UNIVERSITY OF BELGRADE
Faculty of Economics
and Business

ECONOMIC ANNALS

EKONOMSKI ANALI, FOUNDED IN 1955
BY THE FACULTY OF ECONOMICS, UNIVERSITY OF BELGRADE
VOLUME LXVIII, NO. 239 / OCTOBER – DECEMBER 2023

239

UDC: 3.33 ISSN: 0013-3264

ECONOMIC ANNALS

Publisher: University of Belgrade – Faculty of Economics and Business, Serbia

For Publisher the Dean

Žaklina Stojanović

Editor-in-Chief

William Bartlett, London School of Economics, UK

Editorial Secretary

Nikola Njegovan, University of Belgrade – Faculty of Economics and Business, Serbia
Ivana Ivković, University of Belgrade – Faculty of Economics and Business, Serbia

Associate editors

Biljana Bogićević Milikić, University of Belgrade – Faculty of Economics and Business, Serbia
Radovan Kovačević, University of Belgrade – Faculty of Economics and Business, Serbia
Gorana Krstić, University of Belgrade – Faculty of Economics and Business, Serbia

Technical Assistance

Marina Lečei

Language Editor

Brian Browne

Cover Design

Milan Novičić

Editorial office and administration

FACULTY OF ECONOMICS AND BUSINESS, 11000 Belgrade, Kamenička 6, Serbia
Tel: (381)(11) 3021-210, Fax: (381)(11) 2639-560

Website: *http://www.ekof.bg.ac.rs/publikacije/casopisi/ekonomski-anali/*

E-mail: *ea@.ekof.bg.ac.rs*

The journal is published quarterly
Annual subscription: 2400 RSD
Account No. 840-1109666-73
(Faculty of Economics and Business, Belgrade)
Circulation: 200 copies
UDC: 3.33 • ISSN: 0013-3264

Print

JAVNO PREDUZEĆE „SLUŽBENI GLASNIK" – Beograd, www.slglasnik.com

Elona Dushku 7
EVIDENCE ON HOUSEHOLD FINANCIAL FRAGILITY IN WESTERN BALKAN COUNTRIES BEFORE COVID-19
https://doi.org/10.2298/EKA2339007D

Zuzana Brinčíková 31
EVALUATION OF FOREIGN TRADE SPECIALISATION AND COMPETITIVENESS OF THE SLOVAK ECONOMY
https://doi.org/10.2298/EKA2339031B

Marija Radulović, Milan Kostić 59
ANALYSIS OF THE IMPACT OF FDI ON THE HOST COUNTRY MARKET CONCENTRATION: EVIDENCE FROM THE SERBIAN BANKING MARKET
https://doi.org/10.2298/EKA2339059R

Aleksandra Stevanović, Jelena Erić Nielsen, Vesna Stojanović-Aleksić 83
BUSINESS PROCESS ORIENTATION AND EMPLOYEE ENGAGEMENT: THE MEDIATING ROLE OF JOB AUTONOMY
https://doi.org/10.2298/EKA2339083S

Renzo Daviddi 105
BOOK REVIEW:
The Collected Works of Domenico Mario Nuti, Volume I: Socialist Economic Systems and Transition & Volume II: Economic Systems, Democracy and Integration, edited by Saul Estrin & Milica Uvalić

ACKNOWLEDGEMENT TO REVIEWERS 111

INSTRUCTIONS TO AUTHORS 113

ECONOMIC ANNALS, Volume LXVIII, No. 239 / October – December 2023
UDC: 3.33 ISSN: 0013-3264

https://doi.org/10.2298/EKA2339007D

*Elona Dushku**

EVIDENCE ON HOUSEHOLD FINANCIAL FRAGILITY IN WESTERN BALKAN COUNTRIES BEFORE COVID-19

ABSTRACT: *This paper seeks to investigate household financial fragility in Western Balkan countries using household-level data from the third wave of the Life in Transition Survey . We used the ability of households to cope with an unexpected expenditure shock as a measure of household financial fragility and analysed how socio-demographics and economic characteristics are related to the probability of households being financially fragile. Understanding household financial fragility in Western Balkan countries is important to properly address policy challenges in terms of household welfare and financial stability. Our findings show that almost half the households in the Western Balkans could not cope with an unexpected expenditure event and are considered financially fragile. Estimated results based on probit regressions show that the probability of Western Balkan households being financial fragile is, in addition to socio-demographic factors, related to households' portfolio choices.*

KEY WORDS: *household financial fragility, logit regressions, Western Balkan*

JEL CLASSIFICATION: D12, G51, C25

* Head of Microeconomic Research Division, Research Department, Bank of Albania, email: edushku@bankofalbana.org, ORCID: 0000-0002-3823-7236

1. INTRODUCTION

The global financial crisis of 2007–2008 and, moreover, the COVID-19 pandemic crisis once again highlighted household financial fragility as a crucial component of financial well-being not only for households but also for the whole economy (Lusardi et al., 2011). The concept of financial fragility was first introduced by Lusardi et al. (2011) immediately after the 2007–2008 financial crisis with the aim of understanding the capacity of households to withstand shocks and determining whether household financial fragility itself can become a source of financial instability for the financial sector (Demertzis et al., 2020).

Since its introduction, this measure of financial fragility has been used in various surveys and has become a well-established measure of households' coping abilities (Demertzis et al., 2020; Lusardi et al., 2011). However, as Lusardi et al. (2011) emphasised, measuring financial fragility is a complex task since it reflects two aspects of personal finance. Financial fragility is due, on the one hand, to a lack of assets and, on the other hand, to the lack of borrowing capacity of highly indebted households (Lusardi et al., 2011; Hasler & Lusardi, 2019). A review of the literature shows that past research has focused on both objective and subjective measures of financial fragility. Objective measures typically assess the level of financial fragility based on households' level of assets, liabilities, and different liquidity or debt ratios (Holló & Papp, 2007; Brown & Taylor, 2008; Jappelli et al., 2008; Anderloni & Vandone, 2011; Ampudia et al., 2016; Johansson & Persson, 2006; Bankowska et al., 2017, Enzinger et al., 2022), while subjective measures of financial fragility reflect the perception of households based on their ability to cope with unexpected expenses or income shock. The main advantage of using subjective measures is that respondents' self-assessment of their ability to cope with unexpected events is based not only on their level of debt and assets, but also on their expectation about their future financial situation (Lusardi et al., 2011; Halser & Lusardi, 2019; Clark et al., 2020). Some empirical papers that have analysed household financial fragility on the basis of subjective measures are those of Lusardi et al. (2011), Anderloni et al. (2012), Brunetti et al. (2012), Rõõm and Meriküll (2017), and Halser and Lusardi (2019). Generally these empirical studies have shown the importance of demographic and socioeconomic factors for household financial fragility. Thus, being female, having low education level, having a low level of income and assets, and being indebted increase the probability of a household being financially fragile. Besides these factors, some

authors have emphasised the importance of other factors that are associated with financial fragility, such as the use of alternative financial services, e.g. pawn shops and payday loans (Skiba & Tobacman, 2009), and levels of indebtedness (Jappelli et al., 2008; Albacete & Fessler, 2010; Ampudia et al., 2016). In addition, Jappelli et al. (2008) considered the role of institutional factors such as judicial enforcement, information sharing arrangements, and bankruptcy laws as important factors affecting financial fragility. Moreover, Morduch and Schneider (2017) highlighted the role of income and spending volatility as primary causes of financial fragility in the United States, while others (such as Hasler et al., 2018; Hasler & Lusardi, 2019; Clark et al., 2020) demonstrated that despite the level of wealth and indebtedness, financial literacy plays an important role in explaining household financial fragility. Thus, as Lusardi et al. (2011) and Hasler et al. (2018) mentioned, it is important to be aware of the subtle weakness of empirical measures that estimate households' existing asset levels to predict current or future fragility. Furthermore, there are significant differences between households in terms of the sufficient level of assets, in liquid/illiquid form, and preferences that households have regarding emergency assets, which expenses they reduce when faced with a shock, and which networks/connections are used to borrow money.

However, empirical literature covering this topic in the Western Balkans is still limited due to the scarcity of household-level data. Considering the advantages of microdata taken from the third wave of the Life in Transition Survey (European Bank for Reconstruction and Development [EBRD], 2016), this paper aims to assess household financial fragility in the Western Balkans on the basis of the ability of households to withstand an unexpected expenditure event along the lines of the work of Lusardi et al. (2011), Brunetti et al. (2012), Halser & Lusardi (2019), and Deevy et al. (2021). Moreover, we observe how financial fragility varies across countries as function of households' portfolio choices. Our focus is on six Western Balkan countries characterised by a low level of income and a new and less developed financial market compared to EU countries, built from scratch during the transition from a planned to a market economy in 1990 (Barisitz, 2008). Therefore, both households and enterprises have a comparatively short history of interaction with banks (Beckmann et al., 2018). In addition, this region is characterised by a high home ownership rate and limited rental markets (Beckmann et al., 2018; Dushku et al., 2019) with low levels of household

indebtedness and financial inclusion (WB, 2023; Demirgüç-Kunt et al., (2022). Despite the progress Western Balkan economies have made, poverty rates remain high and countries in the region have a number of worrying demographic and employment trends that, if not addressed, will prevent long-term potential growth. These trends are related to the high rate of unemployment, especially among young people, the ageing population, and the emigration of the young (Sanfey et al., 2016.).

Against this background, investigating household financial fragility is relevant for the monetary authorities in this region in order to develop policies to further increase the financial resilience and stability of households as well as the resilience of the financial sector. To the best of our knowledge, there is a lack of empirical research on assessing household financial fragility in the Western Balkan region; thus, the contribution of this paper is to fill the empirical gap and to analyse how demographic factors and households' portfolio choices are associated with the probability of households being financially fragile and whether there are the differences across countries.

