined. The fourth question we refer to as Capital Market, where students were asked to name the most significant stock market indices on the Zagreb Stock Exchange. This question evaluated whether students had a basic knowledge of the stock market. The fifth question and the seventh question we refer to as Currency Exchange Risk, since we asked students to rank the risk of an average Croatian debtor in relation to different currencies, such as the Croatian kuna, American dollar, Swiss franc, and euro. With these two questions, we evaluated whether students differentiated foreign exchange market risks. The sixth question we refer to as Advanced Knowledge of Inflation, since we searched in specific circumstances, where participants were at least exposed to the risk of inflation. The eighth question we refer to as Consumer's Banking Rights because we checked whether they knew the role of the Croatian Deposit Insurance Agency. The ninth question was Credit Cards Knowledge, which was used to check whether they knew which banking cards were categorized as credit cards. The tenth question consisted of a table that represented an imaginary currency exchange list.

After completing the baseline survey, students from the training group received the first lecture, which we called Module 1. Treatment groups were small; between 35 and 45 students per class, and each module was organized approximately two weeks apart. Students from the control group did not receive any lectures in the first week. We apologized to them that due to technical reasons, we were not able to deliver a lecture and that next time we would cover both Module 1 and Module 2 on the same day. We illustrated the phases of our experimental design in Figure 1.

Figure 1. Phases of the experimental design



As evident in Figure 1, in the control group, surveys were conducted with approximately the same frequency. The total number of students who took the survey is illustrated in more detail in Table 1.

Over approximately the next six weeks, we held the two next modules (Module 2 and Module 3) for the same group of students. After approximately two months, students completed the follow-up survey (the same as the baseline survey) and were provided with Module 4. There are two reasons why the follow-up survey took place after approximately two months from training; (1) for students who were in the treatment group to have enough time to go over lectures and materials from the financial training and (2) so individuals from the baseline survey, after the survey was conducted, could not memorize the correct answers by discussing them with peers i.e., to avoid the survey effect. The financial literacy training modules (called FLiP or Financial Literacy in practice) were organized four times for 90 minutes. Each researcher was a lecturer at one of the modules so that we could control consistency and the quality of teaching in terms of content coverage and financial education. It included four modules, which were specially designed for this field experiment.

We measured the joint impact of financial training after exposure to the first three modules that were provided to the treatment group. Before the start of the fourth module, we gave students the follow-up survey.

In Table 2 we describe the outcome and control variables that we used in this research. The first set of dependent variables included financial interest, self-assessed financial knowledge, and the number of financial literacy questions that students answered correctly. The next set of dependent variables includes whether students saved (Y/N answer) and saving amount, saving motives (possible answers were: to buy something, for emergencies, for future), and a question are they in debt. The final dependent variable was whether students were impulsive buyers. Lührmann et al. (2015) use the same set of variables to measure students' financial behavior.

Table 1. Sample size by group and time period

	Treatment	Control	
Before training period ("pre")	266	234	500
After training period ("post")	217	173	390
Total			890

Source: Author's calculation

Table 2. Description of the variables

Outcome variable	**Description**
financial interest	I am . . . interested in finance. Answers are given on the Likert scale (1 = not at all, 5 = very much).
self-assessed financial knowledge	I know about money and finances. Answers are given on the Likert scale (1 = not at all, 5 = very much)
financial literacy (FL)	Measured by ten multiple-choice questions that assessed financial knowledge
savings	Do you save money? Y/N Dummy, =1 if "yes", =0 if "no"
saving motives	Why do you save? To buy something & Dummy, =1 if "to buy something", =0 otherwise For emergencies & Dummy, =1 if "for emergencies", =0 otherwise For future & Dummy, =1 if "for the future", =0 otherwise
debt	Are you in debt? Y/N Dummy, =1 if "yes", =0 if "no"
buyer type (impulsive buyer)	I am an impulsive buyer. Answers given on the Likert scale (1 = strongly disagree, 5 = strongly agree)
hypothetical savings	% saved in hypothetical savings tasks
Control variables	**Description**
pocket money	Amount of pocket money, monthly average
female	Dummy, = 1 if "female", =0 "male"
low math grade	Dummy, =1 if "if average mathematics grade in high school is 2 or 3"
	=0 if grade is 4 or 5 (the worst passing grade is 2)
GPA	Student's current GPA during his/her studies
age	student's age
personal finance course	Dummy, =1 if "student took any financial education class", =0 otherwise
capital city	Dummy, =1 if "student was born in Zagreb", =0 otherwise
financial responsibility	Dummy, =1 if "student is in charge of household finance, =0 otherwise
household size	numbers of household members
faculty	faculty type for each student
treatment	Dummy, = 1 if "student is randomly selected in the treatment group", =0 otherwise
high school (general)	Dummy, = 1 if student went to high school (general specialization), = 0 otherwise
vocational school	Dummy, = 1 if student went to vocational school (only economics specialization), =0 otherwise
educated mother	Dummy, = 1 if "student's mother has a college/university degree", = 0 otherwise
educated father	Dummy, = 1 if "student's father has a college/university degree", = 0 otherwise

2.2. Students' characteristics and balance check

As a part of our experiment, in the baseline survey, we received 500 students' responses from our survey. In Table 3 we report that on average financial interest is high; the average is 3.7 out of 5. When it comes to self-assessment of financial knowledge/level of confidence in their financial abilities, students report low enthusiasm - on average 2.7 out of 5. Next, we constructed a test-based measure of financial literacy. Students were given ten multiple-choice questions and on average they responded with 5 correct answers. Regarding their saving activity, 44% of students report that they save and 14% of them are indebted. About impulsive buying (i.e., buyer type variable), students report 2.9 out of 5, where 4 or 5 means that they never impulsively buy something. Next, in Table 3 we report that 72% of students before enrolling at the University of Zagreb completed a high school and 16% of them completed a vocational school specializing in economics. 14% of students report that they are in charge of household finance (i.e., financial responsibility variable). Next, we show results from a simple balance test on a range of observable variables. The treatment and the control group are balanced for the full set of observables except for the variable age and GPA. This led us to include those two variables in every model as the control variable in order to minimize these unbalanced characteristics.

Table 3. Background characteristics and balance test – mean and differences between groups from baseline survey, selected variables

Variables	Treatment (1)	Control (2)	Difference (3)	p-value (4)	N
Financial Interest	3.68	3.79	-0.11	0.21	500
Self-assessed financial knowledge	2.72	2.79	0.06	0.33	500
Financial literacy score	4.93	5.15	0.22	0.18	500
Savings	0.42	0.46	0.03	0.41	500
Savings amount	221.05	292.20	71.15	0.20	477
Saving motive: to buy something	0.30	0.25	0.05	0.25	499
Saving motive: for emergencies	0.43	0.37	0.06	0.11	499
Saving motive: for future	0.30	0.29	0.01	0.86	499
Debt	0.13	0.13	0.00	0.83	500
Buyer type	2.97	2.86	-0.11	0.23	500
Pocket money	747.18	730.97	-16.21	0.83	482
Gender	0.66	0.62	-0.05	0.25	500
Age	23.04	22.56	-0.48	0.013**	500
Personal Finance	0.13	0.13	0.00	0.86	500
Financial responsibility	0.14	0.17	0.03	0.26	500
Low math grade	0.37	0.42	0.04	0.24	500
Born in the capital city	0.55	0.62	0.07	0.13	500
High school (general specialization)	0.72	0.72	0.00	0.84	500
Vocational school (economics specialization)	0.17	0.15	0.02	0.64	500
GPA	3.66	3.53	-0.13	0.029**	500
Household size	4.17	4.13	-0.03	0.77	500

Source: Author's calculation

Note: In this table, we report on the test of random assignment to the treatment group before any financial training. Columns (1) and (2) report means for 17 dependent and independent variables for the treatment and the control group, respectively. The test for the difference between the means of the treatment group and the control group is given by the p-value in column (4). In parentheses, we report standard deviation. ***p<0.01, **p<0.05, *p<0.1.

3. Empirical methodology

We start with the analysis of the determinants of financial interest, self-assessed financial knowledge, and measured financial literacy in the baseline survey, i.e., before any training took place. Using the OLS estimator we performed the following econometric specification:

$$y_i = \alpha + \sum_k \beta_k z_{ki} + \sum_j \beta_j x_{ji} + \gamma T_i + \epsilon_i \qquad (1)$$

where outcome y of student i in the baseline survey depends on a set of k individual characteristics z, and on a set of j faculty characteristics x. We also include a dummy for the treatment T_i to control for possible differences between the treatment and the control group in the baseline survey. We controlled for the following individual characteristics z: gender, log of household size, a dummy whether the student's mother has a college/university degree, a dummy whether the student's father has a college/university degree, a dummy whether the student was born in the capital city, a dummy for a low mathematics grade during their high school education (numeracy) and the student's age. With dummy variables, we also controlled if students stated in the survey that they had attended any kind of personal finance education, and also a dummy variable if they claimed that they were financially responsible.

Using the same equation (1) and the same econometric model we have estimated using the different outcome variables (dummy variable for savings, saving amount, different saving motives, debt, and buyer type) whether there is a systematic difference in financial behavior among students.

Further, to quantitatively measure the effects of financial literacy training, we estimated our model with a classical difference-in-difference (DiD) estimator, comparing the change in outcomes between the baseline and follow-up survey across the control and the treatment group. We controlled for individual, faculty, and student characteristics. Specifically, we estimated the following model:

$$y_{it} = \alpha + \beta_1[\text{Post}_t] + \beta_2 T_i + \beta_3[\text{Post}_t]T_i + \sum_k \beta_k z_{kit} + \sum_j \beta_j x_{jit} + \epsilon_{it} \qquad (2)$$

where outcome y depended on individual characteristics z, faculty characteristics x, as in section equation (1), and the exposure to the financial literacy training T. The post is a dummy which takes the value zero for the baseline survey and 1 for the follow-up.

The validity of these DiD estimates hinges on reliable measurement of the control group's behavior and exposure to the treatment and the control groups. Since we observed small differences in the individual characteristics of students before the baseline survey, we also estimated the change in outcomes within the treatment group but added fixed effects to filter out any faculty-level heterogeneity. We clustered standard errors at the faculty level in all estimated specifications.

4. Results

4.1. Determinants of financial interest, self-assessed financial knowledge, and measured financial literacy

When it comes to financial interest, we found evidence that female students were different from male students (column 1 in Table 4). After controlling for numerous characteristics, female students' financial interest was about 10% lower than male students. This gender bias decreased when students were asked to assess their financial knowledge (column 2 in Table 4) where female students reported about 7% lower self-assessed financial knowledge than male students. These results correspond to (Barber and Odean 2013) where authors found that in the finance area, men are more overconfident than women. When we asked students about their financial interest and financial knowledge, we expected that on average those who finished a vocational school with an economics specialization would show higher financial interest and self-assessed financial knowledge, but these results show that school background (the type of school) is surprisingly irrelevant. Next, we examined whether performance on the financial literacy test tells us if gender difference is present and which factors define financial literacy. Our survey reports that female students performed much worse on financial literacy tests than male students (Column 3 in Table 4). Female students' financial literacy is about 21% lower than that of male students. This difference has been confirmed in many studies around the world (Lusardi and Mitchell 2008). Also, what we found is that a low mathematics grade from high school which we used as a proxy for mathematics literacy and numeracy, was one of the essential components explaining the level of financial literacy. Having a low mathematics grade is found to be linked with a lower financial literacy

level (de Bassa Scheresberg 2013; Japelli and Padula 2013; Sole 2014). Lusardi (2012) also found that numeracy affects financial decisions. Older students and those students who had previously undergone training in personal finance had better scores on the financial literacy test, as well as those whose GPA was higher. Family background measured as a dummy variable for both an educated mother and an educated father did not significantly affect in determining the level of financial literacy, as well as the number of household members. Surprisingly, those students who are in charge of their household finances (measured as a proxy for financial responsibility) do not report better results on financial literacy tests.

Table 4. Financial interest, self-assessed financial knowledge, and measured FL, baseline survey

	Financial Interest	Self-assessed knowledge	Measured Financial Literacy
	(1)	(2)	(3)
Female	-0.27** (-2.63)	-0.26*** (3.65)	-0.91*** (-4.28)
Low math grade	-0.08 (-1.09)	-0.17** (-2.21)	-0.33** (-2.08)
GPA	0.14** (2.07)	-0.00 (-0.07)	0.27** (2.14)
Age	-0.00 (-0.00)	0.04** (2.41)	0.15*** (3.59)
Personal Finance	0.15 (1.02)	0.32*** (3.51)	0.64** (2.11)
Capital city	-0.11 (-1.05)	-0.00 (-0.19)	-0.39** (-2.62)
Financial responsibility	0.26** (2.08)	0.27*** (3.40)	0.03 (0.09)
High school (general)	-0.00 (-0.01)	-0.05 (-0.43)	-0.21 (-0.61)
Vocational school (economics specialization)	0.00 (0.02)	0.18 (0.98)	0.08 (0.27)
Educated mother	0.04 (0.52)	-0.05 (-0.63)	0.22 (1.39)
Educated father	-0.01 (-0.23)	-0.01 (-0.02)	-0.01 (-0.09)
Household size	0.20 (1.29)	0.22** (2.40)	0.19 (0.99)
Treatment	0.09 (0.83)	(-0.09) (-1.08)	-0.34* (-1.81)
N	500	500	500
R-squared	0.20	0.26	0.24

Source: Author's calculation

Note: We used individual controls for gender, low mathematics grade, GPA, college/university-educated mother, college/university-educated father, log of household size, born in the capital city, age, personal finance, financial responsibility, a dummy variable whether the student attended general high school or a vocational school with economics specialization and for each faculty type fixed effects (FE). OLS Standard errors are clustered at the faculty level. T-statistics in parentheses and ***p<0.01, **p<0.05, *p<0.1.

4.2. Determinants of financial behavior

We also wanted to test whether less financial interest by female students and their lower performance on the financial literacy test translates into systematic differences in financial behavior. Table 5 shows that there is no significant difference in saving activity between them (column 1) and most savings motives (column 3, 4 and 5) or in terms of indebtness (column 6). Female students purchased items more impulsively than male students; i.e., 7% more frequently (column 7). It is interesting to note when students' decisions to save are controlled for their pocket money, results show that it is irrelevant. This is contrary to many researches that found a positive link between saving and income (Céline 2019).

4.3. The effects of financial training on financial literacy

The effects of the financial literacy training on students' financial literacy questions, as compared to before and after the training, show an improvement in financial literacy in all ten questions. These survey questions were tailored to the financial training content but required some ability to transfer the training content into correct multiple-choice answers. Students both in the treatment and the control group after the baseline survey increased the number of correct answers, but the impact was much stronger for the treatment group. Kaiser et al. (2021) using a meta-analysis of randomized experiments also confirmed that financial education on average has a positive causal treatment effect on financial knowledge.

Table 5. Multiple financial behaviors: savings, saving motives, debt and impulsive buying, baseline survey

	Savings		Saving motives			Debt	Buyer type
	Y/N	savings	To buy something	For emergencies	For future	debt	Impulsive buyer
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
pocket money	0.00**	0.03	-0.00**	0.00	-0.00**	-0.00**	0.00
	(2.61)	(0.63)	(-2.13)	(0.42)	(-0.12)	(-2.58)	(084)
female	-0.05	-127.14*	-0.03	0.50	-0.05	-0.03	0.48***
	(-0.92)	(-1.96)	(-0.67)	(0.96)	(-0.92)	(-0.80)	(6.49)
personal finance	0.14	-83.91*	-0.15*	0.41	0.14	-0.04	0.25
	(0.25)	(2.06)	(-1.87)	(0.75)	(0.25)	(-0.88)	(1.98)
financial responsibility	0.13**	151.89**	-0.10	0.39	0.13**	0.05	-0.05
	(2.29)	(2.26)	(-1.63)	(0.48)	(2.29)	(0.73)	(-0.39)
treatment	-0.04	-80.93	-0.06	0.94**	-0.04	-0.00	0.08
	(-0.94)	(-1.05)	(-1.11)	(2.60)	(-0.94)	(-0.06)	(0.86)
N	482	466	481	481	481	482	482
R-squared	0.14	0.17	0.10	0.12	0.13	0.10	0.14

Source: Author's calculation

Note: We used individual controls for pocket money, gender, low mathematics grade, GPA, college/university-educated mother, college/university-educated father, log of household size, born in the capital city, age, personal finance, financial responsibility, a dummy variable whether the student attended general high school or a vocational school with economics specialization and for each faculty type fixed effects (FE). OLS Standard errors are clustered at the faculty level. T-statistics in parentheses and ***p<0.01, **p<0.05, *p<0.1.

The effects of financial training on students' financial literacy are reported in Table 6. Columns show the estimation results of the DiD using faculty fixed effects for the full sample and as a robust check for the sample without attrition (Hausmann and Wise 1979; Fitzgerald 1998). When we conditioned on individual and faculty characteristics, such as gender, numeracy, and socio-economic status, the strong effect of training was present. Based on empirical evidence, the point estimate from difference-in-difference estimates is 1.9 (column 1) or 2.1 (column 2). Overall, this corresponds to approximately a 25% increase in students' financial literacy through the training we provided. We found no evidence that female students were affected by the training any differently from male students since they started from a much lower level. Therefore, the lower score on financial literacy tests among female students reported in the baseline survey persisted after the financial training. Although there is a general agreement in the empirical literature that women have a lower level of financial literacy than men, the factors that contribute to these gender differences are less obvious. We found that having a low grade in mathematics in high school implicated a weaker improvement in financial literacy, while a higher GPA and age implicated a stronger improvement.

Table 6. Effects of financial training on students' financial literacy

Dependent variable: Measured FL	**Financial literacy intervention**	
	Full sample	Sample with no attrition
	(1)	(2)
tpost	1.96*** (7.51)	2.15*** (8.62)
post	0.30*** (4.26)	0.10 (1.34)
treatment	-0.34* (-1.89)	-0.53** (2.58)
female	-0.81*** (-4.26)	-0.72*** (-4.17)
low math grade	-0.35** (-2.44)	-0.36** (-2.34)
GPA	0.33** (2.73)	0.35** (2.71)
age	0.15*** (4.41)	0.14*** (3.69)
personal finance	0.29 (1.13)	0.22 (0.88)
capital city	-0.38*** (-3.06)	-0.46*** (-3.25)
financial responsibility	0.48 (0.16)	0.22 (0.88)
household size	0.11 (0.57)	0.10 (0.45)
N	0.36	0.34
R-squared	890	796

Source: Author's calculation

Note: We used individual controls for female, low math grade, GPA, age, capital city, personal finance course, financial responsibility, logarithm of household size, a dummy variable whether the student attended general high school or a vocational school with economics specialization, college/university educated mother, college/university educated father and for each faculty fixed effects (FE). OLS Standard errors are clustered at the faculty level. T-statistics are in parentheses and ***p<0.01, **p<0.05, *p<0.1.

4.4. The effects of financial training on hypothetical financial behavior and attitudes

One of the key issues in the economic literature is whether and how improved financial literacy translates into future consumer financial behavior. Since our financial training lasted for approximately two months, it was impossible to track real behavioral changes. In order to overcome these issues, we constructed a hypothetical financial decision-making task where we asked students to imagine having 10.000 Croatian kuna (approximately EUR 1.330) of available monthly budget and to allocate it to eight different categories. Those eight categories are (1) savings, (2) food and drinks, (3) leisure (going out, cinema, concerts, and so on), (4) clothes, shoes, and/or cosmetics, (5) magazines and books, (6) mobile phone, (7) traveling and (8) other. Using a DiD estimator and after constructing a hypothetical financial behavior, we wanted to check the effect of financial training on financial behavior and attitudes. Since in our survey we asked students the amount of savings and to rank their opinions on the Likert-type scale when it comes to impulsive buying, we used these two variables as proxies for some dimensions of financial behavior. For measuring the attitudes toward finance, we used again financial interest and self-assessed financial knowledge as dependent variables. In Table 7 we report that after intervention, once we controlled for various socioeconomic factors, financial interest and confidence in financial matters significantly increased (column 1 and column 2). However, in this experiment, financial education was insufficient for making better financial decisions (in line with Ambuehl et al. 2018) since we found no significant effect on decreasing impulsive buying and neither did hypothetical savings significantly increased.

Table 7. The effect of financial training on financial behavior and attitudes

	Financial interest	Self-assessed knowledge	Impulsive buyer	Hypothetical savings
	(1)	(2)	(3)	(4)
tpost	0.25** (2.91)	0.41*** (5.38)	-0.08 (-1.27)	488.11 (1.42)
post	-0.10** (2.68)	0.17*** (5.83)	-0.18*** (-3.22)	34.91 (0.15)
treatment	0.09 (0.86)	-0.08 (-1.09)	0.08 (0.81)	338.27 (1.33)
female	-0.29** (-2.55)	-0.28*** (-3.88)	0.47*** (7.29)	-239.35 (-0.86)
low math grade	-0.06 (-0.93)	-0.12** (-2.14)	0.09 (1.26)	109.75 (0.72)
personal finance	0.05 (0.51)	0.21** (2.28)	0.17 (1.52)	-278.27 (-0.95)
financial responsibility	0.22* (1.89)	0.25*** (3.04)	-0.05 (-0.50)	25.76 (0.10)
N	890	890	890	884
R-squared	0.18	0.26	0.14	0.11

Source: Author's calculation

Note: Each regression includes additional control variables as reported in Table 6. OLS Standard errors are clustered at the faculty level. T-statistics are in parentheses and ***p<0.01, **p<0.05, *p<0.1.

5. Conclusion

There is no universal formula for making financially literate consumers. Therefore, each country should work individually on creating an educational system that would provide adequate education, information, and counseling to every citizen. Despite the fact that some people will invest in their financial knowledge, it is socially optimal to achieve it early in life. Unlike developed countries that have a long tradition of financial education in secondary schools, the financial education of the youth in Croatia has started relatively recently i.e., the National strategy frame for financial literacy of consumers was developed in 2015, while the experimental introduction of several hours of financial education in high schools started in autumn of 2016. Consequently, most of today's generation over the age of 24 have never had the opportunity to acquire basic formal financial education. Exceptions are students involved in economic education programs, but those students involved in economic programs learn about finance from the position of entrepreneurs and/or bankers, rather than from a position of a citizen. There are several explanations why formal financial education in Croatia has been neglected for years. One of them is the belief that financial literacy is a concern of every individual, rather than the education system. The others are that the school and university programs are already overburdened by excessive professional content, and a part of the scientific community assumes that financial education has no significant influence on greater financial literacy.

Consistent with the evidence provided by Chen and Volpe (2002) and Webster and Ellis (1996), when it comes to financial interest, in this research we found evidence that female students were different from male students. After controlling for numerous socioeconomic characteristics, female students' financial interest was lower than male students. This gender bias decreased when students were asked to assess their financial knowledge where female students reported lower self-assessed financial knowledge than male students. Within the country context, different financial socialization during childhood could be a major factor for this difference (Falahati and Paim 2011, Lim et al. 2003, Wilhelm et al. 1993). When we asked students about their financial interest and financial knowledge, we expected that on average those who finished a vocational school with and economics specialization would show higher financial interest and self-assessed financial knowledge, but these results show that school background (the type of school) is surprisingly irrelevant.

Next in this paper we determined the level of financial literacy and examined which factors influence financial literacy. This study showed that Croatian students are not well-equipped to make complex financial decisions in the near future since they showed a low level of correct answers in the financial literacy questionnaire. Further investigation showed that measured financial literacy is significantly different across genders where female students performed worse than male students which is in line with findings of OECD (2013), Bucher-Koenen et al. (2014, 2016), Mahdavi and Horton (2014). In line with the results of de Bassa and Scheresberg (2013), Japelli and Padula (2013), Sole (2014), and Lusardi (2012), we found that a low mathematics grade from high school, which we used as a proxy for mathematics literacy and numeracy, was one of the essential components explaining the level of financial literacy. Furthermore, older students and those students who had previously undergone training in personal finance had better scores on the financial literacy test, as well as those whose GPA was higher, which confirms the findings of previous studies (Strough et al. 2019). Surprisingly, family background measured as a dummy variable for both an educated mother and an educated father did not significantly affect in determining the level of financial literacy.

Further in this study, we presented the results of a randomized intervention on students at the University of Zagreb to study how teaching financial literacy affects their financial knowledge and financial behavior. Our results suggest that the effectiveness of financial education in terms of strong evidence of the positive causal treatment effect of financial education on the level of financial literacy (these results support the findings of Boyce et al. (1998), Danes et al. (1999), Mandell and Klein (2007), Batty et al. (2015), Kalwij et al. (2019), Lučić et al. (2020) and others) and improved financial attitude in terms of financial interest and confidence in financial matters which has increased. Next, we found no evidence that female students were affected by the financial training any differently from male students since they started from a much lower level. Further, we discovered that after intervention students did not report less impulsive buying or higher hypothetical saving. Since as a result of taking part in financial education saving and consumption behavior did not improve, our findings suggest that financial education in the traditional form did not have a positive effect on financial habits of the students. In other words, increased financial literacy via traditional financial education is not sufficient to improve individual's financial behavior. This confirms the findings of Mandell (2008) and Drexler et al. (2014) and shows that traditional financial education, while important

for financial literacy, is no longer sufficient in today's society (Austin and Arnott-Hill 2014; Fernandes et al. 2014; Hastings et al. 2013; Miller et al. 2014; Mitchell and Lusardi 2015). Based on the conducted experimental study we may conclude that a focus on both internal capacities through financial education and external capabilities through the financial products and services available to individuals is required to enhance one's financial behavior. Furthermore, since educational programs did not reduce impulsive buying or increased hypothetical saving among respondents in the study, we strongly believe that future educational programs should include behavioral interventions intended to stimulate certain types of positive financial behaviors, i.e., discourage various forms of negative financial behavior.

There are certain limitations to this research. The survey was conducted in 2016 and 2017. However, this is experimental research which is usually not outdated for at least 5 years and presents a novel and relevant method that was not used in Croatia. Further, research on financial literacy from this period may still be relevant today for several reasons. First, fundamental concepts of financial literacy, such as budgeting, saving, investing, and managing debt, remain constant over time. These concepts are unlikely to change significantly over years, making older research still applicable. Second, while some aspects of financial literacy may change over time, certain long-term trends in financial literacy and behaviors may persist. For instance, understanding financial risk, making informed decisions, and planning are enduring concerns that transcend specific years. And lastly, comparing data from this research with more recent studies can provide valuable insights into how financial literacy levels have or did not change. However, it's essential to consider that the financial environment and technologies can change rapidly. While the core principles of financial literacy may remain relevant, some aspects, like fintech advancements, digital currencies, crypto, or other specific financial products and services, may have evolved significantly in the last couple of years. As a result, it would be beneficial to complement this research with a new research round which would be the same as this one, and add this innovation to gain a comprehensive understanding of the current financial landscape. Next, the research was limited to a single Croatian university and measured the short-term effects. As a result, the findings' generalizability may be compromised. The problem of common technique bias, which may have inflated the predictive connections, arises once again when all scales are captured using a single study questionnaire. Despite these flaws, this study in this journal and the financial literacy field in general contributes in the following way by (1) identifying the level of financial literacy of Croatian students, (2) recognizing some of the key variables that influence financial literacy among university students, and (3) evaluating the effectiveness of financial education in terms of both financial literacy, financial attitude, and financial behavior using a randomized field experiment. The literature on financial literacy is still growing. Consumer background differences in financial literacy and capability are still interesting topics. Therefore, future research could explore more dimensions of consumer backgrounds such as psychological, social, and cultural factors. International comparisons of financial literacy and capability are also important research topics to explore. Furthermore, future research could include the examination of financial education effectiveness in the case when some non-traditional educational methods are used (not only ex-cathedra lectures) such as psychological interventions or some forms of experiential learning intended at improving certain forms of financial behavior. Interventions including families, schools, and workplaces are also possible important topics for future research.

Acknowledgement:

This research was supported by a grant from the CERGE-EI Foundation under a program of the Global Development Network. All opinions expressed are those of the author(s) and have not been endorsed by CERGE-EI or the GDN.

References

Amagir, A., Groot, W., Maassen van den Brink, H., and Wilschut, A. 2018. A review of financial-literacy education programs for children and adolescents. Citizenship, Social and Economics Education 17 (1): 56-80.

Ambuehl, S., Bernheim, B. Douglas, E., Fulya Y., and Harris, D. 2018. Peer advice on financial decisions: A case of the blind leading the blind? NBER working paper series. https://ire.hec.ca/en/wp-content/uploads/sites/3/2018/11/ABEH-BLB.pdf (accessed March 16, 2019).

Austin, P. and Arnott-Hill, E. 2014. Financial Literacy Interventions: Evaluating the Impact and Scope of Financial Literacy Programs on Savings, Retirement, and Investment. The Journal of Social, Political and Economic Studies 39 (3): 290-314.

Bajtesmit, V. and Bernasek, A. 1996. Why do women invest differently than men? Financial Counselling and Planning 7: 1-10.

Barber, B. and Odean, T. 2013. The Behavior of Individual Investors? In Handbook of the Economics of Finance, edited by G. M. Constantninides, M. Harris and R. M. Stulz, Elsevier, 1533-1570.

Bartholomae, S., Fox, J. J., and Cravener, G. 2007. The impact of personal finance education delivered in high school and college courses. Journal of Family and Economic Issues 28 (2): 265-284.

Barua, R., Koh, B., and Mitchell, O. S. 2017. Does financial education enhance financial preparedness? Evidence from a natural experiment in Singapore. Journal of Pension Economics and Finance 17 (3): 254-277.

Batty, M., Collins, J. M., and Odders-White, E. 2015. Experimental Evidence on the Effects of Financial Education on Elementary School Student' Knowledge, Behavior, and Attitudes'. The Journal of Consumer Affairs 49 (1): 69-96.

Becchetti, L., Caiazza, S., and Coviello, D. 2013. Financial education and investment attitudes in high schools: Evidence from a randomized experiment. Applied Financial Economics 23 (10): 817-836.

Bernheim, D. 1998. Financial Illiteracy, Education and Retirement Saving. In Living with defined contribution pensions edited by O. S. Mitchell and S. Schieber, 38-68. Philadelphia: University of Pennsylvania Press.

Borden, L. M., Lee, S. A., Serido, J., and Collins, D. 2008. Changing college students' financial knowledge, attitudes, and behavior through seminar participation. Journal of Family and Economic Issues 29 (1): 23-40.

Boyce, L., Danes, S. M., Huddleston-Casas, C., Nakamoto, M., and Fisher, A. B. 1998. Evaluation of the NEFE High School Financial Planning Program. National Endowment for Financial Education, Denver.

Brown, A., Collins, J. M., Schmeiser, M. D. and Urban, C. 2014. State mandated financial education and the credit behavior of young adults. Board of Governors of the Federal Reserve System (US). https://www.federalreserve.gov/pubs/feds/2014/201468/201468pap.pdf (accessed April 14, 2021).

Brugiavini, A., Cavapozzi, D., Padula, M., and Pettinicchi, Y. 2015. Financial Education, Literacy and Investment Attitudes. SAFE Working Paper Series 86, Research Center SAFE - Sustainable Architecture for Finance in Europe, Goethe University Frankfurt.

Bucher-Koenen, T., Lusardi, A., Alessie, R., and Van Rooij, M. 2016. How financially literate are women? The Journal of Consumer Affairs 51 (2): 255-283.

Catholic University of Croatia. 2019. Jesu li mladi danas dovoljno financijski pismeni? (in Croatian) https://www.unicath.hr/hks2015/wp-content/uploads/2019/03/HKS-FPM brosura.pdf (accessed August 9, 2020).

Céline, A. 2019. The Links between Saving Rates, Income and Uncertainty: An Analysis based on the 2011 Household Budget Survey. In: *Economie et Statistique / Economics and Statistics* 513: 47-68.

Chen, H. and Volpe. R. P. 2002. Gender differences in personal financial literacy among college students. Financial Services Review 11 (3): 289-307.

Croatian national bank. 2016. Results of the financial literacy survey in the Republic of Croatia. Croatian National Bank: Zagreb. https://www.hnb.hr/en/-/results-of-the-financial-literacy-survey-in-the-republic-of-croatia (accessed October 3, 2020).

Cvrlje, D., Bahovec, V., and Palić, I. 2015. The analysis of the financial education impact on investment behavior in Croatia: Ordered logistic regression approach // Proceedings of the 13th International Symposium on Operational research, edited by L. Zadnik Stirn, J.Žerovnik, M.Kljajić Borštar, S.Drobne, 389-394. Bled: Slovensko društvo Informatika.

Dahlia, I., Rabitah, H. and Zuraidah, M. I. 2009. A study on financial literacy of Malaysian degree students. Cross-Cultural Communication 5 (4): 51-59.

Danes, S. M., Huddleston-Casas, C., and Laurie, B. 1999. Financial planning curriculum for teens: Impact evaluation. Journal of Financial Counselling and Planning 10 (1): 26-39.

de Bassa Scheresberg, C. 2013. Financial Literacy and Financial Behavior among Young Adults: Evidence and Implications. Numeracy 6 (2).

Drexler, A., Fischer, G., and Schoar, A. 2014. Keeping It Simple: Financial Literacy and Rules of Thumb. American Economic Journal: Applied Economics 6 (2): 1-31.

Falahati, L. and Paim, L. 2011. Gender differences in financial well-being among college students. Australian Journal of Basic and Applied Sciences 5 (9): 1765-1776.

Fernandes, D., Lynch, J. G., and Netemeyer, R. G. 2014. Financial literacy, financial education and downstream financial behaviors. Management Science 60 (8): 1861– 1883.

Fitzgerald, J., Gottschalk, P., and Moffitt, R. 1998. An Analysis of Sample Attrition in Panel Data: The Michigan Panel Study of Income Distribution. Journal of Human Resources 33 (2): 251-299.

Gale, W. G. and Levine, R. 2010. Financial literacy: What works? How could it be more effective? https://www.rand.org/content/dam/rand/www/external/events/2010/11/18/financial-literacy-what-works.pdf (accessed August 10, 2019).

Garg, N. and Singh, S. 2018. Financial literacy among youth. International Journal of Social Economics 45 (1): 173-186.

Gertler, P. J., Martinez, S., Premand, P., Rawlings, L. B., and Vermeersch, C. M. J. 2016. Impact Evaluation in Practice, Second Edition. Washington, DC: Inter-American Development Bank and World Bank.

Hastings, J. S., Madrian, B. C., and Skimmyhorn, W. L. (2013). Financial literacy, financial education and economic outcomes. Cambridge, MA: National Bureau of Economic Research.

Hausmann, J. A. and Wise, D. A. 1979. Attrition Bias in Experimental and Panel Data. Econometrica 47 (2): 455-473.

Hilgert, M. A., Hogarth, J. M., and Beverly, S. G. 2003. Household Financial Management: The Connection between Knowledge and Behavior. Federal Reserve Bulletin 89: 309-322.

Japelli, T. and Padula, M. 2013. Investment in financial literacy and saving decision. Journal of Banking & Finance 37 (8): 2779-2792.

Jappelli, T. 2010. Economic Literacy: An International Comparison. Economic Journal 120 (548): 429-451.

Johnson, E. and Sherraden, M. S. 2007. From financial literacy to financial capability among youth. Journal of Sociology & Social Welfare 34 (3): 119-146.

Kaiser, T., Lussardi, A., Menkhoff, L., and Urban, C. 2021. Financial education affects financial knowledge and downstream behaviors. Journal of Financial Economics. https://doi.org/10.1016/j.jfineco.2021.09.022. (accessed November 29, 2020).

Kalwij, A., Alessie, R., Dinkova, M., Schonewille, G., van der Schors, A., and van der Werf, M. 2019. The effects of financial education on financial literacy and savings behavior: Evidence from a controlled field experiment in Dutch primary schools. Journal of Consumer Affairs 53 (3): 699-730.

Lim, V. K. G., Teo, T. S. H., and Loo, G. 2003. Sex, financial hardship and locus of control: an empirical study of attitudes towards money among Singaporean Chinese. Personality and Individual Differences 34: 411-429.

Lučić, A. Barbić, D., and Uzelac, M. 2020. The role of financial education in adolescent consumers' financial knowledge enhancement. Market-Tržište 32 (Special Issue): 115-130.

Lührmann, M., Serra-Garcia, M., and Winter, J. 2015. Teaching teenagers in finance: Does it work? Journal of Banking & Finance 54: 160-174.

Lusardi, A. 2012. Numeracy, financial literacy, and financial decision-making. Numeracy: Advancing Education in Quantitative Literacy 5 (1).

Lusardi, A. and Mitchell, O.S. 2008. Planning and Financial Literacy: How Do Women Fare? American Economic Review 98 (2): 413-17.

Lusardi, A., Mitchell, O. S., and Curtoi, V. 2010. Financial literacy among the young. Journal of Consumer Affairs 44: 358-380.

Lusardi, A., Mitchell, O. S., and Oggero, N. 2020. Understanding Debt in the Older Population. Wharton Pension Research Council Working Paper No. 2020-04. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3537858 (accessed December 3, 2021).

Mahdavi, M. and Horton, N. 2014. Financial knowledge among educated women: Room for improvement, Journal of Consumer Affairs 48 (2): 403–417.

Mandell, L. 2008. Financial literacy of high school students. In Handbook of Consumer Finance Research edited by J.J. Xiao, 163-183. New York: Springer Publishing.

Mandell, L. and Klein, S. L. 2007. Motivation and financial literacy, Financial Services Review 16: 105-116.

Miller, M., Reichelstein, J., Salas, C., and Zia, B. 2014. Can you help someone become financially capable? A meta-analysis of the literature. World Bank, Washington DC. https://openknowledge.worldbank.org/handle/10986/16833 (accessed February 14, 2019).

Mitchell, O. and Lusardi, A. 2015. Financial literacy and economic outcomes: Evidence and policy implication. Journal of Retirement 3 (1): 107-114.

Nieri, L. 2007. Access to Credit: The Difficulties of Households. In New Frontiers in Banking Services: Emerging Needs and Tailored Products for Untapped Markets, edited by L. Anderloni, M.D. Braga and E. M. Carluccio, 107-140. Springer Berlin Heidelberg.

OECD 2013. Women and financial education: Evidence, policy responses and guidance. https://www.oecd.org/finance/financial-education/women-and-financial-education-2013.htm (accessed October 3, 2020).

OECD. 2014. PISA 2012 Results: Students and Money: Financial Literacy Skills for the 21st Century (Volume VI), PISA, OECD Publishing.

OECD/INFE 2020. International Survey of Adult Financial Literacy. https://www.oecd.org/financial/education/launchoftheoecdinfeglobalfinancialliteracysurveyreport.htm (accessed October 22, 2021).

Pavković, A., Anđelinović, M., and Mišević, D. 2018. Measuring financial literacy of university students, Croatian Operational Reserach 9 (1): 87-97.

PISA. 2018. PISA 2018 Insights and Interpretations. Available at: https://www.oecd.org/pisa/PISA%202018%20Insights%20and%20Interpretations%20FINAL%20PDF.pdf

Powell, M. and Ansic, D. 1997. Gender differences in risk behaviour in financial decision-making: An experimental analysis. Journal of Economic Psychology 18 (6): 605-628.

Sayingoza, A., Bulte, E. H., and Lesnik, R. 2016. Financial literacy and financial behaviour: Experimental evidence from rural Rwanda. The Economic Journal 126: 1571-1599.

Sole, M. A. 2014. Financial literacy: An essential component of mathematics literacy and numeracy. Journal of Mathematics Education at Teachers College 5 (2): 55-62.

Strough, J., Bruine de Bruin, W., and Parker, A. M. 2019. Taking the Biggest First: Age Differences in Preferences for Monetary and Hedonic Sequences. The Journals of Gerontology: Series B 74 (6): 964-974.

Vehovec, M., Rajh, E., and Škreblin Kirbiš, I. 2015. Financial Literacy of Croatian Citizens, Privredna kretanja i ekonomska politika 124 (1): 53-76.

Vukava, I., Rimac Smiljanić, A. 2017. Financijska pismenost studenata u Hrvatskoj, in Financije na prekretnici: Imamo li snage za iskorak? In Blažić, Helena; Dimitrić, Mira; Pečarić, Mario (editors), Ekonomski fakultet Sveučilišta u Rijeci, 2017. p. 339-356.

Walstad, W. B., Rebeck, K., and MacDonald, R. A. 2010. The effects of financial education on the financial knowledge of high school students. Journal of Consumer Affairs 44 (2): 336-357.

Webster, R. and T. Selwyn Ellis. 1996. Men's and women's self-confidence in performing financial analysis. Psychological Reports 79: 1251-1254.

Wilhelm, M. S., Varcoe, K., and Fridrich, A. H. 1993. Financial Satisfaction and Assessment of Financial Progress: Importance of Money Attitudes. Journal of Financial Counselling and Planning 4: 181-199.

Appendix

Financial management questionnaire

We are conducting a scientific study into students' financial knowledge and financial decisions and would like to ask you few questions on these topics.

For data protection reasons, we do not want to ask you for your name, i.e. this survey is anonymous. Thus, we use the following three questions to link your answers since we will ask you to participate in a survey again in few weeks.

Q1. What is the first letter of your mother's first name?
Q2. What is the first letter of your surname?
Q3. What is your street number? (Please fill in all digits, e.g. "6" or "122")

1	2	3

Study questionnaire

Please circle the item that represents your opinion best.

1. Generally, how would you describe your interest in finance?

I have no interest	1	2	3	4	5	I have great interest

2. How would you rate your knowledge about money and finances?

I have no knowledge	1	2	3	4	5	I have great knowledge

3. I often buy spontaneously, what I like to have.

never	1	2	3	4	5	always

4. Advertising intends to inform me about the best products.

strongly disagree	1	2	3	4	5	strongly agree

5. Advertising wants to show me what I need.

strongly disagree	1	2	3	4	5	strongly agree

6. When making financial decisions, I always think about potential consequences they might have.

strongly disagree	1	2	3	4	5	strongly agree

7. What is the source of your income/earnings? You may select several answers.

☐ Income from employment. What is your monthly salary in HRK? _____
☐ Income from part-time/seasonal jobs. What is your monthly income in HRK? _____
☐ Pocket money. What is your monthly pocket money in HRK? _____
☐ I have no sources of income.

8. Many people cannot make it to the end of the month with their monthly budget. On average, what was your previous month like regarding your budget?

☐ At the end of the month I had more money than I needed.
☐ By the end of the month I had exactly how much I needed.
☐ Before the end of the month I did not have enough money. Therefore, I:
  ☐ borrowed money
  ☐ stopped spending money
  ☐ used my savings

9. Are you currently in debt?

☐ Yes. How much? _____ HRK
☐ No.

10. Do you have a current and/or giro account?

☐ Yes.
☐ No.

11. I use credit cards:

☐ sometimes
☐ for every day shopping
☐ I do not have a credit card

12. Have you been saving money in recent months?

☐ Yes, _____ (average amount in HRK). What percentage of your income? _____%.
☐ No.

13. Why do you save? You may select several answers.

☐ I want to buy a specific item or a service.
☐ I want to put money aside for emergencies.
☐ I save for the future.
☐ I do not save money at all.

14. Image you receive 10,000 HRK next month. How would you allocate the money to the following? Please allocate the money so that you spend exactly 10,000 HRK.

Savings (in a bank, investment in shares etc.)	_____HRK
Food and drinks	_____ HRK
Leisure (going out, cinema, concerts)	_____ HRK
Clothes, shoes and/or cosmetics	_____ HRK
Magazines and books	_____ HRK
Mobile phones	_____ HRK
Travelling (for example, to some faraway lands or warmer places)	_____ HRK

15. During your study, have you taken any courses and/or workshops in the field of personal finance?

☐ Yes. Which ones? _____
☐ No.

16. I learn about finances from the following source (you may choose several answers):

☐ friends and family
☐ my workplace
☐ banks and other financial institutions
☐ I read expert and scientific literature.
☐ media (TV, radio, newspaper, Internet)
☐ I do not learn about it.

17. Let's assume you have 100 HRK in your savings account. With an annual interest rate of 2%, how much money will you have in your savings account in 5 years?

☐ more than 102 HRK
☐ exactly 102 HRK
☐ less than 102 HRK
☐ I do not know.

18. Imagine that the interest rate on your savings deposit is 1%, and inflation is 2% per year. After one year, you will have:

☐ more than today
☐ the same amount as today
☐ less than today
☐ I do not know.

19. Do you think the following statement is true? Buying a single company's stock usually provides a safer return than a stock mutual fund.

☐ Yes, always.
☐ No, never.
☐ Yes, depending on the portfolio diversification.
☐ I do not know.

20. Names of the most significant stock market indices on the Zagreb Stock Exchange are:

☐ Crobes/ZSE
☐ CroMoney/CroFund
☐ CroStock/Crobond
☐ Crobex/Crobis

21. Let's assume that banks give loans in HRK, euro and CHF with interest rates that are the same and fixed for the entire loan repayment period. Please order loan currencies so they would range from the lowest to the highest overall risk for an average Croatian debtor.

☐ euro, CHF, HRK
☐ CHF, euro, HRK
☐ HRK, euro, CHF
☐ There is no difference.

22. The least exposure to risk of inflation have:

☐ students receiving state scholarships
☐ workers with time deposits in banks
☐ retired people who are entitled to a fixed income
☐ There is no difference.

23. Does the interest rate for a time deposit of 300 CHF have to be equal to the interest rate for a time deposit of 300 GBP, if the term in both cases is three months?

☐ Yes, pursuant to the regulations of the Croatian National Bank.
☐ Yes, if the money is deposited in the same bank on the same day.
☐ No, since it is in different currencies.
☐ No, since banks are greedy.

24. The State Agency for Deposit Insurance and Bank Rehabilitation insures:

☐ deposits in banks and building societies, in the maximum amount of 100,000 euros owned by one depositor in a single credit institution
☐ deposits in banks and building societies, in the maximum amount of 100,000 euros owned by one individual in the entire banking system
☐ deposits in banks and credit unions, in the maximum amount of 100,000 euros owned by one depositor in a single institution
☐ since Croatia entered EU deposits in banks are fully insured

25. The category of credit cards includes:

☐ revolving credit cards and current account cards
☐ charge cards, debit cards and prepaid cards
☐ foreign currency account cards
☐ All answers are incorrect.

26. Please answer the following questions using data from the table 1. Exchange rate of the selected bank

Code	Currency	Unit	Buying rate for cash	Buying rate for foreign currency	Mean rate	Seeling rate for foreign currency	Selling rate for cash
756	CHF	1	6,194350	6,256919	6,355212	6,475911	6,566011
826	GBP	1	9,504812	9,649555	9,785744	9,987290	10,075101
840	USD	1	5,945923	6,005982	6,115699	6,216192	6,302678
978	EUR	1	7,620000	7,630000	7,659302	7,730000	7,740000

a) What amount will bank pay in HRK to a natural person selling 100 EUR from his/her foreign currency current account? _____
b) What amount in HRK will a bank charge a natural person buying 100 GBP and requiring payment of pounds in cash? _____

Please answer the following questions regarding your personal data.

27. Your year of birth? ☐☐☐☐

28. Your birth place? _____

29. What is your gender? female ☐ male ☐

30. How many people are in your household, including you (number)? ☐

31. Are you married? Yes ☐ No ☐

32. Are you responsible for managing your household finance?

☐ Yes, I am.
☐ No, I am not.
☐ I am equal to other household members

33. What is the professional qualification of your mother?

☐ unskilled worker
☐ high school diploma
☐ associate degree/university degree

34. What is the professional qualification of your father?

☐ unskilled worker
☐ high school diploma
☐ associate degree/university degree

35. Which high school have you completed?

☐ General high school.
☐ Art high school.
☐ Vocational high school. Which one? _____

36. What was your overall math grade in your high school?

2	3	4	5

37. How would you rate your financial literacy on a scale from 1 to 5? ☐

38. How would you rate financial literacy of the citizens of the Republic of Croatia on a scale from 1 to 5? ☐

39. What is your current year of study? What is your specialization?_____

1	2	3	4	5

40. What is your grade point average? ☐

sciendo

South East European Journal of Economics and Business
Volume 18 (2) 2023, 87-96
DOI: 10.2478/jeb-2023-0020

UNDERSTANDING CONSUMERS' INTENTION TO PURCHASE GI CHEESES BASED ON THE SEM-LOGIT MODEL

Dubravka Užar, Jelena Filipović

Abstract

This study aimed to investigate determinants of purchase cheeses with GIs in developing country and to analyze to what extent these factors affected individuals' purchasing intention, because there is a growing interest in geographical indications of origin (GIs) as a tool for product differentiation. An extension of the theory of planned behavior (TPB) is used as the framework of the study. To get a deeper insight into the influence of unobserved exogenous latent variables on consumers' intentions to purchase GI cheeses, SEM and Logit models were combined and the SEM-Logit integration model was constructed. The study supports extended model of TPB, which includes trust and loyalty, as a useful framework to understand the consumers' intentions to buy the investigated product category. The results from SEM-Logit show that attitude, subjective norms, perceived behavioral control, trust, loyalty, education and monthly income have significant impacts on intention to purchase cheeses with GIs. The findings of this research provide important contribution for understanding GI cheeses' consumption intention and behavior.

Key words: *Geographical indication, Theory of planned behavior (TPB), Cheese purchasing*

JEL classification: *M31, Q13, C30*

1. Introduction

Food markets today are highly diversified, with increasing levels of product diversity and differentiation (Sampalean et al. 2021). Globally, there has been a steady increase in demand for traditional and GI food among consumers in recent years. Consumers' increased concerns about food safety and healthiness, along with environmental considerations throughout production processes, have resulted in the implementation of new demands on the food sector (Palmieri et al. 2021). In this new environment, GI food has become an effective marketing tool for agricultural producers.

From the consumers' perspective, the increased interest in local and regional foods may be viewed as a countertrend to the globalization of the food industry with international brands and converging demand patterns (Parrott et al. 2002). Product origin is becoming

Dubravka Užar, PhD student
(corresponding author)
Faculty of Economics and Business
University of Belgrade
Republic of Serbia
Postal address: Kopernikova 51/7, 21000 Novi Sad, Serbia
E-mail: dubravkauzar@gmail.com
ORCID: 0000-0002-0593-7383

Jelena Filipović, PhD
Full Professor
Faculty of Economics and Business
University of Belgrade
Republic of Serbia
E-mail: jelena.filipovic@ekof.bg.ac.rs
ORCID: 0000-0003-4232-1948

increasingly important in consumer purchasing decisions. The information offered by labelling allows the customer to make better-informed decisions and consider more complicated elements of consumption, which are not immediately verified by the consumer either before or after purchase (Palmieri et al. 2021). The labels indicate that these are high-quality products that are closely related to local traditions and strictly defined specifications for production processes (Lora et al. 2020). In countries that produce quality-certified food, GI labels are considered crucial and play a role in the consumer's decision-making process and willingness to pay, as these foods have a favourable image (Sampalean et al. 2021). Therefore, consumers' preferences for established origin labels are the substantive component in determining the success of GI food in the market (Lambarraa-Lehnhardt et al. 2021). In addition to the above, the growing demand for agri-food products with OGP is generated by several factors: a positive consumer attitude towards high-quality, high-status products, cultural identification and strong ties to the geographical region (Dias and Mendes 2018), increased interest in healthier and safer food, concerns about environmental issues environment (Palmieri et al. 2017) and greater demand for better guarantees and protection (Lambarraa-Lehnhardt et al. 2021).

Furthermore, it could be noted that there is a vast number of studies that tackled GI food market in developed countries, while consumer behavior on this matter remained understudied in emerging markets. As a result, in order to get a more comprehensive understanding of customer behavior, the following research question will be clarified: What determinants influence intentions to purchase GI cheeses in the Serbia? In order to respond to this question, the Theory of planned behaviour (TPB) was applied (Ajzen 1991). The TPB has been confirmed as a relevant model for describing consumer behavior related to traditional food (Shin and Hancer 2016; Haryanto et al. 2019; Menozzi et al. 2021). According to Shin and Hancer (2016) the original model, however, was criticized since it was unable to explain individual behavior to sufficient extent in many circumstances. As a result, this paper goes beyond it and adds constructs of trust in the labeling system and of consumers' loyalty to the TPB, in order to offer and test more potent framework.

Products with a GIs constitute an important element of culture and heritage in the Central and Eastern European countries, contributing to the development and sustainability of rural areas, protecting them from depopulation, entailing significant product differentiation, and potential for agricultural producers. Developing countries as Serbia have a wide range of traditional and indigenous products, although only a few are registered and protected at the national level. Despite significant barriers caused by the economic and political transition, the promotion of traditional foods may be a tool for coping with modernization trends in such transition economies (Barjolle et al. 2015).

This study contributes to the current literature in several ways. First, the scant efforts have been devoted towards the implications of the TPB in relation to buying GI food. The main contribution of this paper is the expansion of TPB with additional variables important for GI products consumption. Contributing to the findings of previous studies on TPB in traditional food, which have already incorporated consumers' trust and loyalty, we test TPB's validity in novel context. Second, we apply the statistical analysis that seems to lack from the subject field, by using the SEM-logit model in the domain of GI food. Third, this paper helps practice by providing insights to marketers and producers who could apply different strategies related to determining stimuli to influence consumers' purchasing decisions.

2. Literature review and hypotheses development

Protected designations of origin and protected geographical indications are being developed in the European Union (Arfini et al. 2019) as a result of the gradual shift in consumer preferences toward locally produced food (Bryla et al. 2017; Fernández-Zarza et al. 2021). The European Union has put in place special legislation on EU quality schemes, which are intended to distinguish between products that have unique qualities, particularly those related to geographical origin, from other similar products (Albuquerque et al. 2018). One of the widely accepted definitions describes GI as "is a sign used on products that have a specific geographical origin and possess qualities or a reputation that are due to that origin. In order to function as a GI, a sign must identify a product as originating in a given place" (WIPO 2021). The European Union's agricultural product quality policy aims to highlight the quality of individual products resulting from a specific origin and/or production method. The major purposes of this policy are to protect brand names from mislabeling and copying, to assist customers in understanding the unique characteristics of products, to stimulate diversified agricultural output, and to increase farmer income (Rodrigo et al. 2015). Moreover, these certifications help producers to be more competitive in the worldwide market (Carbone

2018) and could provide a significant contribution to sustainable rural development (Palmieri et al. 2021).

The European Union (EU) cheese market is the largest in the world (57 per cent of total production; FAO, 2020). Furthermore, the annual growth rate of cheese consumption in the EU is predicted to continue increasing, allowing producers to expand their supply with authentic products (Maceín et al. 2019). Despite the fact that the dominant cheese market model of the second half of the 20th century was focused primarily on mass and homogeneous production, the regional origin of food products and traditional production methods have become an increasingly appealing alternative (Bryla 2015). The increase in consumer interest in traditional products, the discovery of the sociocultural status associated with authentic food and historical heritage increases the demand for quality food. In addition to exceptional nutritional values, autochthonous cheeses are characterized by a traditional method of production, which is attributed to a certain geographical region (Goudis and Skuras 2020). Additionally, Palmieri et al. (2021) indicate that traditional food, together with gastronomic and cultural heritage, as well as the geographical origin of the product, are all sought after by consumers and could occupy a significant role in the market. This trend has triggered a great deal of interest in the definition of cheese safety, quality, and typical characteristics, and the implementation of strategies to protect public health and consumers.

The TPB states that behaviour can be predicted by a person's intention to engage in this behaviour. According to the TPB, three components: attitude toward the behavior, subjective norms, and perceived behavioral control, contribute to the creation of a behavioral intention (Ajzen 1985). GI labels provide consumers with reliable information about the origin and quality of products, allowing them to trust and identify higher-quality food products from conventional ones (Menozzi et al. 2021). Consumer brand loyalty influences the demand for cheese products as well as the profitability of food marketing companies (Gabay et al. 2009). Therefore, trust and loyalty can be postulated to significantly and positively affect purchase intentions for traditional food.

Honkanen et al. (2005) claimed that TPB is an important model for food-related research. The variable attitude, subjective norm, and perceived behavioral control, according to Thomson et al. (1994) meta-analysis approach, may explain 40–50% of the variation in an individual's intention, which further explains 19–38% of the variance in conduct. As a result, it is possible to assume that customer's attitudes, subjective norms, PCB, trust, and loyalty have a significant influence on purchasing GI cheese. Based on this assumption and related literature the following hypotheses were proposed:

H_1: Consumers' attitude is a significant predictor of their intention to purchase GI cheeses.