The survey data show that about half the households in the Western Balkan countries are considered financially fragile, with moderate heterogeneity between countries. The data show a higher percentage of households are financially fragile, ranging from 52% to 58 % in North Macedonia, Kosovo, Serbia, and Montenegro, while in Albania and Bosnia-Herzegovina financially fragile households account for 43% and 32% of total households, respectively. These data show that even one decade after the global financial crisis and preceding the COVID-19 pandemic crisis, households in this region were considered financially fragile and an unexpected shock could jeopardise their financial situation. We also analysed how various socio-demographic factors affected the ability of households to withstand such a shock. The results showed that having a female head of household and not being employed increase the probability of household financial fragility, while a higher level of education and income decrease this probability. Based on the portfolio choice variables, the results show that having bank access and owning a second dwelling decrease the probability of household financial fragility, which may reflect the fact that access to the banking sector and having illiquid assets in the form of housing can cushion the impact of liquidity shortage and might lower their exposure to riskier assets. Having mortgage debt

has insignificant correlation with household financial fragility in Western Balkan countries, which might be due to the fact that mortgage debt is more prevalent among wealthier households.

This paper is organised as follows. Section 2 gives on overview of the related literature on financial fragility. Section 3 presents our data and empirical strategy. Then in Section 4 we present and discuss our results and we provide some concluding remarks in Section 5.

2. LITERATURE REVIEW

As mentioned above, the term financial fragility is used to describe households' inability to cope with unexpected events such as a job loss, decrease in working hours and salaries, changes in the interest rate on loans, etc. Analysing household financial fragility is important to gauge the overall well-being of households and also the whole economy. Our work is based on the large literature on consumer financial behaviour focused on the assessment of household financial fragility. However, as Lusardi et al. (2011), Hasler &Lusardi (2019) pointed out, measuring household financial fragility is a complex task and should reflect not only the assets and liabilities of households, but also households' behaviour. Therefore, there are a number of papers that have assessed households' financial fragility based on their ability to manage short-term risks and their exposure to the shocks presented above.

Jappelli et al. (2008) examined the determinants of international differences in household indebtedness for a number of European countries based on different datasets. They considered highly indebted households as financially fragile and explored whether financial fragility is affected by institutional factors, such as information sharing arrangements, judicial efficiency, and individual bankruptcy regulation. Their results highlighted the importance of institutional arrangements as determinants of the size and fragility of household credit markets.

Lusardi et al. (2011) were the first to use the concept of financial fragility based on the ability of a household to cope with an unexpected financial shock. Using households' self-assessment, this measure seeks to evaluate the capacity of households to do so regardless of their source of funds. According to the theory

of precautionary savings, (Deaton, 1992; Lusardi & Browning, 1996; Carroll, 1997), risk-averse individuals facing an uninsurable risk seek to accumulate wealth, which serves as self-insurance to withstand various macroeconomic shocks (Deaton, 1992; Carroll, 1997). However, there are many empirical studies that reveal that households that have few or no assets and no emergency funds are highly vulnerable to shocks (Lusardi et al., 2011).

The uniqueness of the measure proposed by Lusardi et al. (2011) is that it takes into account not only the level of assets and liabilities, but also the capacity of households to deal with shocks, which is affected by different factors, often unobservable, such as individual characteristics that determine the level of wealth that people wish to hold, their risk aversion, rate of time preferences, credit access, reliance on family and friends, and heterogeneity in households' behaviour (Deaton, 1991; Browning & Lusardi, 1996; Lusardi et al., 2011). As summarised by Lusardi (2008), heterogeneity in household behaviour might reflect differences in economic circumstances and opportunity (e.g. education and inheritances), differences in attitudes and preferences, or differences in financial capabilities and financial literacy (Lusardi2008). All these unobservable factors reflect variations in households' abilities to handle unexpected shocks.

Thus, Clark et al. (2020) assessed the level of financial fragility of Americans after the global financial crisis in 2007–2008 on the basis of the ability of households to deal with a sudden shock of expenses or income equal to 2000 dollars in 30 days. Their research showed that about 50% of Americans in 2009 reported being financially fragile and unable to withstand a shock. The data revealed that the incidence of households being financially fragile is higher among low-income and less educated households, younger and older age groups, women, and households with children. Moreover, an unexpected result was that a higher proportion of the US "middle class" considered themselves to be financially fragile, which was either a reflection of a weaker financial position or a greater pessimism about the future. Furthermore, Clark et al. (2020) found that, in addition to savings, relying on family networks, borrowing money, increasing working hours, and selling some items are other methods used to cope with emergencies.

Anderloni et al. (2012) used a similar indicator for Italian households, asking them if they could immediately afford an unexpected expense of €700. Their work

was based on the evaluation of a new index of financial vulnerability for Italian households as well as the evaluation of various household characteristics associated with it. The results obtained by Anderloni et al. (2012) showed that the financial vulnerability of households is positively related to the level of debt service, especially for those holding an unsecured debt. Anderloni et al. (2012) also showed that a higher level of education helps to reduce the financial fragility of households.

Brunetti et al. (2012) investigated the financial fragility of Italian households by assessing the role of households' portfolio choices beyond standard determinants such us income, indebtedness, age, gender, and financial literacy. They defined those households that have sufficient income to cover expected expenses but have fewer liquid assets to cope with unexpected expenses as financially fragile. Based on household level data during the period 1998–2010 from the Bank of Italy Survey on Household Income and Wealth, Brunetti et al. (2012) found that portfolio choice variables play a role in household financial fragility in addition to other variables. Hasler and Lusardi (2019), several years after the last financial crisis, explored the determinants of financial fragility of middle-income households in USA based on household-level data. Empirical results showed that family size, debt burden, and financial literacy play an important role in household financial fragility. Hasler and Lusardi (2019) concluded that a low level of financial education is an issue with short- and long-term consequences.

Demertzis et al. (2020) analysed the financial fragility of EU households and showed that before the 2020 pandemic crisis, on average 31% of EU households were unable to afford an unexpected expense. The data showed some differences between countries, with Northern European members performing better than their Southern European counterparts. In the largest EU countries, the differences are moderate, with 35% of families in Italy and Spain being considered financially fragile compared to 28% of families in Germany. Demertzis et al. (2020) concluded that the percentage of financially fragile households had not decreased much over time, a fact that requires policies to address the causes that influenced this percentage, not just the symptoms.

Following the approach of Lusardi et al. (2011), Brunetti et al. (2012), and Hasler and Lusardi (2019), we aim to evaluate household financial fragility in the

Western Balkans. All the countries in this region – Albania, Bosnia and Herzegovina, North Macedonia, Kosovo, Montenegro, and Serbia – aspire to membership of the European Union, but they face a major convergence challenge in terms of living standards. As Sanfey et al. (2016) showed, the main reason behind this prosperity gap lies in the failure over the years of Western Balkans countries to be competitive, meaning that they lack the appropriate factors and institutions needed for high levels of long-term productivity. Therefore, assessing the percentage of financially fragile households in this region and the factors associated with them is an important issue not only in terms of household behaviour and its link with financial stability but also for the whole economy.

3. DATA AND METHODOLOGY

3.1. Data

Our source of data is the third round of the Life in Transition Survey (LiTS), a household survey conducted in 34 countries, including Western Balkan countries, at the end of 2015 and the beginning of 2016. LiTS is a complex survey, the aim of which is to collect information on the socioeconomic status of the respondents and their perception of economic, political, and social issues. As our aim is to explore household financial fragility in Western Balkan countries, our analysis is focused on this region. In each country, approximately 1500 interviews were conducted face-to-face with the target population using computer-assisted personal interviewing. Household-level data presented in Table 1 show some differences across countries reflecting differences in their economic development. Thus, on average, household monthly income fluctuates at the level of 520 euros. The lowest level is reported for households in Albania, at 448 euros, while the highest is reported for households in Montenegro, at average of 640 euros. Almost half the household heads are employed (full-time or part-time), with the lowest proportion of employed household heads in Kosovo at about 37%, while Albania reports the highest level of employment of household heads at about 59 %. The data show that household heads in the Western Balkan region have a low level of education and, on average, report having completed high school. Less than half the households live in rural areas, except for those in Kosovo. In Serbia and North Macedonia, 60% of households live in urban areas. The data reveal that home ownership rates are high: on average, 88 % of households have a primary dwelling and 9 % have a second dwelling. On the other hand, we observe that only about 8

% of households in all the regions have a mortgage debt on their main dwelling, with some variation between countries.

Table 1: Some descriptive statistics

Countries	Albania	Bosnia and Herzegovina	North Macedonia	Kosovo	Montenegro	Serbia	Total households in WB
Age[1]	53.53	50.25	55.51	53.93	50.62	54.87	53.12
Gender female	9.34%	22.46%	18.10%	15.20%	34.81%	25.08%	20.84%
Education[2]							
Primary	9.3%	18.7%	33.4%	30.3%	12.3%	16.8%	20.1%
Secondary	59.4%	63.7%	48.0%	51.2%	66.5%	70.3%	59.9%
Tertiary	31.3%	17.6%	18.7%	18.5%	21.2%	12.9%	20.0%
Marital status							
Married	74.5%	58.3%	70.4%	72.3%	45.9%	57.0%	63.0%
Single	17.3%	23.7%	16.4%	18.0%	35.3%	17.5%	21.4%
Others	8.2%	17.9%	13.2%	9.7%	18.8%	25.5%	15.6%
Employment status[3]							
Employed	58.9%	45.6%	41.2%	37.5%	48.0%	46.6%	46.3%
Retired	16.7%	20.9%	25.4%	10.5%	23.4%	33.6%	21.8%
Others	24.3%	33.4%	33.4%	52.1%	28.7%	19.9%	31.9%
Income[4]	447.80	540.77	473.46	548.94	638.43	466.02	520.32
Household size	3.25	2.73	3.16	4.68	2.56	2.57	3.16
Rural area	48%	47%	40%	57%	48%	40%	47%
Having a mortgage debt	4.9%	11.2%	4.2%	14.3%	9.9%	4.7%	8.2%
Having a banks access	52.9%	73.7%	75.9%	56.7%	75.4%	80.4%	69.2%
Owning a primary dwelling	89.2%	89.7%	91.4%	93.3%	78.5%	86.3%	88%
Owning a second dwelling	5.6%	12.7%	7.1%	10.3%	9.2%	9.5%	9.1%
Total number of households	1500	1499	1499	1500	1503	1508	9009

Source: LiTS (2016), simple averages

1 Average age of household head

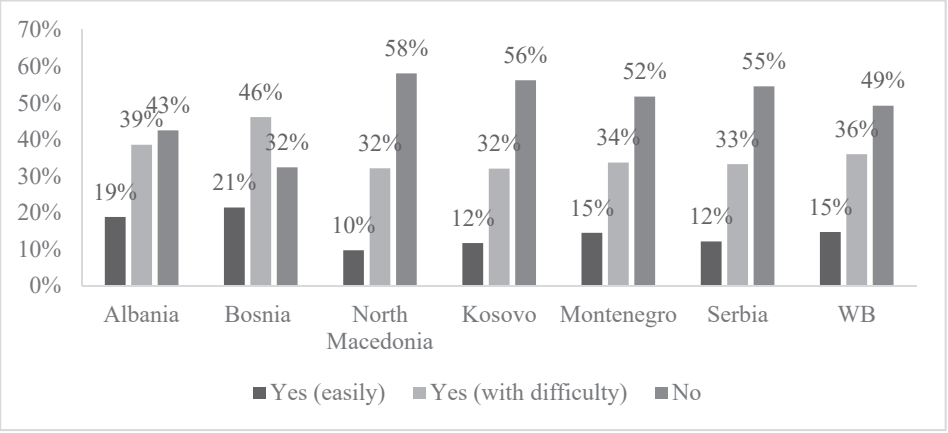
2 Education is defined as ordinary dummy for each level of education, primary, secondary, and tertiary.

3 Employment status is defined as an ordinary dummy for each employment level, employed, retired, and others.

4 Household income represents the total net monthly income calculated as the sum of income of all household members from wages, pensions, social and family benefits, regular transfers from persons outside the household, and other sources. The values are given in euros.

Regarding the ability of households to face an unexpected expenditure shock, the data in Figure 1 show that 49% of the total households in the Western Balkan region cannot afford an unexpected event of expenses equal to the international poverty threshold, 36% of the total households can hardly afford such a shock, while only 15% of households can easily afford an unexpected expenditure event. In Montenegro, Serbia, Kosovo, and North Macedonia, more than half the households (52–58 % of total households) declared themselves to be financially fragile, while in Albania and Bosnia-Herzegovina, the data indicate a lower percentage of financially fragile households, 43% and 32% respectively. On average, 33% of households in North Macedonia, Kosovo, Serbia, and Montenegro can only with difficulty cope with a sudden shock equal to the international poverty threshold, while an average of 12% of households in these countries can easily cope with such a shock. Regarding Albania and Bosnia-Herzegovina, we observe a higher percentage of households that can hardly cope with this shock, at 39% and 46% respectively, while 20% of the households in these countries can easily withstand such a shock.

Figure 1: Meeting unexpected expenses shock with their own funds



Source: LiTS (2016), simple averages

Table A1 (in the Appendix) provides some characteristics of financially and non-financially fragile households for each country in the Western Balkans. In general, the head of financially fragile households is female, has a low level of education, is not employed (retired, students, unemployed), is unmarried, and is older.

Furthermore, financially fragile households are characterised by a low level of income compared to the other types of households, have more financially dependent children, are more exposed to mortgage loans, have fewer real assets, such as a second dwelling, and live mainly in rural areas. At the cross-country level, more differences are observed in households' characteristics, reflecting the dissimilarities in the economic and financial situation between the countries. Thus, we notice that in Albania and Bosnia-Herzegovina, financially fragile households have a lower percentage of mortgage loans, a lower percentage of bank accounts, and a lower percentage of ownership of real assets in the form of a second dwelling. In contrast, in the rest of the countries in the Western Balkans (North Macedonia, Kosovo, Montenegro, and Serbia), financially fragile households are characterised by a higher exposure to mortgage debt, are more financially committed, and report a higher percentage of second dwelling ownership.

3.2. Methodology

As we mentioned above, one issue concerning household financial fragility is the lack of a uniform measure for this concept. In this paper, we have used the approach of Lusardi et al. (2011) and Brunetti et al. (2012), who define a financially fragile household as one which is unable to withstand an unexpected shock. To assess household financial fragility, we used a direct question from the third wave of the Life in Transition Survey (LiTS) of EBRD as follows:

"*Could your household meet with own resources unexpected expenditures up to international poverty threshold*[5]?"

Each household can choose from the following answers: "*yes easily", "yes with difficulty*" and "*no*". Through this question we assess whether households have sufficient resources to cope with an unexpected expenditure event equal to the international poverty threshold, which is the income level sufficient to cover the living costs of households. Based on the definition proposed by Lusardi et al.

[5] In the survey, households are also asked whether, with their resources, they could afford an unexpected expenditure shock of up to the domestic poverty threshold. Because our interest is in comparing the ability of households facing a shock across countries, we decided to use the international poverty line as a consistent shock across countries to account for differences in their purchasing power (Jolliffe et al., 2022).

(2011), we classified those who answered "no" to the above question as financially fragile households.

As our aim is to explain how socioeconomic and demographic factors are related to households' financial fragility, we estimated a probit regression model as follows.

$$HF_i^* = \boldsymbol{x_i'\beta} + \boldsymbol{\mu_i}\,, \tag{1}$$

where HF_i^* is a dummy which takes the value of 1 if a household is financially fragile and 0 otherwise, while $\boldsymbol{x_i'}$ represents exogenous variables and $\boldsymbol{\mu_i}$ is a random disturbance.

The probability of a household being financially fragile is determined as follows:

$$\Pr(y_i = 1|x_i\beta) = \Pr(\boldsymbol{HF^*}_i > \mathbf{0}) = \Pr\left(\boldsymbol{x_i'\beta} + \boldsymbol{\mu_i} > \mathbf{0}\right) = \mathbf{1} - \boldsymbol{F_u}\left(-\boldsymbol{x_i'\beta}\right),$$

where $\boldsymbol{F_u}$ is the cumulative distribution function of $\boldsymbol{\mu_i}$ and the exogenous variables, x_i, represent observed variables made up of various household socio-demographics and households' preferences in terms of portfolio composition and risk. Regarding household demographics, we take into account the gender, the age of the household head, and his/her employment status (retired or other inactive/unemployed, with employees forming the omitted category). We control for marital status with group dummies that distinguish between single and others/widow/separated/divorced and married as the reference group. We consider the education level of the household head, distinguishing between primary, secondary (as the base category) and tertiary levels, as an important factor in determining the ability of a household to handle an unexpected event. We consider financially dependent children by including a categorical variable that represents the number of children aged less than 16 years from one to more than four, where zero children represents the base category. Furthermore, we examine whether there are differences in household behaviour toward fragility between households located in rural areas versus those in urban areas.

Finally, we include a dummy variable that takes the value 1 if a household has a bank account to see how access to credit would smooth the ability of a household

to cope with an unexpected expenditure shock. Moreover, we include two dummy variables, one for the exposure of the household to debt mortgage to capture household preferences toward risk, and the other to see how home ownership is linked with household portfolio choices. As Campbell (2006) states, owning a home, often the largest asset in a household, can have important consequences for the household's portfolio choices through a "wealth effect" or "crowding-out effect". The "wealth effect" enables and encourages households to invest the remainder of their portfolio in risky assets (Campbell, 2006), while the "crowding-out effect" has the opposite effect, since a vast portion of a household's wealth is automatically locked into the illiquid asset of housing (for further details of the housing effect on household portfolio choice, see Chetty & Szeidl, 2010; Chetty, et al., 2017; Li et al., 2022)

4. RESULTS

In this section, we explain how the various variables are correlated with the probability of households being financially fragile based on our probit regression model as summarised in Table 2. More concretely, estimates for all the households in the Western Balkan region are shown in column 1, while individual country estimates are presented in columns 3 to 7. Instead of parameters, we present estimated marginal effects which show the changes in the probability of households being financially fragile when explanatory variables change by one unit, *ceteris paribus*.

Regarding the gender of the household head, we find that there is a greater probability of households being financially vulnerable when the household head is a woman than when it is a man. This result may be because female household heads are less likely to withstand an unexpected financial shock as they may have lower levels of income, education, or financial inclusion compared to men. We find statistically significant results for Albania, Bosnia-Hercegovina, North Macedonia, and Serbia, while for Kosovo and Serbia we do not find that the gender of the household head has any role. For all households in the Western Balkan region, having a divorced/widowed/separated household head increases their probability of being financially fragile compared to the case with a married household head. Among all the countries, we find significant results for Montenegro and Kosovo and partially significant results for Bosnia-Hercegovina, while we obtain insignificant results for the rest of the countries.