H_2: Subjective norms enhances person's intention to purchase GI cheeses.

H_3: PCB enhances person's intention to purchase GI cheeses

H_4: Consumers' trust is a significant predictor of their intention to purchase GI cheeses.

H_5: Consumers' loyalty is a significant predictor of their intention to purchase GI cheeses.

Factors that influence food choice regarding GI food, concerning the consumers, aside from the aforementioned, usually are their socio-demographic characteristics (Stojanović et al. 2013). Previous research confirms that socio-demographic variables (gender, age, income, education level, etc.) have an impact on purchase decisions (de-Magistris and Gracia 2016; Goudis and Skuras 2020). Similarly, in the case of GI food products, Skuras and Vakrou (2002) discovered that the socio-demographic features of Greek customers impact their inclination to purchase origin-marked wine. Therefore, research consistently points out that socio-demographic features have a certain power to explain the intention to consume GI food, thus it can be assumed that:

H_6: Personal attributes (education level, income level and number of household members) significantly influence the intention to purchase GI cheeses.

3. Methodology

Data were collected by using the online questionnaire. The sample was constructed of 806 consumers across Serbia, typical country of CEE. In order to optimize the sample plan and reduce sampling error, the stratification was carried out according to the respondent's region and socio-demographic characteristics. To determine the sample size, the formula was applied (Bartlett et al. 2001):

$$\mathrm{n} = N * \frac{\frac{Z^2 * p(1-p)}{\mathrm{e}^2}}{\mathrm{N} - 1 + \frac{\mathrm{Z}^2 * \mathrm{p}(1-\mathrm{p})}{\mathrm{e}^2}}$$

Where: n = sample size; N = population size; Z = value of the standard normal distribution for the chosen confidence interval of 95% (Z = 1.96); p

– estimated population proportion (0.5); and e - margin of error (3.5%).

The size of the population is defined based on the number of adult residents in Serbia. A confidence level of 95% is defined and is the maximum allowed error in mean proportions of 3.5%, which is considered acceptable for study in the literature given characteristics in social research (Taherdoost 2018). Based on this data and by applying the aforementioned formula, the required sample size of at least 784 was obtained. The basic set had been divided into subgroups based on precisely defined criteria to guarantee that the sample was representative of the population. The selected characteristics of respondents for defining subgroups are gender, age and geographical structure. Four clusters were defined based on the statistical division of Serbia into four regions, and based on data from the Republic Institute of Statistics on the number of adult residents in each region, the number of required respondents in each region was defined. The questionnaire format was pretested on a group of 20 individuals, with the purpose of testing the appropriateness of the selected variables and the clarity of the questions.

The descriptive data show that in the sample 60.3% were female and 39.1% were male. Approximately 72% of respondents are coming from the age group 25–64 years old. Most of the respondents completed high school education (44.7%) and belong to the households of 3-4 members. The monthly income of the majority ranges between 600 and 1000 of euros. Respondents' personal characteristics are provided in Table 1.

According to the literature and based on the given hypotheses, five types of latent variables were created: Attitude, Subjective norm, PCB, Trust in Label, and Loyalty. Each latent variable was constructed from several observed variables (table 2) based on previous similar research (Shin and Hancer 2016; Giampierti et al. 2017; Kumar and Smith 2018). Attitudes towards purchasing cheeses with GIs are developed regarding contributions to the local economy, local community, and local farmers' income. The subjective norms items represent the assessment of the effect of other individuals or groups of people relevant to the consumer ("friend and family", "people whose opinion I value", etc.,) on the execution of the behavior. The PCB, according to Ajzen (2002) was measured by consumers' perception of knowledge and abilities to perform purchasing cheeses, as well as external factors such as time and money constraints. Trust in labels provided by GIs was measured with four items. Two of the items referring to trust in the labeling system and two additional items referring to the uniqueness and reliability of GI cheeses. The loyalty was measured using three items, examining loyalty in terms of frequency of purchase cheeses with GIs rather than other cheeses. The behavioral intentions were the dependent variables and were measured by the items "*I intent to purchase cheeses with GIs in next 6 months*". All the variables in the model were measured with a five-point Likert scale (varying from 1 – "not agree" to 5 – "totally agree"). The complete list of the variables included in the model is presented in the Table 1.

Table 1. Descriptive Statistical Analysis

Variables	Levels	%	Variables	Levels	%
Gender	Females	60.3	*Household size*	1 - 2	28.5
	Males	39.1		3 - 4	49.3
	I cannot identify myself	0.6		5 or more	22.2
Age	18-24 years	10.3	*Income (EUR)*	< 250	8.2
	25-44 years	36.8		251-600	33.5
	45-64 years	35.2		601-1000	38.8
	Over > 65 years	17.6		> 1001	19.5
Level of education	Unfinished primary school	1.1			
	Primary school	4.2			
	High-school diploma	44.7			
	Bachelor's degree	33.5			
	Master, Postgraduate, or doctoral degree	16.5			

Note: n=806

Source: Survey conducted by authors

Furthermore, in table 1 are presented the results of the confirmatory factor analysis performed for the TPB variables and constructs. It can be observed that factor loadings for the latent constructs ranged from 0.658 to 0.964, which is identified as excellent and indicating strong support for construct validity (Hair et al. 2006). Internal reliability of these variables has previously been established with Cronbach Alpha (α). As all Cronbach Alpha's passed the threshold of 0.7 (Hair et al. 2006), all variables are included for the latent construct in the structural equation analysis. The average variance extracted was used to calculate convergent validity (CV) (AVE). The convergent validity AVE should be greater than 0.50 in order to achieve a good convergent validity score (Fornell and Larcker 1981). The AVE varies from 0.547 to 0.825, which is above than the acceptable threshold of 0.50.

SEM is a combination of two different statistical techniques: factor analysis and simultaneous equation models, which can manage a large number of exogenous and endogenous variables as well as latent variables defined as linear combinations (weighted averages) of the observed variables (Roorda et al. 2008). The causal relationship between latent variables and their measured variables is first depicted by SEM based on the factors influencing customers' intentions, and the fitness value of latent variables is obtained. The model was divided into two parts: the structural equation modeling (SEM model), which was primarily used to describe the causal relationship between the latent variables of GI cheeses intention and the corresponding observation variables (Han et al. 2018). The second part is the Logit model, which was utilized in the second section to explain the nonlinear function connection between the likelihood of selected GI cheeses and the latent and socio-demographic variables influencing the choice. Therefore, SEM is a statistical technique that uses linear equations to represent the relationship between observed variables and latent variables (Hair et al. 2006).

To get a deeper insight into the influence of unobserved exogenous latent variables on consumers' intentions to purchase GI cheeses, SEM and Logit models were combined and the SEM-Logit integration model was constructed. Before establishing the SEM-Logit model, the adaption coefficient of the latent variables had to be calculated. To calculate the adaptation coefficient of the latent variables, a SEM

Table 2. Results of reliability and factor analysis

Construct	Items	Factor loading	α Coefficient	Convergent validity AVE (>0.50)
Attitude	ATT1	0.906	0.933	0.825
	ATT2	0.942		
	ATT3	0.874		
Subjective norms	SN1	0.946	0.917	0.801
	SN2	0.964		
	SN3	0.761		
Perceived behavioral control	PCB1	0.722	0.841	0.547
	PCB2	0.734		
	PCB3	0.658		
	PCB4	0.749		
	PCB5	0.827		
Trust in Label	T1	0,921	0.939	0.783
	T2	0,913		
	T3	0,819		
	T4	0,882		
Loyalty	LOY1	0.790	0.880	0.715
	LOY2	0.880		
	LOY3	0.865		
Intention	IT1	-	-	-

Source: Author's Calculation

was required to estimate the path coefficient of each latent variable for the adaptation coefficient calculation (Si et al. 2019). The latent variables were added into the Logit model, setting up the SEM-Logit model, which was used to investigate consumers' intentions to purchase GI cheeses. Among unobserved exogenous latent variables, the socio-demographic variables (income, education level, and family size) were also added to the Logit model.

Values of the unobserved exogenous latent variable were obtained using the data imputation method in AMOS software. The Logit model was analyzed in SPSS 23.0 software, using the Generalized Linear Model, where the type of model was ordinal logistic.

4. Results and discussion

4.1. Parameter Estimation of SEM

In order to assess the influence of factors on the GI cheese consumption, a SEM model was performed. Common goodness of fit measures were calculated, and the results for a SEM model are reported in Table 3. Generally, the value of RMSEA for a reasonable fit should be less than 0.08 (Hair et al. 2006). The GFI, AGFI, CFI, and TLI indexes should be greater than 0.90. Therefore, the initial measurement model with the main fix indexes has reached standards indicating a good fit. The SEM model explained 64.5% of the variance of the experimental data.

All of the unobserved exogenous latent variables have statistically significant influence on consumers' intentions to purchase GI cheeses. Based on the load factor coefficients, the degree of influence of latent variables on consumers' intentions to purchase GI cheeses is ranked in order: PCB, Loyalty, SN, Attitude, and Trust (table 4).

4.2. Parameter Estimation of the SEM-Logit Model

According to the survey data and previous assumptions, the value of each latent variable together with consumers' individual characteristics and intention to purchase GI cheeses, was substituted into the Logit model. The specific parameter estimation results and relevant test results are shown in Table 5.

The results showed that all determinants, except household size, had statistically significant impact on the decision outcomes based on the estimated values of the characteristic variables.

Attitudes were shown to have a direct positive effect on consumer intention ($\beta = 0.243$; $p<0.001$), confirming hypothesis 1. This result confirms the previous results by Kumar and Smith (2017), Haryanto et al. (2019) and Užar and Filipović (2023), indicating that marketers should highlight the benefits of local food on health, environment, and the local community in order to increase the intention to purchase GI food.

Hypothesis 2 predicted that positive subjective

Table 3. Model fit indices for hypothesized structural model.

Model	CMIN/DF	RMSEA	GFI	AGFI	CFI	NFI	TLI
Default model	3.11	.051	.937	.917	.970	.956	.964

Source: Author's Calculation

Table 4. Direct path analysis based on standardized regression weights

Path			Estimate	S.E.	C.R.	p
Intentions	<---	Attitude	.164	0.037	4.873	***
Intentions	<---	SN	.196	0.051	4.644	***
Intentions	<---	PCB	.401	0.049	10.377	***
Intentions	<---	Trust	.157	0.040	4.322	***
Intentions	<---	Loyalty	.139	0.050	3.182	0.001

Note: ***p<0.001

Source: Author's Calculation

Table 5. Parameter estimation and test

Parameter		B	S.E.	Hypothesis Test			
				Wald Chi-Square	df	Sig.	Exp(B)
Threshold*	["I don't agree"=1]	5.131	.4749	116.748	1	.000	169.168
	["Mostly I disagree"=2]	6.477	.4926	172.902	1	.000	650.276
	["I am neutral"=3]	8.265	.5279	245.112	1	.000	3884.637
	["Mostly I agree"=4]	9.473	.5496	297.142	1	.000	13005.449
Education level		.103	.0757	37.747	1	.000	1.108
No. of members in a household		-.024	.0552	.006	1	.939	.976
Income		.015	.0499	15.333	1	.000	1.015
Loyalty		.349	.1113	276.056	1	.000	1.417
Trust		.239	.0886	99.911	1	.000	1.270
PCB		1.341	.1095	177.531	1	.000	3.823
SN		.477	.1142	22.130	1	.000	1.612
Attitude		.243	.0809	8.981	1	.003	1.274
Goodness of Fit		Value	df	Value/df	Sig.		
Deviance		1900.600	3180	.598			
Pearson Chi – Square		3320.135	3180	1.044			
Log Likelihood		-950.300					
Likelihood Ratio Chi-Square			8	.000	.000		

Note: Reference category for dependent variable is "I completely agree".

Source: Author's Calculation

norms toward buying cheeses with GIs enhance a person's intention to purchase it. Results support the positive and significant path coefficients (β = 0.477; p<0.001) in line with previous studies (Kim et al. 2003; Menozzi and Finardi 2019). A one-unit increase in SN increases the odds of consumer's full agreement to purchase GI cheese by 61.2%. The significant relationship between subjective norm and intention to purchase GI cheeses suggests that marketers should leverage social influences to enhance purchases.

PCB is the strongest determinant of all towards consumers' intention, supporting hypothesis 3. This finding suggests that PCB has the most effective and crucial effect on cheese purchasing in comparison to all the other variables. One unit increase in PCB, increases the odds of consumers fully agreeing to purchase GI cheese by about 3.8 times. Consumers' feeling to be able to buy quality-labeled food influences an intention to purchase that product and, as a result, makes the behavior more likely to occur. This finding confirms the results of other studies in the field (Kim et al. 2003; Menozzi and Finardi 2019; Menozzi et al. 2021; Užar and Filipović 2023).

A higher level of trust leads to greater intention to purchase PDO cheese (B=0.239; p<0.001), allowing to accept hypothesis 4. In this sense, trust proved to be a significant predictor of consumers' intention to buy, as already noted in scarce literature in this domain (Giampietri et al. 2018; Gu et al. 2019; Menozzi et al. 2021).

The effect of loyalty is positive and significant on GI purchasing intentions (B=0.349; p<0.001), emphasizing that as the loyalty increases, the odds of consumers totally agreeing to purchase of GI cheeses increase substantially (by more than 40%). Espejel et al. (2008) proved the same but in the product category of GI olive oil.

Among socio-demographic variables affecting consumer's intention to purchase GI cheeses, education level and income had significant influence. These results partially confirm the H7 hypothesis, which postulates that personal attributes significantly influence the purchasing GI cheeses. The regression coefficient of education was 0.103 showing that improvement of the education degree leads to higher consumers' intention to purchase GI cheeses. This notion could be explained in the manner that customers with a higher level of education are more knowledgeable about the different varieties of cheese, as well as about cheeses with a geographical indication. The regression

coefficient of income is 0.015 indicating that a one-unit increment in income increases the odds of consumers totally agreeing to purchase GI cheese by 1.5%. With an increase in monthly income consumers were more included to purchase GI cheeses, which is also consistent with the widely accepted belief that better-income consumers prefer cheeses with GI due to their premium prices. These results are consistent with the research by Grannis et al. (2003) and Goudis and Skuras (2020), which argue that income is an important factor of cheese purchases intention and that household income is positively related to GI label recognition.

5. Conclusions and limitations

Using the TPB, this study provides insights on the motivations for purchasing GI cheeses. First, this study contributes to the current body of literature to the theoretical understanding of individuals' intentions regarding GI food. This paper presents the first assessment of factors that influence GI food consumption in a country in the territory of Serbia. Attitudes, Subjective norms, PCB, trust, loyalty, education level, and income were found to be significant predictors of intention to purchase GI cheeses. The results show that extended model of TPB, which includes trust and loyalty, is a useful framework to understand the consumers' intentions to buy the investigated product category. Trust may drive strong relationships between producers and customers, overcoming consumer misunderstanding and encouraging new loyalty. In order to improve the consumption of GI food, it is needed to build trust with potential consumers. The study contributes to the current literature and theoretical understanding of individuals' intentions regarding products with OGP. Given that there are only a few similar studies based on the intention to purchase cheese with geographical indications, the contributions of this research are critical to the scientific community, which can use the findings as a framework for further scientific research in the field of food product positioning.

Second, the results showed that the expanded SEM-Logit model (including latent variables), considering each latent variable's explanatory power on consumer intention to purchase cheeses, may be used in other research studies involving GI products. The results of the SEM-Logit model reveal that personal variables such as monthly income and level of education significantly influence consumers' intention regarding purchase GI cheeses. This study's empirical technique is broadly relevant and can be employed in other research studies utilizing GI products.

Further, this study provides valuable practical insights for both policymakers and marketing managers. Promotion of GI food and marketing campaigns and strategies should be devoted to emphasize the aspects of local food to lower ill-environmental impact, enhance welfare for the local producers, and improve the health. The goal of the communication campaign by the producer should be to build awareness, obtain credibility, and create a favorable perception regarding the quality and uniqueness of the GI product. Spreading information on GI products' advantages might help to create a positive attitude among consumers and increase sales. Providing reliable labeling information, and demonstrating how products are processed and handled is critical to instill consumer trust and forming positive attitudes (Teng and Wang 2015). In order to improve GI food consumption behavior, governments and producers need to guarantee the availability and access of GI food and ensure that people can easily consume traditional food. Finally, they might develop campaigns to educate consumers about the differences between GI and non-GI food products.

Finally, some limitations should be mentioned. Online questionnaires often contain biases (Kumar and Smith 2017). Individuals who do participate in online questionnaires are often younger and more educated. Future research may include a survey at the point of sale or an experimental study to better represent people's intentions to buy GI food. Additionally, the convenience sampling approach is disabled to represent a population to whom the findings might be generalized. In the next step, the application of the integration model in further examples such as other varieties of GI and traditional food remains to be studied. Finally, it is practical and reasonable to consider satisfaction, moral norms, or other latent variables in predicting consumers' intentions.

References

Ajzen, I. 1985. From intentions to actions: A theory of planned behavior. In Action control:11-39. Springer, Berlin, Heidelberg.

Ajzen, I. 1991. The theory of planned behaviour: Organizational Behavior and Human Decision Processes 50 (2): 179-211.

Ajzen, I. 2002. Perceived behavioral control, self-efficacy, locus of control, and the theory of planned behavior 1. Journal of applied social psychology 32 (4): 665-683.

Albuquerque, T. G., Oliveira, M. B. P., and Costa, H. S. 2018. 25 years of European Union (EU) quality schemes for

agricultural products and foodstuffs across EU Member States. Journal of the Science of Food and Agriculture 98 (7): 2475-2489.

Arfini, F., Cozzi, E., Mancini, M. C., Ferrer-Perez, H., and Gil, J. M. 2019. Are geographical indication products fostering public goods? Some evidence from Europe. Sustainability 11 (1): 272.

Barjolle, D., Brecic, R., Cerjak, M., and Giraud, G. 2015. Traditional Food in Western Balkan Countries Consumers' Perceptions and Habits 714-2016-48609: 1-15.

Bartlett, II, J., Kotrlik, J., and Higgins, C. 2001. Organizational Research: Determining Appropriate Sample Size in Survey Research. Information Technology, Learning, and Performance Journal 19 (1): 43-50

Bryla, P. 2015. The role of appeals to tradition in origin food marketing: a survey among Polish consumers, Appetite 91: 302-310

Bryła, P. 2017. The perception of EU quality signs for origin and organic food products among Polish consumers. Quality Assurance and Safety of Crops & Foods 9 (3): 345-355

Carbone, A. 2018. Foods and Places: Comparing Different Supply Chains. Agriculture 8(1):1-12.

de Magistris, T. and López-Galán, B. 2016. Consumers' willingness to pay for nutritional claims fighting the obesity epidemic: the case of reduced-fat and low salt cheese in Spain, Public Health 135: 83-90

Dias, C. and Mendes, L. 2018. Protected Designation of Origin (PDO), Protected Geographical Indication (PGI) and Traditional Speciality Guaranteed (TSG): A bibiliometric analysis. Food Research International 103: 492–508.

Espejel, J., Fandos, C., and Flavian, C. 2008. Consumer satisfaction: A key factor of consumer loyalty and buying intention of a PDO food product. British Food journal 110 (9): 865-881

European Union 2012. Regulation no 1152/2012 of the European Parliament and of the Council of 21 November 2012 on quality schemes for agricultural products and foodstuffs. Brussels: European Parliament and European Council

Fernández-Zarza, M., Amaya-Corchuelo, S., Belletti, G., and Aguilar-Criado, E. 2021. Trust and food quality in the valorisation of geographical indication initiatives. Sustainability 13 (6): 3168.

Food and Agriculture Organization of the United Nations 2019. FAOSTAT Statistical Database, available at: www.fao.org/faostat (accessed 22th March 2022).

Gabay, G., Moskowitz, H. R., Beckley, J., and Ashman, H. 2009. Consumer centered "brand value" of foods: drivers and segmentation. Journal of Product and Brand Management 18/1: 4–16

Giampietri, E., Verneau, F., Del Giudice, T., Carfora, V., and Finco, A. 2018. A Theory of Planned behaviour perspective for investigating the role of trust in consumer purchasing decision related to short food supply chains. Food Quality and Preference 64: 160-166.

Goudis, A. and Skuras, D. 2020. Consumers' awareness of the EU's protected designations of origin logo. British Food journal 123 (13): 1-18.

Grannis, J., Hine, S., and Thilmany, D. 2003. Marketing premium food products in emerging economies: the case of Macedonian cheese. Journal of International Food and Agribusiness Marketing 13 (2-3): 59-76.

Gu, D., Guo, J., Liang, C., Lu, W., Zhao, S., Liu, B., and Long, T. 2019. Social media-based health management systems and sustained health engagement: TPB perspective. International Journal of Environmental Research 16 (9): 1495.

Hair, J.F., Black, W.C., Babin, B.J., Anderson, R.E., and Tatham, R.L. 2006. Multivariate Data Analysis, 6th ed., Prentice Hall, New York, NY.

Han, Y., Li, W., Wei, S., and Zhang, T. 2018. Research on passenger's travel mode choice behavior waiting at bus station based on SEM-logit integration model. Sustainability 10 (6): 1996.

Haryanto, B., Purwanto, D., Dewi, A. S., and Cahyono, E. 2019. How does the type of product moderate consumers' buying intentions towards traditional foods?(Study of consumer behavior in Indonesia). Journal of Asia Business Studies 13(4): 525-542

Honkanen, P. and Olsen, S.O. 2005. Verplanken, B. Intention to consume seafood- the importance of habit. Appetite 45: 161–168.

Kim, K., Reicks, M., Sjoberg, S. 2003. Applying the theory of planned behavior to predict dairy product consumption by older adults. Journal of Nutrition education and behavior 35 (6): 294-301.

Kumar, A. and Smith, S. 2018. Understanding local food consumers: Theory of planned behavior and segmentation approach. Journal of Food Products Marketing 24 (2): 196-215.

Lambarraa-Lehnhardt, F., Ihle, R., and Elyoubi, H. 2021. How Successful Is Origin Labeling in a Developing Country Context? Moroccan Consumers' Preferences toward Local Products. Sustainability 13: 8433.

Lora, I., Zidi, A., Magrin, L., Prevedello, P., and Cozzi, G. 2020. An insight into the dairy chain of a protected designation of origin cheese: The case study of Asiago cheese. Journal of Dairy Science 103 (10): 9116-9123.

Maceín, J. L. C., DeHond, M. I., and Miguel, E. 2019. Cheese consumption culture in Central Spain (Madrid Region): drivers and consumer profile. British Food Journal 122 (2): 561-573.

Menozzi, D. and Finardi, C. 2019. May trust and solidarity defy food scares? The case of Parmigiano-Reggiano PDO sales in the aftermath of natural disaster. British Food Journal 121: 3119–3134.

Menozzi, D., Giraud, G., Saïdi, M., and Yeh, C.-H. 2021. Choice Drivers for Quality-Labelled Food: A Cross-Cultural Comparison on PDO Cheese. Foods 10: 1176.

Oliver Richard L. 1997. Satisfaction: A Behavioral Perspective on the Consumer, The McGraw-Hill Companies, Int., USA

Palmieri, N., Pesce, A., Verrascina, M., Perito, M.A. 2021. Market Opportunities for Hay Milk: Factors Influencing Perceptions among Italian Consumers. Animals 11 (2): 431.

Parrott, N., Wilson, N., Murdoch, and J. 2002. Spatializing quality: regional protection and the alternative geography of food, European Urban and Regional Studies 9 (3): 241-261.

Rodrigo, I., Cristóvão, A., Tibério, M. L., Baptista, A., Maggione, L., and Pires, M. 2015. The Portuguese agrifood traditional products: Main constraints and challenges. Revista de Economia e Sociologia Rural 53: 23-32.

Roorda, M.J. and Ruiz, T. 2008. Long- and Short-Term Dynamics in Activity Scheduling: A Structural Equations Approach. Transportation research part a policy and practice journal 42: 545–562.

Sampalean, N.I., Rama, D., and Visentin, G. 2021. An investigation into Italian consumers' awareness, perception, knowledge of European Union quality certifications, and consumption of agrifood products carrying those certifications. Bio-based and Applied Economics 10 (1): 35-49.

Si, Y., Guan, H. and Cui, Y. 2019. Research on the choice behavior of taxis and express services based on the SEM-logit model. Sustainability 11(10): 2974.

Shin, Y. H. and Hancer, M. 2016. The role of attitude, subjective norm, perceived behavioral control, and moral norm in the intention to purchase local food products. Journal of food service business research 19 (4): 338-351.

Skuras, D. and Vakrou, A. 2002. Consumers' willingness to pay for origin labelled wine: a Greek case study. British Food Journal 104 (11): 898-912.

Stojanović, Z., Filipović J., Mugoša, B. 2013. Consumer acceptance of functional foods in Montenegro. Montenegrin Journal of Economics 9 (3): 65.

Taherdoost, H. 2018. A review of technology acceptance and adoption models and theories. Procedia manufacturing 22: 960-967.

Teng, C.C. and Wang, Y. 2015. Decisional factors driving organic food consumption: Generation of consumer purchase intentions. British Food Journal 117 (3): 1066-1081.

Užar, D. and Filipović J. 2023. Determinants of Consumers' Purchase Intention Towards Cheeses with Geographical Indication in a Developing Country: Extending the Theory of Planned Behavior. Market – Tržište – Paper accepted for publication

World Intellectual Property organization, Available at: https://www.wipo.int/geo_indications/en/#:~:text=What%20is%20a%20geographical%20indication,are%20due%20to%20that%20origin. accessed: 10th April, 2022

sciendo

South East European Journal of Economics and Business
Volume 18 (2) 2023, 97-111
DOI: 10.2478/jeb-2023-0021

GOVERNMENT AND BUSINESS FUNDING OF SOURCES OF FUNDS FOR R&D AT UNIVERSITIES: COMPLEMENTS OR SUBSTITUTES?

Ján Huňady, Peter Pisár, Hrvoje Jošić, Berislav Žmuk, Mirjana Pejić Bach

Abstract

The paper examines the relationship between different sources of funding for research and development at universities. Following the European Commission methodology, we distinguished between government, business and abroad financing of research and development (R&D) in the higher education sector. The paper aims to test short-run and long-run relationships between different funding sources. We are focused on the relationship between government and business funding of R&D at universities. Based on panel data for EU countries, we applied the Granger causality tests and General methods of moments to examine short-run causality and cointegrating regression to search for potential long-run relationships. Our results suggest that government funding of R&D act as a complement to business funding. Hence, rising government financial support for research in higher education can, lead to higher funding from the business sector. Founding from abroad seems to have a similar effect on business funding in the long run.

Keywords: *research and development; funding; higher education; university; Europe.*

JEL classification: *C23, I22.*

Ján Huňady, PhD
Associate Professor
(corresponding author)
Faculty of Economics,
Matej Bel University in Banska Bystrica,
Tajovskeho 10, 97590 Banska Bystrica,
Slovakia
E-mail: jan.hunady@umb.sk
ORCID: 0000-0002-7075-2289

Peter Pisár, PhD
Professor
Faculty of Economics,
Matej Bel University in Banska Bystrica,
E-mail: peter.pisar@umb.sk
ORCID: 0000-0003-4898-2739

Hrvoje Jošić, PhD
Associate Professor
University of Zagreb,
Faculty of Economics and Business, Zagreb, Croatia
E-mail: hjosic@efzg.hr
ORCID: 0000-0002-7869-3017

Berislav Žmuk, PhD
Associate Professor
University of Zagreb,
Faculty of Economics and Business, Zagreb, Croatia
E-mail: bzmuk@efzg.hr
ORCID: 0000-0003-3487-1376

Mirjana Pejić Bach, PhD
Professor
University of Zagreb, Faculty of Economics and Business, Zagreb, Croatia
E-mail: mpejic@efzg.hr
ORCID: 0000-0003-3899-6707

1. Introduction

The intensity of research and development is seen as one of the most important factors supporting innovation in the country. These issues are closely related to higher education institutions and their activities. Especially research in universities is a crucial knowledge-generating factor for the innovation process. This is also true in the case of basic research. According to the Frascati Manual basic research is considered as experimental or theoretical work undertaken primarily to acquire new knowledge without any particular application or use in view (OECD 2015). However, usually, more emphasis is on the direct impact of R&D expenditures in higher education on business activities. Universities are more motivated to foster links with businesses and improve technology transfer channels. This is often referred to as their "third mission" (Etzkowitz et al. 2000). Moreover, in the recent decade, there has been arising political pressure on universities to improve their connections with businesses and try to enhance their research funding options due to the constraints of public budgets (Muscio, Quaglione, and Vallanti 2013). Cooperation between academia and business is also very important when developing business innovation partly or fully based on previous research and development (R&D) expenditures in the higher educational sector. The government still finances a significant share of R&D activities in higher education in most countries. Despite this fact, business funding in higher education is also important. Universities are directly motivated to examine applied research tasks that are important for a business. They have an additional financial resource based on their research activities for the business sector. This could lead to a useful exchange of information between academia and business in several areas. Moreover, firms can use already developed research infrastructure and human capital funded mostly from the public sector, which could reduce their R&D costs. Based on the field the R&D expenditures can be classified into natural sciences, engineering and technology, medical sciences, social science, and humanities. Another classification considers the sector of usage as well as the sector from which financial sources come. Using this approach R&D and classified into business enterprise sector, government, higher education, and privet nonprofit sector. Moreover, non-domestic R&D funds are mostly labelled as "From abroad" or "Rest of the world" (OECD 2015). Our analysis is focused on the higher education sector as the sector of usage while considering different sources of funds for other sectors.

The paper aims to identify potential short-run and long-run relationships between different sources of funds for R&D expenditures at universities.

Following the European Commission methodology, we distinguished between government, business and abroad financing of R&D activities in the higher education sector. We examine the structure of funds for R&D at universities and the development of the most significant financial sources.

Due to the importance of cooperation between business and academia, there is still a growing need for increasing business R&D funding of research activities in higher education. Hence, we focus our attention, especially on this source of funds for R&D in higher education. Based on the paper's goal, we tested the assumed long-run and short-run causalities between different sources of funds. We aim to test whether the changes in government R&D funding and funding from abroad could affect business funding of R&D in higher education.

On the one hand, we assume that better government financial R&D support for academia could result in better basic research and better research infrastructure, which could, especially in the long run, lead to more applied research and generate more funding from the business sector. Thus, better public funding of research could improve the quality of research at universities and positively affect the probability of cooperation with the private sector and participation in research directly usable by the business. This potential effect could likely be especially evident in the long run. If the government increases its funding, there will likely be some delays in adoption. Increasing the research infrastructure and human capital takes some time.

Furthermore, improvements in academia-business cooperation that can potentially lead to business funding of R&D in higher education takes time. The effect in the opposite direction is true when the government decides to decrease its funding. Our main research question is whether government funding and funding from abroad decrease or increase the business funding of R&D in higher education. Based on the main aim, we also constructed two main research hypotheses, which we present in the text.

H1: There is a positive effect of government funding of higher education research on business funding of higher education research. This hypothesis will be tested based on its two components which uses different time frame as follows:

H1a: There is a short-run positive effect of government funding of higher education research on business funding of higher education research.

H1b: There is a long-run positive effect of government funding of higher education research on

business funding of higher education research.

H2: There is a positive effect of financial sources from abroad on business funding of higher education research. Again, this hypothesis has two partial components as follows:

H2a: There is a short-run positive effect of financial sources from abroad on business funding of higher education research.

H2b: There is a long-run positive effect of financial sources from abroad on business funding of higher education research.

The paper is organized as follows. After the brief introduction, in the second chapter, relevant literature is discussed. Research hypotheses are developed based on the literature review in the third chapter. The applied methodology, along with a description of observed variables, is described in the fourth chapter. The analysis results are presented and discussed in the fifth chapter, whereas the sixth chapter concludes the paper.

2. Literature review

Research is considered one of the main missions of higher education, and its intensity and focus can be significantly affected by funding and financial motivation. According to Bégin-Caouette, Schmidt, and Field (2017), all types of funding streams appear to positively affect the academic output based on the sample of Nordic Countries. However, competitive funding schemes have, in general, the most positive consequences. They also stated that further research on interactions between different funding sources could be beneficial.

Basic research performed mainly by universities enhances the knowledge available to society. However, as mentioned by Tavoletti (2010), funding sources for universities are almost entirely domestic and primarily governmental in most countries. Despite some recent shifts to business funding, government funding is still the most important financial source for university research. Due to this fact, the criteria and targets of public funding play the most important role in setting the research aims and general focus of university research (Auranen and Nieminen 2010). Moreover, public budget limitations and rising focus on efficiency pose more stress on monitoring and evaluation of research outputs in higher education (Jonkers and Zacharewicz 2016).

According to Mohrman, Ma, and Baker (2008), universities are trying to diversify their financial sources. Except for government financial support, they are still often looking for funding from businesses, competitive grants, and the creation of commercially successful businesses as spin-offs of research enterprises.

There is a vivid discussion in the economic literature about the potential consequences of the shift from government funding towards business funding of R&D in higher education. Some authors argue that this change in financial resources could lead to unintended negative consequences, such as decreased basic research output (Geuna 1999). On the contrary, more studies emphasize the positive effect of business academic research funding. More financial resources from the business sector may lead to research on a more socially relevant research topic. This will lead to more applicable knowledge, which seems necessary for changing the global knowledge economy (e.g. Etzkowitz and Leydesdorff 2000). Perkmann and Walsh (2009) showed that industry involvement in university research has several benefits for the production of scientific research under certain conditions. According to Harman (2001), academics in Australia mostly considered university-industry collaboration as a useful opportunity to enhance resources and career opportunities.

On the contrary, academics are concerned about their research autonomy and other undesirable consequences. Mohrman, Ma, and Baker (2008) argue that research universities in the 21st century should have diversified funding. Hence, we can say that increasing business funding for research in higher education will likely have several positive consequences for both academia and business. If the substitution effect is present, the cuts in government financial support could motivate universities to cooperate on research contracts with the private sector. Beath et al. (2003) stated that universities have incentives to focus more on applied research and consultancies with the business sector under limited financial support. This will also generate additional financial resources and help them to ease their budget constraints. However, most research-oriented universities cannot shift from government to business financial support without serious problems. Altbach and Peterson (2009) stated that universities with an emphasis on basic science could be very difficult after the cuts because non-governmental players are more interested in research with quick applicability to the market. Furthermore, Strehl, Reisinger, and Kalatschan (2007) found that cuts in government funding of universities have a negative effect on basic R&D and the quality of research in general.

Economic literature has not discussed the relationship between different financial sources of university research. Hence, our research aims especially on this

topic. However, several studies have focused on similar research problems using a different methodology. Especially the potential relationship between government and business funding is often discussed. The basis of this discussion originates from the question about the potential substitution or complementarity of different R&D funding sources in general. Several studies examine the relationship between business and government R&D funding concerning firms and commercial innovation (e.g. David, Hall, and Toole 2000). David, Hall, and Toole (2000) support the existence of complementarity between these two types of financial sources. They argue that publicly subsidized R&D activities for private enterprises have a positive effect and firms can dispose of advanced scientific knowledge and increase their efficiency in their R&D activities.

Moreover, public funding is often available for building some test facilities, acquiring durable research equipment, and assembling specialized research teams. In some circumstances, this could lower firms' costs for their R&D and improve innovation performance. According to Kristkova (2018), private and public R&D can collaborate in synergy. Public support for private R&D can further generate higher public R&D investments and vice versa due to the spill-over effect between the two sectors. Lanahan, Graddy-Reed, and Feldman (2016) found that government research funding is crucial for further private research investments. Based on the sample of US universities, they conclude that funding from the federal government is complementary to every other funding source. They estimated that a 1% increase in federal research funding is linked with an additional 0.468% increase in funding from industry and a 0.41% increase in nonprofit research funding.

The relationship between university research funding sources can be somewhat similar but has some specifics. Despite the traditional main focus of universities on basic research, the interaction between firms and the higher education sector is desirable. This cooperation is, of course, most likely in the case of applied research. Hence, the mixed government and business research funding of universities can be expected just in applied research. According to Muscio, Quaglione, and Vallanti (2013), business funding can be expected whenever firms must rely on the infrastructure of universities and the expertise of researchers previously accumulated due to public funding. Government support is necessary for basic research activities and acquiring human capital and costly infrastructure.

Furthermore, based on the results of several studies, government funding and its extent may play a signalling role in the quality of universities (Blume-Kohout, Kumar, and Sood 2014). These quality signals could help the university develop better relations with businesses and obtain additional external funding. Similarly, the positive effect of signals from government funding on business funding has also been supported by Diamond (1999).

The relationship between government and business financial sources can be, to some extent, described as the positive effect of initial government funding on business funding. This means that both types of funding are complements rather than substitutes. Some other empirical studies have supported the complementarity between both funding sources of university research (Dechenaux, Thursby, and Thursby 2011; Muscio, Quaglione, and Vallanti 2013). Muscio, Quaglione, and Vallanti (2013), based on their sample of Italian universities, concluded that public funding and private funding from research contracts and consultancies are positively linked, and these two forms should be perceived as strategic complements. On the other hand, several studies also found a negative substitution effect of government research funding on business funding in higher education (Santos 2007). This is often explained by a shift in universities' financial resource allocations and the crowding-out effect. Firstly, universities and their staff could stop seeking alternative financial resources once they have enough funding from the government. Secondly, government financial support may crowd out private investments in research in higher education. As can be seen, there is no consensus in the literature on the exact relationship between government and business funding of research in higher education. Hence, we will examine this problem in more detail based on the analysis of empirical data.

3. Methodology

We analyze the secondary data capturing the share of different sources of funds for R&D expenditures at universities. All variables used in the analysis are described in Table 1. We used two different forms of gross intramural R&D expenditures (GERD) in higher education. Firstly, we have GERD in price purchasing power standard per capita. Secondly, we also used the share of GERD in higher education on total GDP. These two measures have been used mostly to test the robustness of our results.

Moreover, we also compared the differences in both types of variables. Besides the variables capturing R&D expenditures in higher education funded from different sources, we also used GDP per capita

Table 1. Description of variables used in the analysis

Variable	Description	Source
Business per capita (Funding in PPS per capita)	Intramural R&D expenditure (GERD) in the higher education sector funded by the business enterprise sector - in price purchasing power standard (PPS) per inhabitant at constant 2005 prices	Eurostat database. *Intramural R&D expenditure (GERD) by sectors of performance and source of funds* [rd_e_gerdfund]
Business – GDP (Funding as % of GDP)	Intramural R&D expenditure (GERD) in the higher education sector funded by the business enterprise sector - calculated as a percentage of GDP	
Government per capita (Funding in PPS per capita)	Intramural R&D expenditure (GERD) in the higher education sector funded by the government sector - in price purchasing power standard (PPS) per inhabitant at constant 2005 prices	
Government-GDP (Funding as % of GDP)	Intramural R&D expenditure (GERD) in the higher education sector funded by the government sector - calculated as a percentage of GDP	
Abroad per capita (Funding in PPS per capita)	Intramural R&D expenditure (GERD) in the higher education sector funded from abroad - in price purchasing power standard (PPS) per inhabitant at constant 2005 prices	
Abroad- GDP (Funding as % of GDP)	Intramural R&D expenditure (GERD) in the higher education sector funded from abroad - calculated as a percentage of GDP	
GDP per capita	*GDP per capita* (at price purchasing power parity - PPS) (in international dollars)	World Bank - World development indicators

Source: Authors based on the data from Eurostat and the World Bank database.

Note: Intramural R&D expenditures are all expenditures for R&D performed within a statistical unit or sector of the economy during a specific period, whatever the source of funds.

control variables. GDP per capita and the economic output should directly affect the business funding of R&D.

Descriptive statistics of the variables used in the analysis are shown in Appendix in Table A1.

Our dataset consists of panel data. Thus, all variables include a cross-sectional (country) dimension and a time dimension. It includes the data for EU27 countries in the period 1999 – 2019. However, due to data unavailability in certain countries, we used only data from 23 EU countries (Italy, Greece, Luxembourg and Malta were excluded from the sample). Hence by this step, we get a balanced panel.

The paper's research hypotheses related to short-run effects (H1a and H2a) are tested using the panel General Methods of Moments (GMM) model. In the first stage, initially, we will use pooled ordinary least squares (OLS) and fixed-effect OLS models. We decided to use the GMM approach to eliminate the potential endogeneity problem. It is expected that every 1% increase in government spending on research and development in tertiary education will lead to an increase in business spending in the short run.

On the other hand, research hypotheses dealing with the long-run effect (H1b and H2b) are tested by calculating the long-run coefficient from the panel GMM and cointegrating regression models where the dependent variable will be business financing as % of gross domestic product (GDP). We assume, that the expected effect of government funding could likely be more evident in the long than in the short run. The methodology of hypothesis testing and the identified relationships between variables are shown in the diagram on the Figure A2 in Appendix.

At the beginning of the analysis, all variables were tested for weak stationary by using the Levin, Lin, and Chu (2002), Im, Pesaran, and Shin (2003) and Breitung (2000) tests, as well as the Fisher ADF and PP tests defined by Choi (2001) as well as Maddala and Wu (1999). Results are shown in the Appendix in Table A3. Variables that appear stationary at levels have been used in fixed effects and GMM models. On the other hand, variables capturing the share of funding on GDP become stationary at their differences. These have

been used for cointegration tests and in cointegrating regression.

In the next research phase, we tested the short-run causalities in the Granger sense by panel Granger causality tests. Furthermore, pooled OLS fixed-effect and OLS have been applied to stationary variables. Although these two models can be used for a robustness check of the results, they have been primarily used to determine the more suitable model out of difference and system General methods of moments (GMM). GMM represents the dynamic model, which is currently extensively used in economic research in general. One of the first applications of GMM in finance dates back to the 80ties when this approach was used by Hansen and Hodrick (1980) and has been widely used since now. This model has been applied to test the dynamic linkages between business, government and abroad funding of research and development at universities. Based on the archived results, we focused primarily on the system GMM estimator, which appears to be more suitable than different GMMs.

A system GMM estimator has been proposed by Arellano and Bover (1995) and Blundell and Bond (1998), who argue that this approach is significantly less biased and more consistent than pooled OLS and fixed-effects regression. Furthermore, it eliminates the potential endogeneity problem (Nickell 1981), which is also very useful in our case. GMM estimator is consistent if the condition of no serial correlation between error terms and instruments is met. This can be tested by using Arellano and Bond's (1991) approach. One of the main problems related to GMM estimation stems from the number of instruments. Because this number grows exponentially with the periods included in the sample, this can lead to several problems related to finite sample bias. In our case, the period dimension is slightly lower than the cross-sectional dimension, which can be problematic. Hence, to achieve a sufficient reduction in the number of instruments, we decided to present results with a collapsed instrument matrix. We also focused our attention on the results of the Hansen test (Hansen 1982). In our case, we also used both one-step and two-step estimations of coefficients to compare the results. After estimating the statistically significant short-run coefficient of government funding, we also used this result to calculate the potential long-run effects of this variable on business funding. As reported, we assume potential causalities should be more evident in the long run. To further focus mainly on long-run causalities, we apply panel cointegration analysis. The long-run equations will be further estimated as follows:

$$\mathrm{BUSINESS\_funding_{it}} = \mathrm{f(GOVERNMENT\_funding_{it}, ABROAD\_funding_{it}}\ ) \tag{1}$$

After we successfully demonstrated the same level of integration for selected variables by unit root tests, we tested for cointegration by panel cointegration tests. Cointegration between the dependent and independent variables has been tested using panel cointegration tests developed by Pedroni (2004), both widely used in the empirical literature. Both test the null hypothesis of no cointegration between selected variables. The Pedroni (2004) cointegration tests use seven different statistics. Four of them are panel cointegration statistics based on the within the approach, and three are group-mean panel cointegration statistics based on the between approach.

The panel cointegration tests allow us to identify the presence of cointegration but cannot estimate any long-run coefficients by themselves. For this purpose, we use panel cointegrating regression models. The fully modified OLS (FMOLS) and the dynamic OLS (DOLS) panel cointegration estimators estimate the long-run parameters.

Here we briefly describe the essence of both estimators. Both FMOLS and DOLS are based on standard OLS, considering the simple fixed-effects panel regression model that can be written as:

$$Y_{it} = \alpha_i + \beta_i X_{it} + u_{it}, i = 1, \ldots, N, t = 1, \ldots, T \tag{2}$$

where Y_{it} is a vector of the dependent variable, β is a vector of coefficients, α_i is an individual fixed effect, and u_{it} is the stationary disturbance term. It is assumed that X_{it} is an integrated process of order one for all i. The FMOLS estimator is then written as follows:

$$\hat{\beta}_{\mathrm{FMOLS}} = \left[\sum_{i=1}^{N}\sum_{t=1}^{T}(x_{it} - \bar{x}_i)'\right]^{-1}\left[\sum_{i=1}^{N}\left(\sum_{t=1}^{T}(x_{it} - \bar{x}_i)\,\hat{y}_{it}^{+} + T\hat{\Delta}_{\epsilon\mu}^{+}\right)\right] \tag{3}$$

where $\hat{\Delta}^{+}_{\epsilon\mu}$ is a serial correlation term that gives the covariance matrix of the residuals corrected for autocorrelation and $\hat{y}^{+}_{it}$ is the transformation of the dependent variable y_{it} to achieve the endogeneity correction.

On the other hand, the DOLS estimator is obtained from the following equation:

$$y_{it} = \alpha_i + \beta X_{it} + \sum_{j=q_1}^{q_2} c_{ij} \Delta X_{i,t+j} + u_{it}, \quad (4)$$

where c_{ij} is the coefficient relating to the leads and lags of the first differenced independent variables.

We can estimate β, the long run coefficient, by the following equation:

$$\hat{\beta}_{DOLS} = \sum_{i=1}^{N} \left[\sum_{t=1}^{T} z_{it} z_{it}' \right]^{-1} \left[\sum_{t=1}^{T} z_{it} \hat{y}^{+}_{it} \right] \quad (5)$$

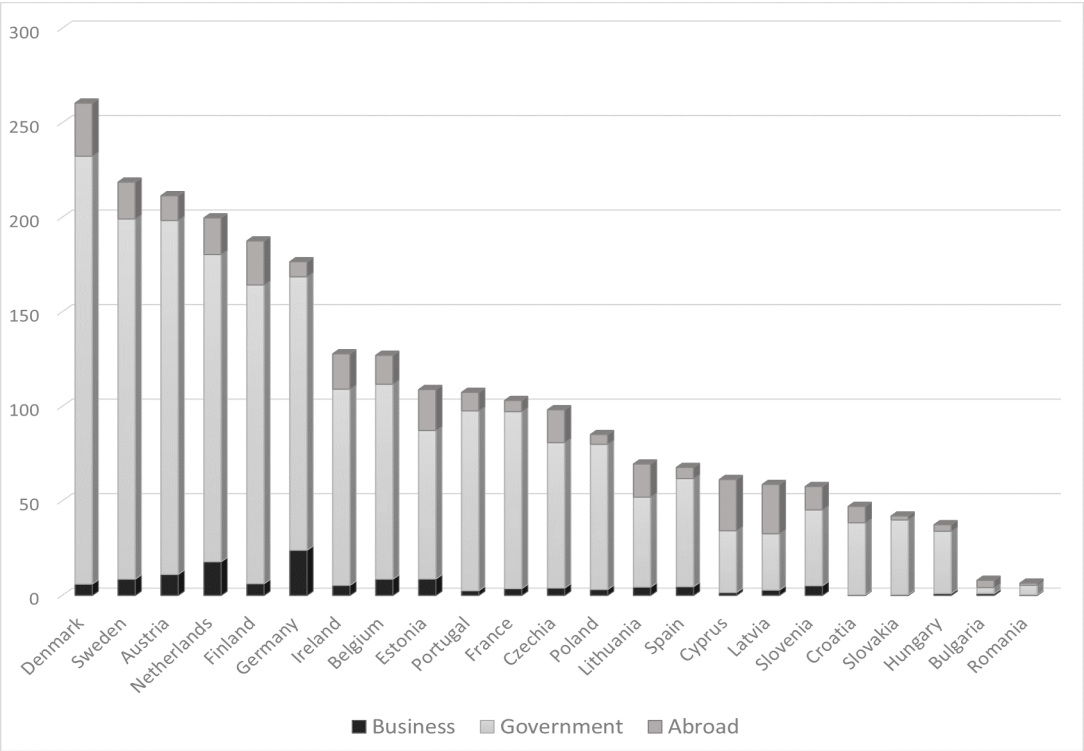
where $z_{it} = (x_{it} - \bar{x}_i, \Delta x_{it-q}, \ldots, \Delta x_{it+q})$ is a 2(q+1)×1 vector of regressors.

Both types of estimators have been used in their two forms: pooled and group-mean estimators. While pooled estimators are based on the "within dimension" of the panel, the group-mean estimators are based on the "between the dimension of the panel". The pooled FMOLS estimator is proposed by Phillips and Moon (1999), and the group-mean FMOLS estimator is developed by Pedroni (2000). The pooled DOLS estimator is introduced by Kao and Chiang (2000), and the group-mean estimator is extended from FMOLS to DOLS by Pedroni (2001). Both estimators are robust for the potential problems of serial correlation and endogeneity, which are potential problems with common OLS panel data estimators. The FMOLS estimator solves this by nonparametric corrections, while the DOLS estimator uses parametric correction, adding leads and lags of differenced regressors into the regression.

5. Results and discussion

In the first part of our analysis, we examine the structure of R&D funding in the higher education sector. We also look closely at the development of the most important sources during the selected period. This will allow us to compare financial sources among EU countries and capture some trends in its development. In Figure 1, we can see the size of overall R&D funding in the higher education sector per capita and its most important sources in 2019. Denmark, Sweden and Austria have the highest funding per capita in the EU in the selected year.

Figure 1. Most important sources of funds for R&D expenditures in higher education based on subjects in the EU countries (in PPS per capita) in 2019



Source: Authors based on the data from Eurostat and the World Bank database.

On the other hand, Bulgaria, Romania and Hungary are performing very poorly in this indicator. Fund structure differs from country to country, and governments are the most important funders in most countries. However, funding from abroad and from the business sector represent important financial sources in several countries, and funding from other higher education institutions or non-profit organizations is mostly negligible. Hence, we decided not to take these two sources into account.

In line with the paper's goal, we further examine the potential relationship between funding sources of R&D funding in higher education with a special focus on business and government funding. We applied the Granger causality test to capture the direction of potential causality in the Granger sense. The results are shown in Table 2. In this case, we fail to find almost any statistically significant Granger causalities between selected variables. There is some evidence of potential Granger causality of government funding on business funding as well as on funding from abroad. These relationships will be crucial in our research. The aim is to examine the potential effect of public funding on the business funding of universities.

After getting the results from Granger causality tests, we look more in detail at the potential short-run effect of government funding on funding from the business sector. As we stated, we assume that there could be a potential effect from initial government funding on R&D in the higher education sector business funding. In the first stage, we used pooled OLS and fixed-effect OLS models. However, in these two cases, we still deal with correlations rather than causalities due to the potential problem of endogeneity. To eliminate this problem, we decided to use the GMM approach. All models are based on variables capturing funding in PPS per capita in their log forms. Since the coefficient of the lagged dependent variable obtained by one-step difference GMM is significantly lower than the one estimated by fixed-effects regression, we prefer the system GMM model. The system GMM is represented by both one-step and two-step estimationand the results can be directly compared. Table 3 reports the results of the relationship between business founding government funding, funding from abroad and GDP per capita. The potential effect of government funding on business funding is statistically significant, at least a 10% level in every model used in our set. Hence, our results seem to be rather robust concerning the different types of models. We also calculated the long-run coefficient for government funding and its statistical significance. The fourth model is used without the control variable capturing GDP per capita to check for robustness.

Table 2. Results of Pairwise panel Granger causality tests

	Number of lags		
	1	2	3
H0: Government funding (per capita) does not Granger cause Business funding (per capita)	1.31	0.99	0.59
H0: Business funding (per capita) does not Granger cause Government funding (per capita)	0.86	0.16	0.54
H0: Government funding (%GDP) does not Granger cause Business funding (% GDP)	4.68**	2.37*	1.89
H0: Business funding (% GDP) does not Granger cause Government funding (% GDP)	2.71	0.74	0.51
H0: Abroad funding does (per capita) not Granger cause Business funding (per capita)	2.23	2.07	2.08
H0: Business funding (per capita) does not Granger cause Abroad funding (per capita)	1.72	0.75	0.49
H0: Abroad funding (per capita) does not Granger cause Government funding (per capita)	0.48	0.15	0.24
H0: Government funding (per capita) does not Granger cause Abroad funding (per capita)	11.66***	4.37***	3.62**
Observations	460	436	413

Source: Authors based on the data from Eurostat and the World Bank database.

Note: *** 1% significance level; ** 5%; * 10%.

Table 3. Results of pooled OLS, Fixed-Effects OLS and GMM models

	Dependent variable: log(business (PPS per capita))						
	Period: 1999-2019						period: 2000-2019
	Pooled OLS	**Fixed Effects**	**One-step difference GMM**	**One-step system GMM**	**One-step system GMM**	**Two-step System GMM**	**One-step system GMM**
$log(business)_{it-1}$	0.907***	0.729*** (6.97)	0.505** (2.12)	0.621*** (3.14)	0.498** (2.11)	0.494** (2.11)	0.479* (1.91)
$Log\ (government)_{it}$	0.069***	0.18*** (3.26)	0.382* (2.05)	0.232* (1.68)	0.397** (2.14)	0.373* (1.98)	0.401** (2.10)
$Log(abroad)_{it}$	0.061***	0.105 (1.69)	0.189* (1.79)	0.081 (1.11)	0.172 (1.35)	0.194 (1.32)	0.190* (1.8)
$Log(GDP\ per\ cap)_{it}$	-0.052**	-0.09** (-2.27)	-0.209* (-1.85)		-0.204 (-1.63)	0.193 (-1.55)	-0.187 (-1.58)
Const	0.432*	0.731**	1.61 (1.66)	-0.244 (-1.45)	1.55 (1.43)	1.47 (1.28)	1.39 (1.35)
No. of obs.	455	455	432	455	455	455	433
No. of groups		23	23	23	23	23	23
No. of instruments			23	23	23	23	22
AR(1) z-stat			-2.65***	-2.84***	-2.64***	-1.77*	-2.4**
AR(2) z-stat			1.39	13.38	1.39	1.22	1.36
Sargan J-test [p-value]			25.4 [0.115]	31.56** [0.035]	26.17* [0.096]	26.17* [0.096]	22.42 [0.169]
Hansen J-test [p-value]			20.51 [0.305]	20.52 [0.364]	20.49 [0.306]	20.49 [0.306]	18.30 [0.370]
R^2	0.93	0.93					
F stat./			150.8***	303.3***	141.2***	152.0***	129.2***
Long-run coefficient log (Government)			0.771*** (4.48)	0.58*** (3.40)	0.79*** (4.42)	0.738*** (3.20)	0.769*** (4.47)

Source: Authors based on the data from Eurostat and the World Bank database.

Note: Standard errors are robust concerning heteroscedasticity; numbers in brackets denote t-statistics or z-statistics; *** 1% significance level; ** 5%; * 10%. The long-run GMM coefficient of log(government) has been calculated as follows: $b2(log(government_{it}) /(1-b1(log(business)_{it-1})$.

The first six models have been estimated on a whole sample of 23 countries and 21 years. We decrease the time dimension to 20 years in the seventh estimation to get fewer instruments than groups. The estimator seems to be fully consistent as the Hansen test's null hypothesis checking the instruments' validity is not rejected. The results also show, on the one hand, the presence of first-order serial correlation and, on the other hand, the absence of second-order serial correlation. The interpretation of the results is rather straightforward. The significance and value of the lagged-dependent variable prove a dynamic relationship which further justifies our choice of GMM as the suitable estimator. The current level of business funding for university research and development is affected by its previous levels.

Regarding our main independent variable, we can conclude that a 1% increase in government funding will lead to approximately, on average, a 0.23-0.4% increase in business funding for research and development in tertiary education. In the long run, the intensity of this effect can even further rise to approximately 0.58-0.79%. The potential positive effect of funding from abroad has been significant only at a 10% significance level and only in two models. Thus, we cannot make firm conclusions about the potential effect of this type of funding on business.