With regard to employment status variables, we observe that having household heads who are retired or student/unemployment/inactive increases the likelihood of household financial fragility compared to the case with employed household heads. We find statistically significant values for both parameters for Bosnia-Hercegovina, North Macedonia, and Serbia, while for Montenegro and Kosovo significant results are obtained only for the category "others", and in Albania we observe that retired household heads are associated with households that are not immune to unexpected financial shock.

Concerning other variables, such as the age of the household head, the number of financially dependent children, and where the families live (rural/urban area), we do not find any significant coefficients for any of the households in the Western Balkans, although we get some mixed results from country estimates between the age of the household head and the likelihood of being financially fragile. Thus, for Bosnia-Hercegovina, Montenegro, and Kosovo we find that households with older household heads have a higher probability of being financially fragile, while for Albania and Serbia we find opposite results, with households with an older household head being more resilient than those with younger household heads.

For all households, we find that education significantly decreases the probability of financial fragility. More concretely, it falls by 14 % in the case of household heads who have a bachelor's or higher degree compared to those with a high school diploma, while household heads with only primary level education lead to an even higher probability of the household being financially fragile. Presumably having a higher education improves the ability to deal with shocks due to better financial management and planning. As Lusardi et al. (2011), Halser & Lusardi (2019), and Clark et al. (2020) point out, better-educated household heads are more likely to be more capable of handling an unexpected expenses shock with their resources because they better manage and plan their finances. Additionally, higher education may also account for better career prospects, and, as a result, these households may enjoy higher income and are then more resilient to shocks than others (Lusardi & Mitchel, 2008; Lusardi et al., 2011; Brunetti et al., 2012; Halser & Lusardi, 2019). Country estimates also confirm this result, thus indicating that better-educated households have a lower likelihood of being financially fragile than households with less education.

The next sets of explanatory variables concern households' preferences regarding financial inclusion, financial risk, and the composition of households' portfolios. Our results indicate that having a bank account reduces the probability of households' being financially fragile by 12 % compared to households without a bank account. Thus, access to the financial sector could facilitate the affordability of an unexpected expenditure shock through access to credit. This is the case for households in all the Western Balkan countries, except North Macedonia. This result is in line with large literature showing that access to bank smooths the ability of households to withstand a shock (Demirgüç-Kunt, & Klapper, 2013).

In terms of the financial risk variable, measured through exposure of a household to mortgage debt, we find a negative but insignificant result at the regional and country levels. This result might be due to fact that the financial system in this region is underdeveloped, is dominated by banks which are stricter in their screening procedures, and ensures that wealthier households receive loans so that loans can be repaid without difficulty. Furthermore, this result is more in line with the work of Brunetti et al. (2012), which shows that Italian households with a formal debt are more resilient than those with an informal debt, since the latter are more financially fragile. Information on the exposure of individuals to informal debt is not available in the LiTS database, thus not allowing us to do an analysis similar to that of Brunetti et al. (2012) for countries in Western Balkan countries, where family ties are important (Sanfey et al., 2016). For the home ownership variable, we find that owning a second dwelling might reduce the likelihood of household financial fragility, in line with "crowding-out effect". This result shows that investing in housing discourages households from investing in risky assets. One reason for this is related to the fact that a vast portion of a household's wealth is automatically locked into the illiquid asset of housing, as pointed out by Chetty and Szeidl (2007, 2010) and Li et al. (2022). Another reason is that financial markets in this region are new and not very developed (Sanfey et al., 2016; Comunale et al., 2019) and do not offer a substantial variety of financial products, which limits the choice of financial instruments (European Investment Bank, 2018). In general, there is little capital market activity, the penetration of financial products is negligible, and non-bank financial institutions are insignificant (Comunale et al., 2019). For example, based on household-level data, Dushku and Çami (2022) showed that savings accounts and deposits are the usual instruments for saving in Albania, while bonds, mutual funds, and other

risky assets are the domain of wealthier households. At country level, we find that in Albania, Bosnia-Hercegovina, Serbian, and Kosovo, owning a second dwelling reduces the probability of households being financially fragile, while we do not find any significant results for North Macedonia and Montenegro. Empirical literature for Albania shows that home ownership is considered as an important investment in the absence of other profitable investments (Rebi, 2016).

Table 2: Average marginal effect for all Western Balkan countries[6]

	All	ALB	BH	NM	MN	KS	SB
Gender: Female	0.0522*	0.108**	0.0695*	0.109***	-0.0211	-0.0306	0.114***
p-value	(0.085)	(0.035)	(0.093)	(0.009)	(0.660)	(0.442)	(0.003)
Marital status (omitted category: Married)							
Single	0.0319	-0.0562	0.0306	-0.0278	0.129***	0.0861*	0.000948
p-value	(0.310)	(0.208)	(0.406)	(0.519)	(0.001)	(0.017)	(0.983)
Others	0.0706***	-0.0549	0.0796*	0.0185	0.124***	0.0941*	0.0718*
p-value	(0.001)	(0.385)	(0.051)	(0.706)	(0.007)	(0.080)	(0.095)
Employment status (omitted category: Employed**)**							
Retired	0.114***	0.167***	0.0890*	0.0976*	0.0464	0.0330	0.167***
p-value	(0.000)	(0.000)	(0.034)	(0.025)	(0.277)	(0.523)	(0.000)
Others	0.0824***	0.0203	0.114***	0.119**	0.0859*	0.0699**	0.125*
p-value	(0.000)	(0.604)	(0.000)	(0.002)	(0.015)	(0.037)	(0.013)
Age level (omitted category: Age 35-lower)							
36-50 years	0.0213	-0.0212	0.0768	0.0211	0.0444	0.0708	-0.137**
p-value	(0.519)	(0.725)	(0.113)	(0.696)	(0.481)	(0.186)	(0.025)
51-65 years	0.0345	-0.0938	0.144***	-0.0229	0.0949	0.0675	-0.0856
p-value	(0.408)	(0.127)	(0.002)	(0.689)	(0.100)	(0.181)	(0.197)
older 65 years	0.0310	-0.130*	0.175***	-0.0465	0.134**	0.137***	-0.197***
p-value	(0.626)	(0.055)	(0.012)	(0.509)	(0.053)	(0.015)	(0.016)
Education level (omitted category: Secondary level)							
Primary level	0.0879***	0.108*	0.121***	0.0588	0.0757	0.0942**	0.135***
p-value	(0.000)	(0.082)	(0.004)	(0.111)	(0.188)	(0.023)	(0.002)
Tertiary level	-0.137***	-0.0998**	-0.138***	-0.130***	-0.220***	-0.107**	-0.130**
p-value	(0.000)	(0.013)	(0.000)	(0.003)	(0.000)	(0.003)	(0.012)

[6] Additionally considering that countries in the Western Balkans have different economic levels, we have re-estimated our main model using a different threshold level, equal to the domestic poverty threshold for each country. The results of this re-estimation are available from the author upon request.

Having financially dependent children (omitted category: no children)							
1 child	-0.000984	-0.0331	0.0710	-0.0727	-0.0121	0.0361	-0.0489
p-value	(0.970)	(0.453)	(0.128)	(0.137)	(0.863)	(0.454)	(0.394)
2 children	-0.00725	0.0631	-0.0482	-0.0902	-0.0721	0.00969	0.0366
p-value	(0.757)	(0.261)	(0.351)	(0.222)	(0.270)	(0.865)	(0.549)
3 children	-0.0232	0.0524	0.0374	-0.00297	-0.112	-0.104	0.498***
p-value	(0.654)	(0.674)	(0.750)	(0.977)	(0.398)	(0.064)	(0.008)
4 or more	0.0349	0.175	0.225**	-0.0814	-0.0301	0.0653	-0.293
p-value	(0.394)	(0.135)	(0.047)	(0.583)	(0.738)	(0.287)	(0.094)
Rural area	0.0295*	0.0869	0.0441	-0.00974	-0.00239	0.0291	-0.00756
p-value	(0.096)	(0.120)	(0.373)	(0.889)	(0.969)	(0.578)	(0.906)
Having bank access	-0.117***	-0.211***	-0.0933***	-0.0201	-0.0781*	-0.127***	-0.0896**
p-value	(0.000)	(0.000)	(0.002)	(0.697)	(0.076)	(0.000)	(0.048)
Having a mortgage loan	-0.00832	-0.118	0.0356	-0.0855	0.0550	0.0216	-0.0770
p-value	(0.729)	(0.117)	(0.403)	(0.352)	(0.345)	(0.589)	(0.303)
Owning second dwelling	-0.102***	-0.152**	-0.112***	-0.0485	-0.0846	-0.110**	-0.0969*
p-value	(0.000)	(0.012)	(0.009)	(0.429)	(0.119)	(0.013)	(0.059)
Country dummy (omitted-Albania)							
BH	-0.131***						
p- value	(0.000)						
NM	0.107***						
p- value	(0.000)						
KS	0.0836***						
p- value	(0.000)						
MN	0.0386**						
p- value	(0.003)						
SB	0.0653***						
p- value	(0.000)						
Pseudo R^2	0.096	0.133	0.145	0.044	0.081	0.076	0.088
N	7867	1328	1341	1347	1167	1386	1298
Average marginal effects based on ordered logit regression with robust standard errors clustered at country level, (column 1) and PSU level (rest of colums). * significant at 10%; ** significant at 5%; *** significant at 1%.							

5. FINAL REMARKS

In this paper, based on household-level data for the third wave of the LiTS of the EBRD (2016), we analysed household financial fragility in Western Balkan countries prior to the COVID-19 pandemic crisis using the approach proposed by Lusardi et al. (2011), which defines financially fragile households as those that are not able to deal with an unexpected expenditure shock.