In the next part of our analysis, we further examine

potential long-run causalities between selected variables. As already mentioned, the expected effect of government funding could likely be more evident in the long run. Business funding has been used as a dependent variable, and government funding and funding from abroad were applied as independent variables. We assume that there is some long-run relationship between government, business and foreign funding of R&D in higher education. To identify this kind of relationship, we first used the results of the panel unit-root test. The results suggest that variables capturing the share of business funding, government funding and abroad funding of R&D in higher education on GDP have the same order of integration. Pedroni and Johansen-Fisher panel cointegration tests test the existence of cointegration between these three variables. All results are shown in Appendix in Table A4 and Table A5.

Most tests from both types confirm the existence of statistically significant cointegration between business funding, government funding and abroad funding. Hence, we can proceed to cointegrating regression analysis and examine long-run causal relationships. This estimation is based on two types of cointegrating regression estimates: fully modified OLS (FMOLS) and dynamic OLS (DOLS). Using two different estimators should again improve the robustness of our results and allow us to compare the results. Both estimators are robust for endogeneity problems which are especially important in our case. As reported in the methodology section, both estimators can be used in their polled or group mean forms. There is also an opportunity to include constants and trends in the equation. As can be seen in Table 4, we used different cointegrating regression models with different specifications. We used both within-dimension (pooled),

Table 4. Results of cointegrating regression models

Dependent variable: Business financing as % of GDP					
Pooled estimator (within dimension)					
	(1) A	(2) B	(3) C	(4) D	(5) E
Government financing (% of GDP)	0.04*** (3.84)	0.03*** (4.57)	0.03** (2.01)	0.02*** (2.62)	0.04*** (3.17)
Abroad financing (% of GDP)	0.05*** (2.59)	0.05* (1.73)	0.09** (5.09)	0.09*** (6.40)	0.07*** (3.08)
R^2	0.84	0.83	0.88	0.88	0.85
Adj. R^2	0.82	0.82	0.87	0.87	0.80
Long-run variance	0.0001	0.0001	8.1x10-5	4.78x10-5	9.9x10-5
Observations	459	459	459	459	421
Group-mean estimator (between dimensions)					
	(6) F	(7) G	(8) H	(9) I	(10) J
Government financing (% of GDP)	0.05*** (4.91)	0.05*** (4.34)	0.04*** (4.63)	0.05*** (3.55)	0.05*** (2.69)
Abroad financing (% of GDP)	0.06** (2.15)	0.18*** (4.72)	0.03*** (0.99)	0.09** (2.02)	0.17** (2.46)
Long-run variance	5.08x10-5	4.02x10-5	1.72x10-5	5.09x10-5	5x10-5
Observations	459	459	459	441	442

Source: Authors' work.

Notes: *** 1% significance level; ** 5%; * 10%.; long-run variances calculated based on Bartlett kernel and Newey-West bandwidth have been used for coefficient covariances; A - FMOLS (pooled estimator), constant included, coefficient covariance matrix with homogenous variances; B - FMOLS (pooled estimator), constant included, coefficient covariance matrix with heterogeneous variances; C - FMOLS (pooled estimator), constant & linear trend, coefficient covariance matrix with homogenous variances; D - FMOLS (pooled estimator), constant & linear trend, coefficient covariance matrix with heterogeneous variances; first-stage residuals use heterogeneous long-run coefficients; E- DOLS (pooled estimator), constant included, lags and leads included based on the AIC; F - FMOLS (group-mean estimator), constant included; G - FMOLS (group-mean estimator), constant & linear trend included; H - FMOLS (group-mean estimator), constant & quadratic trend included; I - DOLS (group-mean estimator), constat, lags and leads included based on the AIC; J - DOLS (group-mean estimator), constant &linear trend, lags and leads included based on the AIC.

and between-dimension (group-mean) approaches. However, the results are rather similar in all models.

Variable capturing government financing of R&D on GDP is statistically significant at a 5% significance level for all models used in our set. Almost the same is also true for funding from abroad. The only exemption is one model where the coefficient is still significant at 10%. Both variables appear to have a positive long-run effect on the business funding of R&D in higher education. Thus, we found strong evidence of a long-run relationship between the three selected variables. The effect of government and funding from abroad on business funding of tertiary education research appears to be positive in the long run. Regarding our two main research hypotheses and their components, we can make several conclusions.

Based on the results, we cannot reject the first research hypothesis. We found a short-run positive effect of government funding of higher education research on business funding of this research. Regarding the second hypothesis, our results are rather ambiguous in this case. Even though we found some relatively weak evidence about the positive effects of funds from abroad, we cannot come to any certain conclusions. However, we can say the short-run positive impact of financial sources from abroad on business funding is possible. According to the calculation of the long-run coefficient from GMM and especially based on the cointegrating regressions, our results strongly suggest a long-run positive effect of government funding of higher education research on business funding of this research. Therefore, the third hypothesis of the paper can be validated. The results of cointegrating regressions suggest a long-run positive effect of government funding of higher education research on business funding of this research. Even though this effect is less statistically significant in some models, the results are more convincing in the long run compared to the short-run effect indicating the acceptance of the fourth hypothesis.

We can conclude there is a complementarity between government funding and business funding of higher education research in the short and long run. The same applies to funding from abroad. The long-run results are valid for the GMM panel regressions using long-run log coefficients and cointegration regression models. Our results align with the findings of several previous studies (Muscio, Quaglione, and Vallanti 2013; Dechenaux, Thursby, and Thursby 2011). Despite this, our research is unique due to capturing the short-run and the long-run relationships based on a sample of EU countries. The positive effect of government research funding on business research funding can be explained by the development of necessary infrastructure and human capital that can be further used in applied research and cooperation with businesses, as reported by Muscio, Quaglione, and Vallanti (2013). Good quality basic science funded mostly by the government is necessary for further applied research, as argued by Guellec and Van Pottelsberghe de la Potterie (2004). Moreover, according to Blume-Kohout, Kuman, and Sood (2014) and Diamond (1999), better government funding could play an important signalling role in business cooperation. Contrary to Santos (2007), we fail to find any support for the substitution effect between government and business funding.

Despite our best afford to maintain the robustness of our results, our approach also has several limitations. First of all, we cannot use more control variables in the models due to the chosen methods. The availability of data for potential control variables, such as the number of researchers at universities, is limited in selected 23 countries during all 21 years. Moreover, the GMM is more suitable for datasets with higher cross-sectional dimensions and lower time dimensions. Every additional variable used as an instrument will inflate the number of instruments over the threshold value, even with the collapse option. Cointegrating regression has a very similar problem as well. The number of variables used in the model is often rather small because all variables in the model should be cointegrated. Hence, these limitations do not allow us to increase the number of model variables.

Moreover, in our case, it appears to be inappropriate to select only one best model of cointegrating regression. Hence, we decided to apply models with different specifications and compare the results. This approach allows us to capture any potential changes. However, our results remain robust in every specification used in our set of models.

5. Conclusions

Research and development in higher education are often inevitable for the creation of innovation. There are several possible sources of funding for this research. In EU countries, the government remains the most important subject in funding R&D in higher education, and business funding is much less common in the EU. Still, it can increase the total R&D expenditures in higher education and motivate universities to be more active in applied research. Likely, government funding and other sources of funding, such as funding from abroad, could potentially affect the amount of business funding. Hence, the paper aims to identify the correlations and causalities between business

funding and other sources of R&D funding in the higher education sector.

Based on our results, we can make several conclusions and policy implications. Our results suggest a significant positive correlation between government funding and business funding in the short run. The Granger causality tests first indicated this relationship. In the next step, this relationship has been further confirmed by the results of GMM. It is expected that every 1% increase in government spending on research and development in tertiary education will lead to another increase, on average, in business spending of 0.23 % to 0.4% in the short run. Based on the results, we also assume that in the long run, this effect can multiply business spending on university research by more than 0.7%, which can be considered a substantial increase. This supported our hypotheses.

If the government funding increases, there is likely a time needed to adapt, increasing research infrastructure and human capital. Furthermore, improvements in academia-business cooperation that can potentially lead to an increase in business funding of R&D in higher education are long-term processes. The opposite direction is true when the government decides to decrease its funding. Hence, it is more likely that there is a certain long-run relationship between different sources of R&D funding in academia. Thus, we decided to examine long-run causal effects by using cointegrating regression models. We found empirical evidence for this assumed long-run relationship based on the results panel cointegration test and FMOLS and DOLS estimates. There appears to be a positive long-run effect of government funding on business funding of R&D in higher education. The same is true for funding from abroad. An increase in either government financial support or funding from abroad is leading to a significant increase in business funding of R&D in the higher education sector. This positive effect of government funding can be interpreted by improvement in basic research, development of research infrastructure and enquiring of human capital, as reported by Muscio, Quaglione, and Vallanti (2013). Moreover, government funding has an important signalling role in business cooperation, as stated by Blume-Kohout, Kumar, and Sood (2014).

Despite some methodological limitations, especially in the case of long-run models, our results are robust enough and remain the same when changing the variables and estimation techniques.

Based on our results, it is possible to make certain recommendations for policies in the field of higher education and support for research and development. The findings confirm the importance of government funding of R&D in higher education. It is not only the most important financial source for academic R&D, but it also complements the funding from the business sector to higher education. Hence, for EU countries we are recommending at least keeping the level of government financial support or if possible, even increasing the support. This can be a key tool to generate more funding from businesses, especially in the long run. It can enhance the cooperation between universities and private sector. A similar effect can also be seen in funding from abroad. However, this time the results can be more visible in the long run. This type of funding mostly comes from EU sources such as Horizon Europe. Hence, funds from these programs are not only supporting the research at universities and research organisations but can also indirectly generate further financial support for the research from the business sector. We can say that improving financial support from the government and EU can be seen as an effective tool for motivation and increasing the financial participation of businesses in R&D activities at European higher education institutions.

Funding

This work was supported by the Slovak Research and Development Agency under the contract No. APVV-20-0338.

References

Altbach, P. G. and Peterson, P. M. 2007. Higher Education in the New Century: Global Challenges and Innovative Ideas. Rotterdam: Sense Publishers.

Arellano, M. and Bond, S. 1991. Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations. The review of economic studies 58 (2): 277-297.

Arellano, M. and Bover, O. 1995. Another look at the instrumental variable estimation of error-components models. Journal of Econometrics 68 (1): 29-51.

Auranen, O. and Nieminen, M. 2010. University research funding and publication performance - An international comparison. Research Policy 39 (6): 822-834.

Beath, J., Owen, R. F., Poyago-Theotoky, J. and Ulph, D. 2003. Optimal incentives for income-generation in universities: the rule of thumb for the Compton tax. International Journal of Industrial Organization 21 (9): 1301-1322.

Bégin-Caouette, O., Schmidt, E. K. and Field, C. C. 2017. The perceived impact of four funding streams on academic research production in Nordic countries: the perspectives of system actors '. Science and Public Policy 44 (6): 789-801.

Blume-Kohout, M. E., Kumar, K. B. and Sood, N. 2014. University R&D funding strategies in a changing federal funding environment. Science and Public Policy 42 (3): 355-368.

Blundell, R. and Bond, S. 1998. Initial conditions and moment restrictions in dynamic panel data models. Journal of Econometrics 87 (1): 115-143.

Breitung, J. 2000. The local power of some unit root tests for panel data. In Nonstationary Panels, Panel Cointegration, and Dynamic Panels, edited by B. H. Baltagi, 161-177. Amsterdam: Elsevier.

Choi, I. 2001. Unit root tests for panel data. Journal of International Money and Finance 20 (2): 249-272.

David, P. A., Hall, B. H. and Toole, A. A. 2000. Is public R&D a complement or substitute for private R&D? A review of the econometric evidence. Research Policy 29 (4-5): 497-529.

Dechenaux, E., Thursby, J. and Thursby, M. 2011. Inventor moral hazard in university licensing: The role of contracts. Research Policy 40 (1): 94-104.

Diamond, A. 1999. Does federal funding crowd in private funding of science?. Contemporary Economic Policy 17 (4): 423-443.

Etzkowitz, H. and Leydesdorff, L. 2000. The dynamics of innovation: from National Systems and "Mode 2" to a Triple Helix of university–industry–government relations. Research Policy 29 (2): 109-123.

Etzkowitz, H., Webster, A., Gebhardt, C. and Terra, B. R. C. 2000. The future of the university and the university of the future: evolution of ivory tower to entrepreneurial paradigm. Research Policy 29 (2): 313-330.

Geuna, A. 1999. The Economics of Knowledge Production: Funding and the Structure of University Research. Cheltenham: Edward Elgar.

Guellec, D. and Van Pottelsberghe de la Potterie, B. (2004). From R&D to productivity growth: Do the institutional settings and the source of funds of R&D matter?. Oxford bulletin of economics and statistics 66 (3): 353-378.

Hansen, L. P. 1982. Large sample properties of generalized method of moments estimators. Econometrica 50 (4): 1029-1054.

Hansen, L. P. and Hodrick, R. J. 1980. Forward exchange rates as optimal predictors of future spot rates: An econometric analysis. Journal of political economy 88 (5): 829-853.

Harman, G. 2001. University-industry research partnerships in Australia: extent, benefits and risks. Higher Education Research & Development 20 (3): 245-264.

Im, K. S., Pesaran, M. H. and Shin, Y. 2003. Testing for unit roots in heterogeneous panels. Journal of Econometrics 115 (1): 53-74.

Jonkers, K. and Zacharewicz, T. 2016. Research performance based funding systems: a comparative assessment. Report No. JRC101043. European Commission Joint Research Centre: Seville.

Kao, C. and Chiang, M. H. 2000. On the estimation and inference of cointegrated regression in panel data. Advances in Econometrics 15: 179-222.

Kristkova, Z. 2013. Analysis of private RD effects in a CGE model with capital varieties: The case of the Czech Republic. Czech Journal of Economics and Finance 63 (3): 262-287.

Lanahan, L., Graddy-Reed, A. and Feldman, M. P. 2016. The Domino Effects of Federal Research Funding. PLoS ONE 11 (6): 1-23.

Levin, A., Lin, C. F. and Chu, C. S. J. 2002. Unit root tests in panel data: Asymptotic and finite sample properties. Journal of Econometrics 108 (1): 1-22.

Maddala, G. S. and Wu, S. 1999. A comparative study of unit root tests with panel data and a new simple test. Oxford Bulletin of Economics and Statistics 61(S1): 631-652.

OECD. 2015. Frascati Manual 2015. Guidelines for Collecting and Reporting Data on Research and Experimental Development, The Measurement of Scientific, Technological and Innovation Activities, OECD Publishing, Paris. http://dx.doi.org/10.1787/9789264239012-en (accessed August 15, 2023).

Mohrman, K., Ma, W. and Baker, D. 2008. The research university in transition: The emerging global model. Higher education policy 21 (1): 5-27.

Muscio, A., Quaglione, D. and Vallanti, G. 2013. Does government funding complement or substitute private research funding to universities?. Research Policy 42 (1): 63-75.

Nickell, S. 1981. Biases in dynamic models with fixed effects. Econometrica 49 (6): 1417-1426.

Pedroni, P. 2000. Fully modified OLS for heterogeneous cointegrated panels. Advances in Econometrics 15: 93-130.

Pedroni, P. 2001. Purchasing power parity tests in cointegrated panels. The Review of Economics and Statistics 83 (4): 727-731.

Pedroni, P. 2004. Panel cointegration: asymptotic and finite sample properties of pooled time series tests with an application to the PPP hypothesis. Econometric Theory 20 (3): 597-625.

Perkmann, M. and Walsh, K. 2007. University–industry relationships and open innovation: Towards a research agenda. International journal of management reviews 9(4): 259-280.

Phillips, P. C. B. and Moon, H. R. 1999. Linear regression limit theory for nonstationary panel data. Econometrica 67 (5): 1057-1111.

Santos, J. L. 2007. Resource allocation in public research universities. Review of Higher Education 30 (2): 125-144.

Strehl, F., Reisinger, S. and Kalatschan, M. 2007. Funding Systems and their Effects on Higher Education Systems. OECD Education Working Papers (6): 1-118.

Tavoletti, E. 2010. Matching higher education with the labour market in the knowledge economy: The much-needed reform of university governance in Italy. Industry and Higher Education 24 (5): 361-375.

APPENDIX

Table A1. Descriptive statistics of variables used in the models, observations = 184

Variable	Mean	SD	Min.	Max.
Business per capita (Funding in PPS)	5.623	0.399	0.3	23.9
Business - GDP (Funding as % of GDP)	0.0238	0.002	0.01	0.09
Government per capita (Funding in PPS)	82.39	4.72	2	233.4
Government- GDP (Funding as % of GDP)	0.319	0.014	0.02	0.81
Abroad per capita (Funding in PPS)	12.45	0.67	0.7	55.3
Abroad- GDP (Funding as % of GDP)	0.056	0.003	0.01	0.028
GDP per capita	37973	937	16328	87380

Source: Authors based on the data from Eurostat and the World Bank database.

Figure A2 Diagram showing the methodology and found effects

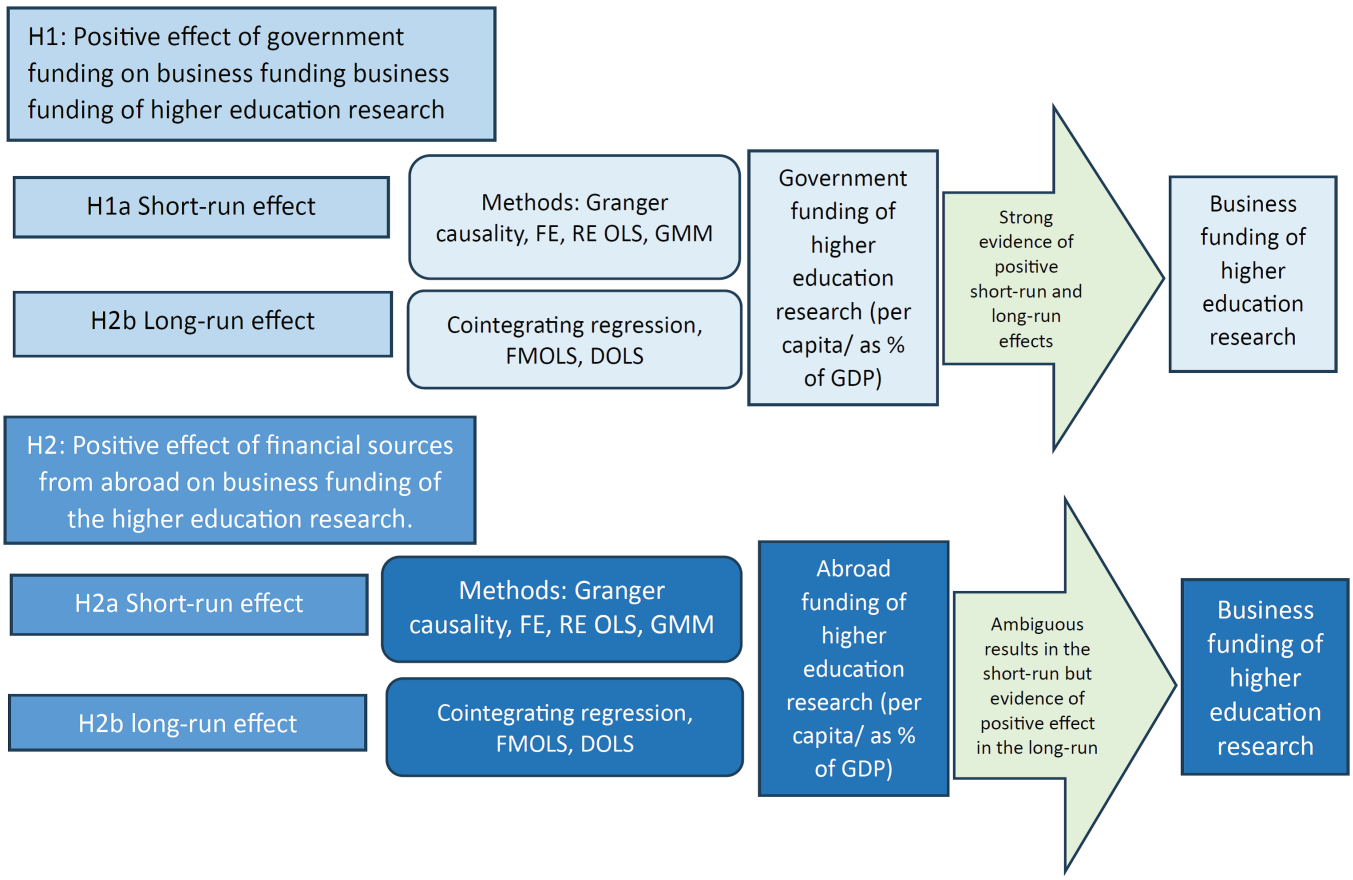


Table A3. Panel unit root tests of selected variables used in the models

Variable	Levin, Lin & Chu	Im, Pesaran & Shin W-stat	ADF - Fisher Chi-square	PP - Fisher Chi-square
Log (Business per capita)	-3.05***	-1.53*	72.11***	83.46***
Log (Government per capita)	-4.66***	-1.96**	72.18***	76.28***
Log (Abroad_ per capita)	-2.17**	-2.17**	77.88***	76.89***
Business (%GDP)	-1.44*	-0.83	58.8**	58.9**
ΔBusiness (%GDP)	-14.8***	-14.7***	253.3***	493.3***
Government (% GDP)	-1.99**	-0.76	53.84	42.03
ΔGovernment (% GDP)	-12.7***	-10.4***	192.1***	205.5***
Abroad (% GDP)	0.06	1.66	41.3	51.8
ΔAbroad (% GDP)	-16.6***	-16.7***	295.5***	367.4***

Source: Authors based on the data from Eurostat and the World Bank database.
Note: *** 1% significance level; ** 5%; * 10%.

Table A4. Results of Pedroni panel cointegration tests

Cointegration: Business funding (%GDP) Government funding (%GDP) Abroad funding (%GDP)			
Pedroni tests (Engle-Granger based) – individual intercept & trend, lag length selection based on SBC	Panel v-Statistic (within dimension)	-23555	0.46
	Panel rho-Statistic (within dimension)	-0.69	-1.93**
	Panel PP-Statistic (within dimension)	-2.05**	-5.09***
	Panel ADF-Statistic (within dimension)	-2.28**	-5.53***
	Group rho-Statistic (between dimensions)	-0.36	
	Group PP-Statistic (between dimensions)	-4.60**	
	Group ADF-Statistic (between dimensions)	-4.18**	

Source: Authors' work.
Note: *** 1% significance level; ** 5%; * 10%.

Table A5. Results of the Johansen-Fisher panel cointegration test

Cointegration: Business funding (%GDP) Government funding (%GDP) Abroad funding (%GDP)		
	Fisher Stat. (from trace test)	Fisher stat (max. eigenvalue test)
None	133.4***	112.8***
At most 1	57.40**	38.06
At most 2	84.95***	84.95***

Source: Authors' work.
Note: *** 1% significance level; ** 5%; * 10%.

sciendo

South East European Journal of Economics and Business
Volume 18 (2) 2023, 112-125
DOI: 10.2478/jeb-2023-0022

NOT JUST EMPTY RHETORIC: THE ECONOMIC COST OF WARMONGERING IN A POST-CONFLICT ENVIRONMENT

Adnan Muminović

Abstract

The post-conflict literature is consistent in reporting that wars leave a painful and lasting legacy on those that experience it directly. This article aims to contribute to this broad body of literature by exploring how threats of possible new conflict affect the generation born after the war in Bosnia and Herzegovina. Our study relies on primary data collected through a controlled experiment amongst business students at three universities dominated by three different ethnicities across the country. The students were exposed to a tailored, yet fictional media report discussing the possibility of a new war. The outcomes from our Structural Equation Model reveal that the threat of a new conflict is associated with lower entrepreneurial intentions of business students and mediated by greater risk aversion. As a result, we provide evidence that the permanent warmongering in a post-conflict context, which is often a regular occurrence in such environments, cannot be dismissed as just empty rhetoric. Rather, it can potentially have severe economic consequences that might hamper economic development and prospects in the medium and long run.

Keywords: *Economic effects of war; risk; entrepreneurship; economic psychology; Bosnia and Herzegovina*

JEL classification: *D74, D81, D91, L26*

1. Introduction

With the ongoing wars and armed conflicts in Ukraine, Myanmar, Yemen, South Sudan and other parts of the world, it is important to remind ourselves that conflicts leave a deep and lasting legacy in every society going way beyond killings, suffering and physical destruction (Conzo and Salustri 2019). Indeed, there is almost no aspect of life that remains untouched by it. Among many other social, political and psychological effects, those that directly experience violent conflicts have been shown to also have lower economic performance (Kešeljević and Spruk 2021), educational outcomes (Efendic, Kovac and Shapiro 2022), levels of trust (Kijewski and Freitag 2016; Ali, Khan and Meo 2020), hope (Bar-Tal 2007), collective action tendencies (Bellows and Miguel 2009), prosocial behaviour (Efendic 2020) and willingness to take risks (Bucciol and Zarri 2015; Bellucci, Fuochi and Conzo 2020; Muminovic and Efendic 2022). Moreover, war-time experiences continue to be felt long after the war has formally ended, often making it a transgenerational trauma (Schwab 2010; Slone and Mann 2016).

Building upon these different bodies of literature, we discuss how threats of a possible new conflict in

Adnan Muminovic, PhD
Senior Teaching Assistant
School of Economics and Business
University of Sarajevo
Trg oslobođenja - Alija Izetbegović 1
71000 Sarajevo, Bosnia and Herzegovina
adnan.muminovic@efsa.unsa.ba

Bosnia and Herzegovina (BiH) impact individuals that did not experience the war directly i.e. those born after the signing of the Dayton Peace Agreement (DPA) in 1995, which formally ended the war. While the literature on the consequences of conflict exposure is indeed rich, there is limited research dedicated to the post-war generation that lives in constant fear of a new conflict generated in the public discourse. The novelty of our research is that we go beyond the actual exposure to the last war and instead focus on the prospects of a new conflict and its impact on the younger generation.

Concretely, we explore whether media reports discussing the possibility of a new conflict affect economic intentions of business students from across the country coming from three dominant ethnic groups involved in the previous war. Through a controlled experiment, we investigate whether such reports and the resulting anxieties lower students' entrepreneurial intentions by making them less willing to take risks. This is relevant, since low levels of risk-willingness mean that individuals will not pursue high-return activities such as entrepreneurship, with negative effects for economic growth (Raghunathan and Pham 1999; Dohmen et al. 2012; Nieß and Biemann 2014; Jakiela and Ozier 2019). Our focus is on entrepreneurship since its creativity and innovativeness provides an important source of employment and economic development, potentially enhancing the future prospects of the country (Lawrence et al. 2008). Unsurprisingly, it has also been shown to depend on the actual environment in which it is taking place (Pfeifer et al. 2021; Potts et al. 2021). As a result, we aim to provide a new lens through which certain phenomena could be better appreciated and understood, such as the country's relative underdevelopment of its private sector (OECD 2021), as well preference of young people for low-risk jobs in the public sector (Turčilo et al. 2019). As such, we would be the first to demonstrate that negative rhetoric to which people in BiH are regularly exposed has concert economic consequences, which means that such narratives could no longer be dismissed as just empty talk.

This article is structured as follows: In Section 2, we begin with a brief discussion on the Bosnian War and the context for our research. Section 3 provides a literature review outlining the importance of emotions for economic behaviour and decision-making, focusing on risk and entrepreneurial intentions. In section 4, we discuss our procedure, data, measurement of variables, and proposed methodology. In section 5, we report the results of our pilot as well as main study. Section 6 points to the limitations of our experiments, while Section 7 concludes.

2. Context for The Research – BiH's Post-Conflict Environment

The Bosnian War (1992-1995) remains the most traumatic experience in the country's recent history. With the death of around 100,000 people and displacement of over two million more, its demographic consequences continue to be felt to this day (Tokaca, 2012; Kadušić and Suljić 2018; Halilovich et al. 2018). The war was marked by targeted violence against civilians, systematic rape, concentration camps, ethnic cleansing, crimes against humanity and the first genocide on European soil since the end of the Second World War (Nettelfield and Wagner 2015). Overall, only a small fraction of BiH's population remained untouched by the conflict, which painfully revealed that yesterday's friends and neighbours could become enemies capable of committing inconceivable atrocities (Mooren and Kleber 2001).

With most of the country devastated, the conflict also left a deep and long-lasting impact on its economy. Despite the initial recovery, BIH's GDP in 1997 was only half of what it was prior to the conflict (IMF, 1998), while the overall picture remained bleak even 20 years after the peace agreement (Keseljević and Spruk 2021). Aside from the physical destruction, it also led to the erosion of BiH's human and social capital (Efendic et al. 2015; Efendic and Pugh 2018; Efendic, Kovac and Shapiro 2022; Muminovic and Efendic 2022) impeding the country's future economic prospects.

While much of the situation has improved over the last 25 years, the conflict continues to play a significant role in the public discourse and consciousness. The DPA was undoubtedly successful in putting an end to the fighting between the country's three main ethnic groups (Bosniaks, Serbs and Croats), yet at the same time it recognised and institutionalised the concept of "constituent people". The strengthened and continued "ethnicisation", in turn, helped perpetuate wartime divisions rather than the emergence of a common in-group identity that could have facilitated the reconciliation process (Leonard et al. 2016). As Whitt and Wilson (2007, p. 656) have noted "in a post-conflict environment, ethnicity is likely to remain the most credible marker separating individuals. In societies where ethnicity is a highly salient marker, it can divide people and lead them to behave positively toward their own ingroup and negatively toward an out-group." As a result, and to this day, the country remains in a state of frozen conflict (Perry 2018) in which the threat of a new war is an ever-present possibility. According to a recent report by the European Commission (2021), the post-conflict environment is still not conducive to

reconciliation as the legacies of the war have yet to be overcome, while the denial of genocide remains a regular occurrence (Parent 2016; Halilovich 2021). What is even more worrying is the fact that recent international reports warn that warmongering and secessionist rhetoric have seriously intensified, causing insecurities amongst the population (Mijatović 2021; OHR 2022). The impact of the constant fear in society is well illustrated by the following statement from a study conducted in BiH by Parent (2022, p. 10):

> "Fear blinds the mind. It does not allow us to make informed decisions. We choose our leaders out of fear. There are all kinds of decisions we take out of fear ... fear of not having enough money to survive, fear for our children ... fear of the Other. You do things you would not do normally, but you do them out of fear."

Given that the psychological cost of fear might even exceed physical harm (Metcalfe et al., 2011) and having in mind that it may led to counterproductive economic behaviours (Dalton, Nhung and Rüschenpöhler 2020), we set out to explore whether they have systematically negative consequences for business intentions of the country's port-war generation. Indeed, it seems reasonable to expect that frequent media exposure to the traumatic experience of a war in BiH will lead people to exaggerate its reoccurrence and consequently affect their economic behaviour.

3. Literature Review

3.1. The effect of emotions on risk and entrepreneurship

Emotions play a crucial role in our judgement, decision making and behaviour (Loewenstein and Lerner 2003). Yet, until not too long ago, economists were mostly focused on higher-level cognitive processes, overlooking the importance of emotions and thus providing an incomplete picture of entrepreneurship (Hayton and Cholakova 2012). In general, the study of experiences and the feelings they elicit were generally neglected in social sciences as they were seen as an unpredictable and erratic source of human behaviour (Lerner et al. 2015).

Nevertheless, it is by now well established that emotions are a powerful driver of decision-making, impacting the way we see the world and perceive reality (Zadra and Clore 2011; Welpe et al. 2012). In the words of Bechara and Damasio (2005, p. 363) "prior emotional events, influence future economic choices." What is more, emotions play a crucial role and are truly necessary for rational decision-making. People with an otherwise normal intellect, but with impaired emotional reactions are unable to make beneficial and advantageous economic decisions (Reimann and Bechara 2010).

In this research, we are particularly interested in fear since it is a distinctively negative emotion characterised by high uncertainty and low feelings of personal control due to which we tend to perceive reality differently (Whitson and Galinsky 2008). As a result, fear has a particular impact on the way in which we process information, make decisions and can lead to sub-optimal economic outcomes (Dunn and Schweitzer 2005; Erhardt et al. 2021). For instance, fearful people tend to systematically opt for the less risky option even as more uncertain option might be more rewarding (Wake, Wormwood and Satpute 2020).

Concretely and importantly for this investigation, we start by noting that entrepreneurship is a highly unpredictable endeavour associated with significant uncertainties in which people have to navigate the world without prior knowledge or experiences (Cacciotti and Hayton 2015). In such a volatile and ambiguous environment, emotions and our attitudes towards risk play a crucial role (Lawrence et al. 2008; Mickiewicz and Rebmann 2020). For instance, they impact all relevant aspects of entrepreneurship such as attention, creativity, evaluation, cognition and interaction with other people (Baron 2008). Furthermore, they influence the way in which potential entrepreneurs feel about specific opportunities and ideas and whether they are willing to actually pursue them (Hayton and Cholakova 2012).

In addition to that, emotions also play a crucial role in the way we evaluate risk. Unlike the long-standing economic belief that individuals evaluate risk rationally and statistically, it has been shown that fear plays a significant role in its assessment differing from other negative emotions (Bechara and Damasio 2005; Welpe et al. 2012; Lerner et al. 2015; Slovic 2018; Hertwig, Wulff and Mata 2018; Dalton, Nhung and Rüschenpöhler 2020; Kassas, Palma and Porter 2022). For instance, according to the affect heuristic (Slovic et al. 2004), people judge risk as being higher and benefit to be lower, if they have a negative feeling towards an activity. The sense of uncertainty and lack of control mentioned previously induce temporarily higher levels of risk aversion and lead individuals to make less risky choices (Lerner and Keltner 2001; Schildberg-Hörisch 2018). Overall, there is broad scientific evidence on the relationship between fear

and greater risk aversion and the effect is considered small-to-medium in strength (for instance, see the meta-analysis conducted by Wake, Wormwood and Satpute 2020).

3.2. The effect of risk on entrepreneurship

Risk-taking presents a crucial aspect of human behaviour and economic decision-making (Dohmen et al. 2011; Frey et al. 2017; Schildberg-Hörisch 2018; Hanaoka, Shigeoka and Watanabe 2018). As stated before, economists long believed that people evaluate risk rationally by carefully considering and weighting alternative probabilities (Bechara and Damasio 2005; Slovic 2018). Psychologists, on the other side, highlighted the importance of emotions for risk assessment (Lerner and Keltner 2001; Gilad and Kliger 2008; Ralph et al. 2018). Indeed, when emotions and our cognitive deliberations differ, it is our emotions that often exert a more powerful influence on our behaviour (Loewenstein et al., 2001; Hayton & Cholakova, 2012), which is why we have methodologically embraced the psychological way of looking at risk. Most importantly for our research, it has been shown to impact our occupational choices (Brown et al. 2019) as those more willing to take risks are also more likely to start their own business and choose more challenging occupations (Raghunathan and Pham 1999; Dohmen et al. 2012; Nieß and Biemann 2014; Jakiela and Ozier 2019).

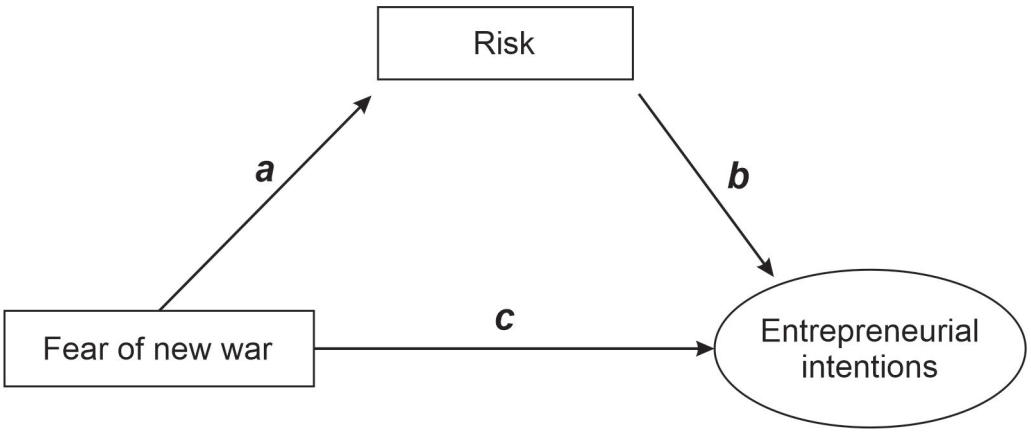
Concerning the actual relationship between risk and entrepreneurship, research conducted in the Netherlands by Cramer et al. (2002) suggests the individual degree of risk aversion does indeed discourage entrepreneurship, although the authors express reservations concerning the causality of their findings. However, longitudinal data from Norway allowed Hvide and Panos (2014) to conclude that risk seeking individuals are indeed more likely to become entrepreneurs and set up a firm. Further, conducting a "lab-in-the field-experiment", Koudstaal, Sloof and Van Praag (2016) also found that entrepreneurs indeed perceive themselves as more risk seeking compared to other groups such as managers and employees, although the effect seems actually to be driven by their greater willingness to risk losses. Overall, Welpe et al. (2012) have shown that fear is associated with higher risk perception, making us less likely to take advantage of entrepreneurial opportunities.

To summarise, the separate impact of fear on risk-taking and entrepreneurship, as well as importance of risk-taking for entrepreneurship is well established in the literature. Yet, by tying these links together, we are the first to consider them jointly in a model and thus explore how fears of a new war impact entrepreneurial intentions of business students across BiH, with risk as a potential mediator. Based on the findings in the literature, we can state the following hypotheses, whose visual representation is shown in Figure 1.

Hypothesis 1a: There is a negative direct effect of fears of a new war on entrepreneurial intentions.
Hypothesis 1b: There is an indirect negative effect of fears of a new war on entrepreneurial intentions and the effect is mediated by lower risk willingness.

In Appendix 1, we discuss methods for experimentally inducing fear, which is important for our experiment.

Figure 1. Graphical representation of the mediated effect of threats of a new war on entrepreneurial intentions through risk



4. Methodology

In order to test our hypotheses, we conducted a controlled experiment to investigate whether the threat of another possible war is impacting economic decisions even of those people who could not have experienced it firsthand i.e. those born after the signing of the DPA in 1995. More specifically, through a mediation analysis and using a Structural Equation Model (SEM), we explore whether the threat is affecting students' entrepreneurial intentions by lowering their risk willingness. According to Iacobucci, Saldanha and Deng (2007), SEM is the superior methodology when testing for mediation, amongst other things, because it allows for the simultaneous estimation of the direct and indirect paths while statistically controlling for the other.

We take advantage of the *medsem* package in STATA, which has been developed by Mehmetoglu (2018) and which allows us to perform such simultaneous estimation. It helps us to quantify the indirect effect of our independent variable (*treatmen*t) on our dependent variable (*entintentions)* through our proposed mediator *genrisk*.

4.1. Participants and procedure

Our data was collected through an in-class questionnaire from aspiring entrepreneurs that were born after 1995. Specifically, we ran the study on undergraduate students pursuing a business degree in 2022, taking courses in entrepreneurship and who are about to graduate thus facing important career decisions. Indeed, a review of the literature by Kerr, Kerr and Xu (2018) found that research of entrepreneurship is often conducted with university students studying business. Overall, students make a good sample when exploring the roots of entrepreneurship as they offer a variety of different traits, attitudes and experiences (Krueger, Reilly and Carsrud 2000; Welpe et al. 2012).

Consequently, experiments using a between-subjects design were conducted from 26 April until 31 May 2022. A total of 146 students were randomly assigned to either the control (n=74) or the treatment group (n=72) and asked to complete the paper-and-pencil survey. This is an appropriate sample size for our population of business students needed for medium-sized effect. To ensure relevant ethnic representation of our sample, which is important in a country like BiH given that the three dominant ethnic groups were not equally exposed to the conflict (Efendic, Kovac and Shapiro 2022), we surveyed students in three major cities across BiH, which are predominantly represented by the three main ethnic groups: University of Mostar, Faculty of Economics (predominantly attended by ethnic Croats), University of Sarajevo, School of Economics and Business (predominantly attended by ethnic Bosniaks) and University of East Sarajevo, Faculty of Economics Pale (predominantly attended by ethnic Serbs). Overall, our sample included 46 percent of Bosniaks, 23 percent of Serbs and 25 percent of ethnic Croats. Just two students declared themselves as belonging to neither of the three dominant ethnic groups, while 7 completely refused to answer this question. Compared to the BiH's general population consisting of 50 percent Bosniaks, 31 percent Serbs and 15 percent Croats according to the 2013 Census, Serbs are thus slightly under, while Croats are somewhat overrepresented.

We got in touch with professors from the three universities and asked them to suggest an undergraduate group that is most likely to include future entrepreneurs based on the courses they chose to study. We conducted the experiments in person on the number of participants who showed up for class that day. All students agreed to take the survey and no candidate withdrew from the study. At the beginning, participants signed the consent forms, were thanked for their participation and provided with the necessary instructions. It was made clear to the subjects that their participation was fully voluntary, that they could withdraw from the study at any point without having to provide a reason and that their privacy and anonymity was guaranteed. No personal information was saved. Random assignment of students to the control and treatment groups ensured that whatever individuals differences they might have (such as abilities, attitudes and values) were controlled for. Upon completion, participants were debriefed and thanked. Most importantly, it was made clear that the article they read (see below) was made up for the purpose of this study and completely fictional.

In the treatment condition, people were primed with threats of a new war by first reading an excerpt from a fictional article that was developed for the purpose of this analysis. All institutions and persons were completely made up and the full text can be seen is Appendix 2.

To make this even more trustworthy and in line with Dunn and Schweitzer (2005), we used different fonts and formats for the two questionnaires and adjusted the instructions given to respondents stating that they were pooled by two different researchers as in Gilad and Kliger (2008). After reading the media report, we also included two questions aimed to blur the focus on war in order to slightly minimise potential experimenter demand effects. A pre-test was conducted

to determine whether it was indeed successful in eliciting the desired emotion of fear and the results are presented in the subsequent section. Subjects then responded to the questions of interest including risk, entrepreneurial intentions, as well as other relevant controls described below. The control group simply answered the questions of interest, without looking at any news. We expected that the salience of existential threat such as mortality and uncertainty would lead students to experience negative affect and ultimately influence their behaviour (Reiss et al. 2021).

4.2. Measurement of main variables

When it comes to measuring risk, there are two main approaches – economic and psychological. The first is based on revealed preferences and captured by asking various lottery questions, either hypothetical or with actual money involved (Eckel and Grossman 2008; Kim and Lee 2014; Schildberg-Hörisch 2018; Kassas, Palma and Porter 2022). The second is based on self-reports obtained through questionnaires (Hertwig, Wulff and Mata 2018). Overall, Frey et al. (2017), Dohmen et al. (2017) and Mata et al. (2018) have found that self-reports are in general better at measuring risk and that that the specific question below offers the best prediction of risky behaviour across contexts:

> How do you see yourself: are you generally a person who is fully prepared to take risks or do you try to avoid taking risks? Please tick a box on the scale, where the value 0 means: 'not at all willing to take risks' and the value 10 means: 'very willing to take risks.'

Entrepreneurial intentions, on the other side, have been shown to provide the best predictive validity of entrepreneurship and to be superior to attitudes, situational or individual characteristics (Krueger, Reilly and Carsrud, 2000).

Consequently, to measure entrepreneurial intentions, a 7-point Likert-type scale with 4 items was used as proposed by Liñán and Chen (2009). Building on Ajzen's theory of planned behaviour, the authors developed a scale that has been shown to generally adequate across cultural environments. The questions were slightly adjusted to correspond to our student sample as in Izquierdo and Buelens (2011). Cronbach's alpha was computed for the four items and revealed good internal consistency of the scale (α=0.895).

We also asked several other questions relevant for entrepreneurship such as gender, parental education, household income and place of living (Kerr, Kerr and Xu 2018). For instance, individuals from wealthy families might be willing to take greater risks simply because they have the financial safety net of the family (Hvide and Panos 2014). While not the direct subject of this investigation, these questions were nonetheless important in order to establish that our experimental randomization was indeed successful and that there were no major differences between our treatment and control groups that could explain the results of our manipulation. There is no variability when it comes to age and education, so these questions were not included.

Finally, it worth mentioning other possible variables that are relevant for entrepreneurship and which might mediate the effect between fear and entrepreneurial intentions. A review of the literature since 2000 conducted by Kerr, Kerr and Xu (2018) identified several potential variables such as openness, entrepreneurial self-efficacy, need for achievement and locus of control. Of these, however, only locus of control qualifies as a potential mediator if one takes into account the criteria developed by Baron and Kenny (1986) and the fact that the emotion of fear is closely tied to feelings of control (Whitson and Galinsky 2008). In short, it refers to the belief that one is able to influence his/her life and is not merely at the mercy of fate and the environment. Hence, we also measured locus of control as part of our sensitivity analysis using the four-item scale developed by Kovaleva (2012). Unfortunately, however, the scale turned out to have a rather poor internal consistency (α=0.376). Descriptive statistics of all variables used in our investigation are provided in Table 1.

5. Results

5.1. Results of the pilot study

Before conducting the actual study, we ran a pilot in order to test whether our chosen method described above was indeed successful in inducing fear. During the first weeks of April 2022, a total of 71 undergraduate students in economics were randomly assigned to the control and treatment group. In the control group, students (n=34) filled out The Discrete Emotions Questionnaire developed by Harmon-Jones, Bastian and Harmon-Jones (2016). In the treatment group, students (n=37) first read the article about the alleged threat of a new war in BiH described above before filling out the questionnaire inquiring about their current state of emotions. The students who first read about the possible breakout of a new war reported significant higher levels of fear (M=4.52, SD=0.24)

Table 1. Descriptive statistics of variables used in the empirical investigation

Variable	Explanation of the variables	Number of observations	Mean
treatment	Dummy variable designating whether participants were exposed to threats of a new war by first reading the fictional media report before filling out the questionnaire: treatment=0 if belonging to the control group; treatment=1 if belonging to the treatment group	146	0.49
genrisk	Self-reported willingness to take general risks from 0- not at all willing to take risks to 10-very willing to take risks	145	6.28
entinentions	Four-item self-reported measure assessing to what extent students express entrepreneurial intentions from 1-not at all to 7-completely	146	6.72
locusofcontrol	Four-item self-reported measure assessing to what extent students believe that they are able to influence their lives on a 5-point scale with higher values indicating belief in greater control	146	3.83
gender	Gender: male=1; female=0	146	0.31
urban	Type of area: urban=1; rural=0	146	0.76
houseincome	One-item measures asking students which phrase comes closest to their feelings about their household's income these days from 0-finding it very difficult on present income to 4- living comfortably on present income	146	3.55
parentaleduc	Highest level of education attained by parents from 1- none to 6-PhD	146	3.61
bosniak	Ethnic identity: Bosniak=1; Croat=0; Serb=0; Others=0	139	0.48
serb	Ethnic identity: Serb=1; Bosniak=0; Croat=0; Others=0	139	0.24
croat	Ethnic identity: Croat=1; Bosniak=0; Serb=0; Others=0	139	0.26

Table 2. Results for SEM estimates for *genrisk*

Direct effects	Coeff.	SE	Z	P>|z|	95% CI	
Path c (*treatment* on *entinentions*)	-0.007	0.235	-0.03	0.976	-0.468	0.453
Path b (*genrisk* on entinentions)	0.153	0.060	2.56	0.010	0.036	0.269
Path a (*treatment* on *genrsik*)	-1.120	0.314	-3.56	0.000	-1.736	-0.504

than the control group (M=1.86, SD=0.16), t(69)=-9.04, p=0.000. We were thus able to conclude that our manipulation was indeed effective in inducing fear and proceeded to our main study. Unfortunately, it also induced other emotions such as anger and sadness, which is a limitation of the study discussed at the end.

5.2. Results of The Main Empirical Analysis

We begin our empirical analysis with the first conventional step in which we test whether our randomisation was successful by conducting a *t-test* of our control variables i.e. exploring the equality of the means of our treatment and control sample. The obtained results indicate that we do not have enough evidence to reject the null hypothesis that there is no statistically significant difference between our control and treatment groups when it comes to gender (p=0.44), household income (p=0.14), area of living (p=0.38) and parental education (p=0.98). Consequently, we are provided with enough evidence to conclude that our randomisation was indeed successful.

Next, we begin by testing the direct effects using the *sem* command in STATA. First of all, we find no direct effect of our independent variable (*treatment*) on the dependent variable (*entintentions*) (p=0.976) and thus do not have enough evidence to support hypothesis 1a. However, as shown in Table 2, we find a significant negative direct effect of *treatment* on

Table 3. Significance testing of indirect effect of treatment on entrepreneurial intentions through general risk

Estimates	Sobel	Monte Carlo
Indirect effect	-0.171	-0.177
SE	0.082	0.090
Z	-2.081	-1.974
P>|z|	0.037	0.048
CI	-0.032 , -0.010	-0.400 , -0.047

genrisk (*a*=-1.12; p=0.000), as well as *genrisk* on *entintentions* (*b*=0.153; p=0.010). However, according to Zhao, Lynch and Chen (2010), mediation is actually measured by the existence and size of the indirect effect (a x b), not by the lack of the direct effect, meaning that there is no need to identify a statistically significant direct effect to establish mediation.

Consequently, we estimate the indirect effect using the procedure put forward by Mehmetoglu (2018) and find that there is indeed a negative and significant indirect effect (*axb*=-0.255; p=0.037; CI [-0.495, -0.015]). The effect is statistically significant when considering the Sobel, as well as Monte Carlo test (see Table 3). Our finding remains robust even when we use the bootstrapping procedure proposed in SPSS as proposed by Hayes (2018). Concretely, we demonstrate that threats of a new war lower students' entrepreneurial intentions by making them more risk averse.

Further, determining the effect size of our mediation, Kenny (2016) suggests to examine completely standardised coefficients for dichotomous independent variables, as is the case in our analysis. Our standardised effect size is -0.061 (p=0.031), which points to a medium-sized effect.

Finally, since we have no direct effect (path *c*), but a mediated indirect effect of *axb*, according to the criteria established by Zhao, Lynch and Chen (2010), we have indirect-only mediation, which also mean that it is unlikely that we have another omitted mediator. Consequently, to test for the robustness of this finding, we ran a separate model between threats of a new war and entrepreneurial intentions, but with locus of control as a potential mediator for reasons described above, but find neither a statistically significant direct (p=0.553) nor indirect effect (p=0.675).

6. Limitations of The Study

The main limitation of our empirical analysis pertains to a highly selective sample, as well as our chosen method to induce the desired emotion. The fact that we only included business students raises questions about the generalisability of our results and should be extended to include a broader population in future research. Further, and as discussed in the methodology section, we developed a fictional article reporting the possibility of a new conflict in BiH with the aim of eliciting fear. Our pilot study revealed that it was indeed successful in triggering the desired emotion. However, additional *t-tests*, also revealed that it made the treatment groups both angrier and sadder than the control group. Thus, we cannot definitively say whether our observed effects were driven by fear, or whether their lack was due to the fact that some students experienced fear, while others felt anger. As previously noted, this is relevant since the various negative emotions are not the same when it comes to processing information and making decisions (Dunn and Schweitzer 2005; Whitson and Galinsky 2008; Cacciotti and Hayton 2015; Erhardt et al. 2021; Kassas, Palma and Porter 2022). Future research could therefore use a method that exclusively triggers fearful emotions as suggested by Hewig et al. (2005) and see whether it leads to different results. However, since our manipulation decreased risk-willingness, we have at least some prove that the effect was indeed driven by fear and not another negative emotion, since anger would have made respondents more risk-seeking (Lerner and Keltner 2001). Still, the question remains whether any stimulus able to induce fear without specifically mentioning the war would ultimately alter the propensity to take risks and produce similar results. The inclusion of a third treatment group (non war-related article eliciting fear) in future research would help answer the question whether our observed effects are indeed driven by threats of a new war and not just fear.

With regards to our finding that threats of a new war had no direct effect on students' entrepreneurial intentions, it is worth noting that the objective probability of a new war in BiH is impossible to calculate and thus primarily dependent on subjective assessments. So, whether people decide to take risks or not depends on whether it can be calculated or not, as

well as the extent to which the outcome is under their control and belief in their abilities (Macko and Tyszka 2009). As a result, students might express a willingness to start their own business simply because they overestimated the chance of their future success due to higher self-confidence of self-efficacy. Future research should therefore explore whether the effect is moderated by other variables relevant for entrepreneurship such as entrepreneurial efficacy and need for achievement (Kerr, Kerr and Xu 2018).

The timing of measuring risk has also been shown to affect its respective level. For instance, a recent study conducted by Kassas, Palma and Porter (2022) has shown that induced emotions in the laboratory can wane quickly, even within a minute, which is particularly relevant since we were exploring temporary states of fear (Cacciotti and Hayton. 2015). Consequently, the authors urge researchers to measure risk immediately after the manipulation, which is exactly what we did. Aside from two brief questions following the fictional media article, we skipped any intermediate task and proceeded right to the relevant questions. Indeed, the questions concerning risk were asked first. However, it is plausible that, by the time respondents reached the questions about entrepreneurial intentions, the emotional effect of our article was diluted, which could explain the direct effect of fear on risk, but not on students' entrepreneurial intentions.

Concerning our finding that threats of a new war impact students' risk attitudes, one could object to the proposed measure of risk. Overall, risk is notoriously difficult to capture as has already been discussed. As noted by Koudstaal, Sloof and Van Praag (2016), there is more to risk and uncertainty than risk aversion alone as it encompasses a mixture of what economists refer to as risk, loss and uncertainty aversion. Our finding that threats of a new war impact students' risk attitudes is based on questionnaires and self-reported data, hence it is not possible to say whether and how they translate into actual economic behaviour (Cesarini et al. 2010). Another open question is the duration of our observed effect, although Lerner et al. (2003) found that it can last for months. Nevertheless, a longitudinal study of our sample would provide important information on how long elevated levels of risk aversion last and which real-life decisions are actually affected by it.

Finally, a larger sample size and longitudinal data would be needed to establish whether there is indeed a significant difference when it comes to the effect that fears of a new conflict have on the three main ethnic groups. This is particularly relevant since the effect of fear depends on the environment and context in which a particular individual is living (Cacciotti and Hayton, 2015) and which is arguably not the same when it comes to BiH's different ethnic groups.

7. Conclusion

Wars and the adverse consequences to which they lead present a highly relevant prism through which economic outcomes can be analysed and understood. Here, we took another step and explored how threats of a new conflict impact those individuals that were born after the Bosnian War, investigating whether these have concrete economic consequences observed through individual entrepreneurial aspirations. We rely on primary data from a controlled experiment and use a Structural Equation Model. What we find is that threats of a new war lower students' entrepreneurial intentions by making them less willing to take risks. As a result, we showed that warmongering has concrete consequences and thus can no longer be dismissed as just empty rhetoric. While the prospect of a new war and instability on such a grand scale might be exaggerated in probabilistic terms, it is nevertheless clear that it exhibits a strong influence on people.

Although our experiment is based on a fictional article specifically developed for the purpose of this study with the aim of inducing the desired emotion, it was nevertheless designed to be as close as possible to real-life media reports that citizens are regularly exposed to. One might argue that threats of a new war would impact risk-willingness and entrepreneurial intentions in any other country and that might indeed be the case. However, as noted in the introduction, BiH is specific in a way that these threats are a regular occurrence and thus more consequential, particularly since their frequency has increased in recent years. Nevertheless, a few additional points should be made:

First of all, we find no direct effect of threats of a new war on students' entrepreneurial intentions. As a possible explanation, it is plausible that business students — by virtue of choosing this field of study — have such strong preferences to one day become entrepreneurs that they remain unaffected by such negative stimuli. Put simply, the selection process has been done before they entered their studies. As Krueger, Reilly and Carsrud (2000) have noted, much of our behaviour is planned and the decisions to become an entrepreneur seems to be a good example of this. If so, this would be an encouraging sign for a country like BiH, as it shows that these intentions cannot be affected by situational stimuli.

Nevertheless, threats of a new war do impact entrepreneurial intentions indirectly by making students

less willing to take risks, which is the main contribution of our study. Future research should explore how this aversion to take risks translates into other domains of economic decision-making. For instance, it would be interesting to investigate whether it could help explain the underdevelopment of BiH's stock market and preference for jobs in the public sector, as well as the absence of public protests in the country. Another interesting question to be explored is how news of a possible new conflict would affect other, non-business-related students that do not a priori have a strong preference to become entrepreneurs. Would we observe the same effect amongst law or electrical engineering students considering whether to one day set up their own law firms or launch a start-up? These are promising avenues for future research.

Thirdly, it is possible that fears of a new war do not equally affect the three ethnic groups. While such threats seem to have no effect on entrepreneurial intentions of Serb and Croat students, they approach a statistically significant effect when it comes to Bosniak students. Given that many Croat citizens have EU citizenship, while many Serb citizens have Serbian citizenship, they could more easily become entrepreneurs in the neighbouring countries regardless of what is actually happening in BiH. Another study limited to Bosniaks and conducted on a greater sample would be needed to test whether fears of a new conflict have detrimental economic consequences for the country's dominant ethnic group, which would be an important finding in itself.

Finally, there a few important consequences and proposals that emerge from our findings. The International Community should be more careful in dismissing warmongering as just empty rhetoric and become less lenient towards politicians that jeopardise peace, even if it is just declaratively. Concerning the educational sector, particularly in business schools, a greater emphasis should be put on the importance of emotions for entrepreneurship. Amongst other things, students should be made aware that their economic decision-making is not impervious to negative emotions and understand that the flow of information to which they are exposed on a daily basis impacts their risk-taking behaviour. Lastly, the media also has a particularly important role to play given that the psychological costs of increased fear, anxiety and stress are significant and might even exceed the physical harm as previously discussed. While the triggering of negative emotions is likely to increase readership, web traffic and revenues, they should nevertheless understand that their negative reporting has real-life economic consequences impeding risk-taking, which ultimately hurts the whole of society.

Disclosure Statement

The author reports there are no competing interests to declare.

References

Ali, M., Khan, K., and Saeed Meo, M. 2020. Trust in Post-Conflict Life: Evidence from a Conflict Zone in Pakistan. *Journal of Public Affairs*: e2403.

Bar-Tal, D. 2007. Sociopsychological Foundations of Intractable Conflicts. *American Behavioral Scientist* 50 (11): 1430–53.

Baron, R. A. 2008. The Role of Affect in the Entrepreneurial Process. *Academy of Management Review* 33 (2): 328–40.

Baron, R. M. and Kenny. D. A. 1986. The Moderator–Mediator Variable Distinction in Social Psychological Research: Conceptual, Strategic, and Statistical Considerations. *Journal of Personality and Social Psychology* 51 (6): 1173–82

Bechara, A. and Damasio, A. R. 2005. The Somatic Marker Hypothesis: A Neural Theory of Economic Decision. *Games and Economic Behavior* 52 (2): 336–72.

Bellows, J. and Miguel, E. 2009. War and Local Collective Action in Sierra Leone. *Journal of Public Economics* 93 (11-12): 1144–57.

Bellucci, D., Fuochi, G., and Conzo, P. 2020. Childhood Exposure to the Second World War and Financial Risk Taking in Adult Life. *Journal of Economic Psychology* 79 (August): 102196.

Brown, R., Montalva, V., Thomas, D., and Velásquez, A.. 2019. Impact of Violent Crime on Risk Aversion: Evidence from the Mexican Drug War. *The Review of Economics and Statistics* 101 (5): 892–904.

Bucciol, A. and Zarri, L. 2015. The Shadow of the Past: Financial Risk Taking and Negative Life Events. *Journal of Economic Psychology* 48 (June): 1–16.

Cacciotti, G. and Hayton. J. C. 2015. Fear and Entrepreneurship: A Review and Research Agenda. *International Journal of Management Reviews* 17 (2): 165–90.

Cesarini, D., Johannesson, M., Lichtenstein, P., Sandewall, Ö., and Wallace, B. 2010. Genetic Variation in Financial Decision-Making. *The Journal of Finance* 65 (5): 1725–54.

Conzo, P, and Salustri, F. 2019. A War Is Forever: The Long-Run Effects of Early Exposure to World War II on Trust. *European Economic Review* 120 (November): 103313

Cramer, J. S., Hartog, J., Jonker, N., and Van Praag, C. M. 2002. Low Risk Aversion Encourages the Choice for

Entrepreneurship: An Empirical Test of a Truism. *Journal of Economic Behavior & Organization* 48 (1): 29–36.

Dalton, P. S., Nhung, N., and Rüschenpöhler, J. 2020. Worries of the poor: The impact of financial burden on the risk attitudes of micro-entrepreneurs. Journal of Economic Psychology 79: 102198.

Dohmen, T., Falk, A., Golsteyn, B., Huffman, D. and Sunde, U. 2017. Risk Attitudes across the Life Course. *The Economic Journal* 127(605): F95-F116

Dohmen, T., Falk, A., Huffman, D., and Sunde, U. 2012. The Intergenerational Transmission of Risk and Trust Attitudes. *The Review of Economic Studies* 79 (2): 645–677.

Dohmen, T., Falk, A., Huffman, D., Sunde, U., Schupp, J., and Wagner, G. G. 2011. Individual risk attitudes: Measurement, determinants, and behavioral consequences. *Journal of the European Economic Association* 9 (3): 522–50.

Dunn, J. R. and Schweitzer, M. E. 2005. Feeling and Believing: The Influence of Emotion on Trust. *Journal of Personality and Social Psychology* 88 (5): 736–48.

Eckel, C. C. and Grossman, P. J. 2008. Forecasting Risk Attitudes: An Experimental Study Using Actual and Forecast Gamble Choices. *Journal of Economic Behavior & Organization* 68 (1): 1–17.

Efendic, A. 2020. The Post-War Bosnia and Herzegovina: Social Capital and Pro-Social Behaviour. *Acta Oeconomica* 70 (1): 63–81.

Efendic, A., Kovač, D. and Shapiro, J. N. 2022. Exposure to Conflict, Migrations and Long-run Education and Income Inequality: Evidence from Bosnia and Herzegovina. *Defence and Peace Economics*: 1–15.

Efendic, A., Mickiewicz, T., and Rebmann, A. 2015. Growth Aspirations and Social Capital: Young Firms in a Post-Conflict Environment. *International Small Business Journal: Researching Entrepreneurship* 33 (5): 537–561.

Efendic, A. and Pugh, G. 2018. The Effect of Ethnic Diversity on Income – an Empirical Investigation Using Survey Data from a Post-Conflict Environment. *Economics: The Open-Access, Open-Assessment E-Journal*.

Erhardt, J., Freitag, M., Filsinger, M., and Wamsler, S. 2021. The Emotional Foundations of Political Support: How Fear and Anger Affect Trust in the Government in Times of the Covid-19 Pandemic. *Swiss Political Science Review* 27 (2): 339–52.

European Commission. 2021. *Commission Staff Working Document. Bosnia and Herzegovina 2021 Report*. Strasbourg: European Commission.

Frey, R., Pedroni, A., Mata, R., Rieskamp, J., and Hertwig, R. 2017. Risk Preference Shares the Psychometric Structure of Major Psychological Traits. *Science Advances* 3 (10): e1701381.

Gilad, D. and Kliger, D. 2008. Priming the Risk Attitudes of Professionals in Financial Decision Making. *Review of Finance* 12 (3): 567–86.

Halilovich, H. 2021. *25 Years after Srebrenica: "Local" Genocide in a Global Context*. In *Bosnian Genocide Denial and Triumphalism: Origins, Impact and Prevention*, edited by Turčalo, S. and Karčić, H. 115–25. Sarajevo, Bosnia and Herzegovina: Faculty of Political Science University of Sarajevo.

Halilovich, H., Hasić, J., Karabegović, Dž, Karamehić-Muratović, A., and Oruč, N. 2018. Mapping the Bosnian-Herzegovinian diaspora (BiH migrants in Australia, Austria, Denmark, Germany, Italy, Netherlands, Slovenia, Sweden, Switzerland, and the United States of America): Utilizing the socio-economic potential of the diaspora for development of BiH. *Sarajevo, BiH: International Organization for Migration (IOM)*.

Hanaoka, C., Shigeoka, H., and Watanabe, Y. 2018. Do Risk Preferences Change? Evidence from the Great East Japan Earthquake. *American Economic Journal: Applied Economics* 10 (2): 298–330.

Harmon-Jones, C., Bastian, B., and Harmon-Jones, E. 2016 The Discrete Emotions Questionnaire: A New Tool for Measuring State Self-Reported Emotions. *PLOS ONE* 11(8): e0159915.

Hayes, A. F. 2018. *Introduction to Mediation, Moderation, and Conditional Process Analysis: A Regression-Based Approach*. New York: The Guilford Press.

Hayton, J. C. and Cholakova, M. 2012. The Role of Affect in the Creation and Intentional Pursuit of Entrepreneurial Ideas. *Entrepreneurship Theory and Practice* 36 (1): 41–68.

Hertwig, R., Wulff, D. U., and Mata, R. 2018. Three Gaps and What They May Mean for Risk Preference. *Philosophical Transactions of the Royal Society B: Biological Sciences* 374: 1-10.

Hewig, J., Hagemann, D., Seifert, J., Gollwitzer, M., Naumann, E., and Bartussek, D. 2005. A revised film set for the induction of basic emotions. *Cognition & Emotion* 19: 1095-1109.

Hvide, H. K. and Panos, G. A. 2014. Risk Tolerance and Entrepreneurship. *Journal of Financial Economics* 111 (1): 200–223.

Iacobucci, D., Saldanha, N., and Deng, X. 2007. A Meditation on Mediation: Evidence That Structural Equations Models Perform Better than Regressions. Journal of Consumer Psychology 17 (2): 139–53.

IMF. 1998. *IMF Staff Country Report No.98/69: Bosnia and Herzegovina: Selected Issues*. Washington D.C.: International Monetary Fund Publication Services.

Izquierdo, E. and Buelens, M. 2011. Competing Models of Entrepreneurial Intentions: The Influence of Entrepreneurial Self-Efficacy and Attitudes. *International Journal of Entrepreneurship and Small Business* 13 (1): 75.

Jakiela, P. and Ozier, O. 2019. The Impact of Violence on Individual Risk Preferences: Evidence from a Natural Experiment. *The Review of Economics and Statistics* 101 (3): 547–559.

Joseph, D. L., Chan, M. Y., Heintzelman, S. J., Tay, L., Diener, E., and Scotney, V. S. 2020. The Manipulation of Affect: A Meta-Analysis of Affect Induction Procedures. *Psychological Bulletin* 146 (4): 355–75.

Kadušić, A. and Suljić, A. 2018. Review of Migration and Demographic Changes: The Case of Bosnia and Herzegovina. *European Journal of Geography* 9 (4): 75–86.

Kahneman, D. 2003. A Perspective on Judgment and Choice: Mapping Bounded Rationality. *American Psychologist* 58 (9): 697–720.

Kassas, B., Palma, M. A., and Porter, M. 2022. Happy to Take Some Risk: Estimating the Effect of Induced Emotions on Risk Preferences. *Journal of Economic Psychology* 91 (August): 102527.

Kenny, D. A. 2016. Mediation http://davidakenny.net/cm/mediate.htm

Kerr, S. P., Kerr, W. R., and Xu, T. 2018. Personality Traits of Entrepreneurs: A Review of Recent Literature. *Foundations and Trends® in Entrepreneurship* 14 (3): 279–356.

Keščeljević, A. and Spruk, R. 2021. Long-Term Effects of Yugoslav War. *Defence and Peace Economics*, November 1–27.

Kijewski, S. and Freitag, M. 2016. Civil War and the Formation of Social Trust in Kosovo. *Journal of Conflict Resolution* 62 (4): 717–42.

Kim, YI. and Lee, J. 2014. The Long-Run Impact of a Traumatic Experience on Risk Aversion. *Journal of Economic Behavior and Organization* 108 (December): 174–86.

Koudstaal, M., Sloof, R., and Van Praag, M. 2016. Risk, Uncertainty, and Entrepreneurship: Evidence from a Lab-in-the-Field Experiment. *Management Science* 62 (10): 2897-2915.

Kovaleva, A. 2012. The IE-4: Construction and Validation of a Short Scale for the Assessment of Locus of Control. *GESIS - Leibniz-Institut für Sozialwissenschaften*.

Krueger, N. F., Reilly, M. D., and Carsrud, A. L. 2000. Competing Models of Entrepreneurial Intentions. *Journal of Business Venturing* 15 (5-6): 411–32.

Lawrence, A., Clark, L., Labuzetta, J. N., Sahakian, B., and Vyakarnum, S. 2008. The Innovative Brain. *Nature* 456 (7219): 168–69.

Leonard, M., Damjanovic, B., Simic, G., and Marshall, G. A. Peace Building in Bosnia and Herzegovina: Effects of Ingroup Identification, Outgroup Trust and Intergroup Forgiveness on Intergroup Contact. *Peace and Conflict Studies* 21(1).

Lerner, J. S., Gonzalez, R. M., Small, D. A., and Fischhoff, B. 2003. Effects of Fear and Anger on Perceived Risks of Terrorism: A National Field Experiment. *Psychological Science* 14 (2): 144–50.

Lerner, J. S. and Keltner, D. 2001. Fear, Anger, and Risk. *Journal of Personality and Social Psychology* 81 (1): 146–59.

Lerner, J. S., Li, Y., Valdesolo, P., and Kassam, K. S. 2015. Emotion and Decision Making. *Annual Review of Psychology* 66 (1): 799–823.

Liñán, F. and Chen, YW. 2009. Development and Cross-Cultural Application of a Specific Instrument to Measure Entrepreneurial Intentions. *Entrepreneurship Theory and Practice* 33 (3): 593–617.

Loewenstein, G. F., Weber, E. U., Hsee, C. K., and Welch, D. 2001. Risk as Feelings. *Psychological Bulletin* 127 (2): 267–86.

Loewenstein, G. F. and Lerner, J. S. 2003. *The Role of Affect in Decision Making*. In *Handbook of Affective Sciences*, edited by Davidson, R. J., Sherer, K. R., and Goldsmith, H. H. 619–42. Oxford University Press.

Macko, A. and Tyszka, T. 2009. Entrepreneurship and Risk Taking. *Applied Psychology* 58 (3): 469–87.

Mata, R., Frey, R., Richter, D., Schupp, J., and Hertwig, R. 2018. Risk Preference: A View from Psychology. *Journal of Economic Perspectives* 32 (2): 155–72.

Mehmetoglu, M. 2018. Medsem: A Stata Package for Statistical Mediation Analysis. *International Journal of Computational Economics and Econometrics* 8 (1): 63.

Metcalfe, R., Powdthavee, N., and Dolan, P. 2011. Destruction and Distress: Using a Quasi-Experiment to Show the Effects of the September 11 Attacks on Mental Well-Being in the United Kingdom. *Economic Journal* 121 (550): F81–103.

Mickiewicz, T. and Rebmann, A. 2020. Entrepreneurship as Trust. *Foundations and Trends® in Entrepreneurship* 16 (3): 244–309.

Mijatović, D.. De-escalate Bosnia and Herzegovina - Before It is Too Late. *EUobserver*. Last modified November 18, 2021. https://euobserver.com/opinion/153535.

Mooren, G. T. M. and Kleber, R. J.. 2001. Review of The Impact of War in Bosnia and Herzegovina. *International Journal of Mental Health* 30 (2): 6–21.

Muminovic, A. and Efendic, A. The long-term effects of war exposure on generalized trust and risk attitudes: evidence from post-conflict Bosnia and Herzegovina. *Southeast European and Black Sea Studies*: 1-18.

Nettelfield, L. J. and Wagner, S. 2015. *Srebrenica in the Aftermath of Genocide*. New York: Cambridge University Press.

Nieß, C. and Biemann, T. 2014. The Role of Risk Propensity in Predicting Self-Employment. *Journal of Applied Psychology* 99 (5): 1000–1009.

OECD. 2021. Bosnia and Herzegovina profile. in *Competitiveness in South East Europe 2021: A Policy Outlook*. Paris: OECD Publishing.

OHR. 62nd report of the High Representative for Implementation of the Peace Agreement on Bosnia and Herzegovina to the Secretary-General. 2022. http://www.ohr.

int/62nd-report-of-the-high-representative-for-implementation-of-the-peace-agreement-on-bosnia-and-herzegovina-to-the-secretary-general-2/.

Parent, G. 2016. Genocide Denial: Perpetuating Victimization and the Cycle of Violence in Bosnia and Herzegovina (BiH). *Genocide Studies and Prevention* 10 (2): 38–58.

Parent, G. 2022. Identity and Trust in Bosnia & Hercegovina: Redrawing Broader Boundaries through Meaningful Experiences. *Europe-Asia Studies*, July, 1–22

Perry, V.. 2018. Frozen, Stalled, Stuck, or Just Muddling Through: The Post-Dayton Frozen Conflict in Bosnia and Herzegovina. *Asia Europe Journal* 17 (1): 107–27.

Pfeifer, S., Singer, S., Šarlija, N., and Peterka, S. O. 2021. Perception of the National Entrepreneurship Conditions – Differences Across Time and Expert Specialization. *South East European Journal of Economics and Business* 16 (1): 1-17.

Potts, M. D., Affholter, J. A., and Harless, S. 2021. Entrepreneurship Factors Among Developed Countries and Emerging Regions. *South East European Journal of Economics and Business* 16(2): 82-100.

Raghunathan, R. and Pham, M. T. 1999. All Negative Moods Are Not Equal: Motivational Influences of Anxiety and Sadness on Decision Making. *Organizational Behavior and Human Decision Processes* 79 (1): 56–77.

Hertwig, R., Wulff, D. U., and Mata, R. 2018. Three Gaps and What They May Mean for Risk Preference. *Philosophical Transactions of the Royal Society B: Biological Sciences* 374 (1766): 20180140.

Reimann, M. and Bechara, A. 2010. The Somatic Marker Framework as a Neurological Theory of Decision-Making: Review, Conceptual Comparisons, and Future Neuroeconomics Research. *Journal of Economic Psychology* 31 (5): 767–76.

Reiss, S., Leen-Thomele, E., Klackl, J., and Jonas, E. 2021. Exploring the Landscape of Psychological Threat: A Cartography of Threats and Threat Responses. *Social and Personality Psychology Compass* 15 (4).

Schildberg-Hörisch, H. 2018. Are Risk Preferences Stable? *Journal of Economic Perspectives* 32 (2): 135–54.

Schwab, G. 2010. *Haunting Legacies: Violent Histories and Transgenerational Trauma*. New York: Columbia University Press, Cop.

Slone, M, and Mann, S. 2016. Effects of War, Terrorism and Armed Conflict on Young Children: A Systematic Review. *Child Psychiatry & Human Development* 47 (6): 950–65.

Slovic, P. 2018. Affect, Reason, Risk and Rationality. *Notas Económicas*, no. 46: 7–15.

Slovic, P., Finucane, M. L., Peters, E., and MacGregor, D. G. 2004. Risk as Analysis and Risk as Feelings: Some Thoughts about Affect, Reason, Risk, and Rationality. *Risk Analysis* 24 (2): 311–22.

Tokaca, M. 2012. *The Bosnian Book of the Dead*. Sarajevo: Research and Documentation Center.

Turčilo, L., Osmić, A., Kapidžić, D., Šadić, S., Žiga, J., and Dudić, A. 2019. *Youth Study Bosnia and Herzegovina 2018/2019*. Berlin: Friedrich-Ebert-Stiftung e. V.

Tversky, A. and Kahneman, D. 1973. Availability: A Heuristic for Judging Frequency and Probability. *Cognitive Psychology* 5 (2): 207–32.

Wake, S., Wormwood, J., and Satpute, A. B. 2020. The Influence of Fear on Risk Taking: A Meta-Analysis. *Cognition and Emotion* 34 (6): 1–17.

Weingarten, E., Chen, O., McAdams, M., Yi, J., Hepler, J., and Albarracín, D. 2016. From Primed Concepts to Action: A Meta-Analysis of the Behavioral Effects of Incidentally Presented Words. *Psychological Bulletin* 142 (5): 472–97.

Welpe, I. M., Spörrle, M., Grichnik, D., Michl, T., and Audretsch, D. B. 2012. Emotions and Opportunities: The Interplay of Opportunity Evaluation, Fear, Joy, and Anger as Antecedent of Entrepreneurial Exploitation. Entrepreneurship *Theory and Practice* 36 (1): 69–96.

Whitt, S. and Wilson, R. K. 2007. The Dictator Game, Fairness and Ethnicity in Postwar Bosnia. *American Journal of Political Science* 51(3): 655-668.

Whitson, J. A. and Galinsky, A. D. 2008. Lacking Control Increases Illusory Pattern Perception. *Science* 322 (5898): 115-117.

Zadra, J. R. and Clore, G. L. 2011. Emotion and perception: the role of affective information. *Wiley Interdisciplinary Reviews: Cognitive Science* 2(6): 676-685.

Zhao, X., Lynch, J. G., and Chen, Q. 2010. Reconsidering Baron and Kenny: Myths and Truths about Mediation Analysis. *Journal of Consumer Research* 37(2): 197-206.

Appendix 1

Methods for Experimentally Inducing Emotions

Since we hypothesise that threats of a new war affect students' intentions by triggering fear, it is worth discussing how these emotions can be induced in the first place, particularly since one cannot experimentally manipulate trauma. Our aim is actually twofold. First, we wish to increase the salience of a possible conflict and as a result its perceived likelihood (Tversky and Kahneman 1973; Kahneman 2003), which has been shown to impact information processing, thoughts and behaviour (Lerner 2003; Hewig et al. 2005; Gilad and Kliger 2008; Weingarten et al. 2016). Secondly, our aim is for the manipulation to trigger fearful emotions, which is something that we test as part of our pilot study described above.

In the social sciences, emotion induction procedures are essential for testing hypotheses and the one proposed in the literature on entrepreneurship is to have subject first read various media excerpts (Hayton and Cholakova 2012; Cacciotti and Hayton 2015). A recent meta-analysis of such procedures conducted by Joseph et al. (2020) has shown that this is indeed an effective method and above average successful in eliciting the desired emotion. Consequently, in exploring whether the threat of a new war affects students' risk attitudes and entrepreneurial intentions, we exposed halve of them to a fictional, yet realistic media article discussing the imminence of a new war, which is presented in more detail in Appendix 2 below.

Appendix 2

Full text of the fictional article developed to induce the desired emotion

"At the beginning of this month, the famous Oslo Centre for Peace Studies published its final report on the state in BiH. The Report was written by a Commission, which consisted of some of the world's leading experts in the fields of international relations, security and humanitarian law.

The experts expressed deep concern with the current situation deeming that the outbreak of a new war in Bosnia and Hercegovina in the following period is quite a real possibility, particularly considering the current events in Ukraine. Furthermore, according to a model developed in cooperation with the Munich Institute of Technology, it is estimated that new conflict would lead to significant human and material losses.

On the occasion of publishing the Report, the Head of the Commission Céline Roux stated the following: 'Even before the War in Ukraine, we saw that things in Bosnia and Herzegovina were moving in the wrong direction. With the current geopolitical situation, it seems that the outbreak of a new war is just a matter of time, whose consequences would be unfathomable.' She thus called upon the mobilisation of all possible efforts, both local and international, in order to prevent a new war in Bosnia and Herzegovina.

What is particularly worrisome is the fact the Oslo Centre for Peace study rightly predicted the War in Ukraine already in July last year, we well as the Syrian Civil War in 2011."

sciendo

South East European Journal of Economics and Business
Volume 18 (2) 2023, 126-139
DOI: 10.2478/jeb-2023-0023

THE INFLUENCE OF WORKING CAPITAL MANAGEMENT ON THE PROFITABILITY OF MANUFACTURING ENTERPRISES - THE CASE OF CROATIA

Milan Stanić, Melita Cita, Marina Stanić Šulentić

Abstract

The aim of this research is to examine the relationship between working capital management and the profitability of Croatian manufacturing enterprises and to provide empirical evidence on the effects of working capital management on the level of profitability of manufacturing enterprises in the Republic of Croatia in the period from 2018 to 2021. The collected data were analyzed through multiple regression analysis, using a panel regression model with random effects. By analyzing panel data, the impact of receivables from customers, inventories, liabilities to suppliers, sales growth and GDP growth on the profitability of Croatian manufacturing companies was examined. The analysis of panel data examined the impact of trade receivables, inventories, payables, sales growth and GDP growth on the profitability of Croatian manufacturing enterprises. The obtained results also suggest that the variables the days sales outstanding, the days inventory outstanding and GDP growth are not statistically significant.

Keywords: *working capital management, profitability, Croatian manufacturing enterprises*

JEL *classification: G32, G39*

Milan Stanić, PhD (corresponding author)
Assistant Professor
University of Slavonski Brod,
The Department of Social Sciences and Humanities, Department of Economics
Adress: Matije Gupca 24
35 000 Slavonski Brod, Croatia
E-mail: mstanic@unisb.hr
ORCID: 0000-0002-6313-7093

Melita Cita, PhD
Senior Lecturer
VERN' University
Croatia
E-mail: melita.cita@vern.hr
ORCID: 0000-0002-5192-3660

Marina Stanić Šulentić, PhD Student Assistant
University of Slavonski Brod,
The Department of Social Sciences and Humanities, Department of Economics
Croatia
E-mail: msulentic@unisb.hr
ORCID: 0000-0002-4878-1817

1. INTRODUCTION

Working capital as a part of current assets is necessary in business in order to cover current liabilities until there is an inflow of cash, respectively, until supplies or services are sold. The main objectives of working capital management are to increase the profitability of the enterprises and to ensure liquidity in order to meet due short-term obligations, and the company should manage working capital by making a compromise between liquidity and profitability. Working capital management should increase the present value of the enterprise (Shin and Soenen 1998; Deloof, 2003), where a reasonable working capital policy will increase profitability and create value for owners (Pham, Nguyen and Nguyen 2020; Prša 2020).

In daily business, it is necessary to have adequate current assets to settle current liabilities, but it is not acceptable to have too much working capital (Uremadu, Egbide and Enyi 2012) because it represents surplus cash that does not bring profit (Chakraborty 2008). Investing in working capital will pay off until its optimal size because then it will positively affect profitability, and after the optimal size is reached, the risk increases and financial difficulties may arise (Milošev 2021; Hernandez et al. 2022).

Smith (1980) was among the first to point out the importance of working capital management due to its effects on the profitability and risk of the enterprise, and accordingly on its value. After him, many other authors appeared who indicated the importance of working capital management.

In relevant studies, the Cash Conversion Cycle is used to measure the efficiency of working capital management, which represents the time when money is tied up in business activities. The Cash Conversion Cycle consists of three basic components, namely: the Days Inventory Outstanding, the Days Sales Outstanding and the Days Payable Outstanding, where the duration of the money conversion cycle is determined by adding the the Days Inventory Outstanding and the Days Sales Outstanding and subtracting the Days Payable Outstanding. In addition to these basic components, there are also some other items of working capital that can significantly affect the effective management of working capital, such as payments received on account or payments in advance. It is necessary to maintain an optimal level between the basic components (Deloof 2003), which implies a balance between risk and business efficiency (Afza and Nazir 2007).

Based on consideration of the interdependence of risk and profitability and according to risk preferences, enterprises are defined as those that implement an aggressive, conservative or moderate working capital management strategy. The characteristics of an aggressive strategy are relatively small investments in current assets, relatively high amounts of short-term financing, higher returns but also the risk (Moyer, McGuigan and Kretlow 2003). In contrast to an aggressive strategy, the characteristics of a conservative strategy are relatively large investments in current assets, relatively small amounts of short-term financing, high net working capital, lower risk and lower return (Moyer, McGuigan and Kretlow 2003). A moderate funding strategy lies between an aggressive and a conservative strategy and includes moderate investments in current assets and moderate short-term borrowing. The macroeconomic environment determines in a way which strategy the enterprise will use. If the macroeconomic environment is stable, enterprises are more inclined to apply an aggressive strategy, while enterprises that operate in an uncertain market environment are more likely to apply a conservative strategy (Baveld 2012).

The influence of working capital on the profitability of companies is more pronounced in times of crisis (Enqvist, Graham and Nikkinen 2014), which confirms the research of Fernandez-Lopez, Rodeiro-Pazos and Rey-Ares (2020), where it is stated that the most important studies (over 60%) on this topic are published after 2010.

Various studies have analyzed the relationship between working capital management and profitability of enterprises of different sizes, in different economies, using different approaches and samples from many sectors or industries The focus of research on working capital management and its impact on profitability was small and medium-sized enterprises (Peel and Wilson 1996; Garcia-Teruel and Martinez-Solano 2007; Gul et al. 2013; Afrifa 2016; Aytac et al. 2020; Prša 2020 ; Fernandez-Lopez, Rodeiro-Pazos and Rey-Ares 2020; Arnaldi et al. 2021; Hernandez et al. 2022 and others); companies listed on the stock exchanges (Opler et al. 1999; Perković 2012; Uremadu, Egbide and Enyi 2012; Iqbal and Zhuquan 2015; Mathuva 2015; Utia, Dewi and Sutisna 2018; Olaoye, Adekanbi and Oluwadare 2019; Pham, Nguyen and Nguyen 2020 ; Azzaddine and Ibrahim 2021 and others) or companies that are not listed on the stock exchange (Goncalvez, Gaio and Robles 2018).

An analysis of the literature, which comprises research that includes the analysis of working capital management in certain industries, diagnosed that the most prevalent is the manufacturing industry (Chakraborty 2008; Perković 2012; Uremadu, Egbide, and Enyi 2012; Almazari 2014; Jakpar et al. 2017; Iqbal et al. 2017; Utia, Dewi, and Sutisna 2018; Kafeel Ali et al. 2020; Aytac et al. 2020; Prša 2020; Amponsah-Kwatiah and Asiamah 2020; Hossain 2020; Golas 2020; Pham, Nguyen, and Nguyen 2020; Olaoye and Okunade 2020; Arnaldi et al. 2021; Hameer, Ramakrishnan and Gillani 2021; Fejzullachi and Govori 2021; Aldubhani et al. 2022; Kušter 2022 and others).

In the Republic of Croatia, as in the countries of the region, there is a small number of publicly disclosed papers and researches on the impact of working capital management on the level of profitability of enterprises in the manufacturing industry. A review of the scientific literature found a paper by Perković (2012) on the influence of working capital on the profitability of manufacturing enterprises in Bosnia and Herzegovina, where it was determined that the money conversion cycle, days sales outstanding, days

inventory outstanding and days payable outstanding negatively affect profitability measured by gross operating profit. Kušter (2022) on a sample of 79 enterprises from the manufacturing sector that were listed on the Belgrade Stock Exchange established a negative and statistically significant correlation between the days inventory outstanding, days sales outstanding and the days payable outstanding with the profitability indicator measured by return on assets (ROA). In the case of manufacturing enterprises in Kosovo, Fejzullachu, and Govori (2021) found a positive correlation between the days sales outstanding, days inventory outstanding and revenue growth, while a negative correlation was found between days payable outstanding and profitability indicator measured by return on assets (ROA). In Croatia, Prša (2020) analyzed the influence of working capital determinants on the profitability of small and medium-sized manufacturing enterprises, where the negative influence of inventories and payables on the level of profitability and the positive influence of the sales growth variable on profitability were confirmed, while the effect of receivables and GDP on profitability measured by return on assets (ROA) was not statistically significant.

Scientists Korent and Orsag recently gave their contribution to the scientific literature on the impact of working capital management on the profitability of Croatian enterprises from different industries. In their study of the impact of working capital management on the profitability of Croatian software enterprises, they pointed out the existence of a significant concave quadratic relationship between working capital management and profitability. They recommend the calculation of the optimal level of net working capital in relation to the total revenues of the company, where net working capital below the optimal level increases profitability, and net working capital above the optimal level causes a decrease in the profitability of the enterprise. When the net working capital is below the optimum, a conservative strategy will prevail, so an increase in the net working capital will lead to an increase in the profitability of the enterprise. An aggressive strategy will prevail at levels of net working capital above optimal, so an increase in net working capital will lead to lower profitability (Korent and Orsag 2018). They also determined a significant convex quadratic dependence between working capital management and profitability in Croatian enterprises classified in the Computer programming, consulting and related activities and recommend that enterprises, in order to increase profitability, be as close as possible to the optimal level of net working capital and avoid deviations from it (Korent and Orsag 2023).

A contribution to research in working capital management is the research conducted by Korent (2021), where the determinants of the money conversion cycle in Croatian enterprises from the processing, trading and information and communication activities for the period 2008 - 2015 are investigated, and where the emphasis is on examining the significance and the speed of the adjustment process of the money conversion cycle of the observed enterprises by activity and company size criterion (small, medium and large companies). The results of the research show that enterprises are gradually adjusting their current money conversion cycles to their targets due to adjustment costs, that this adjustment is slow and that it differs by industry and size of the enterprise.

In research on the identification of the determinants of working capital management in Croatian enterprises from the processing, trading and information and communication activities, Korent and Orsag (2022) conclude that profitability, financial constraints and working capital have a positive effect on working capital cycles and thus support a conservative working capital strategy. In contrast, the size, growth, fixed investment, annual GDP growth and industrial indicators that were significantly negative ratios of the money conversion cycle and the net trade cycle support an aggressive working capital strategy. Based on the research, the authors recommend that the analyzed enterprises use an aggressive strategy for managing working capital.

The manufacturing industry is important for creating added value and employment in the economy, for increasing the productivity of other industries, and thus for the growth of the economy and increasing its competitiveness. It is characteristic of the Croatian manufacturing industry that in the 1990s it was affected by war events, poorly implemented privatization, inadequate industrial policy and late inclusion in European and world economic integration.

The manufacturing industry is one of the most important sectors in the Croatian economy. It employs the largest number of employees (about 25%) and, along with trade, is the activity that generates the largest revenues, which make up a quarter of the income of the real sector, has the largest share in total exports (more than 80%) and contributes the most to the growth of the gross domestic product.

If we evaluate the Croatian manufacturing industry with the help of the OECD's division of industries according to technological complexity, it is characterized by the dominance of low-tech industries, where the food industry and low-medium-tech industries are especially emphasized, while high-tech industries are less represented.

The share of the Croatian manufacturing industry in the gross domestic product continuously decreased in the period from 1995 to 2021. In 1995, it amounted to 18% of the gross domestic product, in 2008 it was 15.1% of the gross domestic product, and in 2021 it was 11%. According to the data of the World Bank for the year 2021, the share of manufacturing enterprises in the gross added value in the countries of the European Union amounted to 15% in 2021, while some countries such as Ireland had a share of 35%, Germany 19% or Slovenia 20% in the gross domestic product.

The greater contribution of the manufacturing sector to the total employment of the economy than the contribution of the gross domestic product indicates the labor intensity of the Croatian manufacturing industry. In contrast to the Croatian manufacturing sector, the share of industry in the total employment decreased in the European Union countries in the past period, while its added value in the gross domestic product increased, which means that structural changes took place within the industry using knowledge and technologies of intensive activities. Investing in research and development of new technologies has a significant impact on the development of the manufacturing industry because industries with a higher technological intensity create greater added value in the economy. The role of the state is also important here, which should significantly increase investments in research and development and which, according to Eurostat data, amounted to EUR 100 per person in Croatia in 2021, while in the countries of the European Union it was EUR 250 per person and in, for example Germany EUR 470 per person or even 700 EUR per person in Norway.

On the manufacturing industry in Croatia, there are studies on, for example, its competitiveness and structural features (Rašić Bakarić and Vizek 2010; Prester and Rašić Bakarić 2017), factors affecting the level of profit (Škuflić, Mlinarić, and Družić 2016), on export competitiveness (Stojčić , Bečić and Vojinić 2012; Stojčić 2020), on the determinants of the profitability of Croatian manufacturing enterprises (Pervan and Mlikota 2013; Pervan, Pervan, and Ćurak 2019; Raguž Krištić, Družić, and Logarušić 2020), on working capital management (Prša 2020; Korent 2021; Korent and Orsag 2022). As the topic of this paper is working capital, in the following text a more detailed description of the research is provided along with the determinants of working capital in manufacturing enterprises in Croatia and in the world.

In order to study the relationship between the determinants of working capital (days inventory outstanding, days sales outstanding and the days payable outstanding) and profitability, all large Croatian manufacturing enterprises that operated in the period 2018-2021 were taken as a sample.

The paper is structured in such a way that after the introduction, the second chapter presents a literature review and research hypotheses on the determinants of working capital. The third chapter states the applied research methodology, as well as the results of the empirical research. And in the last part of the paper, the conclusion, the obtained results are synthesized and recommendations for further research are given.

The following is a review of the literature that studied the influence of working capital determinants on the profitability of enterprises from the manufacturing industry in order to propose research hypotheses.

2. Literature review and setting up hypotheses

Various studies have analyzed the correlation between the determinants of working capital and the profitability of the enterprises. However, the results are different and contradictory because they are influenced by the market in which enterprises operate, the size of the enterprise, the use of different variables for the correlation analysis, as well as different methodologies such as linear regression, correlation and multiple regression.

2.1. Business performance measurement

The scientific literature that deals with the measurement of business performance provides different conceptualizations of business performance, but does not provide an unequivocal definition of which measures would be the best in determining business performance. Business performance was observed from different academic disciplines such as accounting, entrepreneurship, strategic management and human resources management, which resulted in a multitude of indicators, either quantitative or qualitative. The analysis of business performance was traditionally based on the observation of various financial indicators, whereby non-financial indicators such as market share, customer satisfaction, achievement of strategic goals and similar were neglected.

In their research, Venkatraman and Ramanujam (1986) apply a two-dimensional classification scheme that provides different approaches to the measurement of performance in strategic research. The first dimension refers to the use of financial versus operational criteria, while the second focuses on two alternative data sources (primary versus secondary). In

addition to financial criteria that refer to the entire financial operation based on data from accounting and that measure economic performance such as increase in sales and profitability, operational criteria such as customer and employee satisfaction, product quality, market share or new product development also affect the increase in financial performance.

Using operational criteria in their research, Gonzalez - Benito and Gonzales Benito (2005) suggest their use in the field of marketing and management, considering that they are more flexible and reliable than financial criteria, that they can be used in the absence of financial criteria (Dess and Robinson 1984) and, according to Ittner and Larcker (2003), most enterprises failed to connect the effects of customer loyalty or employee satisfaction with the financial result achieved.

The modern information age requires enterprises to create future value by investing in customers, employees, business processes, technology and innovation (Kaplan and Norton 1992). New methods that supplement financial data of past performance with factors of future success with the help of set goals and strategies such as the Balanced Scorecard method or Value Based Management indicators that are better for monitoring the profitability of enterprises on the capital market appear in the research. Research by Debuska and Crabtree (2006) and Hoque (2014), which showed conflicting results in assessing the effectiveness of the Balanced Scorecard method, showed that it is necessary to continue conducting empirical research in order to determine the effectiveness of the methods.

Accounting performance measures due to the use of different accounting policies and a number of management objectives limit the reliability of accounting information as a reliable indicator of business performance. Despite their potential shortcomings, they provide a valuable source of information on business performance and provide a basis for management and business decision making (Brozović, Sever Mališ, and Žager 2019). In terms of financial analysis, the profitability ratio is important for a complete business analysis (Subramanyam and Wild 2009), and the most commonly used indicators are return on assets (ROA), return on capital (ROE), net profit margin (Žager et al. 2017), EBIT and EBITDA (Brozović, Sever Mališ, and Žager 2019).

The scientific literature does not provide an unequivocal definition of which measures would be more appropriate when determining the level of business performance of an enterprise. Ittner and Larcker (2003), Ogunsiji and Ladanu (2017) and Korent (2021) believe that business performance should be observed using financial and non-financial data, Korent and Orsag (2018) and Korent and Orsag (2023) recommend the use of a quadratic relationship in research, while Bukvić (2016) states that no measure of enterprise performance is ideal.

In the researches, many substitute indicators were used to measure the profitability of the enterprise, such as return on assets ROA, return on equity ROE (Wang 2002), return on capital employed ROCE (Edi et al. 2010; Hogerle et al. 2020) and cash conversion cycle (Perković 2012; Banos-Caballero, Garcia-Teruel and Martinez Solano 2014; Golas 2020; Aytac et al. 2020; Olaoye and Okunade 2020).

The dependent variable that is most often used to measure profitability is return on assets ROA (Garcia-Teruel and Martinez-Solano 2007; Uremadu, Egbide, and Enyi 2012; Gul et al. 2013; Enqvist, Graham, and Nikkinen 2014; Iqbal, et al. 2017; Pham, Nguyen, and Nguyen 2020; Amponsah-Kwatiah and Asiamah 2020; Fernandez-Lopez, Rodeiro-Pazos, and Rey-Ares 2020; Hossain 2020; Golas 2020; Kafeel Ali et al. 2020; Hameer, Ramakrishnan and Gillani 2021; Kušter 2022 and others). Different variables are used to calculate return on assets (ROA) indicator. For example, Pham, Nguyen and Nguyen (2020) and Fejzullahu and Govori (2020) calculate return on assets ROA as the ratio of net profit to total assets, while Fernandez-Lopez, Rodeiro-Pazos and Rey-Ares (2020) and Prša (2020) calculated it as the ratio of earnings before interest and taxes (EBIT) to total assets.

In this research, as a measure of profitability was used the rate of return on assets (ROA), which shows how much profit is made from used assets, regardless of how much was financed from own sources and how much from other sources. Operating profit or earnings before interest and taxes (EBIT) was used in the calculation in order to avoid the impact of taxes on the operating result and to better compare indicators between countries.

Korent and Orsag (2018) emphasize that a problem of bias may arise because different variables are used in working capital testing models, but also that deliberately avoiding a certain variable can affect the result.

2.2. Days inventory outstanding and the profitability of manufacturing enterprises

The days inventory outstanding shows the average time from the ordered material to the further sale to the customer, respectively the time the goods are kept in the warehouse, where it is desirable to keep the stock as short as possible. The goal of

inventory management is to ensure sufficient inventory to ensure continuity of production and reduce inventory holding costs (Brigham and Houston 2009). In the research conducted by Uremadu, Egbide and Enyi (2012), Olaoye, Adekanbi, and Oluwadare (2019), Amponsah-Kwatiah and Asiamah (2020), Kafeel Ali et al. (2020), Pham, Nguyen, and Nguyen (2020), Alvarez, Sensini, and Vazquez (2021), Azzaddine and Ibrahim (2021) and Fejzullahu and Govori (2021), a positive correlation between days inventory outstanding and profitability of manufacturing companies was found, while Perković (2012), Seyoum, Tesfay and Kassahun (2016), Iqbal et al (2017), Aytac et al. (2020), Golas (2020), Hogerle et al. (2020), Hossain (2020), Fernandez-Lopez, Rodeiro-Pazos, and Rey-Ares (2020), Kayani, De Silva and Gan (2020), Prša (2020), Arnaldi et al. (2021), Hameer, Ramakrishnan and Gillani (2021) and Kušter (2022) found a negative correlation between the observed variables. But there were also authors who failed to find any significant correlation between inventory and profitability, for example Olaoye and Okunade (2020).

Due to the different results on the influence of the days inventory outstanding on the profitability of manufacturing enterprises obtained in previous studies, the following hypothesis was set:

H1: There is a significant and negative impact of the days inventory outstanding on the profitability of enterprises in the manufacturing industry

It is expected that a longer time of inventory retention in the warehouse will affect the decrease in the profitability of the enterprise.

2.3. Days sales outstanding and the profitability of manufacturing enterprises

Trade receivables represent the amount of money owed to the company by customers who purchased goods or services, while days sales outstanding represent the period in which the company will charge for the sold goods or services. There are different findings about the impact of receivables on the profitability of the enterprise. Most studies show a negative correlation between receivables and the profitability of enterprises from the manufacturing industry, such as Perković (2012), Iqbal et al (2017), Hossain (2020), Goncalvez, Gaio, and Robles (2018), Hameer, Ramakrishnan, and Gillani (2021), Kušter (2022). But there were also authors who, in their research, determined a positive correlation between days sales outstanding and the profitability of enterprises in the manufacturing industry, such as Jakpar et al. (2017), Golas (2020), Amponsah-Kwatiah and Asiamah (2020), Pham, Nguyen and Nguyen (2020), Fejzullahu and Govori (2021), Alvarez, Sensini, and Vazquez (2021). Some authors failed to find any significant correlation between receivables and profitability in their research, such as Kayani, De Silva and Gan (2020), Olaoye and Okunade (2020), Prša (2020), Arnaldi et al. (2021).

Due to the different results obtained in previous studies on the influence of the days sales outstanding on the profitability of manufacturing enterprises, the following hypothesis was put forward:

H2: There is a significant and negative influence of the days sales outstanding on the profitability of the enterprises from the manufacturing industry.

It is expected that the slower collection of receivables from customers will affect the decrease in the profitability of the enterprise.

2.4. Days payable outstanding and the profitability of manufacturing enterprises

Days payable outstanding show the average time from receipt of a supplier's invoice to settlement of the debt in days. Mathuva (2015), Goncalvez, Gaio and Robles (2018), Amponsah-Kwatiah and Asiamah (2020), Hogerle et al. (2020), Hossain (2020), Kafeel Ali et al. (2020), Kayani, De Silva and Gan (2020), Pham, Nguyen and Nguyen (2020), Golas (2020) and Alvarez, Sensini and Vazquez (2021) found a positive correlation between the days payable outstanding on the profitability of manufacturing enterprises, while Perković (2012), Uremadu, Egbide and Enyi (2012), Seyoum, Tesfay, and Kassahun (2016), Iqbal et al. (2017), Fernandez-Lopez, Rodeiro-Pazos, and Rey-Ares (2020), Prša (2020), Arnaldi et al. (2021), Fejzullahu and Govori (2021) and Kušter (2022) found a negative correlation between the days payable outstanding and profitability. Some authors failed to find any significant correlation between the days payable outstanding and the profitability of the enterprise (Hameer, Ramakrishnan and Gillani 2021).

Due to the different results obtained in previous studies on the influence of the days payable outstanding on the profitability of manufacturing enterprises, the following hypothesis was put forward:

H3: There is a significant and positive influence of the days payable outstanding on the profitability of enterprises from the manufacturing industry.

It is expected that a longer period of time for payment of liabilities to suppliers will affect the profitability of the enterprise.

Two control variables were also applied in the research. The first control variable is sales growth, where the control variable is business income according to Kayani, de Silva and Gan (2020), Pham, Nguyen, and Nguyen (2020), Prša (2020), Fejzullahu and Govori (2021). In the research, they found a positive correlation between the growth of the company's sales and the level of profitability, and the research in this paper wanted to verify this on a sample of Croatian manufacturing enterprises, so the following hypothesis was put forward:

H4: There is a significant and positive influence of the growth of company sales on the level of profitability of enterprises from the manufacturing industry.

It is expected that the increase in sales will affect the increase in the level of profitability of the enterprise.

The second control variable is GDP, where the percentage of GDP growth in the current year compared to the previous year is used for the GDP variable, which is expressed as a decimal number. The deterioration of macroeconomic conditions in the country can affect the level of profitability of the enterprise, so GDP was taken as the control variable according to Garcia-Teruel and Martinez-Solano (2007), Enqvist, Graham and Nikkinen (2014), Mathuva (2015), Soukhakian and Khodakarami (2019), Prša (2020).

Deterioration of macroeconomic conditions affects the collection of receivables in enterprises. Then enterprises have a reduced ability to generate money from their operations, and banks reduce the offer of loans to enterprises, which results in an increase in days sales outstanding. Accordingly, it can be concluded that the changes in the economic conditions in the country affect profitability. In their research, Enqvist, Graham, and Nikkinen (2014) showed that the relationship between customer receivables and the level of the profitability of the enterprises is different during economic crises and economic growth and also that during economic crises working capital management is of great importance. Garcia-Teruel and Martinez-Solano (2007) find a positive correlation between trade receivables and economic growth, but the economic impact of this variable is limited. Soukhakian and Khodakarami (2019) found in their research that GDP is positively correlated to the return on assets indicator (ROA), while Prša (2020) found that it is not statistically significant. Based on the statements above the fifth hypothesis was defined, which states that:

H5: There is a significant influence of GDP on the level of profitability of enterprises from the processing industry.

A significant influence of GDP on the level of profitability of the enterprise is expected.

3. Research

3.1. Methodology

Research on the impact of working capital management on the profitability of manufacturing enterprises began with descriptive statistics, followed by a correlation between the variables in the model, namely ROA profitability indicators, independent variables: inventories, receivables and liabilities, as well as control variables: business income and GDP. Finally, a panel regression model was used to examine the influence of receivables, inventories, payables, sales and GDP growth on the profitability of manufacturing enterprises in the Republic of Croatia. The manufacturing sector, along with trade, is the most important sector in the Republic of Croatia, where 25% of all employees are employed and which participates in the total acquired added value with 25.9%.

The analyzed companies are classified in area C - Manufacturing activity according to the National Classification of Activities, which is harmonized with European standards, respectively, it corresponds to the NACE Rev.2 classification.

3.1.1. Sample description

The subject of the research are Croatian manufacturing enterprises which, according to the Croatian Accounting Act (Official Gazette 2016), are defined as large companies, respectively, those that exceed two of the following three conditions: total assets of HRK 150 million, total revenue of HRK 300 million and the average number of employees during the business year year is 250. For the purposes of this paper, a research was conducted on a sample of all large companies in Croatia that operated in the period from 2018 to 2021 (124 companies) and that create 51.5% of the added value of the manufacturing industry and employ 40% of the manufacturing industry's employees. The data was collected from the Register of Annual Financial Statements from the Internet pages of the Financial Agency, to which entrepreneurs submit their annual financial statements.

3.1.2. Data and variables

In research on the influence of working capital on profitability of the enterprise, profitability is measured as a dependent variable through the return on assets indicator (ROA), which is defined as the ratio of operating profit or EBIT (Earnings Before Interest and Taxes) to total assets. Days sales outstanding period is an independent variable and is defined as the average time it takes for receivables to be converted into cash. The second independent variable is days inventory outstanding, which represents the average time it takes to convert materials into finished goods and then to sell those goods. The next independent variable is days payable outstanding which shows the average time between the purchase of materials and labor and the payment of cash for them. The control variables are business income and GDP. The business income variable is a monetary variable that has been converted into its natural logarithm, thus normalizing the distribution (Ford 2018).

The dependent, independent and control variables used in the model are described in Table 1.

3.2. Results of empirical analysis and discussions

3.2.1. Descriptive analysis

The analysis began with descriptive statistics showing for all variables their arithmetic mean, standard deviation, their minimum and maximum values, interquartile ranges, as well as the total number of observations. The research included 124 large enterprises from the manufacturing industry over four years.

The results of the descriptive statistics are shown in Table 2.

Table 1. Variables with full name, abbreviations and explanation

	Variable	Abbreviation	Explanation
Dependent variable	Return on assets	ROA	the ratio of the difference between business income and business expenses (EBIT) to average total assets expressed as a decimal number
Independent variables	Days sales outstanding	DSO	the ratio of the number of days in a year to the receivables turnover
	Days inventory outstanding	DIO	the ratio of the number of days in a year to inventory turnover
	Days payables outstanding	DPO	the ratio of the number of days in a year to the turnover of payables
Control variables	Business income	BI	logarithm of business income
	Gross domestic product	GDP	the percentage of GDP growth in the current year compared to the previous year, expressed as a decimal number

Source: Made by the authors

Table 2. Descriptive statistics

Statistic	N*	Mean	St. Dev.	Min	Pctl(25)	Pctl(75)	Max
ROA	496	0.1	0.1	-0.5	0.02	0.1	0.7
DSO	496	40.0	34.7	0.001	14.8	58.1	229.5
DIO	496	69.4	60.6	0.01	29.0	90.4	415.3
DPO	496	41.1	45.4	0.04	22.1	51.4	572.6
BI	496	$708 \cdot 10^6$	$1833 \cdot 10^6$	$67 \cdot 10^6$	$246 \cdot 10^6$	$653 \cdot 10^6$	$22 \cdot 10^9$
lnBI**	496	19.8	0.8	18.0	19.3	20.3	23.8
Rast GDP	496	2.1	6.6	-8.1	-8.1	3.5	10.2

Source: Made by the authors

*124 enterprises were observed over 4 years. That amounts to 496.

**Only BI is logarithmized, because it is the only variable expressed in absolute numbers. The other variables are relative numbers and are therefore not logarithmized.

The results of descriptive statistics show that the average profitability indicator of return on assets ROA is 0.10 and that there is a large deviation from the average indicator of return on assets ROA among large enterprises from the manufacturing industry in Croatia. The average business income of large companies in Croatia is HRK 708 million (about EUR 94.5 million), with a very large deviation from the average.

The collection of receivables of large enterprises from the manufacturing industry takes an average of 40 days, with 25% of large companies collecting their receivables in less than 15 days. The average days inventory outstanding are about 70 days, while in 25% of enterprises it is shorter than 29 days, in 25% it is longer than 90 days, and in some enterprises it is even about 400 days. In large enterprises, the average days payables outstanding are 41 days, which is almost equal to the days sales outstanding. There is a large discrepancy between enterprises in the days payables outstanding, ranging from 1 to about 570 days. The average growth of GDP in the period from 2018 to 2021 is 2.1%.

3.2.2. Correlation analysis

The paper examined the correlation between the variables in the model and the results are shown in Table 3.

Correlation analysis showed that there is no statistically significant correlation between profitability indicator of return on assets (ROA) and days sales outstanding. Kafeel Ali et al. (2020) and Prša (2020) found a weak negative correlation between profitability indicator and the days sales outstanding, while Kušter (2022) and Hossain (2020) found a negative and statistically significant correlation between profitability and receivables. As expected, the research found a statistically significant negative, but weak correlation between the indicator of return on assets (ROA) and the days inventory outstanding ($r = -0.12$, $p < 0.05$). The result is in accordance with the results obtained by Kušter (2022) and Prša (2020). Seyoum, Tesfay and Kassahun (2016) and Golas (2020) also found a significant and negative correlation between profitability and the days inventory outstanding.

A statistically significant negative weak correlation between return on assets (ROA) indicator and days payables outstanding was determined ($r = -0.24$, $p < 0.01$). The results are in accordance with the results obtained by Seyoum, Tesfay, and Kassahun (2016), Kušter (2022), Prša (2020). The results of the research in this paper on the correlation between the return on assets (ROA) indicator and the days payables outstanding are not expected. It would be expected that the longer the enterprise extends the time of payment of liabilities to suppliers, the more opportunities it has to increase working capital, which affects the profitability of the enterprise. The results obtained in the research show that a longer period of payment of liabilities to suppliers affects the decrease in profitability. This leads to the conclusion that enterprises did not take advantage of the possibility of delaying the payment of their liabilities to improve their sales because they were most likely in financial difficulties and were late in paying their liabilities, which created additional costs for them such as default interest.

A statistically significant, medium-strong positive correlation between the independent variables of the days inventory outstanding and the days payables outstanding was determined ($r = 0.28$, $p < 0.01$).

Correlation analysis showed a statistically significant weak positive correlation between the return on assets (ROA) indicator and the logarithm of business income ($r = 0.15$, $p < 0.01$), which is in accordance with the results obtained by Iqubal et al. (2017) and Golas (2020). The business income variable, measured by

Table 3. Correlation matrix

	ROA	DSO	DIO	DPO	lnBI
ROA					
DSO	0.00				
DIO	-0.12**	-0.03			
DPO	-0.24***	0.05	0.28***		
lnBI	0.15***	-0.11*	-0.25***	-0.19***	
GDP growth	0.00	-0.03	-0.05	-0.02	0.92***

*p< 0.1, **p< 0.05, ***p< 0.01

Source: Made by the authors

the natural logarithm, is statistically significantly correlated to all variables. While this correlation is positive with the return on assets (ROA) indicator, there is a negative, albeit weak, correlation with the independent variables days sales outstanding, days inventory outstanding and days payables outstanding. The expected results show a negative correlation between the return on assets (ROA) indicator and the days sales outstanding and the correlation between the return on assets (ROA) indicator and the days inventory outstanding.

A statistically significant strong positive correlation between the logarithm of business income and GDP growth was determined.

3.2.3. Multiple regression

For data analysis, a multiple regression model was used, namely a panel regression model with random effects, since the Hausman test for a panel regression model with fixed effects did not give significant results ($p<0.05$). The Hausman test in the panel regression model with random effects gave the result shown in Table 4.