The data show that half the households in this region are financially fragile when the expenditure shock is equal to the international poverty line and less than one-third of households when the hit is equal to the domestic poverty line. These findings indicate that any shock that may affect households could damage their financial position and as a result may have a large effect on household well-being and their economic situation. We find that demographic factors have a high correlation with the probability of a household being financially fragile. More specifically, households with female and/or retired or unemployed household head have a higher probability of being financially fragile than households where the household head is male and/or employed. The estimated results for all the households in the Western Balkan countries, as well as country estimates, show that education level negatively affects the probability of household financial fragility. As we find in the literature, better-educated household heads improve the ability to deal with shocks due to better financial management and planning, in line with Lusardi et al. (2011), Halser & Lusardi (2019), and Clark et al. (2020). We find that having bank access and owning a second dwelling lower the probability of households being financially fragile in the case of all the households in the Western Balkans and for almost each country in this region individually. These results suggest that bank access can facilitate the ability of households to withstand an unexpected event. Moreover, households in this region invest more in illiquid assets, such as home ownership, in spite of holding risky financial assets and this effect is more dominant in Albania, Bosnia-Herzegovina, Kosovo, and Serbia, where housing is considered an investment opportunity.

Despite assessing the level of financially fragile households in the Western Balkan region and the factors associated with this, we need to understand the mechanisms and policies we have to promote and implement to improve financial resilience as opposed to household fragility. Owing to the lack of data on assets and liquidity in the LiTS, we cannot determine whether financial

fragility is due to a lack of saving, to overspending, to attitudes toward future risk or to close social ties that might reflect on the borrowing networks of family and friends. In addition, a low level of financial literacy could also play a role in explaining the lack of precautionary saving to deal with risk. These are some elements that would need to be addressed in future research.

Disclaimer:

The views and opinions expressed in this paper are those of the author and do not necessarily reflect the views and official opinions of the Bank of Albania. The author would like to thank all participants at "2nd Workshop On The Comparative Economics Of Southeastern Europe" held in Beograd, on March 2023, 30-31, for their discussions and comments. The author is grateful to Prof. William Bartlett, Dr Vassilis Monastiriotis and two anonyms referees for their helpful comments and valuable suggestions

REFERENCES

Albacete, N., & Fessler, P. (2010). Stress testing Austrian household, *Financial stability report, 19*, 72–91

Ampudia, M., van Vlokhoven, H., & Żochowski, D. (2016). Financial fragility of euro area households. *Journal of Financial Stability, 27*, 250–262.

Anderloni, L., & Vandone, D. (2011). Risk of over-indebtedness and behavioral. In C. Lucarelli, & G. Brighetti (Eds.). *Risk Tolerance in Financial Decision Making* (pp. 113–132). London: Palgrave Macmillan UK. https://doi.org/10.1057/9780230303829_5

Anderloni, L., Bacchiocchi, E., & Vandone, D. (2012). Household financial vulnerability: An empirical analysis. *Research in Economics, 66*(3), 284–296

Bankowska, K., Honkkila, J., Perez-Duarte, S., & Lefebvre, L.R. (2017). *Household vulnerability in the euro area*. IFC-National Bank of Belgium Workshop on "Data needs and statistics compilation for macroprudential analysis", Brussels, 18–19 May.

Barisitz, S. (2008). *Banking Transformation (1989–2006) in Central and Eastern Europe–with Special Reference to Balkans*. (Bank of Greece Working Paper No. 78). https://ssrn.com/abstract=4165386 or http://dx.doi.org/10.2139/ssrn.4165386

Beckmann, E., Reiter, S., & Stix, H. (2018). A geographic perspective on banking in Central, Eastern and Southeastern Europe. *Focus on European Integration* (Q1–18), 26–47

Brown, S. & Taylor, K. (2008). Household debt and financial assets: evidence from Germany, Great Britain and the USA. *Journal of the Royal Statistical Society: Series A: Statistics in Society, 171*(3), 615–643.

Brunetti, M., Giarda, E., & Torricelli, C. (2012). Is financial fragility a matter of illiquidity? An appraisal for Italian households. *Review of Income and Wealth, 62*(4), 628–649.

Campbell, J.Y. (2006). Household finance. *Journal of Finance, 61*(4), 1553–1604.

Chetty, R., & Szeidl, A. (2007). Consumption commitment and risk preference. *Quarterly Journal of Economics 122*(2), 831–877.

Chetty, R., & Szeidl, A. (2010). *The effect of housing on portfolio choice*. (Working Paper Nr 15998). National Bureau of Economic Research, Inc.

Chetty, R., Sándor, L., & Szeidl, A. (2017). The effect of housing on portfolio choice. *Journal of Finance 72*(3), 1171–1212.

Clark, R.L., Lusardi, A., & Mitchell, O.S. (2020). *Financial fragility during the COVID-19 pandemic*. (Working Paper w28207). National Bureau of Economic Research Working Paper Series.

Comunale, M., Geis, A., Gkrintzalis, I., Moder, I., Polgár, É.K., Quaglietti. L., & Savelin, L. (2019). *Financial stability assessment for EU candidate countries and potential candidates Developments since 2016*. (ECB Occasional Paper Series, No. 233).

Deevy, M., Streeter, J.L., Hasler, A., & Lusardi, A. (2021). Financial resilience in America. *Stanford Center on Longevity*, *20*, 14.

Demertzis, M., Domínguez-Jiménez, M., & Lusardi, A. (2020). *The financial fragility of European households in the time of COVID-19*. (Bruegel Policy Contribution No. 2020/15).

Demirgüç-Kunt, A., & Klapper, L. (2013). Measuring financial inclusion: Explaining variation in use of financial services across and within countries. *Brookings Papers on Economic Activity 2013*(1), 279–340. https://doi.org/10.1353/eca.2013.0002

Dushku, E., & Çami, O. (2022). *Albanian Household Wealth Survey (AHWS): Results of the First Wave (AHWS).* (Bank of Albania Working Paper, 1 (82) 2022).

Dushku, E., Hildebrandt, A., & Suljoti, E. (2019). The impact of housing markets on banks' risk-taking behavior: evidence from CESEE. *Focus on European Economic Integration* (Q3/19), 55–75.

EBRD. (2016). *Life in Transition Survey III: A decade of measuring transition*.

Enzinger, M., Koch, M., & Riedl, A. (2022). Financial vulnerabilities and debt at risk of CESEE borrowers: a cross-country analysis. *Financial Stability Report*, *44*, 25–44.

European Investment Bank. 2018. *Access to Finance in the EU Neighborhood and Enlargement Countries*.

Hasler, A., & Lusardi, A. (2019) *Financial Fragility among Middle-Income Households: Evidence Beyond Asset Building.* (GFLEC Working Paper Series WP 2019).

Hasler, A., Lusardi, A., & Oggero, N. (2018). *Financial Fragility in the US: Evidence and Implications.* (GFLEC Working Paper Series WP 2018-1).

Holló, D., & Papp, M. (2007). *Assessing Household Credit Risk: Evidence from a Household Survey.* (Magyar Nemzeti Bank Occasional Papers 70).

Jappelli, T., Pagano, M., & Di Maggio, M. (2008). *Households' indebtedness and financial fragility.* (Center for Studies in Economics and Finance, Working Paper No. 208).

Johansson, M. W., & Persson, M. (2006). Swedish households' indebtedness and ability to pay: A household level study, *Sveriges Riksbank Economic Review, 3*, 24–41.

Jolliffe, D.M., Mahler, D.G., Lakner, C,. Atamanov, A., & Tetteh Baah, S.K. (2022). *Assessing the Impact of the 2017 PPPs on the International Poverty Line and Global Poverty* (Policy Research Working Paper No. WPS 9941), The World Bank.

Li, Q., Brounen, D., Li., J. & Wei, X. (2022). The effect of housing wealth on household portfolio choice. *Annals of Economics and Finance, 23*(2), 253–277.

Lusardi, A., & Mitchell, O.S. (2008). *Planning and financial literacy: How do women fare?* (No. w13750). National Bureau of Economic Research.

Lusardi, A., Schneider, D.J., & Tufano, P. (2011). *Financial fragility households: Evidence and Implications* (No. w17072). National Bureau of Economic Research. https://www.nber.org/papers/w17072

Morduch, J., & Schneider, R. (2017). *The Financial Diaries: How American Families Cope in a World of Uncertainty*. Princeton University Press.

Rõõm, T., & Meriküll, J. (2017). *The financial fragility of Estonian households: Evidence from stress tests on the HFCS microdata.* (No. wp2017-4). Bank of Estonia.

Sanfey, P., Milatovic, J., & Krešić, A. (2016). *How the Western Balkans can catch up.* (EBRD, Working Paper No. 185).

Skiba, P.M., & Tobacman, J. (2009). Do payday loans cause bankruptcy? *Journal of Law and Economics*, *62*(3), 485–519.

Rebi, E. (2016). The relevance of the housing market for the banks' risk profile in Albania. *Eastern Journal of European Studies*, *7*(1), 151–168.