Table 4. Hausman test of the panel regression model with random effects

Chi-sq	P-value	Method
1.991	0.574	Hausman Test

Source: Made by the authors

A panel regression model with random effects can be represented by the expression:

$$ROA_{it} = \mu + \beta_1 \cdot DNP_{it} + \beta_2 \cdot DVZ_{it} + \beta_3 \cdot DPOD_{it} + \beta_4 \cdot PP_{it} + \beta_5 \cdot BDP_t; \quad i = 1, \ldots N, t = 1, \ldots T$$

Table 5 shows the results of regression with random effects in three models.

The overall model fit as measured by R^2 is extremely low and close to 0.05 in all three cases. In other words, the model does not seem to explain a large proportion of the variance in the dependent variable. Furthermore, the results suggest that two of the three independent variables (days sales outstanding and days inventory outstanding) are not statistically

Table 5. Panel regression with random effects

	Dependent variable:		
	ROA		
	(1)	(2)	(3)
DSO	-0.00001 (0.0001)	0.00003 (0.0001)	0.00002 (0.0001)
DIO	-0.0001 (0.0001)	-0.00001 (0.0001)	-0.00001 (0.0001)
DPO	-0.0003*** (0.0001)	-0.0003*** (0.0001)	-0.0003*** (0.0001)
lnBI		0.026*** (0.008)	0.027*** (0.008)
GDP			-0.0003 (0.0004)
Constant	0.083*** (0.010)	-0.446*** (0.153)	-0.459*** (0.154)
N	496	496	496
R^2	0.030	0.052	0.053
Adjusted R^2	0.024	0.044	0.043
F statistic	15.503***	27.270***	27.695***

*p< 0.1, **p< 0.05, ***p< 0.01

Source: Made by the authors

significant in any of the three models shown in Table 5. Olaoye and Okunade (2020) reached the same results on a sample of manufacturing enterprises listed on the stock exchange in Nigeria, while Prša (2020) found in her research that the effect of receivables on profitability is not statistically significant.

However, the variable days payables outstanding is highly statistically significant with an unchanged correlation coefficient of -0.0003 and statistical significance $p< 0.01$. The result shows that extending the term of payment to suppliers by 1 day results in a decrease in the return on assets (ROA) indicator by 0.0003%. The results are consistent with the results obtained by Kušter (2022).

The introduction of the natural logarithm of business income in models 2 and 3 does not contribute to a major change in the overall result. The logarithm of business income is a statistically significant variable ($p< 0.01$) in both models (2 and 3). The results show that each increase in business income by, for example, 5% results in an increase in ROA by 0.0013%. The results of the natural logarithm of business income (0.026 and 0.027) were recalculated according to Ford (2018). Kayani, de Silva and Gan (2020), Pham, Nguyen and Nguyen (2020), Prša (2020); Fejzullahu and Govori (2021) also determined a positive correlation between the growth of company sales and the level of profitability in their research.

With the introduction of the GDP variable the model remains almost unchanged. GDP has no influence on the return on assets (ROA) indicator because the coefficient is not statistically significant, which is in accordance with the research conducted by Prša (2020).

4. Conclusion

Effective working capital management implies ensuring the successful business activity without endangering its liquidity, where it is important to maintain an optimal balance between the determinants of working capital: the days sales outstanding, the days inventory outstanding and the days payables outstanding. The working capital management method, on the one hand, affects the liquidity and security of the business activity, and on the other hand, the profitability and the business risk (Shin and Soenen 1998). Various studies have analyzed the relationship between working capital management and profitability of enterprises of different sizes in different economies. Different results were obtained because they are influenced by the market in which companies operate and different substitute indicators are used to measure profitability, as well as different methodologies such as linear regression and multiple regression.

For the purposes of this paper, research was conducted on a sample of all large enterprises in the Republic of Croatia that operated in the period from 2018 to 2021 (124 enterprises). The collected data were analyzed using descriptive statistics, correlation analysis and multiple regression analysis - a panel regression model with random effects. The panel data analysis examined the impact of receivables, inventories, payables, sales growth and GDP growth on the profitability of Croatian manufacturing enterprises.

According to the research results, the model determined a statistically significant and negative influence of the variable days payables outstanding on the level of profitability of the enterprise, while the correlation method of the mentioned variables established the existence of a statistically significant weak negative correlation between the indicators of return on assets (ROA) and days payables outstanding.

The results obtained from the research show a significant positive impact of the sales growth on the level of profitability, as well as a significant weak positive correlation between the indicators of return on assets (ROA) and sales. The obtained results imply that the variables days sales outstanding, days inventory outstanding and GDP growth are not statistically significant.

This research has shown that enterprises in the manufacturing sector can increase their profitability by paying their obligations to suppliers on agreed terms by using the amounts of rebates they receive from the supplier for short-term investments in, for example, the production of more products. Payment in the agreed term will not create additional costs such as default interest. Enterprises can also increase their profitability by increasing sales.

The conducted research expanded the knowledge about working capital management, where the research results provide a scientific contribution to economic sciences in a theoretical and applied sense. It expands the knowledge of previous analyzes on the topic of working capital management and profitability of enterprises in general, and particularly from the manufacturing industry, published in the SEE European Journal of Economics and Business. The scientific contribution of the research is already reflected in the review of previous research on working capital management in one of the most important sectors of the economy, and the research conducted in this paper determined that the days inventory outstanding, the days sales outstanding, the days payables outstanding, sales growth and GDP growth all affect the profitability of manufacturing companies. The

research results will be useful to policy makers and business management when making decisions on improving the financial performance of enterprises.

This paper initiates further research that could cover a larger number of sectors, research on enterprises from other countries and combined qualitative and quantitative research.

References

Accounting law, *Oficial Gazette*, 120/2016

Afrifa, G. A. 2016. Net working capital, cash flow and performance of UK SMEs. Review of Accounting and Finance 15 (1): 21-44.

Afza, T. and Nazir, M. S. 2007. Is it better to be aggresive or conservative in managing working capital? Journal of Quality and Technology Management 3 (2): 11-21.

Almazari, A. 2014. The Relationship between Working Capital Management and Profitability: Evidence from Saudi Cement Companies. Journal of Economics, Management and Trade: 146-157.

Alvarez, T., Sensini, L., and Vazquez, M. 2021. Working Capital Management and Profitability: Evidence from an Emergent Economy. International Journal of Advances in Economics Management 10 (1): 32-39.

Aldubhani, M. A .Q., Wang, J., Gong, T., and Maudhah, R. A. 2022. Impact of working capital management on profitability: evidence from listed companies in Qatar. Journal of Money and Business 2 (1): 70-81.

Amponsah-Kwatiah, K. and Asiamah, M. 2020. Working capital management and profitability of listed manufacturing firms in Ghana. International Journal of Productivity Performance Management 70 (7): 1751-1771.

Arnaldi, A., Novak, B., Roscigno, R., and Zhang, W. 2021. Working Capital Management and Profitability: Empirical evidence. International Journal of Business Management and Economic Research 12 (2): 1911-1917.

Aytac, B., Hoang, T. H. V., Lahiani, A., and Michel, L. 2020. Working capital management and profitability of wine firms in France: an empirical analysis. International Journal of Entrepreneurship Small Business 41 (3): 368-396.

Azzaddine, B. and Ibrahim, B. 2021. The Effect of Working Capital Management on Firms': Performance Evidence from Algerian Listed Firms. Dirassat Journal Economic Issue 12 (2): 381-397.

Banos - Caballero, S., Garcia - Teruel, P. J., and Martinez Solano, P. 2014. Working capital management, corporate performance and financial constraints. Journal of Business Research 67 (3): 332-338.

Baveld, M. B. 2012. Impact of Working Capital Management on the Profitability of Public Listed Firms in the Netherlands During the Financial Crisis. Master Thesis, University of Twente. https://essay.utwente.nl/61524/

Brigham, E. and Houston, J. 2009. Fundamentals of Financial Management. 12th Edition. Cengage Learning. Houston, Brigham.

Brozović, M., Sever Mališ, and Žager, L. 2019. Limitations in using EBIT and EBITDA margin in Measuring companies' financial performance. Zbornik radova Ekonomskog fakulteta Sveučilišta u Mostaru. Journal of Economy and Business, special edition: 38-61.

Bukvič, V. 2016. Value based management with some practical examples in Slovenian industries: Advences in Business-Related Scientific Research Journal 7 (2): 40-7.

Chakraborty, K. 2008. Working Capital and Profitability: An Empirical Analysis of Their Relationship with Reference to Selected Companies in the Indian Pharmaceutical Industry. The IUP Journal of Management Research 34: 112-126. https://www.iupindia.in/1208/IJMR_Working_Capital_41.html

Decision on the national classification of activities, 2007.-NKD (2007). *Oficial Gazette*, 58/2007.

Deloof, M. 2003. Does working capital management affect profitability of Belgian firms? Journal of Business Finance & Accounting 30 (3-4): 573-588.

Dess, G. G. and Robinson, J. R. B. 1984. Measuring organizational performance in the abence of objective measures: the case of the privately-held firm and conglomerate business unit. Strategic management journal 5 (3): 265 – 273.

Debusk, D. K. and Crabtree, A. D. 2006. Does the balanced scorecard improve performance? Management Accounting Quartely 8 (1): 44 - 48.

Edi, N., Noriza, M. S., Binti Mohamad, N. E. A., and Saad, B. M. 2010. Working capital Management: the efect of market valuation and profitability in Malaysia. Article in International Journal of Business and Management 5 (11).

Enqvist, J., Graham, M., and Nikkinen, J. 2014. The impact of working capital management on firm profitability in different business cycles: Evidence from Finland (32):36-49.

Fejzullahu, A. and Govori, F. 2021. Working capital management and profitability of manufacturing companies in Kosovo. Management: Journal of Contemporary Management 26 (2): 277 - 294.

Fernandez - Lopez, S., Rodeiro - Pazos, D., and Rey-Ares, L. 2020. Effects of working capital management on firms' profitability: evidence from cheese-producing companies. Agribusiness, 36 (4):770-791.

Ford, C. 2018. Interpreting Log Transformations in a Linear Model. University of Virginia Library. StatLab. https://library.virginia.edu/data/articles/interpreting-log-transformations-in-a-linear-model

Garcia- Teruel, P. J. and Martinez-Solano, P. 2007. Effects of working capital management on SME profitability. International Journal of Managerial Finance 3 (2): 164-177.

Golas, Z. 2020. Impact of working capital management on business profitability: Evidence from Polish dairy industry. Agric. Econ. – Czech 66 (6): 278-285.

Goncalvez, T. C., Gaio, C., and Robles, F. 2018. The impact of Working Capital Management on firm profitability in different economic cycles: Evidence from the United Kingdom. Economics and Business Letters 7 (2): 70-75.

Gonzalez - Benito, O., and Gonzales Benito, J. 2005. Cultural vs. operational market orientation and objective vs. subjektive performance: Perspective of production and operations. Industrial Marketing Management 34 (8): 797- 829.

Gul, S., Khan, M. B., Rehman, S. U., Kahn, M. T., Kahn, M., and Kahn, W. 2013. Working Capital Management and Performance of SME sector. European Journal of Business and Management 5 (1): 60-68.

Hameer, N. A. B. A., Ramakrishnan, S., and Gillani, S.M.A.H. 2021. The Impact of Working Capital Management on Firm Performance across Bumiputera and Non Bumiputera Manufacturing Firms in Malaysia. Estudios de Economia Aplicada 39 (4): 1- 8.

Hernandez, S., Alvarez, T., Roscigno, R., and Piluso, V. 2022. Working Capital Management and Profitability: Empirical Evidence from an Emergent Economy. International Journal of Business Management and Economic Research 13 (1): 2013 - 2018.

Hogerle, B., Charifzadeh, M., Ferencz, M., and Kostin, K. B. 2020. The development of working capital management and its impact on profitability and shareholder value: evidence from Germany. Strategic management 25 (2): 27-39.

Hoque, Z. 2014. 20 years of studies on the balanced scorecard: Trends, accomplishments, gaps and opportunities for future research. The British Accounting Review 46 (1): 33-59.

Hossain, T. 2020. The effect of working capital management on profitability. International Journal of Research in Business and Social Science 9 (6): 114-122.

Iqbal, A. and Zhuquan, W. 2015. Working Capital Management and Profitability Evidence from Firms Listed on Karachi Stock Exchange. International Journal of Business and Management 10 (2): 231-235.

Iqbal, A., Ullah, A., Zhuquan, W., and Shah, S. 2017. Effects of Working Capital on Profitability of Manufacturing Firms of Pakistan. Journal of Computational and Theoretical Nanoscience 23(9): 8174-8179. https://doi.org/10.1166/asl.2017.9856

Ittner, C. D. and Larcker, D. F. 2003. Coming Up Short on Non - financial Performance Measurement. Harvard Business Review 81 (11): 88 – 95.

Jakpar, S., Tinggi, M., Siang, T., Johari, A., Myint, K., and Sadique, M. 2017. Working capital management and profitability: evidence from manufacturing sector in Malaysia. Journal of Business and Financial Affairs 6 (2): 1-9.

Kafeel Ali, J., Ud Din, M., Waris, A., Tahir, M., and Khan, S. 2020. Working Capital Management and Firms'Profitability: Dynamic Panel Data Analysis of Manufactured Firms. Journal of Financial Risk Management 9 (4): 494-517.

Kaplan, R. S. and Norton, D. P. 1992. The Balanced Scorecard - Measures that Drive Performance. Harward Business Review January – February:71 - 79.

Kayani, U. N., De Silva, T. A., and Gan, C. 2020. Working capital and firm performance relationship: An empirical investigation of Australasian firms. Review of Pacific Basin Financial Markets and Policies 23 (3): 2050026.

Korent, D. and Orsag, S. 2018.The impact of working capital management on profitability of Croatian software companies. International Review of Economics and Business 21 (1): 47-65.

Korent, D. 2021. Target adjustment model and new working capital management. Proceedings of Rijeka Faculty of Economics: Journal of Economics and Business 39 (1): 135–162.

Korent, D. and Orsag, S. 2022. Determinants of working capital management of firms in selected industries in Croatia. Management: Journal of Contemporary Management Issues 27(2): 129-152.

Korent, D. and Orsag, S. 2023. The impact of working capital management on the profitability of firms in selected industries in the Republic of Croatia. Ekonomski pregled 74 (1): 102 -131.

Kušter, D. 2022. The impact of working capital management on profitability: Evidence from Serbian listed manufacturing companies. Economic themes 60 (1): 117-131.

Mathuva, D. 2015.The Influence of Working Capital Management Components on Corporate Profitability: A Survey on Kenyan Listed Firms. Research Journal of Business Management 4 (1): 1-11.

Milošev, I. 2021. The impact of working capital management on profitability oflarge companies from Serbia. Business ekonomics 20 (2): 1-18.

Moyer, R. C., McGuigan, J. R., and Kretlow, W. J. 2003. Contemporary Financial Management, Ninth ed. USA: Thomson Corporation.

Ogunsiji A. S. and Ladanu, W. K. 2017. A theoretical study of performance measures in the strategic and corporate entrepreneurship of firms. International Journal of Life Sciences 1 (1): 49-57.

Olaoye, F. O., Adekanbi, J. A., and Oluwadare, O. E. 2019. Working Capital Management and Firms' Profitability: Evidence from Quoted Firms on the Nigerian Stock Exchange. Intelligent Information Management 11 (03): 43-60.

Olaoye, S. A. and Okunade R. A. 2020. Working Capital Management and Profitability of Listed Manufacturing Firm's in Nigeria. Journal of Economics, Management and Trade 26 (7): 63-69.

Opler, T., Pinkowitz, L., Stulz, R., and Williamson, R. 1999. The determinants and implications of corporate cash holdings. Journal of Financial Economics: 52 (1): 3-46.

Peel, M. J. and Wilson, N. 1996. Working Capital and Financial Management Practices in the Small Firm Sector. International Small Business Journal: Researching Entrepreneurship 14 (2): 52-68.

Perković, G. 2012. The impact of working capital management on profitability of manufacturing firms in Bosnia and Herzegovina. Journal: Zbornik radova - Sarajevo Business and Economics Review (SBER) 32: 117-138.

Pervan, M. and Mlikota, M. 2013.What Determines The Profitability of Companies: Case of Croatian Food and Beverage Industry. Economic Research - Ekonomska istraživanja 26 (1): 277-286.

Pervan, M., Pervan, I., and Ćurak, M. 2019. Determinants of firm profitability in the Croatian manufacturing industry: evidence from dynamic panel analysis. Economic Research - Ekonomska istraživanja 32 (1): 968 - 981.

Pham, K. Q., Nguyen, Q. N., and Nguyen, C. 2020. Effect of Working Capital Management on the Profitability of Steel Companies on Vietnam Stock Exchanges. Journal of Asian Finance Economics and Business 7(10): 741-750.

Prester, J. and Rašić Bakarić, I. 2017. Structural characteristics of manufacturing industry in Croatia. Ekonomski pregled 68 (4): 341-383.

Prša, D. 2020. The impact of working capital management on the profitability of Croatian manufacturing SMEs. Ekonomski vjesnik/Econviews 33 (2): 371-382.

Rašić Bakarić, I. and Vizek, M. 2010. The analysis of the competitiveness and structural characteristics of croatian manufacturing. Ekonomski pregled 61 (5-6): 241-270.

Seyoum, A., Tesfay, T. and Kassahun, T. 2016. Working Capital Management and Its Impact on Profitability Evidence from Food Complex Manufacturing Firms in Addis Ababa. International Journal of Scientific and Research Publications 6 (6): 815-833.

Smith, K. 1980. Profitability versus Liquidity Tradeoffs in Working Capital Management, in Readings on the Management of Working Capital. New York: St. Paul, West Publishing Company: 549-562.

Shin, H. and Soenen, L. 1998. Efficiency of working capital management and corporate profitability. Financial Practice and Education 8 (2): 37- 45.

Soukhakian, I. and Khodakarami, M. 2019. Working capital management, firm performance and macroeconomic factors: Evidence from Iran. Cogent Business & Management 6 (1): 1-24.

Stojčić, N., Bečić, M., and Vojinić, 2012. The competitiveness of exports from manufacturing industries in Croatia and Slovenia to the EU-15 market: A dynamic panel analysis. Croatian Economic Survey 14 (1): 69 -105.

Stojčić, N. 2020. The impact of Covid-19 pandemic on the export competitiveness of manufacturing firms in Croatia. Economic Thought and Practice 20 (2): 347-365.

Subramanyam, K. R. and Wild, J. J. 2009. Financial Statement Analysis. McGraw - Hill Higher Education.

Škuflić, L., Mlinarić, D., and Družić, M. 2016. Determinants of firm profitability in Croatia's manufacturing sector. Proceedings Book Regional Economic Development: Entrepreneurship and Innovation: 269- 282.

Talonpoika, A. M., Monto, S., Pirttilla, M., and Karri, T. 2014. Modifying the cash conversion Cycle: revealing concealed advance payments. International Journal of Productivity and Performance Management, Emerald Group Publishing 63 (3): 341-353.

Uremadu, J. A., Egbide, B., and Enyi, P. E. 2012.WorkingCapital Management, Liquidity and Corporate Profitability Among Quoted Firms in Nigeria: Evidence from the Productive Sector. International Journal of Academic Research in Accounting, Finance and Management Sciences 2 (1): 80-97.

Utia, V., Dewi, D., and Sutisna, H. 2018. The impact of working capital management to profitability of manufacturing company listed in Indonesian Stock exchange. Hasanuddin Economics and Business Review 2 (1): 1-17.

Venkatraman, N. and Ramanujam, V. 1986. Measurement of business performance in strategy research: A comparison of approaches. Academy of management review 11 (4): 801-814.

Žager K., Mamić Sačer, I., Sever Mališ, S., Ježovita, A., and Žager, L. (2017). Financial statement analysis: principles, procedures, cases. Zagreb: HZRIF.

Wang, J. Y. 2002. Liquidity Management, Operating Performance and Corporate Value: Evidence from Japan and Taiwan. Journal of Multinational Financial Management 12 (2): 159-169.

sciendo

South East European Journal of Economics and Business
Volume 18 (2) 2023, 140-161
DOI: 10.2478/jeb-2023-0024

COMPETENCE PROXIMITY TO EMPLOYERS' REQUIREMENTS AND LABOUR MARKET SUCCESS OF ECONOMICS AND BUSINESS GRADUATES

Bruno Škrinjarić

Abstract

This research concentrates on Croatia with threefold aims: (1) to identify and quantify key competences developed by economics-and-business graduates; (2) to assess the degree of proximity between competences acquired at universities and those required on the labour market; and (3) to investigate how this proximity translates labour market outcomes for graduates. This research is based on primary data, collected through two questionnaires, one for graduates and one for firms. Key competences were identified using factor analysis. Proximity between employers-required and graduates-acquired competences were then used as covariates in explaining differences in graduates' employability and wage premiums using standard regression model, Heckman selection model and instrumental variables approach. Results show that university education is highly skewed towards the acquisition of economics-and-business practical competences, while employers put greater emphasis on generic competences. Results also point to a penalty of having a competence gap on graduates' probability of being employed and on their wages.

Keywords: *graduates; firms; competences: competence matching; Croatia*

JEL classification: *J20, J24*

1. Introduction

Shorter product life cycles and increased pace of technological change caused many firms to become more market-driven and quicker in their adaptations to new customer needs (Yang, You, and Chen 2005). To achieve that, employers are forced to invest heavily in human capital of their workers to acquire the needed competences. Competences are defined as "individual dispositions to self-organization which include cognitive, affective, volitional and motivational elements; they are basically an interplay of knowledge, capacities and skills, motives and affective dispositions." (Rieckmann 2012, p. 131), transcending simple skills or abilities and encompassing both of those (Škrinjarić 2022). Furthermore, since the cost of developing human capital is increasing, employers expect educational institutions to equip workers with required competences without additional industry training (Husain et al. 2010). This is also corroborated by the H.E.G.E.S.C.O. report, stating that graduates are expected to be competent in a very broad range of areas, comprising both field-specific and generic skills, as well as technical abilities (Allen and van der Velden

Bruno Škrinjarić, PhD
Research associate
The Institute of Economics, Zagreb
J. F. Kennedy square 7, 10000 Zagreb, Croatia
Country: Croatia
E-mail: bskrinjaric@eizg.hr
ORCID: https://orcid.org/0000-0002-5969-1948

2009). Andrews and Higson (2008, p. 419) argue that employers expect "… graduates would be employment-ready; equipped with the necessary skills and competencies, and able to work with the minimum of supervision", thus increasing the emphasis on a match between employers' competence requirements and workers' competence acquisitions. Competence mismatches have negative consequences on individual, firm and macroeconomic level. At individual level, this mismatch reduces job satisfaction and wages (Green and McIntosh 2007; Mavromaras, McGuiness, and Fok 2009); at firm level, it dampens productivity and increases on-the-job training costs (Kampelmann and Rycx 2012); and on macroeconomic level it translates into structural unemployment and hinders growth prospects (Quintini 2011). Furthermore, World Economic Forum (2016) reports that 38% of employers reported having difficulties in filling jobs in 2015 with workers possessing adequate combination of required competences.

Nowadays, the importance of competence alignment became highly evident from the perspective of digital transformation. Digital transformation requires competent workforce capable of effectively leveraging digital technologies and driving organizational change. Competences like digital literacy, data analysis and interpretation, adaptability and continuous learning, cybersecurity and risk management, collaboration and communication play a pivotal role in driving successful digital transformation initiatives (Van Deursen and Van Dijk 2014). The importance of competence alignment has become even more significant from the perspective of the recent COVID-19 pandemic. The pandemic has brought about unprecedented challenges, disruptions, and changes in the workforce and the job market. Competences have played a crucial role in how individuals, organizations, and societies have responded and adapted to the pandemic. Most notably, the pandemic has accelerated the adoption of digital technologies and remote work. Individuals with strong digital competences have been better equipped to navigate virtual work environments, utilize online communication tools, and adapt to new digital platforms (Sá et al. 2021). In addition, competences like problem-solving, flexibility, and emotional intelligence have been crucial in dealing with evolving situations, managing stress, and finding innovative solutions. Competences also play a crucial role in implementing sustainable practices and fostering a successful transition towards a greener and more sustainable economy. Competences in green innovation and technology, like expertise in renewable energy technologies, sustainable transportation, circular economy, and green infrastructure development, are critical for developing and deploying eco-friendly solutions (UNEP 2016; GSIA 2019).

This research concentrates on economics and business graduates and firms in Croatia and explores the association of competence proximity (mismatch) between those that graduates acquire during their study and those that employers require and labour market outcomes of graduates – their employability and wages. Hence, this research can be considered as a general policy evaluation of curriculum contents as it assesses to what extent are higher educational institution curricula in line with the contemporary needs of labour market. Hence, the main research question is: To what extent does a proximity (mismatch) between competences developed during higher education and those demanded by employers influence graduate employability and their wages?

Issue of competence misalignment is one of the most persistent problems in Croatian economy, further amplified by the financial crisis effects from late 2008 (Galić and Plećaš 2012), and recent COVID-19 pandemics. Croatian labour market is characterized with high costs to labour and wage adjustments and low mobility of workers – both occupationally and geographically. The same holds true for difference in competences, occupations, or different sectors of economic activity. Botrić (2009) argues that increased structural imbalance on Croatian labour market resulted from changes due to fast restructuring and transition process of product market during the 1990s when Croatia broke ties from former socialist system, leading to changes in labour demand which were not followed by changes in labour supply.

The aim of this research is threefold. Firstly, using the data from economics and business graduates, it aims to indicate which competences are mostly developed through their tertiary education process. The results show that tertiary education curricula are highly skewed towards acquisition of economics-and-business practical competences at the expense of equipping graduates with competences of general type. Secondly, research aims to assess the degree of proximity between the competences acquired at universities and those required on the labour market. These results indicate that employers put greater emphasis on general competences instead of economics-and-business practical ones, and hence indicate to a mismatch between competences being taught at universities and those demanded on the labour market. This measure of proximity is assessed in two different ways, taking in account the fact that different individuals may use different yardstick to measure their own competence level. Third and final goal of this paper is to investigate how this proximity affects graduates'

outcomes on the labour market. Results point at a penalty of having a competence gap towards graduates' probability of being employed and on their wages.

This paper contributes to the literature in several ways. First, this research addresses the significance of the competence (mis)match among graduates in relation to their labour market status and wages, an area that has been insufficiently explored. Previous studies on skill or competence mismatch were scarce due to consultants' limited patience for gathering extensive datasets (Kucel, Vilalta-Bufi, and Robert 2011). Moreover, the scarcity of such studies was also attributed to the lack of a sound and clear methodology, particularly concerning the common measurement of competences (Finegold and Notabartolo 2010). Secondly, in contrast to defining competences a priori (Lokshin, Van Gils, and Bauer 2009), this research adopts a different approach by starting with an extensive list of skills and abilities gathered through a literature review. This list was then refined and validated through a pilot study and expert opinions before being grouped into competences. By doing so, respondents had no prior knowledge of which skills and abilities would be associated with specific competences, thus effectively reducing potential biases towards certain types of competence. Lastly, the study focuses on Croatia, which provides an ideal laboratory setting for investigating competence-related topics due to its high labour costs and wage inflexibility. The rigid labour market conditions and low rates of on-the-job training (approximately 25%, as reported by Eurofound (2017)) suggest relatively stable competences within the labour force, aligning well with the methodology employed to examine their relationship with firm performance.

The rest of the paper is organized as follows. The next section explains how this study builds on prior research that has examined investigation into key competences and their (mis)match. Section 3 presents data and methodology used. In section 4, the key results of the analyses are presented. The last section contains summary of the main conclusions and discusses potential directions for future research.

2. Literature review

Study and identification of key competences is relevant to both employers and workers as their synchronization would reduce the mismatch on the labour market and increase general welfare. This study is founded upon the Human Capital theory, elucidating how individuals interpret cues from organizations to yield economically advantageous outcomes for themselves. According to this theory, individuals make deliberate choices regarding their education, experiences, and efforts to gather information (Becker 1962). Choices that offer substantial returns on investment, such as advanced education and work experiences, amplify an individual's human capital by enhancing productivity and earning potential. Knowledge about the prerequisites for securing a job in a specific occupation such as required set of competences holds significance, as it guides individuals' investment choices towards those that are likely to yield the highest returns in terms of employability and wages.

2.1. Competences and graduates' employability

Competences play a crucial role in graduates' employability. Numerous studies have shown that a strong set of competences is associated to higher graduate employability. These skills are often acquired through specialized courses, practical experiences, or research projects during their academic journey. Robles (2012) shows that graduates who possess strong interpersonal and communication abilities tend to excel in job interviews and perform well in the workplace. Leadership abilities and teamwork skills are essential for career advancement and overall job performance. Zhao, Seibert, and Hills (2005) show that graduates who can work collaboratively, inspire others, and take on leadership roles are more likely to be considered for higher-level positions. Andrews and Higson (2008) analyse graduate and employer perspectives of graduate employability in four European countries (UK, Austria, Slovenia, and Romania), and conclude that to increase graduate employability, business schools need to make sure their graduates are equipped with more than hard business-focused competences. Obadić (2006a, 2006b) investigates the problem of mismatch between the demand on the labour market and the location of workers seeking employment, on a regional level for Czech Republic, Croatia, Poland, Slovakia and Slovenia. Results point towards the existence of this mismatch in Czech Republic, Croatia and Slovakia and towards decrease in total employment with an increase in mismatch indicator. Nicolescu and Paun (2009) worked with Romanian data to identify the extent to which graduates' expectations in terms of competences developed through higher education are convergent to employers' requirements. They found that graduates emphasize the most on getting practical competences while employers emphasize the most on moral and psychic qualities of the

individual (general competences). Tomić (2014) studies mismatch on Croatian labour market via matching function and finds that although occupational mismatch does not have an impact on the aggregate flow of filled vacancies, 6% of total unemployment that can be attributed to occupational mismatch. Bailey and Ingimundardottir (2015) explore the effects of students taking a free extra-curricular competence development program on their subsequent employability estimates and find positive associations. Van Der Heijde and Van Der Heijden (2006) perform a similar study in one Dutch firm, where they propose a competence-based model to measure employability based on a five-dimensional conceptualization complemented with specific and generic competences, which is found to be positively associated with both individual careers and firm outcomes.

In summary, competences are directly connected to graduate employability. As presented above, previous research shows that a combination of both occupation-specific competences and general competences, such as job-specific skills, soft skills, adaptability, problem-solving, critical thinking, leadership, and teamwork makes graduates more attractive to employers and enhances their chances of securing employment. However, a slight importance advantage is given to practical occupation-specific competences when it comes to hiring decision. Lau et al. (2014) show that graduates with well-developed practical and technical competences related to their field of study are more likely to secure employment in their chosen profession. Durrani and Tariq (2012) highlight the potential for poor numeracy competences to limit graduate's acquisition of employment, irrespective of their degree subject. This is especially true for economics and business graduates, where numeracy competences are predominantly used in recruitment tests. Thus, the following hypothesis is offered:

H.1: Graduates with greater proximity (lower mismatch) between *occupation-specific practical competences* acquired during higher education and those demanded on labour market are more likely to be employed.

2.2. Competences and graduates' wage premiums

Competences have a significant impact on the wages of graduates. The acquisition of specific skills, knowledge, and attributes during higher education can lead to increased earning potential in the job market.

Allen and Van der Velden (2001) investigated mismatch impacts on labour market outcomes of Dutch graduates. They exploited the Higher Education and Graduate Employment in Europe database, specifically the cohort who graduated in 1991, and studied their labour market situation seven years later. Competence mismatches were found to be present among half of the graduates and were found to be associated with a 6% decrease in wages and a 14% decrease in job satisfaction. Mavromaras, McGuiness, and Fok (2009) performed a similar study in Australia using Household, Income and Labour Dynamics survey and found that about 11.5% of working age employees in full-time employment were severely over-skilled and paid less, on average, than their equally skilled, well-matched counterparts. Green and McIntosh (2007) studied competence mismatch in Britain using the second Skill Survey conducted in 2001 and showed that 35% of UK employees were over-skilled and 13% were under-skilled, both of which negatively affected their wages, by 9.9 and 0.6 percent respectively. Fredriksson, Hensyik, and Skans (2018) examine the direct impact of mismatch on wages in Sweden by comparing the competences of recently hired workers to the competences of incumbent workers performing the same job and indicate a 13% reduction in wages due to competences mismatch. García-Aracil and Van der Velden (2008) use a Careers after Higher Education – A European Research Survey (CHEERS) data to estimate monetary rewards of higher education graduates. This study indicated at heterogeneity between different competence requirements, where jobs with higher participative and methodological competence requirements are better paid (by 4% to 6%). Yamaguchi (2012) and Postel-Vinay and Lise (2015) investigate effect of mismatches in cognitive, manual, and interpersonal competences and suggest that cognitive competences have much higher return than manual competences but are slower to adjust to market requirements, while interpersonal competences have moderate returns but are slow to adjust over a worker's lifetime. They also found that the cost of mismatch is the highest for cognitive competences in relation to two other competences, but also asymmetric: employing a worker who is under-qualified in cognitive competences is costlier than employing an over-qualified worker.

In conclusion, competences have a direct impact on the wages of graduates. The acquisition of specialized, occupation-specific competences, soft skills, problem-solving abilities, continuous learning, and leadership skills all contribute to graduates' earning potential in the job market. Hence, the following hypothesis is offered:

H.2: Graduates with greater proximity (lower mismatch) between competences acquired during higher education and those demanded on labour market receive higher wage returns.

This short literature review outlines that there is still no general agreement about the best competence set for ensuring labour market success. Concentrating more on former south-east European transition countries (like Croatia), studies on skill, competence, or occupational mismatch are scarce mainly due to lack of adequate data, different approaches in defining, measuring, and comparing competences, and the fact that some competences are non-transferable among different industries. This research hopes to contribute to development of that topic.

3. Methodology and data description

3.1. Theoretical framework

Assume there are n graduates and C competences. Building on Rieckman's (2012) definition of competences as an interplay of skill and abilities, this study considers competences to be latent variables measured using the observable indicators – the skill and ability items. By the end of their studies each graduate i, $i \in \{1,2, ..., n\}$ develops each competence c, $c \in \{1,2, ..., C\}$, which in total determines their competence inventory, $\boldsymbol{C}_i = \{c_{i1}, c_{i2}, ..., c_{ic}\}$. Asfani, Suswanto, and Wibawa (2016) provide a good summary of factors influencing development of competences among students. A mix of these factors results in graduates with different competence inventories.

On the other side, firms wish to employ graduates that best suit their competence requirements. Assume that firms reached a consensus about the optimal competence development inventory, $C^* = \{c_1^*, c_2^*, ..., c_c^*\}$, ensuring the highest probability of being a productive worker. Note that C_{ic} represents the graduate i's acquired level of competence c, and c_c^* represents the optimal required level of that same competence by employers. Hence, from a firm's point of view, the expected productivity of graduates depends, among other factors, on the proximity of the graduate's set of acquired competences $\boldsymbol{C}_i$ to the mix of optimal competences C^*.

This competence proximity is measured in three ways. First measure involves defining a mismatch/gap, G_i, between $\boldsymbol{C}_i$ and $\boldsymbol{C}^*$ (lower values indicate greater proximity):

$$G_i = \sum_{c=1}^{C} |c_{ic} - c_c^*|, \qquad \forall i, i \in \{1, 2, \dots, n\} \tag{1}$$

Since these mismatches (gaps) have no measurement unit, they are transformed in their standardized form (in units of standard deviations) and are hence interpreted as standard unit deviations from their average values.

However, this self-reported competence development/requirement may suffer from non-objectivity of the person evaluating them. As highlighted in Teijeiro, Rungo, and Freire (2013), different individuals may have different response styles and may use a different yardstick to measure their own competence development/requirement. One way of alleviating this issue is to use a rank order of competence development/requirement, as this ordering indicates which competences have been developed/required the most (giving the highest value to the highest developed/required competence), independently from the actual developed/required level. Hence, second way of measuring competence proximity is by obtaining a ranking vector of optimal competence requirements, C^*, and compare it with ranking vector of competence development for each graduate, C_i. Let $R_i = \{r_{i1}, r_{i2}, ..., r_{ic-1}, r_{ic}\}$ and $R^* = \{r_1^*, r_2^*, ..., r_{c-1}^*, r_c^*\}$ be the ranking vectors of graduate i and consensus of all firms, respectively, where r_{ic} and r_c^* represent the ranks assigned to competence c. A proximity parameter p ($p \geq 0$) serves as a measure of equivalence between r_{ic} and r_c^*: $pi = |r_{ic} - r_c^*|$. $p = 0$ (strong equivalence) implies that employers' requirement ranking of competence c is identical to graduates' development ranking of that same competence. However, since this is seldom the case, employers often hire workers with their competence development ranking being "as close as it can be" to suit firm's needs. In this sense, $p>0$ (weak equivalence) entails a situation where ranks given to a particular competence c are considered "approximately the same" (different values of proximity parameter p will be used in robustness check). Using this proximity parameter, variables P_{ic} and $PROX_i$ are defined (higher values of variable $PROX$ indicate higher proximity):

$$P_{ic} = \begin{cases} 1, & \text{when } |r_{ic} - r_c^*| \leq \rho \\ 0, & \text{when } |r_{ic} - r_c^*| > \rho \end{cases} \tag{2}$$

$$PROX_i = \sum_{c=1}^{C} P_{ic} \tag{3}$$

Third approach to measuring competence proximity is by measuring the distance ($DIST$) between ranking vectors of each graduates' competence inventory development and a consensus of firms' competence requirements (higher values of variable $DIST$ indicate lower proximity):

$$DIST_i = \sum_{c=1}^{C} |r_{ci} - r_c^*| \quad (4)$$

First measure of proximity, ***G***, will be used for main set of results, and the two remaining measures of proximity, ***PROX*** and ***DIST***, will be used in robustness check section.

Presented theoretical framework most closely resembles that of Teijeiro, Rungo, and Freire (2013) and Gawrycka, Kujawska, and Tomczak (2020). A former study investigates impact of matching firms' needs and personal attainments of graduate competencies and employability in Spain, while the latter study examines and compares the views of employers and future employees on the desirable competencies of the potential labour market participants in Poland. Both studies collect the data for competence importance from employers (or recruiters) and data for competence development from graduates. This study focuses on Croatia, and presents a different setting compared to large economies of Spain and Poland. Following the two quoted papers, this study also concentrates on business and economics graduates and uses a data gathering process from employers and from graduates (future employees) to assess the relative importance and development of different competences. Compared to two quoted papers, this study expands the list of skills and abilities sent for evaluation which are then combined into key competences, it captures both firms and graduates from different parts of Croatia, as opposed to only one region or one university, and it increases the number of firms and graduates used on analysis.

3.2. Empirical methodology

Impact of competence proximity (gap) on graduates' employability is empirically investigated using a Probit model:

$$P_r(E_i = 1|X) = \Phi([\boldsymbol{GX}]'\beta) \quad (5)$$

where E_i indicates labour market status of graduate i (employed or unemployed), $\boldsymbol{G}$ is a matrix of competence gaps, $\boldsymbol{X}$ is a matrix of other socio-economic graduates' characteristics, ϕ is a standard normal cumulative distribution function, and β is a vector of parameters to be estimated. Matrix $\boldsymbol{X}$ contains personal information (age, sex, region, type of settlement, marital status), household information (number of household residents, total household income, number of cars owned by household) and educational information other than years of schooling (foreign education, GPA at graduation, student status, HE institution ownership type and whether student worked during studies). Graduates with low competence gap (high competence proximity) are expected to have higher probability of being employed.

Impact of competence proximity (gap) on graduates' wages is empirically investigated using an augmented Mincerian model (Mincer 1974):

$$lnW_i = \beta_0 + \beta_1 SCH_i + \sum_{c=1}^{C} \gamma_c G_{ic} + \sum_{c=1}^{C} \gamma_c G_{ic} + \sum_{k=1}^{K} \delta_k X_{ik} + \varepsilon_i \quad (6)$$

where W_i represents (ln) monthly wage of individual i, SCH represents educational attainment measured in number of years of schooling, G_{ci} is a measure of proximity between firms' required and graduates' acquired competence inventories for c^{th} competences, X_{ki} is the value of k^{th} explanatory variable for i^{th} individual and ε_i is error term of the model assumed to follow normal distribution with zero mean and a constant variance. Matrix X contains all the variables as in Equation 5, amended with labour market information (total work experience, employers' ownership type, employers' size, workers position within firm and total duration of training received at work). Graduates with low competence gap (higher competence proximity) are expected to be more productive and awarded a higher salary (Kelly, O'Connell, and Smyth 2010).

However, simple OLS estimation may suffer from bias caused by endogeneity and self-selection of graduates to employment (Card 2001). In terms of endogeneity, graduates' ability can be seen as a determinant of both wages and acquired competences (and thus competence proximity), i.e., abler graduates tend to grasp certain competences easier and with less effort, and also abler graduates tend to be more productive at their workplace and hence better paid. This problem is tackled using instrumental variables two-stage least squares (2SLS) estimation method. In this research, due to availability of data, possible variables set to be used as instruments include graduates' mother and father highest obtained education level. More educated families provide education-friendly environment and/or greater financial aid for their children during their schooling process, which would lead to better guess about the competence requirements on the current labour market and greater help in their children's acquisition of those competences. Self-selection bias arises due to non-random selection of the sample (sub-population) used in analysis, where

the differences in characteristics observed in individuals may simply be due to sample selection problem. This is addressed using Hekcman (1979) sample selection model.

3.3. Project design and data description

3.3.1. Data collection from firms

Firm dataset consists of primary data collected through questionnaire, amended with firm financial and characteristics data from Croatian Financial agency (FINA). Questionnaire was developed by the author from previous similar research (Biesma et al. 2007; Biesma et al. 2008; Kelly, O'Connell, and Smyth 2010) and pilot study results. A final list of 58 general and practical skills and abilities was sent out for self-evaluation. The former set includes higher cognitive (e.g., learning abilities, analytical skills, problem-solving abilities) and interpersonal (e.g., team working skills, planning, and organizing skills and decision-making skills) skills and abilities, while the latter set includes theoretical knowledge as well as methods and procedures specific to economics and business domain (e.g., writing business letters, compiling financial reports, calculating costs and budgets, etc.). The number of skill/ability items sent for self-evaluation in other similar studies ranges from 34 (Biesma et al. 2008) all the way to 99 (Chung-Herrera, Enz, and Lankau 2003). While acknowledging the problems associated with self-evaluation, given the available time and resources, this turned out to be the most appropriate and practical. Literature also supports this method of assessment (Watson et al. 2002) and suggest that continual self-assessment will provide the opportunity to reflect on their practice and to request resources to address perceived deficits (Waddell 2001).

Questionnaire was administered in online version from April to July 2016. In addition to providing basic firm information, respondents (firm owners, CEOs, or heads of HR department) were asked to rate how important each skill or ability is for positions occupied by employees with business and economics background on a five-point Likert scale ranging from 1 (unimportant) to 5 (extremely important).

Following and adapting sampling strategy from Iootty et al. (2014), final questionnaire (representative in terms of firm size, NACE one-digit industry and Croatian counties) was sent out to 1,000 Croatian companies. 156 responses came back, giving a 15.6% completion rate which is quite standard, given that response rates in similar studies range from 11% (Azevedo, Apfelthaler, and Hurst 2012) to 18.6% (Chung-Herrera, Enz, and Lankau 2003). Following a data cleaning process, sample was reduced to 112 firms. Somewhat low number of respondents is also quite standard in this type of study. For example, Chiru et al. (2012) analyse tourism and agricultural industry using data from 44 firms, Zehrer and Mossenlechner (2009) base their analysis of tourism sector on 48 firms and Pan and Perera (2012) assess the competences in accounting field using 106 firms' responses. Table 1 shows descriptive statistics of sampled firm characteristics.

Table 1. Descriptive statistics of firms in the sample

Variable	Questionnaire respondents		All firms in 2016	
	n	Mean	*N*	Mean
Size				
Micro	35	0.31	85,171	0.89
Small	47	0.42	9,160	0.10
Medium	21	0.19	1,515	0.02
Large	9	0.08	313	0.00
Region[b]				
Central Croatia	43	0.38	42,711	0.44
North-western Croatia	19	0.17	8,757	0.09
East Croatia	16	0.14	8,741	0.09
North Adriatic and Lika	21	0.19	17,176	0.18
Central and South Adriatic	13	0.12	18,774	0.20

Table 1. ***Continued***

Ownership				
State	14	0.13	787	0.01
Private	95	0.85	94,210	0.98
Mixed	3	0.03	1,162	0.01
Exporter				
Exporter	53	0.47	13,931	0.14
Non exporter	59	0.53	82,228	0.86
Industry sector				
Agric., forestry, fishing	1	0.01	2,709	0.03
Manufacturing	48	0.43	12,355	0.13
Construction	7	0.06	10,451	0.11
Services	56	0.50	70,644	0.73
Financial variables (in real terms)				
Number of employees	112	89.23	96,159	7.51
Capital (mil. HRK)[a]	112	47.89	96,159	1.77
Value added (mil. HRK) [a]	112	25.87	96,159	2.68
Turnover (mil. HRK) [a]	112	35.21	96,159	3.19

Notes: [a] All monetary values are expressed in Croatian kuna (HRK), 1 EUR = 7.529 HRK (2016 average). [b] Information about definitions of regions is available on request.

Source: Authors calculations based on questionnaire and FINA data.

3.3.2. Data collection from graduates

This dataset consists of primary data collected through questionnaire from economics and business graduates. These particular graduates were chosen for several reasons: (1) following the financial crisis of 2008, Obadić and Majić (2013) report that about every third higher education graduate (25 to 29 years) did not have a secured job position, particularly those with economics-and-business background; (2) graduates' competences were not yet influenced by tenure nor have become obsolete, thus enabling estimation of how do the universities prepare them for challenges on the labour market; and (3) economics-and-business graduates' competences, both general and practical, are not tied to a certain industry as they are needed across wide range of sectors and between different departments within each enterprise.

List of all the higher education (HE) institutions that provide economics and business programs (obtained from Ministry of Science and Education, hereafter MSE) was combined with Croatian Bureau of Statistics (CBS) data, who publish the number of graduates from those institutions on yearly basis. Unfortunately, CBS does not provide data on specific study programs, which prompted exclusion from analysis of graduates from HE institutions that provide programs not related to economics and business (e.g., Faculty of Organization and Informatics in Varaždin offers both informatics and economics programs, but as there was no way to differentiate between these two graduates, they were excluded from analysis).

To ensure consistency and comparability of responses between firms and graduates, this questionnaire used the same list of skills and abilities as the one sent out to firms, where graduates had to evaluate their development level in each of given skill or ability during their studies. Other sections of questionnaire were accommodated to collect their personal and socio-economic data. On-line version was sent to a sample of 10,000 economics and business graduates. This graduate sample was representative in terms of type of higher educational institution (Schools of professional higher education, Polytechnics and Faculties), types of studies (professional and university studies) and by higher education institutions themselves. Invitations were sent out to 736 graduates from Schools of professional higher education and Polytechnics, and to 9,264 graduates from Faculties, thus capturing 28.9% and 30.1% of both graduates, respectively. This questionnaire was implemented from April to July 2016 and it recorded a return rate of just over 10%, with 1,009 ready-to-use observations. Table 2 and Table 6 in Appendix show the final distribution of collected data from graduates.

Table 2. Descriptive statistics of information collected from graduates

Variable	N	Mean	S. d.	Min	Max
Personal information					
Age	1,009	28.09	1.05	27	32
Gender					
Male	444	0.44	0.50	0	1
Female	565	0.56	0.52	0	1
Region					
Central Croatia	727	0.72	0.45	0	1
North-western Croatia	91	0.09	0.29	0	1
East Croatia	101	0.10	0.30	0	1
North Adriatic and Lika	50	0.05	0.23	0	1
Central and South Adriatic	40	0.04	0.19	0	1
Living in urban settlement	707	0.70	0.46	0	1
Married	424	0.42	0.49	0	1
Household information					
Members of household	1,009	2.99	1.04	1	5
Household income	1,009	14,335	5,359	2,300	29,650
Cars owned by household	1,009	1.54	0.77	0	4
Father highest education level					
Elementary	151	0.15	0.35	0	1
Secondary	454	0.45	0.50	0	1
Tertiary	404	0.40	0.49	0	1
Mother highest education level					
Elementary	172	0.17	0.38	0	1
Secondary	464	0.46	0.50	0	1
Tertiary	373	0.37	0.48	0	1
Education information					
Years of education	1,009	17.32	0.98	15	20
Foreign education	1,009	0.23	0.42	0	1
Graduation GPA[a]	1,009	4.26	0.59	2.9	5
Student status					
Full-time student	636	0.63	0.48	0	1
Part-time student	373	0.37	0.28	0	1
Education institution ownership					
Private institution	161	0.16	0.37	0	1
Public institution	848	0.84	0.37	0	1
Work during HE studies	1,009	0.48	0.50	0	1
Labor market information					
Unemployed	361	0.36	0.21	0	1
Employed	648	0.64	0.48	0	1
Work experience	648	1.91	0.81	0	5
Employer ownership					
Private	434	0.67	0.47	0	1
State	214	0.33	0.27	0	1

Table 2. ***Continued***

Employer size					
Micro firm	91	0.14	0.35	0	1
Small firm	214	0.33	0.47	0	1
Medium firm	259	0.40	0.49	0	1
Large firm	84	0.13	0.34	0	1
Employee status					
Owner	65	0.10	0.30	0	1
Manager	168	0.26	0.44	0	1
Worker	415	0.64	0.48	0	1
Training at work	648	0.55	0.50	0	1
Wage[b]	648	6,040	1,421	2,550	12,000

Notes: [a] Grades in Croatian educational system range from 1 (fail) to 5 (excellent). [b] To increase the response rate, when asking for the amount of household income and wage, respondents were asked to round a number to nearest 50 HRK or 100 HRK. 1 EUR = 7.529 HRK (2016 average).

Source: Authors calculations based on questionnaire.

4. Findings and discussion

4.1. Estimation of key competences

Key competences were identified using exploratory factor analysis on firm dataset (as firms are the ones creating demand on labour market). Using standard criteria of eigenvalue greater than one and based on the list of skills/abilities loadings on each factor, eight key competences (factors) were extracted, explaining over 80% of original variance: 1) economics-and-business theory and practice; 2) collectedness, presentation, and teamwork; 3) IT proficiency; 4) business communication; 5) project management and professionalism; 6) advocacy, language fluency; 7) motivation and organization; and 8) quantitative-economics algebra. All these competences are concerning respondents themselves, i.e., *motivation and organization* means that graduates themselves are motivated and organized, and not that they have ability to motivate and organize others. This division is in line with previous studies that have focused on a small set of key competences (Biesma et al. 2008; Azevedo, Apfelthaler, and Hurst 2012; Grzybowska and Łupicka 2017). Kaiser-Meyer-Olkin sampling adequacy measure of 0.88 justifies the usage of exploratory factor analysis. Competences 1, 3, 4 and 8 were labelled as economics-and-business practical competences, while competences 2, 5, 6 and 7 were labelled as general. Confirmatory factor analysis with a root mean squared error of approximation of 0.062 indicates a good fit of the model.

To quantify key competences, a sum score of all its items was calculated and divided by the total number of items per each competence. Competences employers view as the most important are *motivation and organization*, *project management and professionalism* and *collectedness, presentation, and teamwork* (Table 3). On the other hand, graduates felt the most confident in acquisition of the *quantitative-economics algebra*, *business communication* and *economics-and-business theory and practice* competences. Key competences' requirements were also calculated by different industries, firm size, firm ownership and by different educational attainment of firm representatives and find no significant differences within these groups were found.

Differences between required and acquired competences are presented in last column of Table 3, presenting competence proximity from employers' point of view – a positive sign indicates competence overdevelopment while a negative sign indicates competence shortage. Practical competences are mostly in excess development (apart from *business communication* competence) while those of general type are in shortage, with the greatest shortage in *motivation and organization* and *project management and professionalism* competences. These results are in line with previous research suggesting that employers place greater emphasis on general competences such as professionalism, project management and teamwork (Biesma et al. 2008; Azevedo, Apfelthaler, and Hurst 2012; Chiru et al. 2012; Grzybowska and Łupicka 2017) whole HE institutions are more concerned with equipping graduates with practical competences (Chiru et al. 2012). Of course, one could argue this is their primary role. However, it is important to note that

Table 3. Descriptive statistics of key competences by firms and graduates

		Required by firms	Acquired by graduates	Mean diff.
		Mean (S. d.)	Mean (S. d.)	
Practical	Economics and business theory and practice	3.6 (0.9)	4.0 (0.4)	0.3***
	IT proficiency	3.0 (1.0)	3.2 (0.9)	0.2**
	Business communication	4.3 (0.7)	4.0 (0.5)	-0.3***
	Quantitative-economics algebra	3.7 (1.1)	4.1 (0.8)	0.4***
	Practical competences (total)	**3.6 (0.8)**	**3.8 (0.4)**	**0.2*** **
General	Collectedness, presentation, and teamwork	4.2 (0.6)	3.7 (0.8)	-0.5***
	Project management and professionalism	4.4 (0.6)	3.6 (0.8)	-0.9***
	Advocacy, language fluency	3.9 (0.7)	3.6 (0.7)	-0.3***
	Motivation and organization	4.6 (0.4)	3.6 (1.0)	-0.9***
	General competences (total)	**4.2 (0.5)**	**3.6 (0.7)**	**-0.6*** **

Notes: Means were calculated as simple means with no weights. Differences in the last column were tested using t-tests for unpaired data with unequal variance. (***) and (**) denote 1% and 5% level of significance, respectively.

Source: Authors calculations based on questionnaire data.

practical competences may become obsolete, or at least outdated, as technological development progresses (World Economic Forum 2016). Instead, future labour market demands that graduates be equipped with competences enabling quick adaptation to latest methods of doing business available on the market. This rather simple analysis points to a high degree of competence mismatch (low competence proximity) on the labour market, especially in terms of general competences.

4.2. Graduates' employability

Table 4 shows the estimation results of employability model presented in Equation 5. First two columns present Probit estimation results – column (1) presents the results when this mismatch is calculated for all 58 skill/ability-items together (without combining them into key competences) and column (2) presents results when these skill/ability-items are grouped in competences.

When looking at results for all skill/ability items together (without combining them into competences), increase in mismatch by one standard deviation from the mean reduces the probability of being employed by 4.9% on average. Now focusing on the situation when these skill/ability items are combined into key competences, results show that only practical occupation-specific competences are significantly associated to probability of being employed. Concentrating on these practical occupation-specific competences, unit mismatch increase in *economics-and-business theory and practice* reduces the probability of being employed by 5.7% on average, and unit mismatch increase in *business communication* by 3.4% on average. No other key competences, practical or general, seem to be statistically significant in relation to graduates' employability. Nevertheless, they all have the expected negative direction of effect, thus, estimated coefficients could still be consistent with the expectations but due to small dataset, the degree of variation is not sufficient to guarantee statistical significance (Amrhein, Greenland, and McShane 2019). Hence, these results go in favour of supporting H.1.

Endogeneity of acquired graduates' competences and hence the calculated proximity (or in this case mismatch) to employers' requirements is tackled using instrumental variable approach. Due to availability of only two instruments (mothers' and fathers' education), this exercise can only be performed on a single endogenous variable – mismatch in all skill/ability-items – instead on a set of eight key competences, as that would require availability of at least eight good instruments. With this in mind, 1st stage results of 2SLS estimation, presented in column (1) of Table 7 in Appendix, reveal that education of both graduates' parents is negatively associated with mismatch in skills/abilities. For example, providing that graduates' father and mother have obtained secondary education degree, graduates' mismatch in required skills/abilities is expected to be reduced on average by 0.840 and 0.886 standard deviation units, respectively. These results go along in showing that parents'

Table 4. Results of employability model.

Regressors[a]		Probit		2SLS (2nd stage)
		(1)	(2)	(3)
Mismatch in **all skill/ability items**		-0.049*		-0.019*
		(0.026)		(0.009)
Mismatch in **practical** competences	Economics and business theory and practice		-0.057***	
			(0.019)	
	IT proficiency		-0.004	
			(0.017)	
	Business communication		-0.034**	
			(0.015)	
	Quantitative-economics algebra		-0.020	
			(0.019)	
Mismatch in general competences	Collectedness, presentation, and teamwork		-0.007	
			(0.018)	
	Project management and professionalism		-0.026	
			(0.030)	
	Advocacy, language fluency		-0.014	
			(0.021)	
	Motivation and organization		-0.005	
			(0.016)	
N		1009	1009	1009
Pseudo R^2		0.735	0.753	0.732
Sargan score				6.584
% of correctly predicted		93.62%	94.33%	
Hosmer-Lemeshow χ^2		36.26***	55.29***	
Area under ROC curve		0.9820	0.9840	

Notes: (***), (**) and (*) denote 1%, 5% and 10% level of significance, respectively. Standard errors in parentheses. Results in columns (1) – (3) are *average marginal effects* while results of *marginal effects estimated at the means* are available on request. [a] All three models also included personal characteristics, household characteristics and education characteristics of a graduate. Personal characteristics variables: age, sex, region, type of settlement, marital status. Household characteristics variables: number of household residents, total household income, number of cars owned by household. Education characteristics variables: foreign education, GPA at graduation, student status, HE institution ownership type and whether student worked during studies. Estimated coefficients of personal, household and education variables are not reported as they were not the focus of the research and due to presentation purposes but are available on request.

Source: Author's calculations based on questionnaire and FINA data.

education level matters and that highly educated parents are better able to point their children in the right direction when it comes to acquisition of skills/abilities required on contemporary labour market. Overall effect of mismatch in all skills/abilities on graduate employability is 1.9% on average (column (3) of Table 4), which is about 3 percentage points lower than OLS estimates.

4.3. Graduates' wage premiums

Table 5 shows the estimation results of augmented Mincerian wage model. First two columns present OLS estimation results – column (1) present the results when mismatch is calculated for all skill/ability items together and column (2) when these skill/ability items are grouped in key competences. Results for mismatch in all skill/ability items together indicate a wage penalty of about 3.9%. As the average wage in obtained sample amounts to 6,040 HRK (~ 801 EUR), this represents a wage penalty of 235 HRK (~ 32 EUR).

When we focus on economics-and-business practical key competences, results are suggesting a small wage penalty for *economics and business theory and practice* competence mismatch of about 1.1% (67 HRK ~ 9 EUR). This is in line with previous research showing that graduates who possess specialized technical competences and expertise relevant to their field are often rewarded with higher wages (Hershbein and Kahn 2018). These competences differentiate them

Table 5. Results of augmented Mincerian wage model

Regressors[a]		OLS		2SLS (2nd stage)	Heckman	
		(1)	(2)	(3)	(4)	(5)
Mismatch in all skill/ability items		-0.039***		-0.131***	-0.048***	
		(0.007)		(0.033)	(0.008)	
Mismatch in **practical** competences	Economics and business theory and practice		-0.011**			-0.017***
			(0.005)			(0.005)
	IT proficiency		-0.005			-0.003
			(0.004)			(0.005)
	Business communication		-0.001			-0.003
			(0.004)			(0.004)
	Quantitative-economics algebra		-0.003			-0.002
			(0.004)			(0.004)
Mismatch in **general** competences	Collectedness, presentation, and teamwork		-0.012			-0.014*
			(0.008)			(0.008)
	Project management and professionalism		-0.012**			-0.013**
			(0.005)			(0.006)
	Advocacy, language fluency		-0.003			-0.000
			(0.005)			(0.005)
	Motivation and organization		-0.020***			-0.019***
			(0.006)			(0.007)
Lambda (Inverse Mill's Ratio)					0.091	0.092
					(0.079)	(0.074)
N		648	648	648	648	648
R^2		0.891	0.892	0.847		
Adjusted R^2		0.885	0.885	0.839		
Sargan score				7.159		
Kleibergen-Paap rk LM statistic				18.721		
Kleibergen-Paap rk Wald statistic				21.552		
Kleibergen-Paap rk Wald F statistic				5.082		
Hansen J statistic				5.022		
p					0.972	1.000
σ					0.094	0.092

Notes: (***), (**) and (*) denote 1%, 5% and 10% level of significance, respectively. Standard errors in parentheses. [a] All five models also included personal characteristics, household characteristics, education characteristics and labor market characteristics of a graduate. Personal characteristics variables: age, sex, region, type of settlement, marital status. Household characteristics variables: number of household residents, total household income, number of cars owned by household. Education characteristics variables: foreign education, GPA at graduation, student status, HE institution ownership type and whether student worked during studies. Labor marker characteristics variables: total work experience, employers' ownership type, employers' size, workers position within firm and total duration of training received at work. Estimated coefficients of personal, household, education and labor market variables are not reported as they were not the focus of the research and due to presentation purposes but are available on request.

Source: Authors' calculations based on questionnaire and FINA data.

from other candidates and make them more valuable to employers.

While practical competences are important, general competences such as project management, motivation and organization also contribute to higher wages. Mismatch in general competences indicates a wage penalty of 1.2% (73 HRK ~ 10 EUR) in case of *project management and professionalism* competence and 2.0% (120 HRK ~ 17 EUR) in case of *motivation and organization* competence. These results are in line with previous results that employers put more emphasis on general type of competences, and that mismatches in those have greater effect on the wages. Graduates who develop project management competences

often progress into supervisory or managerial roles. These positions are typically associated with higher wages due to increased responsibilities and the ability to guide teams toward success. Additionally, graduates with strong professionalism competences can often negotiate better compensation packages due to their ability to work effectively with colleagues and clients. Competences related to motivation for continuous learning and adaptability are highly valued in today's rapidly changing job market. Graduates possessing these competences can quickly acquire new skills and adapt to evolving demands, which increases their wages as their capabilities remain relevant over time. Finally, graduates who possess strong organization competences are better equipped to handle complex tasks and contribute positively to their organizations. As a result, they often receive higher wages due to their impact on overall productivity. These results go in favour of supporting H.2.

Hence, these results are suggesting a greater effect of general competences, instead of practical ones, on graduates' wages. These is interesting result, as it would seem to contradict Probit estimation results on graduates' employability, which shows greater mismatch effect of practical competences. This suggests that even though employers are putting greater emphasis on the importance of general competences, when deciding to award an employment contract they are still more focused on the practical competences. Only after someone is employed, general competences seem to become more important in determining their wage level.

These results are not too surprising, given that it is difficult to evaluate candidates' general competences using various recruitment tests or during recruitment interview. Even though many of these tests include a psychological profile section, which should give an indication of candidates acquired general competences, they are still primarily based on the occupation-specific questions and job-specific situation. Hence, it is no surprising that mismatch in practical occupation-specific competences is more important at this stage. On the other hand, mismatch is general competences is best evaluated during the actual work and hance connected to employee's renumeration.

Results of instrumental variable procedure using 2SLS estimation method (2nd stage results, 1st stage results are presented in column (2) of Table 7 in Appendix) are presented in column (3) of Table 5 and show that overall effect of mismatch in all skills/abilities on graduate wage is 13.1% (785 HRK ~ 100 EUR) on average, which is by about 10 percentage points higher than OLS estimates. Heckman sample selection model is used to accommodate for sample selection bias, more precisely to account for self-selection of graduates into employment, and results are presented in columns (4) – (5) of Table 5. Results here are very much in line with initial OLS estimates, which is corroborated by statistical insignificance of Inverse Mill's Ratio, suggesting no self-selection problem. When analysing mismatch in all skills/abilities, wage penalty is estimated to be 4.8% (290 HRK ~ 40 EUR on average), which is higher by roughly one percentage point than OLS estimate. In terms of economics-and-business practical competences, only *economics and business theory and practice* is showing significant wage penalty effect of 1.7%, slightly higher than OLS's estimated 1.1% penalty. Looking at general competence set, *project management and professionalism* and *motivation and organization* show significant wage penalties of 1.3% and 1.9%, respectively (also slightly higher than OLS estimates).

4.4. Robustness check

For the robustness check, the proximity between employers' competence requirements and graduates' competence attainment is defined as in Equations 3 and 4. Results of robustness check for Employability model and Mincerian wage model are presented in Tables 8 and 9, respectively, in the Appendix. First two columns of both these tables show the results when competence proximity is measured using the distance between rankings (variable *DIST*) of particular competences (negative association expected – greater distance between required and attained competence rankings should lead to lower employability and wages); and columns (3) to (8) present the results when competence proximity is measured using different values of proximity parameter p (variable *PROX*) (positive association expected – greater number of ranking matches between required and attained competence rankings should lead to higher employability and wages). Of course, as approximation parameter p increases (thus allowing greater differences in ranking of competences by employers and graduates to still be labelled as weakly equivalent), estimated effects on employability and wage should gradually decrease.

Focusing on the Employability model, robustness checks result for all skill/ability items mainly corroborate original estimates but are higher by 1 and 4 percentage points for *Distance* and *PROX1* proximity measures, respectively. In terms of competences, practical competences are shown to be more important for graduates' employability, particularly *economics and business theory and practice; business communication;* and *quantitative-economics algebra*, which is also

in line with previous results. The story is very much similar for the Mincerian wage model. Robustness checks yielded results like those in original scenario, with general competences holding greater importance when it comes to determining wages.

5. Conclusion

This research analysed the mismatch on the labour market between the competences that employers require, on one side, and graduates acquire, on the other, and how is this associated with graduates' employability and wages. Analysis was carried out using a sample of economics and business graduates, and a general sample of firms in Croatia. Data was collected using questionnaires for graduates and firms, both containing the same list of skills and abilities sent out for evaluation, which were then combined in eight key competences of general and practical type.

Results point towards a mismatch between competence inventories required by employers and acquired by graduates. This is particularly emphasized for general competences which were all underdeveloped by graduates in relation to employers' needs. The greatest mismatch was found in *motivation and organization* competence and *project management and professionalism* competence. On the other hand, mismatches in practical competences, although significant, were somewhat smaller and overdeveloped in relation employers' needs.

These competence mismatches were then associated with graduates' employability and wages. Results here show that the probability of being employed significantly decrease with the existence of this mismatch (low proximity) by about 5% overall. Looking at key competences, results are significant only for competences of practical type *economics-and-business theory and practice* and *business communication*.

Shifting the focus from employability to wage returns, results for mismatch in all skill/ability-items grouped together indicate a wage penalty of about 3.9%. When we look at key competences, results are suggesting greater impact of mismatch in competences of general type – a wage penalty of 1.2% in case of *project management and professionalism* competence and 2.0% in case of *motivation and organization* competence. This indicates that in a situation where the job market is constantly evolving, and graduates need to demonstrate adaptability and a willingness to learn to remain relevant. Those with a growth mindset and a demonstrated ability to embrace new challenges are more likely to navigate the dynamic job landscape successfully.

Thus, results have shown that employers put greater emphasis on practical competences during initial screening of the candidates and when awarding employment contracts. Once the graduate has been employed, however, general competences are more important in securing a higher wage return for employee. Both written employment test and job interviews predominantly revolve around inquiries tailored to the specific occupation. Therefore, it's unsurprising that practical occupation-specific competences hold greater significance at this juncture. General competences, on the other hand, are most accurately assessed through actual job performance, consequently meriting higher remuneration.

Looking into the future, the issue of competence alignment on the labour market will further gain importance as firms, organizations, governments, and households continue to embrace digital and green technologies to stay competitive. Hence, investing in the development and cultivation of the right competences among employees becomes imperative. Organizations that prioritize building a competent and skilled workforce are better positioned to capitalize on the opportunities presented by digital transformation and thrive in the digital age.

Results of this research also carry certain policy implications. They indicate that higher education institutions need to align their curricula to meet the current demand on the labour market. However, these results go beyond only tertiary education - pupils in elementary and secondary schools should also be better equipped with these competences as some of them opt to enter the labour market instead of continuing to higher education. Additionally, some of these competences can be acquired, or greatly improved, by out-of-school or non-formal training, so these curricula should be updated as well. Higher education institutions could embed the concept of employability in the learning programme design process and into learning, teaching and assessment practices. Employability could be further enhanced by incorporating work experience in the curriculum, by building an institutional culture that promotes employability and by inviting employers as guest lecturers. The greatest mismatch between graduates and employers' competence inventories was found for general competences, such as *motivation and organization*, or *project management and professionalism*, which points at parts of curricula in a dire need of reform.

Finally, this research is not without limitations. Firstly, this analysis is focused on economics and business graduates, and it would be unwise to generalize these findings to job positions requiring other educational background. Even though *general* competences

may be transferable to positions held by employees with different background, their importance may be different. Second possible limitation may be the method of collecting data using online surveys. Even though online surveys offer substantial cost savings, greater options for editing and analysis, wider magnitude of coverage and quicker response time, they may also suffer from questionnaire display issues and lower levels of confidentiality. Thirdly, the response rate to these surveys were quite low, even though, as evidenced in similar research, this is quite standard for this kind of analysis. Next, competences requirements and competences development were evaluated by two different people (employers and graduates) – instead of the same person – who may use different subjective notions or yardsticks when measuring these. Fifth, due to data availability and focus of this research, graduates' data only includes 2011-2015 cohorts, and this analysis was carried in a time of a rebounce of Croatian economy from 2008 financial crisis. Future research can also work towards prolonging this span as to include business cycle effects. Lastly, this research did not respond to how these competences are acquired in the first place and which factors influence the development degree of each competence, which is a valid topic for future research.

References

Allen, J. and van Der Velden R. K. W. 2001. Educational mismatches versus skill mismatches: effects on wages, job satisfaction, on-the-job search. Oxford economic papers 53 (3): 434-452.

Allen, J. and van Der Velden, R. K. W. 2009. Competencies and early labour market careers of higher education graduates. Ljubljana: University of Ljubljana, Faculty of Social Sciences.

Amrhein, V., Greenland, S., and McShane, B. 2019. Scientists rise up against statistical significance. Nature 567: 305-307.

Andrews, J. and Higson, H. 2008. Graduate employability, 'soft skills' versus 'hard'business knowledge: A European study. Higher education in Europe 33 (4): 411-422.

Asfani, K., Suswanto, H., and Wibawa, A. P. 2016. Influential factors of students' competence. World Transactions on Engineering and Technology Education 14 (3): 416-420.

Azevedo, A., Apfelthaler, G., and Hurst, D. 2012. Competency development in business graduates: An industry-driven approach for examining the alignment of undergraduate business education with industry requirements. The International Journal of Management Education 10 (1): 12-28.

Babić, Z., Matković, T., and Šošić, V. 2006. Strukturne promjene visokog obrazovanja i ishodi na tržištu rada. [Structural Changes in Tertiary Education and Impacts on the Labour Market]. Economic Trends & Economic Policy 16 (108): 26-65.

Becker, G. S. 1962. Investment in human capital: A theoretical analysis. Journal of Political Economy 70: 9-49.

Biesma, R. G., Pavlova, M., van Merode, G. G., and Groot, W. 2007. Using Conjoint Analysis to Estimate Employers Preferences for Key Competencies of Master Level Dutch Graduates Entering the Public Health Field. Economics of Education Review 26 (3): 375-386.

Biesma, R. G., Pavlova, M., Vaatstra, R., van Merode, G. G., Czabanowska, K., Smith, T., and Groot, W. 2008. Generic Versus Specific Competencies of Entry-Level Public Health Graduates: Employer's Perceptions in Poland, the UK, and the Netherlands. Advances in Health Sciences Education 13 (3): 325-343.

Botrić, V. 2009. Unemployed and long-term unemployed in Croatia: evidence from Labour Force Survey. Revija za socijalnu politiku 16 (1): 25-44.

Card, D. 2001. Estimating the Return to Schooling: Progress on Some Persistent Econometric Problems. Econometrica 69 (5): 1127-1160.

Chiru, C., Ciuchete, S. G., Lefter, G. G., and Paduretu, E. 2012. A Cross Country Study on University Graduates Key Competencies. An Employer's Perspective. Procedia-Social and Behavioral Sciences 46: 4258-4262.

Chung-Herrera, B. G., Enz, C. A., and Lankau, M. J. 2003. Grooming future hospitality leaders: A competencies model. The Cornell Hotel and Restaurant Administration Quarterly 44 (3): 17-25.

Durrani, N. and Tariq, V. N. 2012. The role of numeracy skills in graduate employability. Education + Training 54 (5): 419-434.

Fredriksson, P., Hensvik, L., and Skans, O. N. 2018. Mismatch of talent: Evidence on match quality, entry wages, and job mobility. American Economic Review 108 (11): 3303-38.

Galić, Z. and Plećaš, M. 2012. Quality of working life during the recession: The case of Croatia. Croatian Economic Survey 14 (1): 5-41.

García-Aracil, A. and Van der Velden, R. (2008). Competencies for young European higher education graduates: labor market mismatches and their payoffs. Higher Education 55 (2): 219-239.

Gawrycka, M., Kujawska, J., and Tomczak, M. 2020. Competencies of graduates as future labour market participants–preliminary study. Economic research 33 (1): 1095-1107.

Green, F. and McIntosh, S. 2007. Is there a genuine underutilization of skills amongst the over-qualified? Applied Economics 39 (4): 427-439.

Grzybowska, K. and Łupicka, A. 2017. Key competencies for Industry 4.0. Economics and Management Innovations 1 (1): 250-253.

GSIA. 2019. Global Sustainable Investment Review 2018. Global Sustainable Investment Alliance. Available at https://www.gsi-alliance.org/wp-content/uploads/2019/06/GSIR_Review2018F.pdf

Heckman, J. J. 1979. Sample selection bias as a specification error. Econometrica 47 (1): 153-161.

Hershbein, B. and Kahn, L. B. 2018. Do recessions accelerate routine-biased technological change? Evidence from vacancy postings. American Economic Review 108 (7): 1737-1772.

Husain, M. Y., Mokhtar, S. B., Ahmad, A. A., and Mustapha, R. 2010. Importance of employability skills from employers' perspective. Procedia-Social and Behavioral Sciences 7: 430-438.

Iootty, M., Correa, P., Radas, S., and Škrinjarić, B. 2014. Stylized facts on productivity growth. Evidence from firm-level data in Croatia. Policy Research Working Paper 6990.

Kelly, E., O'Connell, P., and Smyth, E. 2010. The Economic Returns to Field of Study and Competencies Among Higher Education Graduates in Ireland. Economics of Education Review 29 (4): 650-657.

Lau, H. H., Hsu, H. Y., Acosta, S., and Hsu, T. L. 2014. Impact of participation in extra-curricular activities during college on graduate employability: an empirical study of graduates of Taiwanese business schools. Educational Studies 40 (1): 26-47.

Matković, T. 2012. Educational Origins and Occupational Destinations? Dissecting the Education-Job Mismatch in School to Work Transitions in Croatia. In Labour Market and Skills in the Western Balkans, edited by M. Arandarenko and W. Bartlett, 73-101. FREN – Foundation for the Advancement of Economics, Belgrade.

Mavromaras, K., McGuinness, S., and Fok, Y. K. 2009. Assessing the incidence and wage effects of overskilling in the Australian labour market. Economic Record 85 (268): 60-72.

Mincer, J. 1974. Schooling, Experience and Earnings. New York: National Bureau of Economic Research. Columbia University Press.

Nicolescu, L. and Paun, C. 2009. Relating Higher Education with the Labour Market: Graduates' expectations and employers' requirements. Tertiary Education and Management 15 (1): 17-33.

Obadić, A. 2005. Dezagregirana analiza tržišta rada Hrvatske prema stručnoj spremi i djelatnostima. [Disagregated analysis of Croatian labour market according to qualification level and activities]. Ekonomija 11 (4): 586–620.

Obadić, A. (2006a). Theoretical and empirical framework of measuring mismatch on a labour market. Zbornik radova Ekonomskog fakulteta u Rijeci: časopis za ekonomsku teoriju i praksu 24 (1): 55-80.

Obadić, A. (2006b). Influence of regional mismatch on the employment process in selected transition countries. Ekonomski pregled 57 (1-2): 3-30.

Obadić, A. and Oršolić, D. 2012. Kvalifikacijska (ne) usklađenost ponude i potražnje visokoobrazovanih osoba na tržištu rada Grada Zagreba [Qualification (mis) match of highly educated individuals in the labour market of City of Zagreb]. Ekonomski pregled 63 (12): 681-712.

Obadić, A. and Majić, E. 2013. Analiza strukture nezaposlenosti visokoobrazovanih osoba u Republici Hrvatskoj i mjere za njezino smanjivanje. [Unemployment Structure Analysis in Highly Educated People in Croatia and Measures for Reduction of Unemployment]. Poslovna izvrsnost 7 (2): 103-123.

Pan, P. and Perera, H. 2012. Market relevance of university accounting programs: Evidence from Australia. Accounting Forum 36 (2): 91-108.

Postel-Vinay, F. and Lise, J. 2015. Multidimensional skills, sorting, and human capital accumulation. In 2015 Meeting Papers No. 386. Society for Economic Dynamics.

Rieckmann, M. 2012. Future-oriented higher education: Which key competencies should be fostered through university teaching and learning? Futures 44 (2): 127-135.

Robles, M. M. 2012. Executive perceptions of the top 10 soft skills needed in today's workplace. Business communication quarterly 75 (4): 453-465.

Sá, M. J., Santos, A. I., Serpa, S., and Miguel Ferreira, C. 2021. Digitainability—Digital competences post-COVID-19 for a sustainable society. Sustainability 13 (17): 9564.

Škrinjarić, B. 2022. Competence-based approaches in organizational and individual context. Humanities and social sciences communications 9 (28): 1-12.

Teijeiro, M., Rungo, P., and Freire, M. J. 2013. Graduate competencies and employability: The impact of matching firms' needs and personal attainments. Economics of Education Review 34: 286-295.

Tomić, I. and Domadenik, P. 2012. Matching, adverse selection and labour market flows in a (post)transition setting: the case of Croatia. Post-Communist Economies 24 (1): 39-72.

Tomić, I. 2014. Structural unemployment in Croatia – How important is the occupational mismatch? Economic Research 27 (1): 346-365.

UNEP. 2016. UNEP Frontiers 2016 Report: Emerging Issues of Environmental Concern. United Nations Environment Programme, Nairobi. Available at https://wesr.unep.org/media/docs/assessments/UNEP_Frontiers_2016_report_emerging_issues_of_environmental_concern.pdf

Van Der Heijde, C. M. and Van Der Heijden, B. I. J. M. 2006. A competence-based and multidimensional operationalization and measurement of employability. Human Resource Management 45 (3): 449-476.

Van Deursen, A. J. and Van Dijk, J. A. 2014. The digital divide shifts to differences in usage. New media & society 16 (3): 507-526.

Waddell, D. L. 2001. Measurement issues in promoting continued competence. The Journal of Continuing Education in Nursing 32 (3): 102-106.

Watson, R., Calman, L., Norman, I., Redfern, S., and Murrells, T. 2002. Assessing clinical competence in student nurses. Journal of Clinical Nursing 11 (4): 554-555.

World Economic Forum. 2016. The future of jobs: Employment, skills and workforce strategy for the fourth industrial revolution. World Economic Forum.

Yamaguchi, S. 2012. Tasks and heterogeneous human capital. Journal of Labor Economics 30 (1): 1-53.

Yang, M. Y., You, M., and Chen, F. C. 2005. Competencies and qualifications for industrial design jobs: implications for design practice, education and student career guidance. Design Studies 26 (2): 155-189.

Zehrer, A. and Mossenlechner, C. 2009. Key Competencies of Tourism Graduates: The Employer's Point of View. Journal of Teaching in Travel and Tourism 9 (3-4): 266-287.

Zhao, H., Seibert, S. E., and Hills, G. E. 2005. The mediating role of self-efficacy in the development of entrepreneurial intentions. Journal of applied psychology 90 (6): 1265.

APPENDIX

Table 6. Description of variables collected from graduates

Variable	Description
Personal information	
age	age of respondent
sex	sex of respondent
region	region of the firm: 1-Central Croatia, 2-North-western Croatia, 3-East Croatia, 4-North Adriatic and Lika, 5-Central and South Adriatic
urban	dummy for urban settlement
married	dummy for being married
Household information	
hh	number of people living in same household
hh_y	household total income
car	cars owned by household
educ_dad	father's highest education level: 1-Basic elementary education, 2-High school education, 3-University education
educ_mom	mother's highest education level: 1-Basic elementary education, 2-High school education, 3-University education
Education information	
educ_years	total years of education
educ_foreign	abroad education dummy
educ_highest_gpa	GPA of highest level of education
ft_student	dummy for full time students
priv_educ	dummy for private ownership institution where highest education level was obtained
educ_work	dummy for working during highest education level
Labour market information	
emp_d	employment dummy
work_exp	total work experience
emp_own_priv	dummy for private ownership of employer
emp_l	size of employer based on number of workers: 1-Micro, 2-Small, 3-Medium, 4-Large
position	position of respondent within a company: 1-Owner, 2-Manager, 3-Worker
training	training in last year dummy
wage	income of respondent

Notes: All monetary values are expressed in Croatian kuna, HRK (1 EUR = 7.529 HRK, 2016 average). Information about definitions of regions are available on request.

Source: Authors calculations based on questionnaire data.

Table 7. Results of 1st stage of 2SLS estimation procedure for Employability model and Mincerian wage model

	Employability	Wages
	(1)	(2)
Instruments		
Father education (benchmark primary)		
Secondary education	-0.840***	-0.523***
	(0.314)	(0.156)
Tertiary education	-0.499	-0.373**
	(0.334)	(0.164)
Mother education (benchmark primary)		
Secondary education	-0.928***	-0.170*
	(0.234)	(0.100)
Tertiary education	-0.886***	-0.269**
	(0.250)	(0.104)
Personal characteristics	**Yes**	**Yes**
Household characteristics	**Yes**	**Yes**
Education characteristics	**Yes**	**Yes**
Labor market characteristics	**Yes**	**Yes**
Wald statistic	6.725***	
Durbin statistic		9.807***
Wu-Hausman statistic		9.463***
N	1,009	648
R^2	0.698	0.588
Adjusted R^2	0.655	0.565

Notes: (***), (**) and (*) denote 1%, 5% and 10% level of significance, respectively. Standard errors in parentheses.

Source: Authors calculations based on questionnaire data.

Table 8. Robustness check results for Employability model

		Distance		PROX1 (p = 1)		PROX2 (p = 2)		PROX3 (p = 3)	
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Distance/Proximity in **all skill/ ability-items**		-0.063***		0.094**		0.027***		0.012	
		(0.023)		(0.043)		(0.008)		(0.008)	
Distance/Proximity in **practical** competences	Economics and business theory and practice		-0.045***		0.037*		0.012		0.004
			(0.007)		(0.021)		(0.025)		(0.022)
	IT proficiency		0.004		0.032		-0.013		-0.018
			(0.006)		(0.028)		(0.021)		(0.026)
	Business communication		-0.025***		0.028**		0.022*		0.019
			(0.008)		(0.013)		(0.012)		(0.036)
	Quantitative-economics algebra		-0.017***		0.040***		0.048**		0.048***
			(0.006)		(0.012)		(0.020)		(0.017)
Distance/Proximity in **general** competences	Collectedness, presentation and teamwork		-0.005		0.011		-0.014		0.003
			(0.008)		(0.017)		(0.022)		(0.041)
	Project management and professionalism		-0.050*		0.064**		0.063*		-0.009
			(0.022)		(0.021)		(0.039)		(0.018)
	Advocacy, language fluency		-0.009		0.015		-0.015		0.013
			(0.009)		(0.017)		(0.025)		(0.067)
	Motivation and organization		-0.004		-0.022		-0.026		0.006
			(0.005)		(0.023)		(0.022)		(0.021)
N		1,009	1,009	1,009	1,009	1,009	1,009	1,009	1,009
Pseudo R^2		0.745	0.757	0.739	0.755	0.749	0.758	0.740	0.746

Notes: (***), (**) and (*) denote 1%, 5% and 10% level of significance, respectively. Standard errors in parentheses. All models also included personal characteristics, household characteristics and educational characteristics of a graduate. Personal characteristics variables: age, sex, region, type of settlement, marital status. Household characteristics variables: number of household residents, total household income, number of cars owned by household. Education characteristics variables: foreign education, GPA at graduation, student status, HE institution ownership type and whether student worked during studies. Estimated coefficients of personal, household, education and labor market variables are not reported as they were not the focus of the research and due to presentation purposes but are available on request.

Source: Authors' calculations based on questionnaire and FINA data.

Table 9. Robustness check results for augmented Mincerian wage model

		Distance		PROX1 ($p = 1$)		PROX2 ($p = 2$)		PROX3 ($p = 3$)	
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Distance/Proximity in **all skill/ ability-items**		-0.032***		0.025**		0.017*		0.007	
		(0.001)		(0.011)		(0.008)		(0.006)	
Distance/Proximity in **practical** competences	Economics and business theory and practice		-0.016***		0.016**		0.014*		0.005
			(0.003)		(0.006)		(0.007)		(0.008)
	IT proficiency		-0.003		0.009		0.016		0.012
			(0.002)		(0.008)		(0.011)		(0.009)
	Business communication		-0.010		0.031		0.034		0.015
			(0.008)		(0.028)		(0.024)		(0.011)
	Quantitative-economics algebra		-0.001		0.008		0.009		-0.001
			(0.002)		(0.010)		(0.009)		(0.008)
Distance/Proximity in **general** competences	Collectedness, presentation and teamwork		-0.001		0.010		0.007		0.001
			(0.003)		(0.007)		(0.009)		(0.026)
	Project management and professionalism		-0.009***		0.016**		0.010*		0.036
			(0.002)		(0.007)		(0.004)		(0.028)
	Advocacy, language fluency		-0.005		0.009		0.011		0.033
			(0.003)		(0.007)		(0.008)		(0.027)
	Motivation and organization		-0.018***		0.015**		0.009*		0.007
			(0.004)		(0.006)		(0.004)		(0.009)
N		648	648	648	648	648	648	648	648
R^2		0.885	0.893	0.885	0.890	0.885	0.890	0.886	0.892
Adjusted R^2		0.745	0.879	0.887	0.879	0.883	0.879	0.884	0.880

Notes: (***), (**) and (*) denote 1%, 5% and 10% level of significance, respectively. Standard errors in parentheses. All models also included personal characteristics, household characteristics, education characteristics and labor market characteristics of a graduate. Personal characteristics variables: age, sex, region, type of settlement, marital status. Household characteristics variables: number of household residents, total household income, number of cars owned by household. Education characteristics variables: foreign education, GPA at graduation, student status, HE institution ownership type and whether student worked during studies. Labor marker characteristics variables: total work experience, employers' ownership type, employers' size, workers position within firm and total duration of training received at work. Estimated coefficients of personal, household, education and labor market variables are not reported as they were not the focus of the research and due to presentation purposes but are available on request.

Source: Authors' calculations based on questionnaire and FINA data.

sciendo

South East European Journal of Economics and Business
Volume 18 (2) 2023, 162-172
DOI: 10.2478/jeb-2023-0025

CONSUMER SEGMENTS IN BLOCKCHAIN TECHNOLOGY ADOPTION

Ana Čuić Tanković, Marina Perišić Prodan, Dragan Benazić

Abstract

Recent research has highlighted the adoption of blockchain technology (BCT) and the increasing recognition of its multiple capabilities for users. The main objective of this paper is to delineate different consumer segments based on their BCT beliefs and attitudes. Using a survey method, 934 questionnaires were collected and subjected to hierarchical and K-Means cluster analysis and contingency analysis. The results reveal four identifiable user segments with respect to BCT adoption: Innovators (enthusiastic about BCT), Cautious (careful about BCT), Sceptics (doubtful about BCT), and Suspicious (very distrustful about BCT). These results provide valuable insights into understanding behavioral intentions and serve as a basis for future research.

Keywords: *blockchain technology usage, segmentation, customer behavior*

JEL code: *O33, Q55*

1. Introduction

The digital revolution has produced numerous technological innovations, especially in the last century. In recent years, blockchain technology (BCT) has received much attention from industry and academia as one of the most popular technological innovations. As a distributed ledger technology (Zheng and Lu 2021), it is transforming traditional business operations in various industries such as banking and financial services, healthcare, food, transportation, and public services (Shin 2019). For example, to increase supply chain efficiency, Walmart and IBM have integrated blockchain technology into the food production process (Walmart 2021). In addition, this technology was used during the COVID -19 pandemic to purchase and monitor temperature-sensitive vaccines (Grand View Research 2023). Recent studies point to numerous benefits of this new technology, including transparency, improved safety and traceability, speed, efficiency, and cost effectiveness (Shrimali and Patel 2022). According to

Ana Čuić Tanković, PhD (corresponding author)
Assistant Professor
University of Rijeka, Faculty of Tourism and Hospitality Management
Primorska 46, B.O. 97, 51410 Opatija
Country: Croatia
E-mail: anact@fthm.hr
ORCID: 0000-0002-4383-684X

Marina Perišić Prodan, PhD
Associate Professor
University of Rijeka, Faculty of Tourism and Hospitality Management
Country: Croatia
E-mail: marinap@fthm.hr
ORCID: 0000-0003-1954-4481

Dragan Benazić, PhD
Full Professor
Juraj Dobrila University of Pula, Faculty of Economics and Tourism "Dr Mijo Mirkovic"
Country: Croatia
E-mail: dragan.benazic@unipu.hr
ORCID: 0000-0001-5396-3706

recent research, the blockchain technology market is estimated to reach $1,431.54 billion by 2030, with a growth rate of 87.7% from 2023 to 2030 (Grand View Research 2022). The growth of the blockchain technology market is driven by the increasing adoption of cryptocurrencies by traders and the exponential growth of interest in the financial institutions sector. Moreover, the number of people using cryptocurrencies globally is increasing tremendously. According to recent data, there were more than 300 million people who owned or used cryptocurrencies in 2021 (Grand View Research 2022). As innovative technologies are adopted faster in developed countries, North America (U.S. and Canada) held the largest share of the blockchain technology market in 2022. Being an emerging technology, this market in Europe is estimated to be worth $59,142.33 million by 2028, up from $1,234.08 million in 2021, at a CAGR of 73.8% during the specified period (Business Market Insights 2022). In Europe, Germany has the largest share in the market of emerging technology, followed by the UK, France, Italy, Russia, and the rest of Europe. The Republic of Croatia supports the development of blockchain technology prescribed in the Digital Croatia Strategy 2032 (Official Gazette 2023) and expects this technology to be used in the public and private sectors, especially in the work of public administration, in the next ten years. In Croatia, companies and projects have developed in the financial industry, telecommunications, energy, software solutions, tourism, transport, and public administration, and several initial calls for funds have been issued, reflecting the initiative to support the development of this technology (Fuzul and Juričić 2021).

Parallel to the development and adoption of this technology in various industries, the interest of the academic community is also developing. Recently, studies have investigated the application of blockchain technology in various fields, most commonly in supply chain management (Kamble, Gunasekaran, and Arha 2018; Queiroz and Wamba 2019; Sheel and Nath 2019; Wamba and Queiroz 2019; Alazab et al. 2021) and finance (Yusof et al. 2018; Ali, Ally, and Dwivedi 2020; Kabir and Islam 2021). These studies mainly focused on the organizational perspective and how blockchain technology can add value to businesses and organizations. From the consumer perspective, researchers most often examine the factors that influence the adoption of cryptocurrencies (Albayati, Kim, and Rho 2020; Arli et al. 2020; Almajali, Masa'Deh, and Dahalin 2022; Ter Ji-Xi, Salamzadeh, and Teoh, 2021; Koroma et al. 2022; Mashatan, Sangari, and Dehghani 2022), as well as acceptance drivers and user behavioral intentions for blockchain technology adoption (Hawlitschek 2018; Grover et al. 2019; Shin 2019; Shin and Hwang 2020; Gao and Li 2021; Liu and Ye 2021; Raddatz et al. 2021; Marikyan et al. 2022). According to Zheng and Boh (2021), there is limited empirical evidence on the social perspective of using blockchain technology, and there is little research on how this technology can add value to the customer or user. In addition, Kamble, Gunasekaran, and Arha (2018) and Albayati, Kim, and Rho (2020) emphasize that consumer adoption of blockchain technology is low, largely due to misunderstandings and lack of familiarity with the concept, resulting in hesitant and slow adoption of the technology. Since it is a nascent technology, users have many doubts about its adoption and use (Liu and Ye 2021). In the context of food traceability using blockchain, Wang and Scrimgeour (2022) pointed out that there is a lack of studies on the psychological and motivational factors, segmentation, and consumer perception. This means that it is crucial to determine the characteristics of target segments, their motivations, habits, and intentions for future behavior in order to develop effective marketing strategies. Therefore, the objective of this paper is to identify the key segments of users of BCT, focusing on social influence, trust in BCT, trust in blockchain users, perceived threat of personal data disclosure, and intention to use BCT. This research will help fill the knowledge gaps in profiling user segments regarding their intentions to use blockchain technology. This paper has two main objectives. The first is to explain the fundamental concepts that drive blockchain technology usage intentions, and the second, to identify segments in terms of their attitudes and perceptions toward BCT usage. The study aims to show that there are different segments of BCT users. In addition, the study aims to show the importance BCT, given the increasing development of a disruptive economy.

The paper is organized as follows. After this introduction, a theoretical framework supporting our study is presented. The third part explain the research methodology and presents the research results. The last section concludes the study, discusses the limitations and offers suggestion for future research.

2. Literature review

2.1. Blockchain technology (BCT)

Blockchain technology (BCT) is defined as a decentralized ledger that maintains transaction records on multiple computers simultaneously (Ali, Ally, and Dwivedi 2020) and represents both an economic and technical transformation (Zhao, Fan, and Yan 2016; Zyskind, Nathan, and Pentland 2015). From an economic

perspective, blockchain provides tools for all areas requiring a reliable record of transactions, especially in scenarios where parties cannot be fully trusted (Lindman, Rossi, and Tuunainen 2017). Technically, blockchain is a novel database system particularly suited for decentralized environments where trust may be lacking. The advent of blockchain technology has introduced various elements and related concepts that may lead to confusion when discussing its implementation. Among these aspects is the concept of organizing and sharing transactions through data structures known as blocks (Asharaf and Adarsh 2017; Antoniadis, Kontsas, and Spinthiropoulos 2019). These blocks are cryptographically linked and distributed across a peer-to-peer network to ensure the prevention of tampering with previously recorded transactions (Beck, Müller-Bloch, and King 2018). Before inclusion in a block, transactions need to be validated by nodes, commonly referred to as miners. Consensus models play a crucial role in determining which node is granted the privilege of publishing the subsequent block. It is important to note that the ledger of all transactions performed in the blockchain is not stored centrally but rather distributed across all participating nodes (Antoniadis, Kontsas, and Spinthiropoulos 2019). Furthermore, blocks offer the potential to integrate advanced smart contract capabilities by facilitating the provision of code and data on the blockchain network through cryptographically signed transactions (Ali, Ally, and Dwivedi 2020). Although blockchains have often been associated with cryptocurrencies, researchers have recently shifted their focus towards exploring other potential applications of blockchain technology (Ali, Ally, and Dwivedi 2020). Beyond its use in Bitcoin, blockchain is considered to have breakthrough potential (Zhao, Fan, and Yan 2016). The security and integrity of all transactions within a blockchain are safeguarded by the fact that every node in the peer-to-peer network maintains a complete record of the blockchain. Thus, any fraudulent manipulation attempt would necessitate attacking all copies of the blockchain distributed across the network, rendering it infeasible (Seebacher and Schüritz 2017). To maintain the integrity of the blockchain, new blocks with fresh transactions are only added after successfully passing agreed verification protocols.

2.2. Customer segmentation in the context of BCT

According to the theory of innovation diffusion, the spread of new technologies within a given social system represents a flow or movement from the source to the users, usually through different communication channels or social influence (Bohlmann, Calantone, and Zhao 2010). In the context of the above theory, users are classified into 5 groups of adopters depending on their willingness to adopt new products, especially technologies (Rogers 1983): 1) Innovators, who are enthusiastic about the technology, conduct tests, and report weaknesses to obtain lower prices; 2) Early Adopters, who represent opinion leaders in the social community and are less price sensitive; 3) the Early Majority are conscious pragmatists who accept a new technology when its benefits are proven and many have already adopted it, and they represent the majority of the market; 4) the Late Majority represents skeptics who reject risks and are afraid of the technology; 5) Laggards are traditionalists who resist innovation. Ramírez-Correa, Grandón, and Rondán-Cataluña (2020) studied technology-related behavioral intentions in a less technologically mature country, Chile, and compared them with users from the United States, a more technologically mature country. They identified five groups of users: pioneers, hesitants, avoiders, explorers, and skeptics, similar in composition to the U.S. research but differing in order of importance. Namely, the vast majority of Chilean users belong to the Pioneers and Hesitants group, while Skeptics represent the majority in the U.S. study. In the context of blockchain technology, Wang and Scrimgeour (2022) studied consumer acceptance of blockchain food traceability (BFT) and identified two consumer segments: pioneers and conservatives. Pioneers have much more positive attitudes and purchase intentions toward BFT, have more experience with food traceability, and consider BFT easy to use, compared with members of the Conservative segment.

In the field of information technology (IT), the concept of behavioral intention encompasses the user's perceived likelihood of engaging in a particular behavior, such as adopting a new technological innovation (Albayati, Kim, and Rho 2020). However, willingness to adopt a technology varies from user to user (Kabra et al. 2017) and occurs when a user is inclined to actively integrate a particular technology into his or her routine (Tran and Nguyen 2021). In the context of mitigating the risks associated with suboptimal technologies, behavioral intentions help define various metrics for technology adoption in the early stages of their development (Albayati, Kim, and Rho 2020).

The influence of the social dimension on user behavior is particularly pronounced when a new technology is introduced (Albayati, Kim, and Rho 2020; Queiroz and Wamba 2019). The social environment, especially reference groups, has a direct influence on

consumer behavior (Vitezić and Perić, 2021) and can affect the acceptance or rejection of BCT, which indicates the extent to which an individual perceives the approval of important personalities to adopt the new system or technology (Alazab et al. 2021; Venkatesh et al. 2008). Social influence emerges as the most important predictor of auditors' willingness to adopt BCT (Ferri et al. 2020).

Trust is one of the most important factors influencing the adoption and expansion of BCT, because it is built within a decentralized network structure that promotes secure frameworks for storing and validating transactions (Kabir and Islam 2021; Shin 2019). The field of blockchain-enabled sharing economies highlights the essential importance of trust within BCT as a driving force for trust in blockchain-based platforms (Hawlitschek 2018). Within the interactions and dynamics inherent in blockchain systems, trust within the user community emerges as a linchpin, with users relying on and trusting the experiences of their peers (Liu and Ye 2021, Koroma et al. 2022).

The impact of privacy concerns on users' behavioral inclinations in various technological contexts has been proven (Zhou 2011; Kumar, Kumar, and Bhasker 2018; Libaque-Sáenz et al. 2021). For BCT, there is a significant and positive correlation between perceived privacy and intention to use services enabled by BCT (Marikyan et al. 2022). Consumers' perceptions of privacy affect their trust in and attitude toward blockchain, which affects their intention to use the technology (Shin 2019) and their approval of blockchain media (Shin and Bianco 2020).

Therefore, in understanding consumer segments within the domain of BCT, the critical factors involve intention to use (Albayati, Kim, and Rho 2020; Alazab et al. 2021), social influence (Queiroz and Wamba 2019; Nuryyev et al. 2020), trust in BCT (Hawlitschek 2018; Almajali, Masa'Deh, and Dahalin 2022), trust in the BCT user community (Liu and Ye 2021; Koroma et al. 2022), and the perceived risk linked to sharing personal information (Marikyan et al. 2022; Shin and Bianco 2020).

3. Methodology and sample

An empirical study, which utilized the survey method as a means of data collection, was conducted. A self-administered questionnaire, based on the current literature and adapted from previous studies, was used as the measurement instrument. The survey was conducted in Croatia from September to December 2022, using an online questionnaire.

A diverse sample comprising 1018 participants was selected using a stratified sampling technique, in order to represent a larger population and to ensure replicability and validity of the collected data. After accounting for errors and missing values, 934 completed questionnaires were included in the analysis. The sample consisted of 61.77% female and 38.23% male participants. Most respondents (42.3%) hold undergraduate degrees, followed by respondents with secondary school qualifications (39%) and graduate degrees (17.8%). About 38% of the respondents were employed, while 59% were students. The majority of respondents (32%) had a personal monthly income between 400€ and 800€.

The measurement instrument was designed based on the relevant literature and was adapted to the needs of this study. The questionnaire followed the funnel principle, consisting of four groups of structured questions. Based on the findings of the literature review, which identified factors affecting attitudes and beliefs about BCT, the questionnaire includes questions about familiarity of the term BCT, social influence, trust in BCT, trust in the community of BCT users, perceived threat of sharing personal information, and intention to use. The questionnaire started with questions about the social influence on blockchain technology (BCT), which were adapted from Vitezić and Perić (2021). The second part contained statements about trust in BCT and the community of BCT users, which were adopted from Hawlitschek (2018). In the third part, the participants rated their level of agreement with statements about the perceived threat of sharing personal information (Brinson, Eastin, and Cicchirillo 2018), and six items for intention to use were adapted from Van Pinxteren et al. (2019) and Hu et al. (2019). The questionnaire ended with questions to collect socio-demographic data. Seven-point Likert scales were used to rate levels of agreement with items, anchored at 1= strongly disagree and 7= strongly agree. The collected data were analyzed using hierarchical cluster analysis with STATA software.

4. Research results

The study aimed to determine whether there are different segments of consumers with regard to attitudes towards BCT usage. To this end, hierarchical cluster analysis was performed, using Ward's method, an agglomerative respondent clustering procedure. The objective of Ward's method is to minimize the total variance within clusters by joining individuals into clusters and forming new clusters. The aim is to achieve the greatest possible homogeneity of members of the individual clusters while maximizing

heterogeneity among the clusters created. The Euclidean distance was the distance measure used to join respondents into clusters. To determine the final number of clusters, a graphic presentation of respondent grouping in a cluster dendrogram was used, and the Calinski/Harabasz-F index, the Duda/Hart Je(2)/Je(1) index and the pseudo T-squared values were calculated. Based on a visual examination of the dendrogram and on the calculated values of the selected indicators, it was determined that the optimal solution consists of 4 clusters. The Calinski/Harabasz pseudo-F measure had the highest value for the solution with 2 segments, amounting to 934.75. It dropped to 606.54 for the 3-segment solution and grew to 640.99 for the 4-segment solution, but then dropped again for individual solutions, down to a value of 244.06 for the 15-segment solution. On the other hand, the value of the Duda/Hart Je(2)/Je(1) index was higher for the 4-segment solution than for the 2-segment and 3-segment solutions, and amounted to 0.813. The value of the pseudo T-squared measure for the 4-segment solution was 86.52, lower than the values for the solutions with 2 and 3 segments. Based on the above indicators, it was concluded that the optimal solution is the 4-segment solution and, accordingly, the means were calculated for the individual statements used in the study for the identified 4 segments of respondents. The results are presented in Table 1.

The first segment, labelled "Innovators-enthusiastic about BCT", comprises 17.5% of the respondents. The average scores of the investigated statements range from 5.22 to 5.91. This segment is well-informed of BCT (FAM1=5.22), and is willing to use BCT more often in the future (INT3=5.81) and to recommend it to others (INT5=5.85). The average scores of statements referring to the influence and encouragement of others in the BCT usage of members of this segment (SOCINF5=5.37) and to BCT usage being a status symbol (SOCINF4=5.36) are slightly lower. Generally, the members of this segment tend to associate with people who have similar attitudes towards BCT as they do (SOCINF3=5.36) and they trust the technology (TRUSTB2=5.45).

The second segment, comprising 21.7% of the respondents, was labelled "Cautious-careful about BCT", considering that average scores ranged from 2.70 to 4.67. The members of this segment are less informed about BCT (FAM1=3.95), and are somewhat less willing to use BCT in the future, make recommendations to others on how to use BCT (INT1=4.34, INT2=4.18, INT3=4.38) or recommend BCT usage to others (INT6=4.33). Generally, however, they have a positive opinion regarding BCT usage (INT6=4.67). On the other hand, the members of this segment have slightly more-negative opinions (average score less than 3.5) regarding statements referring to people, in particular people who are important to them, encouraging them to use BCT (SOCINF5=2.70). Furthermore, the respondents belonging to this segment also expressed a slight uncertainty regarding the safety of BCT usage (TRUSTB2=3.45).

Labelled "Sceptics-doubtful about BCT", the third segment accounts for 20.2% of the sample. The respondents in this segment gave low average scores, ranging from 1.02 to 1.30, to all the statements. This segment is poorly informed about BCT (FAM1=1.17) and, accordingly, expressed low intentions of using BCT in the future. Nevertheless, in this segment, the statement that BCT usage is a good idea has a slightly higher average score (INT6=1.30).

Finally, the fourth segment, which is also the largest segment, comprises 40.6% of the respondents. Considering the range of average scores, from 2.14 to 2.86, given to the statements, this segment is labelled "Suspicious-very distrustful about BCT". Although the respondents belonging to this segment are poorly informed about the new BCT (FAM1=2.86), they are still slightly better informed than the respondents in the third segment. Similarly, although the respondents in the fourth segment expressed their somewhat negative opinions to all the statements with average scores lower than 3.5 for all statements, these scores are higher than the scores in the third segment. For example, this segment's willingness to use BCT in the future is low, but in comparison with the third segment, they are in greater agreement with the statement that BCT usage is a good idea (INT6=2.70). Among the lower averages scores given to statements referring to the influence of other, important people on the BCT usage of members of Suspicious' segment, a relatively low average score was given to the statement referring to the safety of using BCT (TRUSTB2=2.25).

In addition to hierarchical cluster analysis, K-means cluster analysis was also performed using the centroids determined by Ward's method. The obtained structure of the segments was relatively equal to the previously obtained results of hierarchical cluster analysis, indicating the relative stability of the obtained solution. To expand the results of cluster analysis, contingency analysis was also performed, taking into consideration the individual segment to which a respondent belongs as well as the respondents' demographic characteristics (gender, age, education, and income), and the chi-square indicator was calculated. The results of contingency analysis are presented in Table 2.

The results of contingency analysis indicate that there is a statistically significant associative

Table 1. Results of cluster analysis

Code	Items	Mean	ST. DEV	Mean-S1	Mean-S2	Mean-S3	Mean-S4
	Segment size (%)			17.5	21.7	20.2	40.6
FAM1	I am familiar with the term Blockchain technology	3.16	0.07	5.22	3.95	1.17	2.86
INT1	I am ready to use BCT in the future.	3.19	0.06	5.72	4.34	1.28	2.44
INT2	I will definitely use BCT again in the future.	3.04	0.06	5.60	4.18	1.15	2.28
INT3	I am willing to use BCT more often in the future.	3.20	0.06	5.81	4.38	1.20	2.45
INT4	I will definitely use BCT more frequently in the future.	3.16	0.06	5.75	4.38	1.17	2.38
INT5	I will recommend the positive use of BCT to others.	3.16	0.06	5.85	4.33	1.14	2.39
INT6	The use of BCT seems to be a good idea	3.41	0.06	5.91	4.67	1.30	2.70
SOCINF1	People who influence my behavior would want me to utilize BCT	2.77	0.06	5.46	3.25	1.06	2.21
SOCINF2	People in my social networks (e.g., friends, family, and co-workers) who utilize BCT have more prestige than those who don't	2.79	0.06	5.52	3.20	1.05	2.27
SOCINF3	People whose opinions I value would prefer that I utilize BCT	2.79	0.06	5.63	3.12	1.05	2.42
SOCINF4	Utilizing BCT is a status symbol in my social networks (e.g., friends, family, and co-workers)	2.65	0.06	5.36	2.89	1.05	2.16
SOCINF5	People who are important to me would encourage me to utilize BCT	2.60	0.06	5.37	2.70	1.03	2.15
SOCINF6	People in my social networks (e.g., friends, family, and co-workers) who would utilize BCT have high profiles	2.69	0.06	5.41	3.07	1.02	2.15
TRUSTB1	I feel good about how things go when doing activities on the Blockchain	2.72	0.06	5.44	3.17	1.05	2.14
TRUSTB2	I feel assured that legal and technological structures adequately protect me from problems on the Blockchain	2.84	0.06	5.45	3.45	1.09	2.25
TRUSTC1	Information provided by other users of the Blockchain is valuable	3.06	0.06	5.59	3.92	1.13	2.46
TRUSTC2	Other users of the Blockchain offer e help when I have questions	3.01	0.06	5.55	3.77	1.10	2.46
TRUSTC3	In general, I can count on the information provided by other Blockchain users.	3.05	0.06	5.70	3.79	1.11	2.48

Source: authors' own calculation, n=934

relationship between the specific segment to which a respondent belongs and the respondent's gender (χ^2=22.26, p<0.05) and income (χ^2=37.81, p<0.05), but no statistically significant associative relationship with regard to age and educational level. While there is a relatively equal number of females and males in the Innovators segment, the share of female respondents is relatively larger in the other three segments, in particular in the Sceptics segment. Furthermore, the table also suggests that respondents with higher incomes (more than 1334 Euros) account for a larger share in the structure of the first segment (7.98% and 6.13%) in comparison with the other segments, which is to be expected as a higher income allows for greater investment in alternative technologies. On the other hand, respondents with incomes below 215 Euros prevailed in the structure of segments Cautious, Sceptics and Suspicious.

Table 2. Contingency analysis of selected demographic variables and cluster analysis results (%)

	Innovators	Cautious	Sceptics	Suspicious	Total
Gender					
M	47.85	38.42	25.93	31.13	34.58
F	52.15	61.58	74.07	68.87	65.42
Total	100	100	100	100	100
Chi square					22.26*
Year of birth					
<1965	1.23	1.48	4.23	2.65	2.47
1965-1979	3.70	7.39	4.23	7.41	6.12
1980-1994	15.43	16.75	14.29	14.81	15.24
1995-2012	79.63	74.38	77.25	75.13	76.18
Total	100	100	100	100	
Chi square					9.33
Educational level					
Secondary school	38.04	37.62	46.56	41.27	40.99
Undergraduate study	47.24	41.09	40.21	40.21	41.63
Graduate study	13.50	20.79	12.70	17.20	16.42
Post-graduate study	1.23	0.50	0.53	1.32	0.97
Total	100	100	100	100	
Chi square					10.25
Income					
<215 €	9.82	15.27	28.57	21.11	19.38
216-467 €	22.70	24.14	21.16	21.37	22.16
468-800 €	35.58	29.06	26.98	29.82	30.09
801-1334 €	17.79	23.15	16.40	21.90	20.34
1335-2000 €	7.98	4.93	5.82	3.69	5.14
2001-2600 €	6.13	3.45	1.06	2.11	2.89
Total	100	100	100	100	
Chi square					37.81*

Source: authors' own calculation, n=934, *p<0.05

5. Discussion and conclusion

The aim of the research conducted was to identify different consumer segments in terms of the underlying factors for the intention to use blockchain technology. Based on the data and using hierarchical cluster analysis, four segments were identified: Innovators (enthusiastic about BCT), Cautious (careful about BCT), Sceptics (doubtful about BCT) and Suspicious (very distrustful about BCT). The differences between the segments were examined.

The research found that the fourth segment, Suspicious, is the largest. It accounts for 40.6% of the sample. In contrast, the first segment, Innovators, the second segment, Cautious and the third segment, Sceptics, are roughly equal in size. The most positive attitude toward blockchain technology was recorded in the first segment, in terms of information about BCT, future use of BCT, and recommendations to others. Members of this segment are influenced by their reference groups and have confidence in the community and the technology. The findings on the characteristics of this segment are consistent with the research findings of Wang and Scrimgeour (2022), whose segment, referred to as "Pioneers", also has positive attitudes toward blockchain technology and strong intentions to use it, in the context of purchasing food via blockchain technology. Social influence is extremely important to them, which was also demonstrated in this research. The characteristics of

the segment identified in this study are also partially consistent with the study of Ramírez-Correa, Grandón, and Rondán-Cataluña (2020), who emphasized that their segment, referred to as "Explorers", is characterized by a high level of optimism and innovation and a very low level of uncertainty and discomfort with new technologies. Members of the second segment are less well informed about blockchain technology and express lower intentions to use and recommend this technology in the future, compared with members of the first segment, but have a positive attitude toward using this technology. They are also not influenced by reference groups and express uncertainty about the security of this technology. The members of the third segment have a negative attitude toward blockchain technology, are not aware of this technology and are not inclined to use it in the future. This segment can be compared to the research findings of Ramírez-Correa, Grandón, and Rondán-Cataluña (2020), who describe the "Sceptics" segment as individuals who are the least optimistic about the adoption of new technologies and have a high level of discomfort and uncertainty about new technologies. Members of the last and largest segment are poorly informed about the technology but have more information compared with the third segment. The intention to use the technology is low in this segment, as is the perception of the security of blockchain technology. However, compared with the third segment, they are more likely to think that using the technology is a good idea. The results are consistent with Wang and Scrimgeour's (2022) research findings that members of the segment labeled as "Conservatives" have negative attitudes toward blockchain technology and low intention to use it, do not believe that the technology will benefit them and their community, and view the technology as complicated.