Received: June 30, 2023
Accepted: October 24, 2023

APPENDIX

Table A1: Cross-country evidence of the distribution of financially and non-financially fragile households in each Western Balkan country

Note: Data are expressed as a percentage for each row and for each country. They show, for each country, the percentage of financially and non-financially fragile households based on the main characteristics of households and household heads																		
	ALB			BH			NM			KS			MN			SB		
	Yes easily	Yes with difficulty	No	Yes easily	Yes with difficulty	No	Yes easily	Yes with difficulty	No	Yes easily	Yes with difficulty	No	Yes easily	Yes with difficulty	No	Yes easily	Yes with difficulty	No
Total	18.9	38.6	42.6	21.3	46.2	32.5	9.7	32.1	58.2	11.70	32.01	56.29	14.61	33.54	51.85	12.18	33.07	54.76
Gender																		
Male	19.2	39.0	41.9	23.3	47.7	29.1	10.1	34.1	55.8	11.90	32.51	55.59	17.77	33.06	49.17	13.59	35.97	50.44
Female	15.8	34.5	49.6	14.6	41.1	44.4	7.9	22.9	69.3	10.62	29.20	60.18	8.70	34.43	56.87	7.96	24.40	67.64
Age																		
Young (ages 35–lower)	24.0	41.3	34.6	25.9	55.5	18.6	14.9	31.6	53.5	18.01	37.89	44.10	17.23	34.15	48.62	11.57	27.78	60.65
Young middle age adults (ages 36–50)	18.1	39.2	42.8	25.1	48.6	26.4	9.1	33.8	57.1	13.53	31.93	54.55	14.83	37.08	48.08	19.48	36.68	43.84
Old middle age adults (ages 51–65)	22.0	38.7	39.3	18.8	43.4	37.8	9.2	33.4	57.4	11.27	32.57	56.16	16.26	31.69	52.06	10.19	33.27	56.54
Senior adults (older than age 65)	10.5	35.7	53.7	13.8	36.0	50.2	8.7	29.0	62.4	6.51	28.01	65.47	8.48	31.10	60.42	8.85	32.54	58.61
Education																		
Primary	11.5	21.6	66.9	11.1	30.4	58.6	4.2	28.6	67.2	5.71	23.96	70.33	3.78	28.11	68.11	2.77	23.32	73.91
Secondary	14.1	37.9	47.9	20.3	49.5	30.2	9.5	32.4	58.1	11.20	34.38	54.43	12.00	32.70	55.30	11.13	35.47	53.40
Tertiary	30.0	44.9	25.1	36.4	50.8	12.9	20.4	37.9	41.8	23.10	38.99	37.91	14.50	33.73	51.76	29.74	34.36	35.90
Marital status																		
Not married	20.4	39.0	40.6	18.2	43.4	38.4	9.2	29.1	61.7	9.62	28.37	62.02	13.04	29.64	57.32	10.48	26.96	62.56
Married	18.3	38.5	43.2	23.7	48.2	28.2	10.0	33.5	56.6	12.55	33.49	53.97	16.23	38.55	45.22	13.39	38.07	48.54

Employment status																		
Not employed	10.6	36.2	53.3	12.8	43.4	43.8	7.4	28.3	64.4	9.28	26.97	63.75	8.57	31.71	59.72	6.45	30.40	63.15
	ALB	BH	NM	KS	MN	SB												
	Yes easily	Yes with difficulty	No	Yes easily	Yes with difficulty	No	Yes easily	Yes with difficulty	No	Yes easily	Yes with difficulty	No	Yes easily	Yes with difficulty	No	Yes easily	Yes with difficulty	No
Employed	24.7	40.3	35.1	31.7	49.4	18.9	13.1	37.7	49.2	15.84	40.57	43.59	20.94	35.92	43.13	18.66	36.61	44.73
Financially dependent children																		
0	18.5	38.6	42.9	21.1	44.5	34.4	9.4	31.2	59.5	10.19	32.47	57.34	14.25	31.68	54.07	10.91	32.72	56.37
1	22.3	39.8	37.9	21.1	50.9	28.1	10.7	37.7	51.6	16.87	28.92	54.22	15.38	41.03	43.59	20.13	35.22	44.65
2	18.2	37.2	44.6	25.4	57.6	17.0	15.6	33.9	50.5	16.67	32.10	51.23	19.39	39.80	40.82	16.25	40.00	43.75
3	11.1	44.4	44.4	17.7	47.1	35.3	4.0	24.0	72.0	12.68	35.21	52.11	11.11	44.44	44.44	12.50	0.00	87.50
4 or more	15.4	23.1	61.5	20.0	33.3	46.7	3.1	40.6	56.3	10.00	31.00	59.00	7.89	47.37	44.74	0.00	60.00	40.00
Household income																		
Q1 income (Less than €250)	12.9	10.1	77.0	4.0	16.6	79.4	1.7	22.0	76.3	0.41	10.29	89.30	0.54	16.76	82.70	0.00	17.28	82.72
Q2 income (€250–€382)	5.7	33.7	60.7	5.9	48.5	45.6	2.6	33.0	64.4	1.08	21.08	77.84	1.12	31.28	67.60	4.35	31.52	64.13
Q3 income (€383–€500)	10.2	54.8	35.0	12.1	58.2	29.7	7.6	33.5	59.0	4.48	35.52	60.00	7.25	33.33	59.42	7.65	46.43	45.92
Q4 income (€501–€706)	28.3	53.1	18.6	20.1	65.6	14.3	11.8	46.8	41.4	14.72	50.76	34.52	11.50	44.50	44.00	21.65	41.75	36.60
Q5 quantile (> €706)	45.3	39.4	15.3	55.0	39.2	5.8	34.9	39.4	25.8	35.42	48.33	16.25	36.81	40.00	23.19	37.04	38.52	24.44
Rural area	13.3	35.8	50.8	18.9	43.6	37.5	5.7	34.5	59.8	8.84	32.91	58.26	16.41	32.14	51.45	10.53	33.55	55.92
Having a mortgage	38.5	40.0	21.5	30.5	44.4	25.2	17.2	39.7	43.1	12.00	31.50	56.50	19.66	34.19	46.15	22.95	40.98	37.07
Having bank access	29.1	43.5	27.4	25.5	48.5	26.0	11.3	33.1	11.3	15.29	38.00	46.71	17.37	35.80	46.83	13.83	34.05	52.02
Owning primary dwelling	20.4	37.1	42.5	22.0	46.1	31.9	9.9	33.4	56.6	11.9	31.7	56.3	17.0	34.8	48.2	13.1	34.1	52.8
Owning second dwelling	39.3	45.2	15.5	36.1	44.5	19.4	19.6	30.8	49.5	27.10	34.84	38.06	31.88	31.16	36.96	29.86	30.56	39.58

Source: LiTS (2016), simple averages:

ECONOMIC ANNALS, Volume LXVIII, No. 239 / October – December 2023
UDC: 3.33 ISSN: 0013-3264

https://doi.org/10.2298/EKA2339031B

*Zuzana Brinčíková**

EVALUATION OF FOREIGN TRADE SPECIALISATION AND COMPETITIVENESS OF THE SLOVAK ECONOMY

ABSTRACT: *This paper aims to assess the structure of foreign trade specialisation and the character of trade competitiveness of the Slovak Republic as a member state of the European Union in the period 1999–2021. We apply an industry specific classification using the concepts of the revealed comparative advantage and the revealed price elasticity. This allows us to evaluate the competitiveness and divide the product groups into price and quality sensitive. The findings confirmed that Slovak production is competitive on the European market in several industries, mainly in automotive production, electronics, and iron and steel, with external competitiveness being based on tradition and low costs resulting in lower prices. The structure of competitive exports changed over the analysed period, and we can note a slight shift from price- to quality-based competitiveness.*

KEY WORDS: *trade competitiveness, trade specialisation, RCA index, unit value, REVELAST method*

JEL CLASSIFICATION: F14, F15, O52, P45

* University of Economics in Bratislava, Faculty of National Economy, Bratislava, Slovak Republic, e-mail: zuzana.brincikova@euba.sk, ORCID: 0000-0002-1528-6561

1. INTRODUCTION

A country can increase its production and wealth only if it produces in sectors that are competitive. In the case of a small economy that relies mainly on export-led growth, this means that these industries must be competitive externally vis-à-vis other countries. The elimination of trade barriers over the last 30 years has established a new system of free international trade, and the global expansion of trade has exposed domestic firms to international competition, intensifying their vulnerability and the levels of international competition.

The Slovak Republic is a small economy with a degree of openness of more than 180% (Eurostat database, 2022), with foreign trade playing a key role. The small size of the country's economy is connected with the necessity for export-oriented growth. Trade integration has facilitated economic development and the EU has played an important role in this integration. A country's participation in such an integration union requires the ability to cope with the competitive pressure of the single market. Increasing trade competitiveness thus becomes more important than ever for the country. At the beginning, the Slovak Republic was a transition country with an inadequate economic structure, a gap between supply and demand, and a significant technological lag compared to developed countries. Successful reforms at the beginning of the 21st century contributed to the accession of the Slovak Republic to the European Union on 1 May 2004, which contributed to an acceleration of economic growth and increasing openness of the Slovak economy. The adoption of the euro on 1 January 2009 and the subsequent reduction in exchange rate risk further strengthened the process of integration of Slovak foreign trade into the European market. The single European market represents an important target for Slovakia, as more than 90% of Slovak exports go to European countries (Eurostat database, 2022). With the accession of the Slovak Republic to the EU, the national market increased, and along with integration came the pressure to continuously improve the goods offered to be competitive on the international market. In an environment of increasing global competition, Slovakia, like other countries, faces the challenge of maintaining its position in international trade. It is therefore important to ensure the competitiveness of the domestic production in foreign markets.

Competitiveness of a nation was originally mainly associated with exports and international trade (McGeehan, 1968). Competitiveness can be understood as a

country's ability to sell its products on the international market (OECD, 1992, p. 237). Trade competitiveness can be based on a lower price or higher quality of the country's goods compared to competing goods. Prices play an increasingly minor role in attracting and, in particular, maintaining trade competitiveness. In particular, countries lagging behind technologically specialise in sectors where price is the main factor of competitiveness. These countries, like Slovakia at the beginning and during the transition, have a competitive advantage based on low wages and intensive use of energy or environmental resources (Wolfmayr, 1998). However, trade competitiveness built solely on prices and the production of low-technology and labour-intensive products may quickly be lost. This is especially true today, when new competitors are coming onto the world market with extremely low production costs, primarily due to cheap labour. Once a low-wage advantage is exploited, it becomes crucial for a country to move into technology-intensive production. Developed industrialised countries can only compete with countries that have relatively with cheap labour if they produce sophisticated products and their competitiveness is based on quality. Quality competition is defined as "a competitive environment, in which upgrading quality, and increasing the willingness to pay is important relative to competing at low prices" (Aiginger, 2001, p. 6). Slovakia, with its high levels of openness and foreign dependence, is reliant on maintaining and increasing the competitiveness of its exports. Therefore, the aim of this article is to reveal the areas and nature of the competitiveness of Slovak exports and its development over the past decades. We extend the existing literature with an analysis of the development over the last decade when Slovak foreign trade was affected by significant factors in the form of integration, restructuring, and FDI inflows.