Looking at the characteristics of the third and fourth segments, it is clear that the aforementioned segments either do not intend to use this technology or the intention to use it is very low. The reason for this could be the fact that the Republic of Croatia is ranked 21st among the 27 member states of Europe, according to the Digital Economy and Society Index (DESI) for the year 2022 (European Commission 2022), which indicates that Croatia is a technologically less developed country. In this sense, and in line with the recommendation of Ramírez-Correa, Grandón, and Rondán-Cataluña (2020), it is extremely important to explore behavioral intentions related to technology because if the population of a country is not open to new technologies, the future development of the country is questionable. The latter is especially true for countries with a less pronounced tendency to accept new technologies.

Contingency analysis was used to demonstrate that there is a statistically significant relationship between segment membership, gender, and income. Compared with the first segment, the percentage of female respondents is significantly higher in the second, third, and fourth segments, and especially in the Sceptics segment. This indicates that it is more difficult for women to adopt new technologies, which was also confirmed by the study of Wang and Scrimgeour (2022), which proved that the Pioneers in adopting new technologies are likely to be male. Moreover, members of the first segment are individuals with higher incomes than members of the other segments. Indeed, Ali, Ally, and Dwivedi (2020) pointed out that people with higher incomes set aside funds for innovative technologies more easily, especially in the field of cryptocurrencies.

The empirical study conducted fills an important gap in the research and understanding of user behavior in the context of blockchain technology. The scientific contribution of this work manifests itself in its theoretical and applied value. From a theoretical perspective, the study represents a contribution to the research field of blockchain technology, particularly from the perspective of consumer behavior in the context of using innovative technologies. Moreover, as far as we know, this study is the first to examine consumer segments in terms of their intentions to use blockchain technology in a Croatian context. The practical contribution of this study can be seen in the possibility of applying the knowledge gained from the research in the development of various marketing strategies. Knowing the characteristics of each segment, it is possible to develop different marketing activities depending on the target market segment. Since Innovators are the most promising user segment, it is necessary to stimulate this segment in such a way that targeted advertising promotes special benefits and additional services when using this technology (e.g., discounts, points, call center support, etc.). Assuming that this segment is an early adopter of new technologies and uses them more frequently compared with other segments, its members can become opinion leaders and a kind of nano-influencer to other segments, whose activities companies can leverage through video marketing, podcast recordings, and testimonials. In marketing activities targeting the Cautious, it is especially important to emphasize the security aspect, as members of this segment express insecurities about using this technology. Companies can also set up various online communities of users to provide this segment with the necessary information about security, as much as possible. Since the

"new-technology skeptics" and the "suspicious of new technology" share similar characteristics, marketing activities should generally focus on educating and spreading awareness of the benefits and advantages of this technology, with the goal of accelerating adoption. For Skeptics, marketers should pay particular attention to understanding the interests of female consumers, as the majority of this segment are women. The use of different appeals in targeted advertising is particularly important here.

This study has some limitations that provide clues for future research. Although the study was conducted on a relatively large sample, the number of male and female respondents was uneven, so the results of this study can be considered indicative. For future studies, it is necessary to distribute the structure of the sample more evenly in terms of the gender of the respondents. The study sample consists primarily of young consumers with an income range predominantly between EUR 400 and EUR 800, it is important to emphasize that this income level represents a snapshot of a specific demographic subgroup and does not generalize the entire study population. Further exploration will analyze the potential impact of demographic factors on interest in or engagement with BCT. This will provide a more nuanced understanding of how demographic characteristics may influence interest in and engagement with BCT.

In order to obtain a more complete picture of the target segments for the use of blockchain technology, it would be necessary to include respondents from other European countries in future studies, as Croatia is a country with a lower level of readiness to accept new technologies. According to the European Commission's Blockchain Strategy, the European Union aims to be a leader in BCT, with the fundamental goal of enabling people and organizations who do not know or trust each other to build trust and securely exchange information and conduct transactions in a digital environment (European Commission 2023). Therefore, it would also be possible to compare the results of such studies with the results of studies from European countries with similar characteristics using defined criteria. The findings of this study can formulate policies that support the regulation of the blockchain industry, ultimately contributing to the growth and success of the blockchain technology sector in the region.

The present research focuses on the intention to use blockchain technology. Since actual behavior and behavioral intentions differ significantly, in future studies it is necessary to include respondents who actually use blockchain technology. Considering that the differences between the segments cannot be fully explained by demographic variables, it would be necessary for future studies to include certain psychological variables such as perceived risk, propensity to invest in new technologies, and personality characteristics.

Funding: This paper has been financially supported by the University of Rijeka, Faculty of Tourism and Hospitality Management for the project ZIP-FMTU-012-09-2022.

References

Alazab, M., Alhyari, S., Awajan, A., and Abdallah, A. B. 2021. Blockchain technology in supply chain management: an empirical study of the factors affecting user adoption/acceptance. Cluster Computing 24 (1): 83-101.

Albayati, H., Kim, S. K., and Rho, J. J. 2020. Accepting financial transactions using blockchain technology and cryptocurrency: A customer perspective approach. Technology in Society 62: 101320.

Ali, O., Ally, M., and Dwivedi, Y. 2020. The state of play of blockchain technology in the financial services sector: A systematic literature review. International Journal of Information Management 54: 102199.

Almajali, D. A., Masa'Deh, R. E., and Dahalin, Z. M. 2022. Factors influencing the adoption of Cryptocurrency in Jordan: An application of the extended TRA model. Cogent Social Sciences 8 (1): 2103901.

Antoniadis, I., Kontsas, S., and Spinthiropoulos, K. 2019. Blockchain applications in marketing. In the Proceedings of 7th International Conference on Contemporary Marketing Issues (ICCMI 2019), 10-12 July, 2019, Crete; Greece.

Arli, D., van Esch, P., Bakpayev, M., and Laurence, A. 2020. Do consumers really trust cryptocurrencies?. Marketing Intelligence & Planning, 39 (1): 74-90.

Asharaf, S. and Adarsh, S. (Eds.). 2017. Decentralized Computing Using Blockchain Technologies and Smart Contracts: Emerging Research and Opportunities: Emerging Research and Opportunities. IGI Global.

Beck, R., Müller-Bloch, C., and King, J. L. 2018. Governance in the blockchain economy: A framework and research agenda. Journal of the Association for Information Systems 19 (10): 1020–1034.

Bohlmann, J. D., Calantone, R. J., and Zhao, M. 2010. The effects of market network heterogeneity on innovation diffusion: An agent-based modeling approach. Journal of Product Innovation Management 27 (5): 741-760.

Brinson, N. H., Eastin, M. S., and Cicchirillo, V. J. 2018. Reactance to personalization: Understanding the drivers

behind the growth of ad blocking. Journal of Interactive Advertising 18 (2): 136-147.

Business Market Insights 2022. https://www.business-marketinsights.com/reports/europe-blockchain-market (accessed June 1, 2023).

European Commission 2022. Digital Economy and Society Index (DESI) 2022 – Croatia. https://digital-strategy.ec.europa.eu/en/policies/desi-croatia (accessed June 1, 2023).

European Commission 2023. Blockchain Strategy. https://digital-strategy.ec.europa.eu/en/policies/blockchain-strategy (accessed September 1, 2023).

Ferri, L., Spanò, R., Ginesti, G., and Theodosopoulos, G. 2020. Ascertaining auditors' intentions to use blockchain technology: evidence from the Big 4 accountancy firms in Italy. Meditari Accountancy Research 29 (5): 1063-1087.

Fuzul, E. and Juričić, V. 2021. Trend tehnologije ulančanih blokova u Hrvatskoj: kvalitativna analiza realnog sektora. Polytechnica 5 (2): 15-27.

Gao, S. and Li, Y. 2021. An empirical study on the adoption of blockchain-based games from users' perspectives. The Electronic Library 39 (4): 596-614.

Grand View Research 2022. Blockchain Technology Market Growth & Trends. https://www.grandviewresearch.com/press-release/global-blockchain-technology-market (accessed June 1, 2023).

Grand View Research 2023. Blockchain Technology Market Size & Share Report, 2030. https://www.grandviewresearch.com/industry-analysis/blockchain-technology-market (accessed June 1, 2023).

Grover, P., Kar, A. K., Janssen, M. and Ilavarasan, P. V. 2019. Perceived usefulness, ease of use and user acceptance of blockchain technology for digital transactions–insights from user-generated content on Twitter. Enterprise Information Systems 13 (6): 771-800.

Hawlitschek, F. 2018. In blockchain we trust: Consumer trust relationships in the sharing economy 2.0. In Perspectives on the sharing economy, edited by D. Wruk, A. Oberg, and I. Maurer, 148–155. Newcastle upon Tyne: Cambridge Scholars Publishing.

Hu, J., Liu, Y. L., Yuen, T. W. W., Lim, M. K., and Hu, J. 2019. Do green practices really attract customers? The sharing economy from the sustainable supply chain management perspective. Resources, Conservation and Recycling 149: 177-187.

Kabir, M. R. and Islam, M. A. 2021. Application of blockchain for supply chain financing: explaining the drivers using SEM. Journal of Open Innovation: Technology, Market, and Complexity 7 (3): 167.

Kabra, G., Ramesh, A., Akhtar, P., and Dash, M. K. 2017. Understanding behavioural intention to use information technology: Insights from humanitarian practitioners. Telematics and Informatics 34 (7): 1250-1261.

Kamble, S., Gunasekaran, A., and Arha, H. 2018. Understanding the Blockchain technology adoption in supply chains-Indian context. International Journal of Production Research 57 (7): 2009-2033.

Koroma, J., Rongting, Z., Muhideen, S., Akintunde, T. Y., Amosun, T. S., Dauda, S. J., and Sawaneh, I. A. 2022. Assessing citizens' behavior towards blockchain cryptocurrency adoption in the Mano River Union States: Mediation, moderation role of trust and ethical issues. Technology in society 68: 1-9.

Kumar, S., Kumar, P., and Bhasker, B. 2018. Interplay between trust, information privacy concerns and behavioural intention of users on online social networks. Behaviour & Information Technology 37 (6): 622-633.

Libaque-Sáenz, C. F., Wong, S. F., Chang, Y., and Bravo, E. R. 2021. The effect of Fair information practices and data collection methods on privacy-related behaviors: A study of Mobile apps. Information & Management 58 (1): 103284.

Lindman, J., Rossi, M., and Tuunainen, V. K. 2017. Opportunities and risks of blockchain technologies in payments: A research agenda. . In: Proceedings of the 50th Hawaii International Conference on System Sciences, Manoa 1533–1542.

Liu, N. and Ye, Z. 2021. Empirical research on the blockchain adoption–based on TAM. Applied Economics 53 (37): 4263-4275.

Marikyan, D., Papagiannidis, S., Rana, O. F., and Ranjan, R. 2022. Blockchain adoption: a study of cognitive factors underpinning decision making. Computers in Human Behavior 131: 107207.

Mashatan, A., Sangari, M. S., and Dehghani, M. 2022. How perceptions of information privacy and security impact consumer trust in crypto-payment: an empirical study. IEEE Access 10: 69441-69454.

Nuryyev, G., Wang, Y. P., Achyldurdyyeva, J., Jaw, B. S., Yeh, Y. S., Lin, H. T., and Wu, L. F. (2020). Blockchain technology adoption behavior and sustainability of the business in tourism and hospitality SMEs: An empirical study. Sustainability 12 (3): 1256.

Official Gazette 2023. Digital Strategy of Croatia for the Period until 2032. 2/2023 https://narodne-novine.nn.hr/clanci/sluzbeni/2023_01_2_17.html (accessed June 1, 2023).

Queiroz, M. M. and Wamba, S. F. 2019. Blockchain adoption challenges in supply chain: An empirical investigation of the main drivers in India and the USA. International Journal of Information Management 46: 70-82.

Raddatz, N., Coyne, J., Menard, P., and Crossler, R. E. 2021. Becoming a blockchain user: understanding consumers' benefits realisation to use blockchain-based applications. European Journal of Information Systems 32 (2): 287-314.

Ramírez-Correa, P., Grandón, E. E., and Rondán-Cataluña, F. J. 2020. Users segmentation based on the Technological Readiness Adoption Index in emerging countries: The case of Chile. Technological Forecasting and Social Change 155: 120035.

Rogers, E. M. 1983. Diffusion of innovations. Third Edition, London: The Free Press A Division of Macmillan Publishing Co., Inc.

Seebacher, S. and Schüritz, R. 2017. Blockchain technology as an enabler of service systems: A structured literature review. In Exploring Services Science: 8th International Conference, (IESS 2017), Rome, Italy, May 24-26, 2017, Springer International Publishing. Proceedings 8: 12-23.

Sheel, A. and Nath, V. 2019. Effect of blockchain technology adoption on supply chain adaptability, agility, alignment and performance. Management Research Review 42(12): 1353-1374.

Shin, D. D. 2019. Blockchain: The emerging technology of digital trust. Telematics and informatics 45: 1-11.

Shin, D. and Bianco, W. T. 2020. In blockchain we trust: does blockchain itself generate trust?. Social Science Quarterly 101 (7): 2522-2538.

Shin, D. and Hwang, Y. 2020. The effects of security and traceability of blockchain on digital affordance. Online information review 44 (4): 913-932.

Shrimali, B. and Patel, H. B. 2022. Blockchain state-of-the-art: architecture, use cases, consensus, challenges and opportunities. Journal of King Saud University-Computer and Information Sciences 34 (9): 6793-6807.

Ter Ji-Xi, J., Salamzadeh, Y., and Teoh, A. P. 2021. Behavioral intention to use cryptocurrency in Malaysia: an empirical study. The Bottom Line 34 (2): 170-197.

Tran, T. M. L. and Nguyen, T. T. H. 2021. The impacts of technology-based communication on EFL students' writing. AsiaCALL Online Journal 12 (5): 54-76.

Van Pinxteren, M. M., Wetzels, R. W., Rüger, J., Pluymaekers, M., and Wetzels, M. 2019. Trust in humanoid robots: implications for services marketing. Journal of Services Marketing 33 (4): 507-518.

Venkatesh, V., Brown, S. A., Maruping, L. M., and Bala, H. 2008. Predicting different conceptualizations of system use: The competing roles of behavioral intention, facilitating conditions, and behavioral expectation. MIS quarterly 32 (3): 483-502.

Vitezić, V. and Perić, M. 2021. Artificial intelligence acceptance in services: connecting with Generation Z. The Service Industries Journal 41 (13-14): 926-946.

Walmart 2021. https://tech.walmart.com/content/walmart-global-tech/en_us/news/articles/blockchain-in-the-food-supply-chain.html (accessed June 1, 2023).

Wamba, S. F. and Queiroz, M. M. 2019. The role of social influence in blockchain adoption: The Brazilian supply chain case. IFAC-PapersOnLine 52 (13): 1715-1720.

Wang, O. and Scrimgeour, F. 2022. Consumer adoption of blockchain food traceability: effects of innovation-adoption characteristics, expertise in food traceability and blockchain technology, and segmentation. British Food Journal 125 (7): 2493-2513.

Yusof, H., Munir, M. F. M. B., Zolkaply, Z., Jing, C. L., Hao, C. Y., Ying, D. S., Zheng, L. S., Seng, L. Y., and Leong, T. K. 2018. Behavioral intention to adopt blockchain technology: Viewpoint of the banking institutions in Malaysia. International Journal of Advanced Scientific Research and Management 3 (10): 274-279.

Zhao, J. L., Fan, S., and Yan, J. 2016. Overview of business innovations and research 0pportunities in blockchain and introduction to the special issue. Financial Innovation 2 (28): 1–7.

Zheng, X. R. and Lu, Y. 2021. Blockchain technology–recent research and future trend. Enterprise Information Systems 16 (12): 1-23.

Zheng, Y., and Boh, W. F. 2021. Value drivers of blockchain technology: A case study of blockchain-enabled online community. Telematics and Informatics 58: 101563.

Zhou, T. 2011. The impact of privacy concern on user adoption of location-based services. Industrial Management & Data Systems 111 (2): 212-226.

Zyskind, G., Nathan, O., and Pentland, A. 2015. Decentralizing privacy: Using blockchain to protect personal data. In the Proceedings of the IEEE Symposium on Security and Privacy Workshops (IEEE 2015), 21-25 May, San Jose, CA, USA: 180–184.

sciendo

South East European Journal of Economics and Business
Volume 18 (2) 2023, 173-185
DOI: 10.2478/jeb-2023-0026

LINKING FARMERS' BARGAINING POWER IN TRADE TO THEIR PLANS FOR FUTURE ECONOMIC ACTIVITIES

Isuf Lushi, Gentjan Çera, Arif Murrja, Sead Ujkani

Abstract

This paper aims to examine the relationship between the bargaining power of farmers in trade and their plans for future economic activity. While there is existing evidence shedding light on the factors influencing trading power and its consequences, there remains a compelling exigency for scientific substantiation clarifying the aforementioned nexus. A questionnaire was designed and utilized to collect primary data from farmers in Albania (with a sample size of 640). Factor analysis, reliability test and non-parametric statistical methods were used. Evidence was found in support of the aforesaid relationships. Hence, farmers who have plans for investments reflect a higher bargaining power in trading, as opposed to those without such plans. Moreover, interest in increasing farm activity is significantly associated with improved bargaining power in trade. This study enriches the literature, especially in the agribusiness field, by offering additional insights from a transition and developing country.

Keywords: *trade bargaining power, future plans, farmers, decision-making, agribusiness, Mann-Whitney test*

JEL Classification*: Q12, Q13*

1. Introduction

This paper explores the relationship between farmers and their buyers, examining how bargaining power in trade (hereinafter referred to as trading power) is affected by future decision-making regarding new investments and the prospective expansion of economic activity. In addition, by focusing on the influencing factors, this paper aims to augment the academic discourse by furnishing such a relationship with novel insights. When discussing buyers and sellers, field experts prefer to use the term "conflict". In this paper, the term is utilized to refer to the disputes arising after such a relationship emerges. Notwithstanding, what can cause these types of discordances between them? Experts'

Isuf Lushi, PhD
Faculty of Life and Environmental Sciences - University of Prizren, Republic of Kosovo
E-mail: isuf.lushi@uni-prizren.com
ORCID: 0000-0003-4543-3259

Gentjan Çera, PhD
Agriculture University of Tirana, Albania
E-mail: gcera@ubt.edu.al
ORCID 0000-0002-9324-181X

Arif Murrja, PhD
Agriculture University of Tirana, Albania
E-mail: amurrja@ubt.edu.al
ORCID 0000-0002-6794-8782

Sead Ujkani, PhD (corresponding author)
Faculty of Economics, University of Prishtina
Str. "Agim Ramadani", n.n. 10 000 Prishtinë,
Republic of Kosovo
E-mail: sead.ujkani@uni-pr.edu
ORCID 0009-0007-3159-3709

efforts to answer this question have become a central issue in the field's literature. A great number of them converge into one point – factors that lead to "conflict" between buyers and sellers are numerous and can be classified, including – albeit not limited to – psychological, social, economic, political, geographic, and demographic. Powers and Reagan (2007) mention in their research paper main factors like reputation, performance satisfaction, trust, social bonds, power/interdependence, cooperation, shared technology, cooperation, and commitment. The extent of agreement between farmers and buyers, put otherwise as the facility on which an agreement is attained, is strongly defined by the above-mentioned factors. However, sources of conflict require delicate balancing acts to prevent a trading relationship from losing its impetus and failing to fully develop its trading potential (Dwyer et al. 1987; Lam and Chin 2005; Harwood 2013; Çera, Meço, et al. 2019).

In principle, the most basic mechanism in an economy is the economic relationship. In order for an economic relationship to be completed, two actors are required: the buyer and the seller. They should be willing to exchange money or other in-kind contributions with goods or services. As soon as this happens, as a consequence, a trade relationship is established between these two parties in which financial actions will be taken based on how supply and demand are met. In fact, the relationship between buyers and sellers is among the most commonly discussed topics between scholars, academicians, researchers, economists, and even policymakers. A multitude of articles examining this correlation can be found in the literature.

One of the core problems discussed in this paper pertains to the decision-making power of farmers in a transaction, and how the latter influences farmers' decision to invest in the long run. In the past decade, multiple concerns have been expressed about this instance. At the axis of the relationship between these two trading parties, also stands the power to decide, the balance of which could shift between the farmer and the buyer. Farmers are believed to be more disadvantaged in the power distribution compared to buyers. For instance, modern literature attributes this disadvantage to farmers' bargaining power, countervailing power, and the role of contracts in the agriculture sector. On the other hand, Sexton and Xia (2018) in their recent study relate this disadvantage to farmers' lack of access to selling opportunities, liquidity constraints, and the absence of adequate storage facilities. In addition, they highlight the lack of a legal framework to enforce fair competition. In Albania, a comparable scenario unfolds, with farmers encountering significant disadvantages compared to their potential buyers. As corroborated by literature, the lack of a well-organized market, poor infrastructure, low sale prices due to overproduction, lack of suitable space for storage or conservation of production, climate problems, etc., are all predicaments that exert considerable pressure upon farmers to expedite the sale of their produce. Considering the factors above, in many cases, farmers try to sell their products immediately and at devalued prices, driven by lingering incomes. Moreover, there are many other occasions in which farmers dispose of their products without being able to sell them even at depreciated values.

This research was conducted in Albania, an IMF-designated developing country with an economy that is mostly driven by agriculture and food processing. About half of the labour force is employed in this sector, which amounts to about 20% of the Gross Domestic Product (World Bank 2019). Even though the agriculture sector in Albania has an essential role in the wellbeing of the economy, it has been facing some serious challenges over the last three decades. Woes such as poor infrastructure, lack of subventions or other financial incentives, lack of efficient agriculture-supporting policies, and old technology, have all contributed negatively to this sector's growth (Kittova and Steinhauser 2018; Dvorský et al. 2019; Çera, Breckova, et al. 2019; Çera et al. 2021). However, in recent years, the interest in studying this topic has risen sharply. Owing to the strong correlation between the Albanian economy and the rural sector, it is worth going further in the study.

In the relationship between farmers and buyers, experts often bring to attention a phenomenon called "moral hazard". It is strongly related to the so-called "asymmetric information" between these two parties. This is also a contributing factor in market power between farmers and buyers. Moral hazard refers to farmers' egoistic behaviour after reaching an agreement with purchasers (Olounlade et al. 2019). It occurs when insured farmers are less concerned about the possibility of a loss as a result of their insurance coverage, thus tending less to their crops (He et al. 2019). Farming moral dangers are characterised as violations of "production orders" or "hidden action" in the course of agricultural activities (Zhang and Li 2016). Moral hazard's reputational impact can potentially harm long-term partnerships between farmers and purchasers (Zhang and Li 2016). Moral hazard is a major worry in the context of crop insurance, since it can lead to farmers taking more risks in the presence of crop insurance than they would otherwise be prepared to accept. The role of trust, risk, and time preferences for farmers' contract choices is also studied in the context of moral hazard (Fischer and Wollni

2018). Asymmetric information has two consequences: moral hazard, which arises after contracting when the agent's activity cannot be witnessed, and adverse selection, which occurs before contracting (Minarelli et al. 2016). Asymmetric information concerns, such as moral hazard and adverse selection, have long been a source of worry for crop insurance, as they might lead to farmers taking more risks in the presence of crop insurance than they would otherwise (He et al. 2019). Because of the existence of information asymmetry between buyers and rice farmers, the moral hazard problem is the primary impediment to the growth of the contract farming market (Olounlade et al. 2019).

Our study is significant because it has the potential to empower farmers pertaining to their trading ties, henceforth encouraging sustainable farming practices. We give insights into policy tools tailored to improve the agricultural sector by finding the beneficial association between power in trade and investment plans, particularly in emerging markets and transition economies where institutional flaws remain rampant. Our research emphasizes the necessity of considering farmers' trading power as a major aspect in defining their strategies for future activities. Empowering farmers in their trade connections may result in higher investments and activity expansion, eventually benefitting the agriculture industry, farmers, and the economy as a whole.

The rest of this paper is structured as follows: in section two a literature review on the relationship between farmers and their buyers is provided, mainly focused on bargaining power in trade, plans for future investments and interest on expanding economic activity; section three describes the aim, methodology, and the data; section four consists of an analysis of the study's results; whereas, section five and section six provide the paper's discussions and concluding remarks, respectively.

2. Literature Review

As already mentioned above, this paper is concerned with the relationship between farmers and buyers. Such a relationship, particularly based on the long-term perspective, has attracted a lot of interest. In the majority of consulted research pieces, this fact is strongly highlighted; being argued that the relationship represents a great source for developing competitive advantage for both parties (Dwyer et al. 1987; Janda et al. 2002; Lambe et al. 2002; Wong et al. 2005; Tarí et al. 2020; Dvorský et al. 2021; Zarnadze et al. 2022). Within the scholarly discourse, a consensus appears to hold sway among researchers on the fact that farmers are facing a very dynamic environment nowadays, which encompasses changes in technology, climate, market prices, as well as institutional and political changes, leading to the need for farmers to adapt as soon as possible (Ihli et al. 2014; Skreli et al. 2015; Evteeva et al. 2019; Maloku, Çera, Metzker, et al. 2021; Maloku, Çera, Poleshi, et al. 2021). In a similar fashion, the relationship between farmers and buyers has undergone rapid changes. Farmers all over the world are under the pressure of economic decision-making, including the renewal of older technologies, possible expansion of production activities, adopting newer and more efficient production techniques, etc. All of the above-mentioned situations can be considered as investments from the farmers' perspective, hence yielding increased influence on their incomes and consumption trends, in accordance with the long-term point of view (Feder et al. 1985). When talking about investments, authors usually consider the long run. In this context, we can use the term 'investments' interchangeably with farmers' plans for the future.

As previously discussed, there is a vast number of factors that influences farmers' relationship with the buyers. In this typology of trading relationship, as well as in the conflict that arises between farmers and buyers, it is essential to highlight "decision-making power". Power is defined as the capacity of one party to gain advantage over another, sometimes also implying the party persuading or coercing the other into complying with something they would otherwise not (Wilson 1995). In his research, Collins (2002; 2007) considers power as a multidimensional variable and links it to activities that include products, delivery, and price margins. On the other hand, there are studies on relationship performance that in their analysis include efficiency, flexibility, responsiveness, parties' satisfaction, and food quality (Aramyan et al. 2007). Furthermore, it is very important to understand how power is exercised in a relationship between buyers and farmers. It directly affects commitment, satisfaction, performance, value distribution, risk sharing and participation in a trading relationship (Brown et al. 1995; Batt 2003; Benton and Maloni 2005). In the literature, there are also authors (Grosh 1994; Katchova and Miranda 2004) who scrutinize the variable from the "problem-solution" point of view. In their studies, they frame contract farming as an institutional solution to instances of market failures mostly pertaining to low access of credits, insurance and information in general.

However, along with the multiple questions that can be posed to this regard, one that stands out would ask: "Is there any relationship between farmers' power over the buyers and their plans for the future?"

Referring to the literature of the field, especially within the local (Albanian) scholarly debate, there seems to be a knowledge gap when studying the impact of farmers' decision-making power compared to buyers and their ability to invest in the long run. This possible relationship seems to have been pushed out of sight, as the current studies do not imply a direct relationship between these two variables. Often power relations with farmers' investing decisions are accounted for only indirectly by authors of the field, without referring conclusions explicitly (Malak-Rawlikowska et al. 2019).

Most of the authors link the decision of farmers to make investments in their farm with financially based factors, more concretely, to their incomes. Investment decisions are directly related to farmers' income and prospective consumption patterns (Hill 2010). Sun, Zhang and Zhang (2018) also find a direct relationship between farmer's monetary situation and their plans for the future, principally centred around the transformation of their land. The financial situation of farmers in Albania is generally indigent. This can be directly related to contract farming. On the whole, contract farming can be considered as a mix of spot market transactions and vertical integration. This type of making business has its own advantages, such as flexibility, high coordination, better quality control for the products offered, etc. (Prowse 2012). It is worth highlighting the low level of contract farming in Albania which can be translated into lower product commercialization for the farmers, lower incomes, decreased productivity and lower modernization (Maertens and Swinnen 2009; Bellemare 2012; Lushi et al. 2021). In fact, contract farming, especially in the context of developing countries like Albania, has received considerable attention in recent years (Xhoxhi et al. 2019). Ton et al. (2018) in their recent study show that poor farmers, in the context of land and other assets, are rarely involved in contract farming.

However, this is not the only influencing factor as there are many others that contribute to this regard. Amidst other factors, the lack of a well-organized market, poor infrastructure, and the absence of adequate places for the storage and preservation of products have all resulted in lower income rates for farmers. This is directly associated with a decrease in their financial capacity, which in turn diminishes their intention to opt for long-term investment plans. In such circumstances, even when farmers desire to invest with assistance from banks or other financial institutions, they often encounter practical impediments due to being perceived as financially unreliable by such lenders. In this context, farmers in Albania find themselves in a disadvantaged position compared to buyers, primarily due to the aforementioned factors. In today's socio-economic reality, many concerns have been expressed about the unequal distribution of power between farmers and buyers (OECD 2014). Lower farmer power compared to their buyers implies a disadvantage in their products' price-setting position, risk reduction, financial flows, price stability, and security of sale. Consequently, as the buyer gains market traction, farm prices and incomes become significantly redundant. In addition, lower incomes for the farmer mean lower financial capability and as a result, lower capacities for future investments. Being under the pressure of financial uncertainty makes farmers hesitate to invest (Winter-Nelson and Amegbeto 1998).

However, from a purely theoretical standpoint, the other side of the coin is also plausible. If sellers have market power, farmers in this case can create markups above marginal cost at each stage of the supply chain where such power is present. One of the most influencing factors in having market power for the farmer is reputation. It is related with the trading relationship fairness between the farmer and the buyer, built consistently over time (Wilson 1990). In theory, this would create a more favourable environment for the farmer to improve his financial situation and therefore, increase the possibilities of investing in the future.

In this context, the majority of authors in the literature of the field agree that trading power positively correlates with farmers' decision to make new investments, or to expand their economic activity in the future (Bingen et al. 2003; Warsaw et al. 2021). Local authors agree with this line of thinking, pinpointing the fact that farmers in Albania tend to be disadvantaged towards their buyers (Xhoxhi et al. 2019 2020).

3. Methods and procedures

The aim of this research is to study the relationship between trading power and plans for future activities. Such a relationship is investigated in the context of the agribusiness sector in a developing country, namely Albania. The output of this work seeks to contribute to the literature by providing additional evidence in either support or opposition to the above association. Such results can be very useful not only for the farmers themselves, but also for the researchers, academicians, managers or other decision-makers concerned with this issue. Since the economy of Albania is mainly boosted by the rural sector, our findings can also assist policy-makers in designing and pursuing the right policies to this end.

The research design entailed data collection employing a structured questionnaire. The questionnaire

was developed based on literature review and productive consultations with relevant field experts. Its section composition includes household general information, different aspects focused on livelihood, main activity, and trading relationship.

An in-person data collection modality was utilized. A total of 640 valid questionnaires were collected, covering various areas where agribusiness is extant in Albania. As shown on Table 1, the majority of the respondents were above 55 years old (65%), while 12% of them were younger than 45 years old. Almost two-thirds of respondents chose secondary school as the highest completed level of education, whereas less than 4% of the respondents had graduated from a higher education institution. Table 1 also depicts the number of family members over the age of 14.

The two main variables in this research are trading power and plans for future activity. The second one is represented by two indicators, which are (1) plans for investments and (2) interest in increasing the activity. Plans for investments was a dummy variable (Yes/No), where respondents were asked to respond to the following question: Do you have plans for investment in the future? On the other hand, the other indicator, namely interested to increase the activity, was formulated as a nominal variable (Yes, Undecided, No), and the query in the questionnaire associated to this variable was: Is the family interested to increase its agricultural activity?

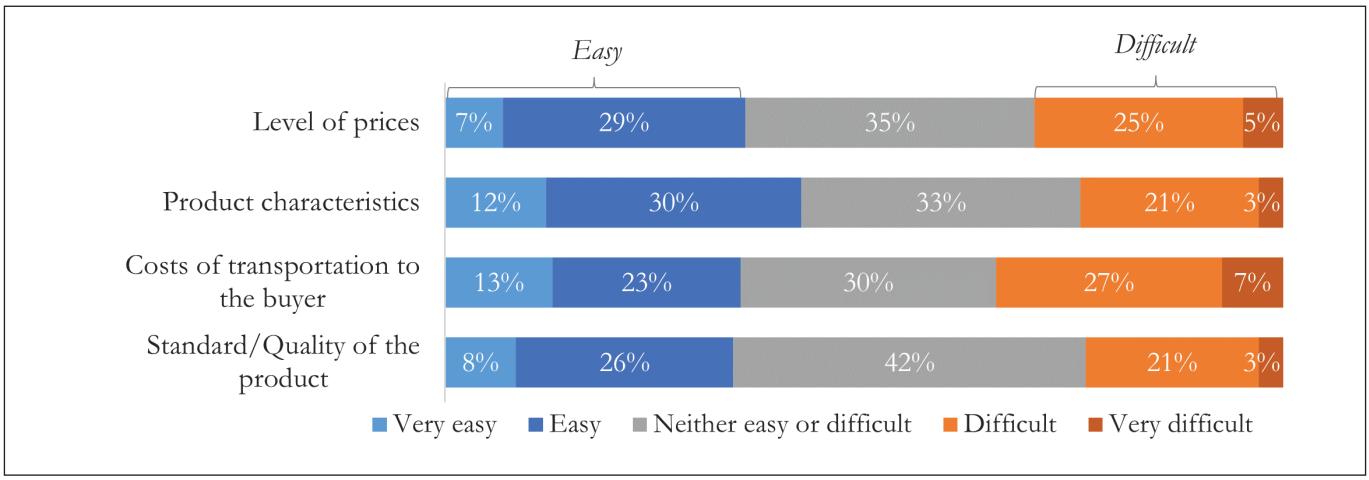
Trading power is a latent variable, which is constituted by four indicators/statements. Trading power refers to the purchasing and selling power between trading partners. Various forms of trading power are possible depending on the market design, ranging from short-term trading to long-term power purchase agreements. The core question was: How easy it is to agree with the buyer about…? The four indicators were: "Level of prices", "Product characteristics", "Costs of transportation to the buyer", and "Standard/Quality of the product". Although ease of reaching an agreement may depend on numerous factors, such as the commonality of values between the two parties, in our case it focuses on the market power only. Each indicator answer was formulated as a Likert-type scale with five options: 1 = Very easy, 2 = Easy, 3 = Neither easy, nor difficult, 4 = Difficult, 5 = Very difficult. To compute the trading power variable, a factor analysis was run, meaning that the indicators (statements) will not have the same loading.

Figure 1 illustrates the distributions of the answers of the respondents per each statement/indicator that were used in constructing the trading power variable. If "Very easy" and "Easy" categories are combined together to form a bigger category, named "*Easy*", and "Difficult" and "Very difficult" categories are summed up to form a bigger category, labelled "*Difficult*", then it can be said that the "*Easy*" ranges from 34% (Standard/Quality of the product) to 43% (Product

Table 1. Sample profile

Variable	Category	Count	Percentage
Age of the respondent	25-34 years old	36	5.63%
	35-44 years old	42	6.56%
	45-54 years old	148	23.13%
	55-64 years old	191	29.84%
	65 + years old	223	34.84%
Education of the respondent	Elementary-up to 4 years	43	6.72%
	Secondary-8/9 years	353	55.16%
	High School	163	25.47%
	Professional High School	59	9.22%
	University	22	3.44%
Members over 14 years old	1 member	24	3.75%
	2 members	282	44.06%
	3 members	124	19.38%
	4 members	134	20.94%
	5 members	57	8.91%
	6 or more members	19	2.97%

Figure 1. Distributions of the answers of per each statement/indicator of trading power



characteristics), while the "*Difficult*" moves from 24% (Standard/Quality of the product and Product characteristics) to 34% (Costs of transportation to the buyer). On average, more than 1/3 of the respondents selected the "Neither easy, nor difficult" option, which represents a considerable share.

For analysis purposes, the variable of trading power was composed using factor analysis (Fabrigar and Wegener 2011). Considering the low number of indicators, only one factor from the factor analysis conducted is expected to emerge.

To test the association between trading power and plans for future activity, the Mann-Whitney test was performed. The assumptions of applying t-test were not satisfied, which implies the use of the Mann-Whitney U test (Hollander et al. 2013; Gravetter and Wallnau 2017). The Kolmogorov-Smirnov test for normality was used to test whether the above assumption is satisfied. This statistical technique examines the difference only between two groups. U statistic formula incorporates the number of the subject per each category and the sum of the ranks (*R*) for individuals in the respective sample, and between the following calculations, the lowest one represents the Mann-Whitney U value.

$$U_1 = n_1 n_2 + \frac{n_1(n_1+1)}{2} - \sum R_1 \quad \text{and}$$

$$U_2 = n_1 n_2 + \frac{n_2(n_2+1)}{2} - \sum R_2$$

The Mann-Whitney U can be standardised using the following formula:

$$z = \frac{U - (n_1 n_2 / 2)}{\sqrt{n_1 n_2 (n_1 + n_2 + 1)/12}}.$$

All the analysis conducted to get the results presented in this paper were performed in SPSS, version 23 (Meyers et al. 2013; Pallant 2016).

4. Results

As mentioned in the previous section of the paper, four indicators were used in constructing trading power, since it is a latent variable. Different ways can be used in constructing such a variable. One such way includes summing up the respondent's scores based on the four indicators, and the result will yield the latent variable. Another way of spotting an unobserved variable can be by calculating the average of the four indicators per each respondent. The third approach in calculating a latent variable pertains to using such an approach that can provide the weights of each indicator in calculating the latent variable, like factor analysis. Hence, the third method listed for calculating a latent variable does not assume that the loading of each indicator is the same, so it is neither the average, nor the sum. In this paper, factor analysis was used to yield the trading power variable (Fabrigar and Wegener 2011). As it was expected, only one factor emerged from the performed principal component analysis, explaining 72.62% of the variation in the sample. The Kaiser-Meyer-Olkin value was greater than the threshold of 0.80 and Barlett's test of sphericity was significant (Hair et al. 2010), providing evidence of the appropriateness of factor analysis. The component matrix is shown in Table 2. All factor loadings were well in excess of Stevens' (2015) benchmark of 0.40, showing evidence of construct convergent validity.

In addition to factor analysis results, reliability test was conducted for the composed variable, and its

results are shown in Table 2. The Cronbach's alpha of the latent variable (trading power) was found to be 0.872, which is above the conservative threshold of 0.7. Thus, there is no issue with the reliability, meaning that the latent variable can be used in further analysis.

To examine the differences in trading power between farmers who have plans for future activities or not, an independent t-test can be performed. Nonetheless, this statistical technique can be used only if certain principles are satisfied, one of whom is usually distribution (Pallant 2016). In cases when this assumption is violated, then a non-parametric technique such as the Mann-Whitney test can be performed. To investigate whether the above assumption is satisfied or not, Kolmogorov-Smirnov test in SPSS 23 was executed (Meyers et al. 2013), and its result is reported in Table 3. The test showed that both the indicators and extracted factor do not follow a normal distribution, meaning that the application of the Mann-Whitney test should be used instead of independent t-test.

The aim of this work is to link trading power with plans for future activities. Regarding the nature of the variables under study, this aim can be achieved by testing the difference between two groups of farmers, those who have plans for future activities and those who do not. If the data confirms that there is a statistical difference between the two groups, then the above association is established.

As stated earlier in this paper, plans for future activities were represented by two indicators, which are plans for investment and interest in increasing the activity. "Plans for investment variable" is a dummy one (yes/no), while "interest in increasing the activity" variable is a nominal one. To test the relationship between trading power and plans for future activities, the Mann-Whitney test was used.

It was found that, when comparing those who have plans for future investment to those who do not, farmers perceived trading power differently (see Table 4). Furthermore, the results indicate that those who have plans for investments reflect higher trading power, as compared to those who do not have such plans. The last row of Table 4 refers to the results of the Mann-Whitney test related to the latent variable (trading power). It was demonstrated that farmers which have plans for investments (mean rank = 422.07), scored higher in trading power than those without such plans (mean rank = 352.32), $U = 27520$, $z = -3.233$, $p < 0.01$. Three out of the four indicators used to compose trading power provided the same result as with the latent variable. Hence, compared to farmers who do not have plans for investments, the data showed that those who have such plans scored higher in level

Table 2. Component matrix and Reliability test

How easy it is to agree with the buyer about…?	Loading	Communalities	Cronbach's Alpha if Item Deleted
Level of prices	.897	.663	.856
Product characteristics	.858	.805	.807
Costs of transportation to the buyer	.837	.701	.847
Standard/Quality of the product	.814	.736	.833

Note: Extraction method, Principal Component Analysis. Kaiser-Meyer-Olkin Measure of sampling adequacy = 0.823. Sig. Bartlett's test < 0.001. Eigenvalue = 2.905; Variance explained = 72.62%; Cronbach's alpha = 0.872.

Table 3. Tests of normality

How easy it is to agree with the buyer about…?	Mean	Standard deviation	Kolmogorov-Smirnov[a]		
			Statistic	df	Sig.
Level of prices	2.92	1.00	0.178	640	0.000
Product characteristics	2.73	1.02	0.187	640	0.000
Costs of transportation to the buyer	2.94	1.14	0.170	640	0.000
Standard/Quality of the product	2.84	0.95	0.224	640	0.000
Power in trading (*as a latent variable*)	0	1	0.079	640	0.000

[a]. Lilliefors Significance Correction

of prices (U = 27821.5, z = -3.213, p< 0.01), product characteristics (U = 28714, z = -2.749, p< 0.01), and costs of transportation incurred by the buyer (U= 24204, z = -5.016, p< 0.001). No significant difference between the two groups of farmers regarding "standard/quality of the product" was found, U = 33975.5, z = -0.053, p> 0.10. However, taking into account all the above results, it can be stated that there is a significant relationship between trading power and plans for investments. Besides, it was demonstrated that this association is a positive one, meaning that those who have plans for investments reflect a higher trading power, as opposed to those without such plans.

Table 5 summarizes the results of the Mann-Whitney test for the second variable that represents plans for future activities, which is "interest in increasing the activity" (Yes, No, Undecided). Evidence shows that, when comparing those who are interested to increase the activity (mean rank = 240.23) with those who are undecided (mean rank = 164.79), farmers perceived trading power differently, U = 9289, z = -6.284, p < 0.001. Even though the mean rank for "Yes" (= 232.26) is a bit higher than for "No" (= 216.74), yet that does not suffice to get a significant difference in trading power, U = 17998, z = -1.143, p > 0.10. The authors believe that the reason for such a result is because two out of four indicators that comprise trading power did not show statistical differences, namely product characteristics (U = 18841, z = -0.451, p > 0.10) and standard/quality of the product, U = 17167, z = -1.916, p > 0.05. On the other hand, compared to those who are undecided (mean rank = 249.22),

Table 4. Results of Mann-Whitney test: Plans for investment

How easy it is to agree with the buyer about…?	Mean rank		Mann-Whitney U		
	Yes (n = 111)	No (n = 614)	U	z	p
Level of prices	419.36	352.81	27821.5	-3.213	0.001
Product characteristics	411.32	354.27	28714	-2.749	0.006
Costs of transportation to the buyer	451.95	346.92	24204	-5.016	0.000
Standard/Quality of the product	363.91	362.83	33975.5	-0.053	0.958
Power in trading (*as a latent variable*)	422.07	352.32	27520	-3.233	0.001

Table 5. Results of Mann-Whitney test: Interest in increasing the activity

How easy it is to agree with the buyer about…?	Mean rank			Mann-Whitney		
	No (n = 320)	Undecided (n = 256)	Yes (n = 121)	U	z	p
Level of prices	295.96	279.18	–	38573.5	-1.257	0.209
	–	168.83	231.68	10324	-5.549	0.000
	208.2	–	254.86	15262.5	-3.558	0.000
Product characteristics	318.75	250.69	–	31281	-5.077	0.000
	–	172.07	224.82	11153.5	-4.618	0.000
	219.38	–	225.29	18841	-0.451	0.652
Costs of transportation to the buyer	331.75	234.44	–	27120.5	-7.210	0.000
	–	156.22	258.36	7096	-8.843	0.000
	210.08	–	249.89	15864.5	-3.053	0.002
Standard/Quality of the product	314.75	255.68	–	32559	-4.465	0.000
	–	184.16	199.23	14250	-1.358	0.174
	227.85	–	202.88	17167	-1.916	0.055
Power in trading (*as a latent variable*)	319.93	249.22	–	30904	-5.075	0.000
	–	164.79	240.23	9289	-6.284	0.000
	216.74	–	232.26	17998	-1.143	0.253

farmers who are not interested to increase the activity (mean rank = 319.93) scored significantly higher in trading power, $U = 30904$, $z = -5.075$, $p < 0.001$.

Regarding the results of the test for individual indicators, it can be said that, compared to either those who are not interested, or those who are undecided, farmers who are interested to increase the activity scored statistically higher in "level of prices" and "buyer transportation cost" (see Table 5). Moreover, evidence shows that there are significant difference between those who are not interested to increase the activity and those who are undecided, in "product characteristics" ($U = 31281$, $z = -5.077$, $p < 0.001$), "buyer transportation cost" ($U = 27120.5$, $z = -7.210$, $p < 0.001$), and "standard/quality of the product" ($U = 32559$, $z = -4.465$, $p < 0.001$).

Considering all the above, results related to the variable "interest in increasing the activity", show that there is an association between the latter variable and trading power. Given the fact that "plans for investments" and "interest in increasing the activity" together represent "plans for future activities", and the significance of the associations of these variables with trading power, it can be said that the proposed association is supported by the data of this study.

5. Discussion

This work has demonstrated interesting results regarding the linkages between trading power and plans for future activities. Evidence found supports the relationship stated above. Despite the results demonstrating that there is an association between trading power and plans for future activities, yet again there is a need to discuss the obtained results, especially because the factor "plans for future activities" is represented with two indicators: plans for investments and interest in increasing the activity.

To test the association and to get the results, a rigorous set of procedures was followed. Firstly, the trading power variable was developed with four indicators, which captures issues like Level of prices, Product characteristics, Buyer transportation costs, and Standard or quality of the product. These aspects do matter in forming trading power, in particular in the agribusiness context. Secondly, to compose this latent variable, a factor analysis was performed, as to obtain the weights of each indicator. As expected, one factor emerged from the factor analysis. Thirdly, to have a better understanding of plans for future activities, two indicators were used, as to have a clearer view over the future plans that farmers have. Finally, the latent variable was tested to see whether it had any correlation to plans for future activities by using a non-parametric technique. The steps mentioned were followed to examine the above linkage in the agribusiness sector in the context of Albania's free-market transitioning economy.

As stated above, two associations were tested in this paper, which lead to the overall relationship. The first association is the one that links trading power to plans for investments, whereas the second one shed light over the linkage between trading power and interest in increasing the activity. Both associations are supported by field-relevant literature. A number of authors consider income level to be a highly significant indicator in their approach towards the two above-mentioned factors (Bellemare 2012; Ton et al. 2018).

Regarding the relationship between trading power and plans for investment, it was found that farmers who have plans for investment reflected higher trading power levels compared to those who have no such plans. This finding establishes a positive relationship between these factors. Therefore, the mere existence of the linkage was not only proved, but its positive nature was also discovered. Maart-Noelck and Musshoff (2013) are on the same line as in their study that linked farmers' plans for investment to higher financial knowledge, better financial behaviour and higher risk tolerance. All these factors, as stated by the authors, imply enhanced trading power relationships. The relationship between farmers' plans for future investments and their market power is complex and can be influenced by several economic phenomena. Here are some of the substantive economic phenomena that can justify this directionality of the relationship. *Improved productivity*: Farmers who invest in their farms can improve their productivity, which can increase their revenue and profitability. This, in turn, can provide them with more resources to invest in their farms and improve their production processes (Warsaw et al. 2021). *Access to capital*: Farmers who have access to capital can invest in their farms and improve their production processes, which can then increase their market power. Access to capital can also help farmers weather economic downturns and other challenges (Carlisle et al. 2019). *Technological advancements*: Farmers who invest in new technologies can improve their production processes, reduce costs, and increase their market power. For example, the implementation of digital connectivity in agriculture can improve efficiency, resilience, digitization, agility, and sustainability, which can improve farmers' market power (Goedde et al. 2020). *Sustainable agriculture practices*: Farmers who invest in sustainable agriculture practices can improve the quality of their soil, reduce the use of harmful chemicals, and increase

their yields. This can lead to better-quality produce, which can increase farmers' revenue and profitability and enhance their market power (Warsaw et al. 2021). *Market access*: Farmers who have access to markets can sell their products and generate more revenue, which can be reinvested in their farms. For example, farmers' markets can improve food access and affordability, which has the potential to expand the demand for locally grown produce and provide farmers with more opportunities to sell their products and generate more revenue (Warsaw et al. 2021).

Regarding the linkage between having interest in increasing the activity in the farm and trading (market) power, the analysis conducted supports such an association. A positive relationship between trading power and having interest in increasing the activity is referred to by many authors, especially those embracing the "contract farming" point of view. A vast number of studies (Eaton and Shepherd 2001; Byerlee et al. 2008; Silva and Ranking 2013; Xhoxhi et al. 2018, 2019, 2020) posit this relationship, even though not explicitly. There is an agreement between these authors pertinent to the positive correlation between trading power and farmers' income level. As was shown above, contract farming has a direct positive relationship with higher incomes as it helps farmers improve their access to credit, or explore additional possibilities for agricultural extension. However, generalizations cannot be made for all the farmers as there are many contributing factors to their income level. Csaki et al. (2008) underline the fact that farmers' income level is highly affected by their region's economy. In this context, farmers operating in poor regions, exhibit a lower trading power – and, as a consequence – less interest in increasing their activity.

6. Conclusion

This study sought to identify whether a linkage existed between trading power (bargaining power in trade) and plans for future activities in the context of the agribusiness sector in a developing country. Plans for future plans are represented by two factors which are: plans for investment and being interested in increasing the activity. Trading power is a current topic in the agribusiness field of study. Scholars have tried to explore potential factors that impact farmers' trading power to entice the design and implementation of different policy instruments for farmers. This problem is quite pronounced in developing and transition countries, where institutions are weak and principles of fair competition are not observed accordingly, as opposed to more advanced economies (Çera, Breckova, et al. 2019). Considering the above discussion, this research aims to fill this gap in literature and offer some insights into the context of developing countries.

To the best of the authors' knowledge, the linkages between trading power and plans for future activities have not received much attention by scholars. Furthermore, it can be said that this study is among the first, since we have failed to find any other paper covering such an issue in the literature. In addition, the originality of this work lies in the fact that "plans for future activities" is represented by two factors, which lead to more consolidated results.

This work demonstrated that plans for future activities are associated with farmers' trading power. Indeed, the study's findings underline that the latter is significantly associated with plans for investment, and, to some extent, with the fact whether farmers are interested in increasing their activity or not. Moreover, findings of this study claim that farmers' trading power is positively linked to plans for investment. This result means that those farmers who plan for future investment reflect higher power over the buyer, as compared to those without such plans. This claim stands for three indicators of trading power, which are level of prices, product characteristics, and buyer transportation cost.

Promoting the horizontal coordination of farmers can potentially increase their market power and facilitate investments in the Albanian agrarian sector. Horizontal coordination among farmers can lead to economies of scale, better bargaining power, and improved access to markets (Imami et al. 2021). This can increase farmers' market power and provide them with more resources to invest in their farms.

References

Aramyan, L. H., A. G. J. M. Oude Lansink, J. G. A. J. van der Vorst, and O. van Kooten. 2007. Performance measurement in agri-food supply chains: a case study. Supply Chain Management: An International Journal 12: 304–315.

Batt, P. J. 2003. Examining the performance of the supply chain for potatoes in the Red River Delta using a pluralistic approach. Supply Chain Management 8: 442–454.

Bellemare, M. F. 2012. As You Sow, So Shall You Reap: The Welfare Impacts of Contract Farming. World Development 40: 1418–1434.

Benton, W., and M. Maloni. 2005. The influence of power driven buyer/seller relationships on supply chain satisfaction. Journal of Operations Management 23: 1–22.

Bingen, J., A. Serrano, and J. Howard. 2003. Linking farmers to markets: different approaches to human capital development. Food Policy 28: 405–419.

Brown, J., R. Lusch, and C. Nicholson. 1995. Power and relationship commitment: their impact on marketing channel member performance. Journal of Retailing 71: 363–393.

Byerlee, D., A. D. Janvry, E. Sadoulet, and R. Townsend. 2008. World development report 2008: agriculture for development. Retrieved from http: //documents.worldbank.org/curated/en/587251468175472382/.

Carlisle, L., M. M. de Wit, M. S. DeLonge, A. Calo, C. Getz, J. Ory, K. Munden-Dixon, R. Galt, B. Melone, R. Knox, A. Iles, and D. Press. 2019. Securing the future of US agriculture: The case for investing in new entry sustainable farmers. Elementa: Science of the Anthropocene 7: 17.

Çera, G., P. Breckova, E. Çera, and Z. Rozsa. 2019. The Effect of Business Enabling Policies, Tax Treatment, Corruption and Political Connections on Business Climate. Acta Polytechnica Hungarica 16: 113–132.

Çera, G., E. Çera, H. N. R. Ribeiro, and S. Maloku. 2021. The role of trust in government and institutional environment in future business climate. International Journal of Entrepreneurial Venturing 13: 425.

Çera, G., M. Meço, E. Çera, and S. Maloku. 2019. The effect of institutional constraints and business network on trust in government: an institutional perspective. Administration & Public Management Review 33: 6–19.

Collins, A. 2002. The determinants of retailers' margin related bargaining power: Evidence from the Irish food manufacturing industry. International Review of Retail, Distribution and Consumer Research 12: 165–189.

Collins, A. M. 2007. Retail control of manufacturers' product-related activities: Evidence from the irish food manufacturing sector. Journal of Food Products Marketing 13: 1–17.

Csaki, C., C. Forgacs, and D. Milczarek-Andrzejewska. 2008. Restructuring market relations in food and agriculture in Central and Eastern Europe: impacts upon small farmers. Retrieved from https: //www.cabdirect.org/cabdirect/abstract/20103204003.

Dvorský, J., Jr. Jaroslav Belás, G. Çera, and S. Bilan. 2021. Disparities in the perception of business risks in connection with the achieved education of the owner/manager and doing business. International Journal of Entrepreneurial Knowledge 9: 25–40.

Dvorský, J., Z. Petráková, G. Çera, and A. Folvarčna. 2019. Important factors for the entrepreneurship in Central Europe. Innovative Marketing 15: 71–83.

Dwyer, F. R., P. H. Schurr, and S. Oh. 1987. Developing Buyer-Seller Relationships. Journal of Marketing 51: 11–27.

Eaton, C., and A. Shepherd. 2001. Contract farming: partnerships for growth. Rome: Food and Agriculture Organisation. Retrieved from https: //books.google.com/books?hl=en&lr=&id=K7qM_i8yj1sC&oi=fnd&pg=PP11&dq=Contract+farming:+Partnerships+for+growth&ots=jdU9FqH6h5&sig=qddm4DpCT2ZKhdk6aC3uyRVTewI.

Evteeva, T., P. Rovný, and M. Petriľák. 2019. Farm as a form of small agricultural business in Russia: advantages and disadvantages. International Journal of Entrepreneurial Knowledge 7: 53–62.

Fabrigar, L. R., and D. T. Wegener. 2011. Exploratory Factor Analysis. New York, NY: Oxford University Press.