A further aim of this article is to analyse the competitiveness of Slovak foreign trade under the conditions of the EU-27 market and its development in the period 1999–2021. We identify the competitive product groups by calculating the RCA indices for individual product groups. The products (sectors) with the highest values of this index represent the main source of economic growth and employment in the Slovak Republic. Subsequently, the type of competitiveness is identified. The paper is divided into five sections. Section 2 deals with an overview of literature, which focuses on the issue of measuring and assessing the foreign trade competitiveness. Section 3 outlines the methodology and data used in the

analysis, while Section 4 presents the empirical results and their description. Section 5 summarises the findings.

2. LITERATURE REVIEW

International competitiveness of trade in goods and services refers to a nation's trade advantage vis-à-vis the rest of the world. In this sense, trade advantage occurs whenever the economic welfare of a nation improves as a result of trade (Coldwell, 2000, p. 418). According to trade theory, economic welfare is dependent on the production of goods and services in which a country has a comparative advantage.

Traditional theories explain a country's trade competitiveness on the basis of international differences in labour productivity (Ricardo, 1817) or factor endowments (Heckscher, 1919; Ohlin, 1933) in the production of homogeneous goods. The basic factor of production in the Ricardian model is labour. Lower labour costs act as opportunity costs, moving production from one country to another, through trade (Krugman et al., 2018). In the Heckscher–Ohlin view, comparative advantages in international trade are the result of differences in the endowment of production factors. Trade specialisation and comparative advantage are explained in these models from the side of inputs into production.

Measuring comparative advantages and testing the H-O theory is not at all easy in practice. Information on production costs should be obtained from individual countries before undertaking activities in international trade, which is almost impossible in practice. On this basis, Balassa (1965) suggested that it is not necessary to define all the factors of a country´s comparative advantage and the initial relative prices, but that it is possible to define a comparative advantage based on ex-post international trade data as "revealed" on the basis of the observed existing patterns of trade. Such a comparative advantage derived from the observed data is defined as the revealed comparative advantage (RCA) and, in practice, is a generally accepted method of analysing trade data. This method does not examine the potential competitive advantages, but the resulting competitiveness of the country. That makes it possible to consider non-price factors that are not considered in the Heckscher-Ohlin theory.

Liesner was the first who contributed to the theory in 1958 and tried to measure the revealed comparative advantage of Great Britain over the Common Market, which was the first empirical study in the field of RCA (Liesner, 1958). Balassa (1965) proposed an index (also called the Balassa index), which represents an improved form of measurement of the revealed comparative advantage based on export data and is widely used in the empirical literature. After Balassa, a number of studies improved the definition of RCA. Vollrath (1991) offered alternative ways of measuring a country's comparative advantage based on RCA, namely the relative trade advantage (RTA), revealed competitiveness (RC), and the relative export advantage (REA). The advantage of these indices is that they include both the supply and demand side of trade. The problem with the implementation of these methods of measurement of the RCA is that the pattern of trade can be distorted by government intervention in the form of restrictions on imports, export subsidies, and other protectionist measures, which may cause misinterpretation of the comparative advantage. Greenaway and Milner (1993) removed the distortion caused by interventions and used a price-based measurement of the RCA, called an implicit revealed comparative advantage (IRCA), which also considers the possibility that the country records both simultaneous exports and imports with a certain commodity or within a certain industry. Fertȍ and Hubbard (2003) used the coefficients of nominal assistance estimated by the OECD for countries and commodities to filter the effect of possible distortions in measuring Hungarian agri-food sector RCAs vis-à-vis the EU.

The traditional RCA index provides a static analysis of comparative advantages, but is unable to explain their transitional changes in time. For the identification of dynamic changes, Edwards and Schoer (2002) built a dynamic RCA index, which is used for the analysis of the dynamic market position of competitors in the market through the disaggregation of RCA growth into its components. Based on the observed relative trends in the share of the commodity in a country's exports and global exports, it is possible to identify a dynamic market position and divide the exported goods into 6 groups: (i) rising stars, (ii) falling stars, (iii) lagging retreat, (iv) leading retreat, (v) lagging opportunity, and (vi) lost opportunity.

Depending on the alternative version of the indicator used, inconsistent results may occur. For this reason, careful interpretation of the resulting indices by economic policy makers is necessary. French (2017) applied a widely used class of quantitative trade models to evaluate the usefulness of measures of revealed comparative advantage and found several common uses of RCA indices for certain tasks. Although various authors have provided alternative measures, no one has succeeded in overcoming all the drawbacks and the Balassa index is still recognised as a standard index for accessing comparative advantages in trade (Yu et al., 2009).

One of the authors who assessed the nature of foreign trade specialisation and competitiveness according to output indicators was Aiginger (1997), who, through the use of unit values of exports and imports, divided industries into those based on price competition and industries where non-price (qualitative) competition prevails. Unit value can be both an indicator of cost and quality. A low unit value can reflect low costs, but also insufficient production performance. Higher unit value means the ability of a country to sell the same product at a higher price due to the rise in production costs or, for example, due to marketing, advertising, or quality. In general, high-skill and high-tech industries achieve the highest export unit values (Aiginger, 2001). However, there are also cases when high unit values are associated neither with high-tech industries nor with the use of a highly skilled workforce and are not an indicator of quality. This may be the case when unit values are high because the weight is low. Another case is reprocessing, where a country imports semi-finished product that are further processed or assembled using cheap labour and then exported back with a slightly higher unit value. Another exception may be precious metals, where supply is lower than demand.

In order to determine the character of foreign trade competitiveness and to distinguish between price and quality competition in foreign trade, Aiginger (1998) used the idea of revealed price elasticity (REVELAST). In order to differentiate industries where unit value reflects costs and those where it is the result of differences in quality, product differentiation or market power, he applied the following principle: if unit values reflect costs (and therefore price competition) and the product is homogeneous, high-cost countries will be net importers in terms of the volume of goods. On the contrary, price competition

will cause lower prices to lead to higher export volumes. On the other hand, if there is qualitative competition within trade, high unit values (higher prices) will also be associated with a high volume of exports. By applying the above criteria, it is possible to divide industries into four segments according to whether or not price or quality competition dominates. Brito et al. (2012) used the REVELAST approach to evaluate the quality-cost choice of R&D in nations´ exports. Kostoska and Mitrevski (2016) calculated unit values to signal Macedonia's quality position and performed a country-specific segmentation of markets according to the revealed price elasticity concept.

Many empirical studies have assessed the competitiveness of foreign trade. The authors focus on either a specific country or an integration union. From the studies related to Slovakia, we can conclude that the Slovak economy has been developing in a similar way to other Central European countries. Vokorokosova and Čarnický (2003), on the basis of the RCA index, found that in the early 2000s Slovakia was competitive in relatively high capital-, material-, and labour-intensive production. Slovak trade competitiveness was based on cost competition exploitation, with production and trade suffering from insufficient foreign investment, high import intensity, and low value added. According to Borbély (2006), the new and cohesion countries of the EU were competitive in middle- and low-quality products. EU integration and eastern enlargement were expected to stimulate structural adjustment and economic specialisation, which were to be the driving forces for structural change in the European economies. Bobáková and Hečková (2007) found that Slovakia´s trade was dominated by price and cost competitiveness and products dependent on raw materials and energy sources. The industry was lagging behind in its competitive ability in relation to high-tech products. Pavličková (2013) quantified the competitiveness of Slovak foreign trade using the complex range of methods including the REVELAST approach to determine the character of its competitiveness until 2011. The results confirmed that its production was competitive in the European market, although mainly in relation to prices. According to Aiginger (1998), the largest positive contribution to the Slovak Republic's trade balance comes from sectors in which the Slovak Republic is cheap and markets are price elastic. Among the transition countries, where the prices are still not set at full cost, Slovakia has the second largest sector with successful price competition and the lowest unit value of exports. Zábojník and Borovská (2021) define the key

indicators of the competitiveness of the Slovak Republic in third countries' markets using the basic indicators export volumes, market share, RCA, and export gap. Their findings indicate insufficient policy in relation to export competitiveness in third country markets as determined by institutional and general economic policy.

3. METHODOLOGY

To assess the trade competitiveness of the Slovak economy, we used two methods that allowed us to identify and determine competitive areas of production as well as the nature of their competitiveness and development.

First, we analysed and identified product groups in which the Slovak Republic is competitive against the EU-27. To do this, we used the Balassa index of revealed comparative advantages (RCA index), which is expressed as follows:

$$\text{RCA index} = (Xij/Xit) / (Xnj/Xnt) = (Xij/Xnj) / (Xit/Xnt), \quad (1)$$

where X represents exports, i is a country, j is a commodity (or industry), t is a group of commodities (or sectors or total exports), and n is a group of countries (or the world).