Feder, G., R. Just, and D. Silberman. 1985. Adoption of agricultural innovations in developing countries: A survey World Bank staff working paper no. 444. The University of Chicago Press 2: 255–295.

Fischer, S., and M. Wollni. 2018. The role of farmers' trust, risk and time preferences for contract choices: Experimental evidence from the Ghanaian pineapple sector. Food Policy 81: 67–81.

Goedde, L., J. Katz, A. Menard, and J. Revellat. 2020. Agriculture's technology future: How connectivity can yield new growth. McKinsey & Company. Retrieved from https: //www.mckinsey.com/industries/agriculture/our-insights/agricultures-connected-future-how-technology-can-yield-new-growth#/.

Gravetter, F. J., and L. B. Wallnau. 2017. Statistics for the behavioral sciences. CENGAGE Learning.

Grosh, B. 1994. Contract farming in Africa: an application of the new institutional economics. Journal of African Economies 3: 231–261.

Hair, J. F., W. C. Black, B. J. Babin, and R. E. Anderson. 2010. Multivariate Data Analysis. Harlow: Pearson Education Limited.

Harwood, T. G. 2013. Developing buyer-seller relationships through face-to-face negotiations. In The Future of Relationship Marketing, pp. 105–122. Taylor and Francis.

He, J., X. Zheng, R. M. Rejesus, and J. M. Yorobe Jr. 2019. Moral hazard and adverse selection effects of cost-of-production crop insurance: evidence from the Philippines. Australian Journal of Agricultural and Resource Economics 63: 166–197.

Hill, R. V. 2010. Investment and abandonment behavior of rural households: An empirical investigation. American Journal of Agricultural Economics 92: 1065–1086.

Hollander, Myles., D. A. Wolfe, and E. Chicken. 2013. Nonparametric statistical methods. New Jersey: Wiley.

Ihli, H. J., S. C. Maart-Noelck, and O. Musshoff. 2014. Does timing matter? A real options experiment to farmers' investment and disinvestment behaviours. Australian Journal of Agricultural and Resource Economics 58: 430–452.

Imami, D., V. Valentinov, and E. Skreli. 2021. Food Safety and Value Chain Coordination in the Context of a Transition Economy: The Role of Agricultural Cooperatives 15: 21–34.

Janda, S., J. Murray, and S. Burton. 2002. Manufacturer–supplier relationships: An empirical test of a model of buyer outcomes. Industrial Marketing Management 31: 411–420.

Katchova, A. L., and M. J. Miranda. 2004. Two-step econometric estimation of farm characteristics affecting marketing contract decisions. American Journal of Agricultural Economics 86: 88–102.

Kittova, Z., and D. Steinhauser. 2018. The International Economic Position of Western Balkan Countries in Light of their European Integration Ambitions. Journal of Competitiveness 10: 51–68.

Lam, P., and K. Chin. 2005. Identifying and prioritizing critical success factors for conflict management in collaborative new product development. Industrial Marketing Management 34: 761–772.

Lambe, C. J., R. E. Spekman, and S. D. Hunt. 2002. Alliance competence, resources, and alliance success: Conceptualization, measurement, and initial test. Journal of the Academy of Marketing Science 30: 141–158.

Lushi, I., G. Çera, S. Halilaj, and E. Çera. 2021. Exploring the association between trust and contracting in agribusiness sector: Evidence from Albania. Economics and Sociology 14 (4), 297-309.

Maart-Noelck, S. C., and O. Musshoff. 2013. Investing today or tomorrow? An experimental approach to farmers' decision behaviour. Journal of Agricultural Economics 64: 295–318.

Maertens, M., and J. F. M. Swinnen. 2009. Trade, Standards, and Poverty: Evidence from Senegal. World Development 37: 161–178.

Malak-Rawlikowska, A., D. Milczarek-Andrzejewska, and J. Falkowski. 2019. Farmers' bargaining power and input prices: What can we learn from self-reported assessments? Social Sciences 8: 1–13.

Maloku, S., G. Çera, Z. Metzker, I. Lushi, and B. Poleshi. 2021. The role of access to information in trading relationship and plans for future activities. Journal of International Studies 14: 113–127.

Maloku, S., G. Çera, B. Poleshi, I. Lushi, and Z. Metzker. 2021. The effect of relationship quality on contract farming: The mediating role of conflict between trading partners in Albania. Economics & Sociology 14: 283–296.

Meyers, L. S., G. C. Gamst, and A. J. Guarion. 2013. Performing data analysis using IBM SPSS. New Jersey: Wiley.

Minarelli, F., F. Galioto, M. Raggi, and D. Viaggi. 2016. Asymmetric information along the food supply chain: a review of the literature, pp. 12–15. Presented at the 12th European International Farming Systems Association (IFSA) Symposium, Social and Technological Transformation of Farming Systems: Diverging and Converging Pathways.

OECD. 2014. Competition issues in the Food Chain Industry. Paris: OECD. Retrieved from https: //www.oecd.org/daf/competition/competition-issues-in-food-chain.htm.

Olounlade, O. A., L. Gu-Cheng, L. Traore, N. Ouattara, F. V. Dossouhoui, and G. Biaou. 2019. Reputation effect of the moral hazard on contract farming market development: Game theory application on rice farmers in Benin. African Journal of Agricultural Research 14: 666–671.

Pallant, J. 2016. SPSS survival manual: a step by step guide to data analysis using IBM SPSS. New York, NY: McGraw-Hill Education.

Powers, T. L., and W. R. Reagan. 2007. Factors influencing successful buyer-seller relationships. Journal of Business Research 60: 1234–1242.

Prowse, M. 2012. Contract farming in developing countries - A Review. The A Savoir Collection 1–30.

Sexton, R. J., and T. Xia. 2018. Increasing Concentration in the Agricultural Supply Chain: Implications for Market Power and Sector Performance. Annual Review of Resource Economics 10: 229–251.

Silva, C. D., and M. Ranking. 2013. Contract farming for inclusive market access. Rome: Food and Agriculture Organisation. Retrieved from https: //www.cabdirect.org/cabdirect/abstract/20143323379.

Skreli, E., D. Imami, A. Jambor, D. Zvyagintsev, and G. Cera. 2015. The Impact of Government Subsidies on the Olive and Vineyard Sectors of Albanian Agriculture. Studies in Agricultural Economics 117: 119–125.

Stevens, J. P., and K. A. Pituch. 2015. Applied Multivariate Statistics for the Social Sciences: Analyses with SAS and IBM's SPSS. Routledge.

Sun, X., Z. Zhang, and Y. Zhang. 2018. Factors influencing farmer's decision-making behavior on rural construction land transformation. Sustainability (Switzerland) 10: 5–9.

Tarí, J. J., J. Pereira-Moliner, J. F. Molina-Azorín, and M. D. López-Gamero. 2020. A Taxonomy of Quality Standard Adoption: Its Relationship with Quality Management and Performance in Tourism Organizations In Spain. Journal of Tourism and Services 11: 22–37.

Ton, G., W. Vellema, S. Desiere, S. Weituschat, and M. D'Haese. 2018. Contract farming for improving smallholder incomes: What can we learn from effectiveness studies? World Development 104: 46–64.

Warsaw, P., S. Archambault, A. He, and S. Miller. 2021. The Economic, Social, and Environmental Impacts of Farmers Markets: Recent Evidence from the US. Sustainability 13: 3423.

Wilson, D. T. 1990. An Integrated Model of Buyer-Seller Relationships.

———. 1995. An Integrated Model of Buyer-Seller Relationships. Journal of the Academy of Marketing Science 23: 335–345.

Winter-Nelson, A., and K. Amegbeto. 1998. Option Values to Conservation and Agricultural Price Policy: Application

to Terrace Construction in Kenya. American Journal of Agricultural Economics 80: 409–418.

Wong, A., D. Tjosvold, and P. Zhang. 2005. Developing relationships in strategic alliances: Commitment to quality and cooperative interdependence. Industrial Marketing Management 34: 722–731.

World Bank. 2019. Enabling the Business of Agriculture 2019. Enabling the Business of Agriculture 2019. New York, NY: World Bank, Washington, DC.

Xhoxhi, O., R. Keco, E. Skreli, D. Imami, and B. Musabelliu. 2019. The role of intermediaries' power on contracting decision between farmers and intermediaries. New Medit 18: 3–15.

Xhoxhi, O., S. M. Pedersen, and K. M. Lind. 2018. How does the intermediaries' power affect farmers-intermediaries' trading relationship performance? World Development Perspectives 10–12: 44–50.

Xhoxhi, O., A. Stefanllari, E. Skreli, and D. Imami. 2020. How intermediaries' power affects contract farming decisions: evidence from the medicinal and aromatic plant sector in Albania. Journal of Agribusiness in Developing and Emerging Economies 10: 529–544.

Zarnadze, G., I. Dika, G. Çera, and H. N. R. Ribeiro. 2022. Personality Traits and Business Environment for Entrepreneurial Motivation. Administrative Sciences 12: 176–194.

Zhang, L., and X. Li. 2016. The Impact of Traditional Culture on Farmers' Moral Hazard Behavior in Crop Production: Evidence from China. Sustainability 8: 643.

sciendo

South East European Journal of Economics and Business
Volume 18 (2) 2023, 186-196
DOI: 10.2478/jeb-2023-0027

PATRIOTIC TOURISM DEMAND IN ALBANIA: A SYSTEM GMM MODEL APPROACH

Emiljan Karma

Abstract

This paper aims to evaluate the determinants of international tourism demand in Albania following the existing literature and particulars of the tourism sector in Albania using Dynamic Panel Data from 2011 to 2019. The analysis is conducted on the sample of 20 countries of origin using the Two-Step GMM Model. The analysis highlights the importance of word-of-mouth effect in the tourism industry in Albania marked at the same time by inferior goods and services, as defined by the microeconomic theory. While on the one hand, tourism becomes very useful in terms of social cohesion (converging familiars and relatives), on the other hand, it can support better the general economic development. At the same time, this study underlines the relative importance of Government Spending. The National strategy on tourism must look not only at the tourism demand quantity but mostly at the sustainable and greater added value tourism segments.

Keywords: *International Tourism; Tourist Arrivals; Dynamic Panel Data; GMM; Albania*

JEL classification: *C33; C87; D11; D12; F22; H5; L83*

1. Introduction

In the last two decades the development of tourism in Albania has seen an increase in international tourist flows, contributing to the national GDP both in employment and economic terms. This study tries to identify the factors determining the development of the tourism sector in Albania. As a special factor, the national origin of foreign tourists has been examined: Albanian tourism is characterized by the fact that a large part of tourists is of Albanian origin. This research tries to understand the influence of patriotic tourism in the tourism demand in Albania.

Tourism demand refers to the goods and services purchased by tourists in tourist destinations during trips (Ciro and Toska 2021; Li et al. 2018; Wu, Song, and Shen 2017), which is usually measured by tourist volume or tourist expenditure. According to Samirkaş and Samirkaş (2016) tourism demand is defined as the number of people that plan to buy tourism products (goods and services) supported by sufficient purchasing power and spare time to meet tourism needs of people.

In recent decades, tourism demand has had a great development. From 1990 to 2018, World Tourist flows have jumped from 439 million arrivals in 1990 to 4 billion tourists in 2018 (UWTO 2022).

This trend of tourist demand development has also been reflected in the Albanian market. Based on

Emiljan Karma, PhD
Associate Professor
Affiliation: Catholic University Our Lady of Good Counsel – Research Centre on Transition Economies, Tirana
Address: Rruga Dritan Hoxha, 23
1064 Tirana, Albania
E-mail: e.karma@unizkm.al

the measurements made by the Word Tourism and Travel Council, the direct contribution of Travel & Tourism to GDP in 2017 was USD 1.1 billion (8.5% of GDP), while the total contribution to the economy was USD 3.4 billion (26.2 % of GDP) supporting 318857 jobs. In 2020, due to the global epidemic situation, total contribution to GDP fall in USD 1.7 billion (10.5 % of GDP) and total employment fall in 178600 jobs (15.8% of total jobs, - 26.8% compared with 2019). These number are expected to grow in the upcoming years. The epidemic influence did not stop the upward trend of the tourism industry, because in 2021 the tourism contribution on the economy has approached the positive situation before COVID-19 (in 2021 the total contribution of travel and tourism hospitality to GDP and employment amounts 17% and 20% respectively (WTTC 2021)

Furthermore, in addition to traditional tourists, who come from Kosovo and other border countries with Albania, an increase can be seen in the number of tourists who come from other countries, not traditional in the tourist market of Albania, such as: Poland, Austria, Sweden, Belgium (INSTAT 2022).

The factors that influence or determine the international tourism demand are very different: economic, gastronomic, religious, political, demographic, cultural, social, etc. Consequently, the determinants analysis of tourist demand is, on the one hand, very interesting, and on the other hand, quite complex.

The main hypothesis tested in this research is the influence of nationality on tourism demand in Albania. Along with this hypothesis, from the existing literature the formulated model has examined other traditional factors such as: income, relative prices, government spending, distance between the origin country and host country.

The rest of the paper is structured as follow: section 2 provides overview of the literature related to international tourism demand while the section 3 look into the empirical methodology and variables used. Section 4 report the empirical research results while section 5 outline conclusions.

2. Literature review

In the tourists' destination choice there are multiple factors involved in their decision. As indicated by Eugenio – Martin (2003) most tourists need to make multiple decisions before deciding where to go on holiday. This process considers five stages: participation decision; tourism budget decision; frequency and length of stay decision; the kind of destination decision; destination and the mode of transportation choice. Each of these stages includes a series variables materialized in age, education, income, labour conditions, characteristics of the place of residence and size and composition of the household (**participation decision; tourism budget decision**); age, education, income, labour conditions, characteristics of the place of residence and size and composition of the household, health conditions and unobservable variables such as risk aversion and propensity to travel (**frequency and length of stay**); physical attributes of destination, tourist environment (**kind of destination decision**); household characteristics and destination attributes in terms of safety, weather, facilities, relative prices, language, transportation cost, etc. (**destination and transportation mode choice**).

Lickorish and Jenkins (1997) argue that tourism demand depends in the first instance by disposable income (spare money) and increased income per capita giving the emphasis on developed economies that generate tourists. In second stage is the growth in the availability of leisure time and holiday entitlement. In third stage, the barriers reduction to travel internationally. Successively the leisure / work trade - off (depending on wage dynamics, personal preferences, government policies) and democratization (accessibility) of travel opportunities.

The growth of the tourist industry can be very crucial for the Albanian government, as it not only creates job opportunities, but becomes a way to boost the local economy attracting foreign currency. In 2000, Albania attracted 317000 foreign tourists which generated an income of USD 398 .000.000 but reached 6.4 million visitors and an income of USD 2.46 billion in 2019 (Figure 1).

By putting the tourist numbers in relation to the population of Albania with 0.95 tourists per resident, Albania ranked 47th in the World. In Southern Europe, Albania ranked 5th.

As seen, the factors complexity and the vigorous development of the tourism sector has accentuated the interest of researchers in modelling tourism demand. To accomplish this objective, researchers have used many different variables which partially describe the five phases of the tourists' destination choice as indicated by Eugenio – Martin (2003) and Lickorish and Jenkins (1997), such as: economic, social, demographic, political, environmental, etc. (Könnyid et al. 2022; Seetram 2012; Leitão 2015; Pervan and Jurić 2021; Romilly, Song, and Liu 1998; Xuankai, Yang, and Zheng 2022).

In general, in these studies, the demand for tourism is measured either by the number of foreign tourists, or by the tourism revenue. While the explanatory variables are related to the income of the origin

Figure 1. Tourist Arrivals and Tourist Receipts in Albania 2000 - 2020

Source: INSTAT 2023; UWTO 2022

countries and host countries, relative prices, the age of foreign tourists, consumption preferences etc.

As for the variables, the empirical statistical methods are also various. Traditionally, the gravity Ordinary Least Squares (OLS) or Pooled OLS model has been used (Nadal and Gallego 2022). Recently, considering the lack of effectiveness of Pooled OLS models and in the light of different dynamic models' performance (CuiCui and Woodbridge 2019; Arellano and Bond 1991) many authors are using dynamic panel data to model the international tourism demand: Difference Generalized Method of Moments (DIFF GMM) one step or two-step; System GMM one step or two-step; Autoregressive Distributed Lag (ARDL).

Leitão (2015) conducted a study considering the determinants of Portuguese tourism demand for the period 2004-2013. The econometric methodology was a dynamic panel data (System GMM estimator) including the 26 main partners in tourism demand in Portugal for the period 2003-2013. Econometric results demonstrate that Portuguese tourism demand is explained by high-quality services. The relative prices are positively related to tourism demand, showing that quality developments raise tourism demand in Portugal. Human capital justifies high-quality tourism services in Portugal. The results also demonstrate that government spending is essential to promote the tourism sector. Pervan and Jurić (2021) conducted an analysis on the sample of 25 Croatian competitor countries during the period 2005 – 2019 using a dynamic panel data model (DIFF GMM). All model variables show statistically significant influence on tourist arrivals in Croatia. Ketenci (2010) aimed to estimate determinants of tourism demand for Turkey from 14 countries and to examine cointegration relationships in the considered model, over the period from 1996 to 2000 year on the monthly. This paper uses the autoregressive distributive lag. From the results this study found evidence at the high significance level of a long run cointegration relationships among the variables. The study shows that the most significant impact on the tourism demand in the long-run as well as in the short-run has income of tourist.

In compliance with the variegate factors, which can influence the tourism demand, the researchers have examined alongside the economic factors, also other variables of a social, cultural, political, democratic, and demographic nature.

Koçak and Yucel (2022) focused on the impact of migration-related concerns on tourism. The authors estimated the impact of the US migration fears on tourist arrivals from Western Europe to the US using a tourism demand model. The estimates suggest that tourists from Western Europe have a negative and significant long-term response to the fear of migration in the US. The results show that migration-related concerns are constraints on the development of the tourism industry in the US. Bulut, Kocak, and Suess (2019)

investigated the impact of freedom (i.e., the effects of political rights and civil liberties) on tourist arrivals in Brazil using annual data from 1998 to 2016. The empirical findings show that the level of freedom may play a role in explaining the volume of international tourist arrivals. Gozgor, Seetaram, and Lau (2002) focused their research on the effects of economic and political uncertainties on tourism demand. The findings show that uncertainty shocks affect travels for business, holidays, and visiting friends / relatives' purposes negatively. It is statistically significant for duration of stay of 1 week to less than one month in Australia. This effect dissipates for longer stays. Dancausa Millán, Vazquez de la Torre, and Rojas (2021) analyze the profile of gastronomic tourists in Andalusia to understand their motivations and estimates the demand for gastronomic tourism using seasonal autoregressive integrated moving average (SARIMA) models. The results obtained indicate that the gastronomic tourist in Andalusia is very satisfied with places and gastronomy. Rodríguez, Roget, and Pawlowska (2012) conducted an empirical analysis about the academic tourism demand using a dynamic panel data model by a generalized method of moments during the period 2001 – 2009. The results suggest that academic tourism depends mainly on determinants that are not strictly economic; namely, the relevance of the habits and preferences of students, the potential for differential attractiveness of the University of Santiago de Compostela, and the significant impact of the Erasmus program.

Regarding the tourism industry in Albania, there is a lack of empirical research. However, in recent years, with the development of the tourism sector, a few studies have been conducted regarding the modeling of the factors that influence the international tourism demand. This study is an attempt to contribute to studies related not only to typical issues of a country (such as the concrete case of patriotic tourism in Albania), but also to research related to migratory flows impact on international tourist demand. To the author's knowledge, the impact of the national origin of foreign tourists in Albania has never been investigated in an empirical study on Albanian tourism.

Some studies concerning determinants of international tourism demand in Albania have been highlighted below.

Malaj (2020) investigated the main demand and supply factors of international tourist arrivals to Albania. A gravity-type equation is estimated through three different estimation techniques, controlling for basic and experimental independent variables. The analysis is based on an annual dataset of international tourist arrivals to Albania from 22 origin countries over the period 2001–2018. Empirical results show that international tourist arrivals to Albania are positively related to GDPs per capita in destination and origin countries, total infrastructure investments, political stability, and absence of violence/terrorism. On the other hand, the dependent variable is negatively related to the distance between Albania and origin countries, and to the 'climate similarity' variable. Matja and Licaj (2017) studied the contribution of tourism to the economy of the country with emphasis on wellbeing of Albanians using a VAR model. The results show that the boom of tourists has not contributed properly to the development of the country in general. The pace of tourist number increase should contribute to a major number of employed directly or indirectly in Tourism sector. Burleau – Schiopoiu and Uzuni (2021) conducted a study about the attitude of foreign tourists visiting Albania using quantitative analyses and regression model. This study highlights the fact that relationship between expectations and perceptions of tourists visiting Albania is strongly influenced by tangible elements of the touristic package.

3. Data and methodology

3.1. Data section

Table 1 presents the descriptive statistics of the variables used in the GMM equation that models the tourism demand in Albania. To create a comprehensible

Table 1. Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min.	Max
TA – *Total Arrivals*	180	195689.9	40322.1	9094	2287597
GDP – *Gross Dom. Prod.*	180	33011.5	16600.7	7780.6	72033.9
DIST – D*istance between countries*	180	1402.05	1592.1	197	7759
P – *relative price*	180	6.14	17.3	0.0069	78.3
GE – *Gov. Expenditure*	180	11.2	0.2	10.8	11.5
NAT – *Tourist Nationality*	180	5.5	13.5	0	60

Source: Author's calculations

idea about descriptive statistics, in this case the variables are presented in the original values. Whereas in the modeling of the tourism demand according to the GMM model, they are presented in log mode.

The period of inquiry of this research does not include years 2020 and 2021 because they are two years with random short - term disturbances in the considered economic model (mainly COVID19 and the earthquake in Albania in November 2019). The intent of this study was to approach as much as possible a normal period of tourism business. For this reason, this study deals with the period 2010 - 2019. During this period 2010 – 2019 the most represented countries in Albanian tourism are: Kosovo (35.7%), Montenegro (5.7%), Northern Macedonia (11.8%), Italy (7.3%) and Greece (9.3%) that together account for 69.8 % of all foreign tourists in Albania. The less representatives are Romania (0,4%), Russia (0,3%) and Belgium (0,4%). The lowest value of the GDP per capita is in Kosovo and the highest value is in Switzerland. Considering that USA is included in countries participating in Albanian tourism, the highest distance is between Tirana and Washington Dc (7759 km). As for the relative price, there is an increase in prices in Albania referring to the European Union countries. Instead, referring to the other countries, the description is more varied. The government expenditure in Albania have had the highest value in 2017 and the lowest value in 2012. About the nationality of Albanians in foreign countries, the most represented is Kosovo, Greece, Italy, and North Macedonia. Other countries as Poland, Russia, Bosnia and Herzegovina and Romania have no presence of Albanians in their respective countries.

3.2. Methodology section

Following the methodologies used by different authors, this study looked several options. The options were namely Gravity Model, DIFF GMM, System GMM. The goal was to find the most suitable method to conduct the analysis. Handling a. the tourism as a dynamic process, b. considering the deficiencies performance estimation of Pooled OLS (CuiCui and Wooldridge 2019; Arellano and Bond 1991) at the time the endogeneity bias can lead to inconsistent estimates and incorrect inferences, c. the small sample size of panel data, the choice was between Diff GMM and System GMM. Following the literature (Bond, Hoeffler, and Temple 2001; Blundell and Bond 1998; Arellano and Bover 1995; Arellano and Bond 1991) estimators among parameter of lag dependent variable in Pooled OLS model and Diff GMM are calculated. If the difference GMM estimate is close or below the fixed effect estimate of Pooled OLS model, this suggest that a System GMM estimator should be preferred: The GMM model, which is generally used for panel data, provides consistent results in the presence of different sources of endogeneity, namely "unobserved heterogeneity, simultaneity and dynamic endogeneity" (Wintoki, Linck, and Netter 2012). The GMM model removes endogeneity by "internally transforming the data" – transformation refers to a statistical process where a variable's past value is subtracted from its present value (Roodman 2009). In this way, the number of observations is reduced, and this process (internal transformation) enhances the efficiency of the GMM model (Wooldridge 2012).

In addition, in case of small sample size of panel data, the System GMM estimator has a lower bias in terms of endogeneity and higher efficiency than all the other estimators analysed, including the standard first DIFF GMM estimator (Soto 2009; Hayakawa 2007).

In line with stated, the model will be formulated according to the following equation, including the lag of dependent variable:

$$lnTA_{it} = \alpha + \delta lnTA_{i,t-1} + \sum_{n=1}^{N} \beta_n lnX_{i,t}^{n} + \varepsilon_{it} \qquad \varepsilon_{it} = \vartheta_i + u_{it} \tag{1}$$

where TA_{it} is the number of Tourist Arrivals from country i in period t, with i = 1, 2…,N; t = 1, 2, …, T; α is the unobserved time-invariant individual effect; δ is the speed of adjustment to equilibrium; $TA_{it\text{-}1}$ is the previous year value of tourism arrivals, $\beta's$ are the estimated coefficients of the predictors $X_{i,t}^{n}$'s (income, price, distance, government expenditure, tourists' nationality); ε_{it} is the disturbance, in which ϑ_i and u_{it} are respectively the unobserved country-specific and the idiosyncratic error.

This model specification is based on economic arguments, also supported by macro- and microeconomic theory since the public spending in the host country, the tourists' willingness to pay and their purchasing power, the costs to be supported in the destination country (prices and transport) should also influence the tourist flow in a particular country. Instead, the patriotic aspect is more connected to the tourist's utility function, which in a certain sense could sacrifice the purely and individual economic argument (due to social relationships emotionality).

The variables used in the equation (1) were also chosen considering the indicated literature and empirical research (Eugenio – Martin 2003; Lickorish and Jenkins 1997; Könnyid et al. 2022; Seetram 2012; Leitão 2015; Pervan and Jurić 2021; Romilly, Song, and Liu 1998; Xuankai, Yang, and Zheng 2022):

International Tourist Arrivals (TA) as the dependent variable and a. GDP per capita (GDP) of foreign tourists by origin country (expressed in PPP $); b. Distance (DIST – in km) between origin country and hosting country, c. Price (P - relative price hosting country/ origin country) adjusted by the bilateral exchange rate, d. Government Expenditure (GE) as % GDP and e. Nationality of International Tourists (NAT) (as % of the population in the hosting country) treated as exogenous variables.

Lagged values (*lnTAi, t-1*) in the above two step dynamic model are included as regressors. These lagged levels of the dependent variable estimator are used as instruments to deal with endogeneity (Arellano and Bond 1991) .

The dataset refers to twenty tourism origin countries (Bulgaria, France, Germany, Greece, Italy, Kosovo, Montenegro, North Macedonia, United Kingdom, Poland, Serbia, USA, Turkey, Switzerland, Austria, Russian Federation, Sweden, Bosnia and Herzegovina, Belgium, Romania).

TA_{it} – dependent variable that expresses the number of foreign tourists in Albania. The data are obtained from the National Institute of Statistics and the countries considered in this study represent over 95% of all foreign tourists in Albania during the period 2000 – 2019.

GDP – independent variable that indicates the GDP per capita at purchasing power parity (PPP) in a specific time-period t by country i. The influence of GDP (as an indicator used in many studies to represent the economic power of a country or an individual) depends on the type of goods or services that tourism offers. If revenue increases, the demand for goods increases, while it falls for inferior goods and services. In general, the empirical studies, even quoted above, show a positive link between a country's income and the demand for tourism (in terms or arrivals or incomes). However, this may not always be verified. The tourism industry in different countries is confronted with consumers with different income tourism elasticities that require marketing strategies adapted to each specific origin market (Rudez 2018). The GDP data were collected from World Bank dataset.

DIST – independent variable that expresses the distance by air (in km) between the capital of the host country (Tirana) and the capital of the origin country. As indicated by some studies (Mc Kercher, Chan, and Lam 2008; Dunne, Flanagan, and Buckley 2010; McKercher and Mak 2019) travel to land neighbours dominates outbound travel. The expectations about this variable are negative, in the sense that if the distance increase between the two capitals, the demand for tourism can drop down. The data are collected online from Maps Distance Calculator.

P – independent variable that indicate the relative price of the hosting country referring to the origin country adjusted by the bilateral nominal exchange rate.

$$P_{i,t} = {CPI_{AL,t}}\Big/{CPI_{i,t} x Exch_{i,t}} \quad (2)$$

Relative price is given by the ratio of Consumer Price Index of Albania ($CPI_{AL,t}$) and the Consumer Price Index of the origin country ($CPI_{i,t}$) adjusted by the bilateral exchange rate ($Exch_{i,t}$). The expectations about this variable are negative. The price of a product and the quantity demanded for that product have an inverse relationship, as stated in the law of demand. However, since the dependent variable concerns with the tourist arrivals (and not with tourist receipts, it cannot be said with certainty that the increase in the relative price will affect the tourist arrivals. The CPI data and Exchange Rate data were collected from World Bank dataset.

GE – Government Expenditure (as % of GDP) indicates the public sector spending in the provision of goods and services, which indirectly support the tourist services improvement especially in developing countries (Prasetyo, 2020; Wakimin et al. 2019). Upgrading the country's economic and social conditions through public spending improves the hosting country tourist climate offering an added value for the origin country tourists. In this case, it is expected a positive value for this variable meaning that the expansion of Government Expenditure will lead an increase of the tourist arrivals.

NAT – Albanian nationality measures the ratio of people with Albanian nationality in the origin countries (as % of the Albanian Population). This variable has been examined because over 70% of tourists with foreign citizenship arriving in Albania, come from four foreign countries where the connection with Albania (nationality, native Albanians, Diaspora) is very important (in Greece and Italy the Albanian emigrants constitute 32% of the today Albanian population; in Kosovo 60%, in North Macedonia 25%). It is expected a positive value for this variable, that is, the greater the presence of the Albanian nationality in the origin countries (as % of the Albanian Population) the more tourist demand increases (ceteris paribus). The data were collected from World Bank dataset and from the United Nations Department of Economic and Social Affairs (UN DESA 2023).

Other variables examined in this research, and which could influence the demand for international tourism demand in Albania are CO2 emissions, trade openness, political security, corruption, investment.

Due to the presence of multicollinearity, deterioration of System GMM model and considering motivation and scope of this study, these variables were not included in the statistical analysis.

4. Empirical result and discussion

Following the literature estimators among parameter of lag dependent variable in Pooled OLS model and Diff GMM are calculated. Considering that the difference GMM estimate (δ = 0.34, p = 0.049) is below the fixed effect estimate of Pooled OLS model (δ = 0.58, p = 0.0000), this suggest that a System GMM estimator should be preferred.

The results of the tourism demand model equation (1) are presented in table 2. The value of Hansen Test, that is used in System GMM method applying robust standard errors, small sample, two-step method and collapse options for a more accurate result using STATA13 (Roodman 2009; Kirpans 2017) indicates no presence of over-identifying restrictions. At the same time the p-value of AR2 indicates no serial correlation. In view of the small sample and the necessity to respect model assumption and effectiveness in terms of research objective, this study cannot deal with time variations control of the dependent variable across the panel (time dummies), considering this aspect as a part of model estimation error.

The value of the lagged variable $logTA_{t-1}$ (0.815), positive and significant, can be interpreted as a major influence on the tourist decisions regarding whether to visit tourism destinations measured by habit formation persistence (internal habit) and word-of-mouth (external habit). Some studies report the lagged dependent variable (which represents tourism demand in previous year) as the most important determinant of tourism demand (Song, Witt, Li 2003; Song and Witt 2003; Song et al. 2010). The value of the adjustment coefficient (0.185) gives evidence of a good adjustment process between the actual variation of the tourism demand and the long run level (Athanasoglu, Brissimis, and Delis 2008; Aslan 2008). This means that the tourists experience in previous years can create positive expectations in the long term as indicated by results.

The value of the distance coefficient is negative (-0.085 as expected) and significant at 10% meaning that more distant the origin country is, the less chance there is for tourists to arrive in Albania. This result is in line with other (Mc Kercher, Chan, and Lam 2008; Dunne, Flanagan, and Buckley 2010; McKercher and Mak 2019).

The most indicative coefficient in this study turns

Table 2. Albanian Tourism demand using dynamic panel data.

Dependent variable: Tourism Arrivals (logTA)			
Variables	Coeff. / Short run	Coeff. / Long run	Excepted signs
$logTA_{t-1}$	0.815***	4. 41***	+
logGDP	-0.022	- 0.12	- / +
logDIST	-0.085*	- 0.46*	-
logP	-0.024**	- 0.13**	-
logGE	3.477***	18.80***	+
logNAT	0.075***	0.41***	+
Cons	-5.485***	-29.64***	
Observations	128		
AR1	z = -2.78; Prob > z = 0.005		
AR2	z = 1.38, Prob > z = 0.167		
Hansen Test	chi2(7) = 10.54, Prob > chi2 = 0.160		
Sargan Test	chi2(7) = 25.84, Prob > chi2 = 0.001		
Instruments	14		
Groups	16		
F (6, 15)	415153.34***		

Notes: ***, **, * are statistically significant at 1%, 5% and 10% levels respectively.

Source: Author's calculations

out to be Government Expenditure (3.48), positive and significant demonstrating the importance of the Government Expenditure on the country, producing positive effects in the tourism market too. Government Expenditure and tourism industry are related through several factors, for instance road and infrastructure, education, health, national defence. When a country is stable and safe, the number of visitors and tourists can increase, influencing positively the level of tourism demand. This shows positive impacts on a country visited by tourists. Similar results were recorded by Balalia and Petrescu (2011), Tawang, Paddu, and Tadjibu (2020), Cizmar and Lisjak (2007). The nationality coefficient seems to be very important for the tourism industry (positive and significant). Foreign tourists of Albanian origin, through their patriotic tourism, offer an important contribution in the tourism industry in Albania (actually distinguished by non-competitiveness compared with other regional tourism market like Montenegro, Croatia, and Greece and without luxury products). The relative price elasticity shows negative value and significant: When relative prices in a country increase, then the quantity demanded also decreases, consequently negatively affecting the purchasing power of foreigners. As indicated by demand theory, relative prices are negatively related with quantity demanded.

This study has dealt with some non-exhaustive aspects in explaining the international tourism demand in Albania. In this sense, it can be said that tourism demand is very vulnerable to the presence of random short-term or long-term disturbances: e.g., COVID19, the earthquake in Albania in end November 2019, have drastically reduced the international tourist demand in Albania during the period 2020 – 2021 and actually the European instability in the context of the war in Ukraine can have negative effects for the tourism industry in Albania. Other factors that can influence the economic model of this research, considered as long-term disturbances can be the tourism conceptualization in the context of marketing. Since tourism, as a concept, is characterized by more core services than goods, often the added value of tourism stays in the way the service is provided, rather than the service itself (Lambin 2016; Kattara, Weheba, and Ahmed 2015; Dritsakis 2004; Kukanja and Planinc 2019). In this specific case, the patriotic tourist must be considered as a strength for Albanian tourism that must be managed with innovation and long-term benefits. If the patriotic aspect is not managed with long term vision, the tourism (as an important variable in the Albanian tourism industry) can be transformed into a weak point with negative consequences on the host country economy (Scutariu 2012).

4.1. Limitations and future research

This paper has some limitations. First, the study focused on some variables that are certainly not exhaustive in explaining the tourist demand in Albania. As highlighted in the theoretical part, tourist demand is influenced by a multitude of factors, some of which are not even statistically detectable. Related to this aspect and considering the endogeneity complexity, another limitation concerns the assumption of the independent variables as exogenous. Second, describing a tourism situation without causal shocks, this study did not consider random shocks (such as COVID19 or the earthquake in Albania at the end of December 2019), trying to capture a period with a normal tourist development situation (2011 - 2019). So future research can examine the impact of COVID-19 or other causal shocks on tourism demand looking into the magnitude of the impact of shocks uncertainties. Researchers can present new findings by following time-varying and econometric methods. Third, it would also be interesting to analyse the variable tourism receipts as dependent variable. Since this data is not available at a disaggregated level (for each country), this study has dealt only with tourism arrivals as dependent variable. Hence future research studies can investigate aspects of tourism demand from a monetary point (tourism receipts).

The tourism demand in Albania is not yet explored. Consequently, scholars can contribute with different methods (statistical, econometric, linear, non-linear) trying to explain a very relevant sector for the Albanian economy.

5. Conclusions

Tourism is one of the most vital sectors in the global economy. This trend is also evident in Albania where the total contribution of travel and tourism hospitality to GDP and employment amounts 17% and 20% respectively. In this regard, Albania as a pioneer tourist country, has engaged its capital resources in serving the implementation of the national tourism strategy.

This article investigated tourism demand between Albania and 20 countries during the period 2011 – 2019. A two-step System GMM estimator was applied in this research. The results indicate that tourism industry in Albania is having a positive development over time (in terms of tourist arrivals) where positive perceptions of the past help positive expectations for the future (word-of-mouth). Another conclusion of this study is related to the fact that public investments greatly affect the tourism industry in Albania. The central government must have a particular focus on

public spending to cope with a continuously growing tourism sector identified by strong regional competition. Concerning relative prices, the coefficient value significantly shows that tourists are not very sensitive to price fluctuations in the Albanian tourist market. Furthermore, this study demonstrates that patriotic tourism has an important role in the constitution of tourism demand in Albania, *ceteris paribus*.

The *patriotic tourist* must be considered as a strength for Albanian tourism that must be managed with vision and creativity. Otherwise, *patriotic tourism* (as an important variable in the Albanian tourism industry) can be transformed into a weak point with negative consequences on the host country economy. Tourists in general (not just specific ones) need to be served adequately strengthening loyalty. On the other hand, the Albanian tourism market must identify efficient and authentic strategies to improve its competitiveness in a saturated regional tourism market (Montenegro, Croatia, Greece), where in addition to public investments, it is necessary to address adequate marketing policies to face the sectoral competition (which is intended both in terms of tourist arrivals and tourist receipts).

References

Arellano, M. and Bond, S. 1991. Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations. Review of Economic Studies 58 (2): 277 – 297.

Aslan, A., Kaplan, M., and Kula, F. 2008. International Tourism Demand for Turkey: A Dynamic Panel Data Approach. MPRA Paper 10601, University Library of Munich, Germany, September.

Athanasoglou, P.P., Brissimis, S., and Delis, M.D. 2008. Bank-Specific, Industry-Specific and Macroeconomic Determinants of Bank Profitability. Journal of International Financial Markets Institutions and Money 18 (2): 121-136.

Balalia, A.E. and Petrescu, R.M. 2011. The involvement of the public and private sector – elements with influence on travel & tourism demand during the crisis period. Journal of Hospitality and Tourism Management. 17 (2): 217 – 230.

Blundell, R. and Bond, S. 1998. Initial conditions and moment restrictions in dynamic panel data models. Journal of Econometrics 87 (1): 115-143.

Bond, S., Hoeffler, A., and Temple, J. 2001. GMM Estimation of Empirical Growth Models. Economics Working Papers 2001 – W21, University of Oxford, United Kingdom, September.

Bulut, U., Kocak, E., and Suess, C. 2020. The effect of freedom on international tourism demand: Empirical evidence from the top eight most visited countries. Tourism Economics 26 (8): 1358–1373.

Burlea-Schiopoiu, A. and Ozuni, F. 2021. The Potential of Albanian Tourism Sector. Sustainability 13(7): 3928.

Ciro, A. and Toska, M. 2020. Entrepreneurial Eco-Systems for Sustainable Community-Based Tourism Development in Albania: Case Studies of Community Tourism Development. In Innovation and Entrepreneurial Opportunities in Community Tourism, edited by J. Renner, R. Soares, 109 - 137. IGI Global Publisher: Pennsylvania.

Cizmar, S. and Lisjak, S. 2007. Tourism Master Plans. An Effective Tourism Destination Management Tool in SEE. The South East European Journal of Economics and Business 2 (1): 48 – 57.

Cuicui, L. and Wooldridge, J.M. 2020. A GMM estimator asymptotically more efficient than OLS and WLS in the presence of heteroskedasticity of unknown form. Applied Economics Letters 27 (12): 997-1001.

Dancausa Millán, M. G., Vazquez de la Torre, M.G., and Rojas, R. H. 2021. Analysis of the demand for gastronomic tourism in Andalusia (Spain). Plos One 16 (2): 1 – 23.

Dritsakis, N. 2004. Tourism as a Long Run Economic Growth Factor: an empirical investigation for Greece. Tourism Economics 10 (3): 305 – 316.

Dunne, G., Flanagan, and S. Buckley, J. 2010. Towards an understanding of international city break travel. International Journal of Tourism Research 12 (5): 409–417.

Eugenio-Martin, J.L. 2003. Modelling determinants of tourism demand as a five-stage process: A discrete choice methodological approach. Tourism and Hospitality Research 4 (4): 341 – 354.

Gozgor, G., Seetaram, and Lau, C.K.M. 2021. Effect of global uncertainty on international arrivals by purpose of visits and length of stay. Int. J. Tourism Res 23 (6): 1086-1098.

Hayakawa, K. 2007. Small sample bias properties of the system GMM estimator in dynamic panel data models. Economics Letters Elsevier 95 (1): 32 – 38.

INSTAT. 2022. Arrivals of foreign citizens at national borders by countries by Country, Type and Year. Available from http://databaza.instat.gov.al/pxweb/en/ DST/START__TU__TU1/ TU4/ (accessed on 27.02.2023)

Kattara, S. H., Weheba, D., and Ahmed O. 2015. The impact of employees' behaviour on costumers' service quality perceptions and overall satisfaction. African Journal of Hospitality, Tourism and Leisure 4 (2): 1-14.

Ketenci, N. 2010. Cointegration analysis of tourism demand for Turkey. Applied Econometrics and International Development 10 (1): 91 – 114.

Koçak, E. and Yucel, A. G. 2022. Does migration fear affect tourism demand? Evidence from instrumental variable cointegration test. Tourism Economics 11 (11): 1-15.

Könnyid, L., Váradi, Z., Nagy, Z., Ilyés N., and Horváth, O.H. 2022. The Changes in the Demographic Characteristics and Spatial Structure of Tourism Demand in the West Balaton Region's Spa Cities. Sustainability 14 (17): 10531.

Kripfganz, S. 2017. Sequential (two-stage) estimation of linear panel data models. Paper presented in 23rd UK Stata Users Group Meeting, University of Exeter Business School, London, September.

Kukanja, M. and Planinc, T. 2019. Cost – effective service excellence: Exploring the relationships among restaurants' operational efficiency, size, and service quality. The South East European Journal of Economics and Business 14 (2): 67-81.

Lambin, J.J. 2016. Market – driven management, Marketing strategico e operative. Milan: McGraw-Hill.

Leitão, N.C. 2015. Portuguese Tourism Demand: A dynamic Panel Data Analysis. International Journal of Economics and Financial Issues 5 (3): 673 – 677.

Li, J., Xu, L., Tang, L., Wang, L., and Li, L. 2018. Big data in tourism research: a literature review. Tourism Management 68 (5): 301-323.

Lickorish, L.J, Jenkins, C.L. 1997. Introduction to Tourism. London: Routledge.

Malaj, V. 2020. Gravity-model specification for tourism flows: the case of Albania. Centre for European Studies Working Paper. Alexandru Ioan Cuza University, September 12 (2): 144-155.

Matja, L. and Liçaj, B. 2017. Tourism and employment in Albania – is there a strong correlation?" Paper presented in the 13th International Conference of ASECU, Durres / Albania, May.

Manuel, A. and Bover, O. 1995. Another look at the instrumental variable estimation of error-components models. Journal of Econometrics 68 (1): 29-51.

Maps Distance Calculator. Available from https://www.calcmaps.com/map-distance/ (accessed on 11.02.2023).

McKercher, B., Chan, A., and Lam, C. 2008. The Impact of Distance on International Tourist Movements. Journal of Travel Research 47 (2): 208-224.

McKercher, B. and Mak, B. 2019. The impact of distance on international tourism demand. Tourism Management Perspectives 31 (1): 340 – 347.

Nadal, J.R. and Gallego, M.S. 2022. Gravity models for tourism demand modelling: Empirical review and outlook. Journal of Economic Surveys 36 (5): 1358-1409.

Prasetyo, P. E. 2020. The Role of Government Expenditure and Investment for MSME Growth: Empirical Study in Indonesia. The Journal of Asian Finance, Economics and Business 7 (10): 471–480.

Pervan, M. and Jurić. E. 2021. Determinants of tourism demand in Croatia. International Journal of Economics and Statistics 9 (1): 102 – 107.

Roodman, D. 2009. How to do Xtabond2: An Introduction to Difference and System GMM in Stata. The Stata Journal 9 (1): 86–136.

Rodríguez, A.X., Roget, M.F., and Pawlowska, E. 2012. Academic tourism demand in Galicia, Spain. Tourism Management 33 (6): 1583-1590.

Romilly, P., Song, H., and Liu, X. 1998. An empirical study of outbound tourism demand in the UK. Paper presented in the 17th International Symposium on Forecasting Bridgetown / Barbados, June 1997.

Rudez, H.N. 2018. The Relationship between Income and Tourism Demand: Old Findings and New Research. Tourism and Innovation Journal 11 (1): 67-73.

Samirkaş, M. and Samirkaş, M. 2015. The Impact of Exchange Rate on Tourism Industry: The Case of Turkey. In Handbook of Research on Global Hospitality and Tourism Management edited by A. Camillo, 107 - 118. IGI Global Publisher: Pennsylvania.

Scutariu, A. L. 2012. Measuring the regional tourism activity in Romania: an EU Pre- and Post-Accession comparative analysis. Economic Insights - Trends and Challenges 1 (4): 79 – 88.

Seetram, N. 2012. Immigration and International Inbound Tourism: Empirical Evidence from Australia. Tourism Management 33 (6): 1535–1543.

Song, H., Li, G., Witt, S.F., and Fei, B. 2010. Tourism demand modelling and forecasting: how should demand be measured. Tourism Economics 16 (1): 63 – 81.

Song, H., and Witt, S.F. 2003. Tourism forecasting: the general-to-specific approach. Journal of Travel Research 42 (1): 65-74.

Song, H., Witt, S.F., and Li, G. 2003. Modelling and forecasting the demand for Thai tourism. Tourism Economics 9 (4): 363-387.

Soto, M. 2009. System GMM estimation with a small sample. Working Papers 395, Barcelona School of Economics, Barcelona.

Tawang, B., Paddu, A.H., and Tadjibu, M.D. 2020. The influence of Government Expenditure, Infrastructure, and Investment on Tourism Sector Development. Case Study (West Nusa Tenggara, South Sulawesi, North Sulawesi, Papua. Global Scientific Journals 8 (12): 728-735.

UN DESA. 2023. Emigrants from Albania: Where did they move? Available from https:// ourworldindata.org/migration (accessed on 10.02.2023).

UWTO 2022. Global and regional tourism performance. Available from https:// www. unwto.org/tourism-data/global-and-regional-tourism-performance (accessed on 28.02.2023).

Wakimin, N.F., Azlina, A.A., Samsudin, H., Kamaludin, M. 2019. The Impact of Tourism Demand, Government

Expenditure on Education, and Income on the Environment in ASEAN-5 Countries. Jurnal Ekonomi Malaysia 53 (3): 75 - 90.

Wintoki, M.B., Linck, J.S., Netter, J.M. 2012. Endogeneity and the dynamics of internal corporate governance. Journal of Financial Economics 105 (3): 581 – 606.

Wooldridge, J.M. 2012. Introductory Econometrics: A Modern Approach. Boston: Cengage Learning.

World Bank, World Bank Open Data 2023. Available from https://data.worldbank.org/ (accessed 07.02.2023 – 01.03.2023).

WTTC 2021. Albania: 2022 Annual Research: Key Highlights. Available from http:// https://wttc.org/research/economic-impact (accessed on 03.03.2023).

Wu, D.C., Song, H., and Shen, S. 2017. New developments in tourism and hotel demand modelling and forecasting. Int. J. Contemp. Hospit. Manag 29 (1): 507-529.

Xuankai, M., Yang, Zh., and Zheng, J. 2022. Analysis of spatial patterns and driving factors of provincial tourism demand in China. Scientific Reports 12 (1): 2260.

SUBMISSION GUIDELINES

The South East European Journal of Economics and Business (SEEJ) primarily addresses important issues in economics and business, with a special focus on South East European (SEE) and countries in transition. The SEEJ also publishes high-quality papers that might not be directly focused on SEE region. Articles may involve explanatory theory, empirical studies, policy studies, or methodological treatments of tests.

Manuscripts are reviewed with the understanding that they

- are substantially new;
- have not been previously published, unless without copyrights as part of the proceedings of a conference sponsored by the School of Economics and Business;
- have not been previously accepted for publication;
- are not under consideration by any other publisher, and will not be submitted elsewhere until a decision is reached regarding their publication in the SEE Journal.

The procedures guiding the selection of articles for publication in the journal require that no manuscript be accepted until it has been reviewed by the Editorial Board and at least two reviewers who are experts in their respective fields (often members of the International Editorial Board). The manuscripts are judged solely on the basis of content, clarity, and contribution to the field. All manuscripts are judged on their contribution to the advancement of science, the practice of economics and business, or both. Articles should be written in an interesting, readable manner, and technical terms should be defined. In some highly exceptional circumstances, the journal will publish a solicited manuscript from a noted scholar on a topic deemed of particular interest to the development of the fields of economics and business. Manuscripts submitted to the journal can be processed most expeditiously if they are prepared according to these instructions.

MANUSCRIPT PREPARATION

Manuscripts should be typed double-spaced, including references, and formatted for the A4 (21cm x 29,7cm) paper size. Single spacing should not be used aside from tables and figures. Page numbers are to be placed in the upper right-hand corner of every page. A tab indent should begin each paragraph. Please allow the text to wrap, rather than placing a hard return after every line. Manuscripts ordinarily should be between 4,000 and 6,000 words (ca. 15 typewritten pages of text) using Times New Roman l2-point type. Articles of shorter or longer length are also acceptable. Please refrain from using first person singular in the text of the manuscript unless it is a solicited article or book review.

In the article, please be sure that acronyms, abbreviations, and jargon are defined, unless they are well-known or in the dictionary or The Chicago Manual of Style, 15th edition (e.g., Table 14.4 and sec. 15.55). Quotes of 10 or more words must include page number(s) from the original source. Every citation must have a reference, and every reference must be cited.

For any details of manuscript preparation not included in the following sections, see The Chicago Manual of Style, 15th edition, Chicago and London: University of Chicago Press, 2003, and review recent issues of the journal.

What Goes Where?
Together with your manuscript, please prepare additional supplementary file to be uploaded after you upload the manuscript. Supplementary file should contain: article title, with full name of author(s), present position, organizational affiliation, full address including postal code and country, telephone/fax numbers, and e-mail address. Author(s) must be listed in the order in which they are to appear in the published article. Please clearly indicate which author will serve as the primary contact for the journal and be especially sure to provide an e-mail address for this person.

The sections of the manuscript should be placed in the following order: title page, body, appendices, endnotes, reference list, tables, figures. Each section should begin on a new page.

Title Page - Title of paper, without author(s) name(s), and a brief abstract of no more than 150 words substantively summarizing the article. JEL classification code to facilitate electronic access to this manuscript should also be listed on this page.

Body - The text should have its major headings centered on the page and subheadings flush with the left margin. Major headings should use all uppercase letters; side subheadings should be typed in upper- and lowercase letters. Do not use footnotes in the body of the manuscript. If used, please place endnotes in a numbered list after the body of the text and before the reference list; however, avoid endnotes wherever possible because they interrupt the flow of the manuscript. Acronyms, abbreviations, and jargon should be defined unless they are well-known (such as IMF) or they can be found in the dictionary. Quotes of 10 or more words should include page number(s) from the original source. Every citation must have a reference, and every reference must be cited.

Tables and Figures - Each table or figure should be included in the manuscript where appropriate. The data in tables should be arranged so that columns of like materials read down, not across. Non-significant decimal places in tabular data should be omitted. The tables and figures should be numbered in Arabic numerals, followed by brief descriptive titles. Additional details should be footnoted under the table, not in the title. In the text, all illustrations and charts should be referred to as figures. Figures must be clean, crisp, black-and-white, camera-ready copies. Please avoid the use of gray-scale shading; use hatch marks, dots, or lines instead. Please be sure captions are included. Indicate in text where tables and figures should appear. Be sure to send final camera-ready, black-and-white versions of figures and, if possible, electronic files.

References - References should be typed double-spaced in alphabetical order by author's last name.

Reference Citations within Text - Citations in the text should include the author's last name and year of publication enclosed in parentheses without punctuation, e.g., (Johnson 1999). If practical, the citation should be placed immediately before a punctuation mark. Otherwise, insert it in a logical sentence break.

If a particular page, section, or equation is cited, it should be placed within the parentheses, e.g., (Johnson 1990, p. 15). For multiple authors, use the full, formal citation for up to three authors, but for four or more use the first author's name with "et al." For example, use (White and Smith 1977) and (Brown, Green, and Stone 1984). For more than three authors, use (Hunt et al. 1975), unless another work published in that year would also be identified as (Hunt et al. 1975); in that case, list all authors, e.g., (Hunt, Bent, Marks, and West 1975).

Reference List Style - List references alphabetically, the principal author's surname first, followed by publication date. The reference list should be typed double-spaced, with a hanging indent, and on a separate page. Do not number references. Please see the reference examples below as well as reference lists in recent issues. Be sure that all titles cited in the text appear in the reference list and vice versa. Please provide translations for non-English titles in references, page ranges for articles and for book chapters, and provide all authors' and editors' names (not "et al.," unless it appears that way in the publication).

Journal article:
Smith, J. R. 2001. Reference style guidelines. Journal of Guidelines 4 (2): 2-7 [or 4:2-7].
_____.2001. Reference style guidelines. Journal of Baltic Studies 4 (2): 2-7.

Book:
Smith, J. R. 2001. Reference style guidelines. Thousand Oaks, CA: Sage.

Chapter in a book:
Smith, J. R. 2001. Be sure your disk matches the hard copy. In Reference style guidelines, edited by R. Brown, 155-62. Thousand Oaks, CA: Sage.

Editor of a book:
Smith, J. R., ed. 2001. Reference style guidelines. Thousand Oaks, CA: Sage.

Dissertation (unpublished):
Smith, J. R. 2001. Reference style guidelines. Ph.D. diss., University of California, Los Angeles.

Paper presented at a symposium or annual meeting:
Smith, J. R. 2001. A citation for every reference. Paper presented at the annual meeting of the Reference Guidelines Association, St. Louis, MO, January.

Online:
Smith, J. R. 2001. Reference style guidelines. In MESH vocabulary file (database online). Bethesda, MD: National Library of Medicine. http:// www.sagepub.com (accessed October 3, 2001).

Mathematical Notation - Mathematical notation must be clear within the text. Equations should be centered on the page. If equations are numbered, type the number in parentheses flush with the right margin. For equations that may be too wide to fit in a single column, indicate appropriate breaks. Unusual symbols and Greek letters should be identified by a marginal note.

Permission Guidelines – Authors are solely responsible for obtaining all necessary permissions. Permission must be granted in writing by the copyright holder and must accompany the submitted manuscript. Authors are responsible for the accuracy of facts, opinions, and interpretations expressed in the article.

Permission is required to reprint, paraphrase, or adapt the following in a work of scholarship or research:

- Any piece of writing or other work that is used in its entirety (e.g., poems, tables, figures, charts, graphs, photographs, drawings, illustrations, book chapters, journal articles, newspaper or magazine articles, radio/television broadcasts);
- Portions of articles or chapters of books or of any of the items in the preceding paragraph, if the portion used is a sizable amount in relation to the item as a whole, regardless of size, or it captures the "essence" or the "heart" of the work;
- Any portion of a fictional, creative, or other nonfactual work (e.g., opinion, editorial, essay, lyrics, commentary, plays, novels, short stories);
- Any portion of an unpublished work

MANUSCRIPT SUBMISSION

Submit manuscripts electronically, in MS Word format, through through the following web-page: seejournal.efsa.unsa.ba/submission.

All additional correspondence should be addressed to:
The South East European Journal of Economics and Business
University of Sarajevo, School of Economics and Business

Trg oslobodjenja-Alije Izetbegovica 1
71000 Sarajevo
Bosnia and Herzegovina
E-mail: seejournal@efsa.unsa.ba

SEC JOURNAL

ISSN 2233-1999