The RCA index thus measures the share of commodity (industry) exports in a country's total exports relative to the ratio of the commodity's exports to the total exports of the selected group of countries (or worldwide). In other words, it compares a country's share of the world commodity market with that of all commodities. A comparative advantage is considered to be revealed if the RCA index is greater than one, i.e. the commodity's share of the country's exports is greater than its share of world exports. If the RCA index is less than one, the country has a comparative disadvantage in exporting the product (industry). For the purposes of our analysis, we have adjusted the index to calculate the share of exports of a certain product group in the total exports of Slovakia against the share of this group of goods in the total exports of the European Union. Considering that the aim of the present study is the position of the Slovak Republic in the conditions of the European market, we used EU-27 trade flows instead of the world market for comparison. In this sense, we measure RCAs with respect to the EU as a comparison. Moreover, the comparison with the EU market

eliminates the impact of different domestic trade policy interventions, as Slovakia, as an EU member, has the same basic trade policy setting. Therefore, factors determined by domestic policies should not influence the results. Since the aim of our paper is to assess the structure of foreign trade specialisation in recent decades, not its future potential, we used a static approach based on the traditional RCA indicator, which can be used to evaluate commodity specialisation but cannot infer future comparative advantages. A dynamic approach may lead to misleading conclusions, as the development of the Slovak economy and the sustainability of determined comparative advantages in recent years have been significantly influenced by unpredictable events (e.g. the COVID-19 pandemic, war in Ukraine).

Subsequently, we determined the character of the competitiveness of identified competitive product groups. To distinguish between the price and non-price (qualitative) competitiveness of individual industries, we used the concept of revealed price elasticity (REVELAST), introduced by Aiginger (1998). This method is based on the calculation of unit values (UV), which can be defined as the ratio of the value to the quantity (Q) of export/import. For the purposes of this analysis, we calculated these as the value of exports (imports) in EUR divided by the quantity in kilograms. Based on a comparison of the quantitative balance in trade and the unit values of individual SITC items, we divided them into four segments according to the nature of competitiveness:

- The SQC segment – *successful quality competition (sector of excellence)* – includes industries where the quantity exported exceeds imports despite high unit values ($Q_{exp} > Q_{imp}$, $UV_{exp} > UV_{imp}$). This is the result of high-quality production or specialisation in the most sophisticated market segment. These sectors have the greatest prospect of technological or dynamic competitiveness.
- The SPC segment – *successful price competition* – covers price-elastic goods where the country achieves a trade surplus due to a lower domestic price ($Q_{exp} > Q_{imp}$, $UV_{exp} < UV_{imp}$).
- The UPC segment – *deficit in price competitiveness (outpriced sector)* – contains price-elastic goods whose unit value is high in the home country, for example due to high production costs, and this leads to a trade deficit ($Q_{exp} < Q_{imp}$, $UV_{exp} > UV_{imp}$).

– The UQC segment – *structural problems (unsuccessful quality competition)* – comprises sectors with trade deficits despite low prices ($Q_{exp} < Q_{imp}$, $UV_{exp} < UV_{imp}$).

We used the Eurostat database from which we obtained data on the export and import performance of the Slovak Republic and the EU-27 for the period 1999–2021. The analysed products were classified according to SITC (Standard International Trade Classification, Rev. 4), a two-digit classification, at the level of sections and divisions.

4. RESULTS

Slovakia's position as a former centrally planned economy has long been subject to many historical factors in terms of international trade. An important role was played not only by internal economic and political conditions, but also by fundamental changes in Slovakia's international position. The transformation of the Slovak economy from a centrally planned economy to a market economy was also reflected in foreign trade by the changing territorial structure of trade, with priority being given to a change of orientation from the Council for Mutual Economic Assistance countries (CMEAS/COMECON) to advanced world markets, in particular those of Western Europe and the EU countries. Following the establishment of an independent Slovak Republic, there was a need to increasingly target EU markets as the existing production capacities were no longer geared towards the markets of the former CMEAS countries. Slovak exporters were increasingly focused on Western markets, but the economy's dependence on raw material supplies from Russia persisted. At the beginning, the Czech Republic, with which the Slovak economy was linked in supplier-customer relations, had the largest share of Slovakia's foreign trade and this primacy lasted until 1997. In 1998, the Czech Republic was replaced by Germany, which still retains its leading position as first trading partner. Mutual foreign trade is mainly the subject of activities of automotive companies and large-scale foreign direct investments. The territorial structure of foreign trade of the Slovak Republic has gradually been transformed, and the share of OECD and EU countries in both exports and imports has increased, which was also supported by Slovakia's accession to the European integration structures. At present, European countries account for around 90% of Slovak exports and almost 70% of Slovak imports

(Eurostat database, 2022). The V4 countries remain an important market for Slovakia's exports.

Since the 1960s, Slovakia has focused mainly on the export of machinery and metalworking products. Fuels, raw materials, and semi-finished products were a key component of imports. The transformation of the Slovak economy into a market economy has largely changed production in many sectors of the economy. Slovakia had unused production capacities, mainly in the arms industry, which was built for export to the CMEAS countries. Structural changes have mainly affected the mechanical engineering sector, where many products saw a significant drop in exports and an increase in imports.

Table 1. Shares of product groups in total exports/imports (%)

Product	Exports					Imports				
	1999	2005	2010	2015	2021	1999	2005	2010	2015	2021
0 Food and live animals	3,00	3,94	3,62	3,38	3,28	5,05	4,79	5,17	4,68	4,88
1 Beverages and tobacco	0,51	0,25	0,15	0,15	0,26	1,11	0,98	0,73	0,68	0,79
2 Crude materials, inedible, except fuels	3,73	2,97	2,80	1,80	2,20	3,75	3,51	3,66	2,36	3,15
3 Mineral fuels, lubricants and related materials	4,69	5,90	5,30	3,56	2,82	12,99	13,17	12,92	7,37	6,83
4 Animal and vegetable oils, fats and waxes	0,12	0,16	0,16	0,19	0,17	0,18	0,18	0,31	0,28	0,23
5 Chemicals and related products, n.e.s.	7,06	5,75	4,58	4,76	4,56	11,26	9,69	8,34	8,82	8,94
6 Manufactured goods classified chiefly by material	27,30	24,55	18,93	16,74	17,17	18,22	18,00	15,22	15,09	15,08
7 Machinery and transport equipment	39,10	44,14	54,05	59,06	60,51	36,98	38,15	42,73	47,41	49,01
8 Miscellaneous manufactured articles	12,44	10,58	10,10	10,13	8,90	9,43	11,03	10,57	13,07	10,29
9 Commodities and transactions not classified elsewhere in the SITC	1,47	1,74	0,29	0,21	0,12	1,00	0,52	0,36	0,23	0,81

Source: Author´s calculations, Eurostat data

From 1995, the share of iron and steel exports in Slovak exports gradually started to decline, which can be considered a positive trend in terms of export orientation towards products with higher added value. Road vehicle exports experienced a strong growth rate. The tradition of Slovak arms production and the number of unemployed workers who still had experience in engineering were among the driving forces behind the establishment of the automotive industry in the Slovak Republic. Exports of machinery and transport equipment increased from 39.1% of total exports in 1999 to 60.5% in 2021. The growth of road vehicle exports was significant due to foreign investors entering the sector. In the automotive

industry, the growth of exports was also accompanied by an increase in imports, in particular imports of parts and accessories for transport equipment. Most components for the Slovak automotive industry are imported from Germany, the Czech Republic, the Republic of Korea, France, and Poland. The position of commodities with a higher degree of finalisation in exports, such as telecommunications, sound and image recording and reproduction apparatus and equipment and electrical equipment, gradually strengthened, which is also linked to the entry of foreign investors in this domestic market.

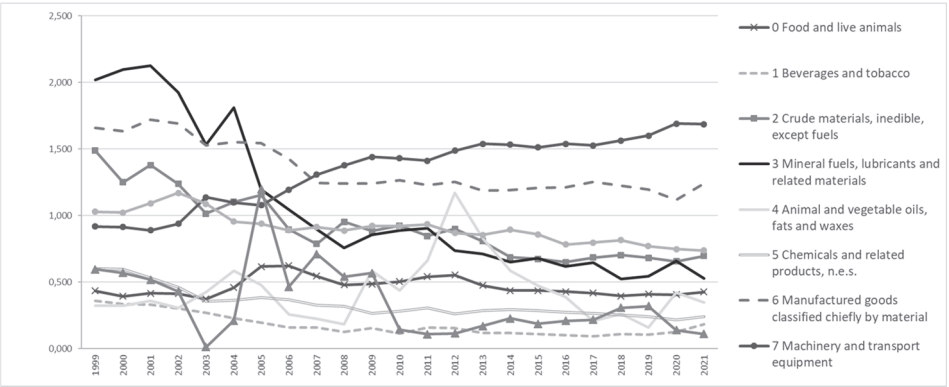
At present, the commodity structure of Slovak exports is concentrated in several sectors, mainly the production of transport equipment (passenger cars, their parts and accessories), electrical and telecommunications equipment (shafts, bearings, pumps, fans, compressors, boilers, televisions, and telephone equipment), and base metals and articles made from these (iron, steel, wires). The development of these sectors is the main driver of the Slovak economy. Slovakia imports predominantly machinery and electrical equipment (computing, engines, pumps, mobile phones), raw materials (oil, gas, fuel, oils and coal), and transport equipment (cars and their parts and accessories). The share of machinery and transport equipment in Slovak imports increased from 37% in 1999 to 49% in 2021, reflecting the high import intensity of this sector.

Applying export data of the Slovak Republic and the EU-27 to the RCA index enabled us to identify in which product groups Slovakia has a comparative advantage and which product groups are competitive at European Union level. Figure 1 shows the development of the RCA index over the period under review in wider product groups (sections of SITC). More detailed RCA values for the SITC divisions in which Slovakia achieved a revealed comparative advantage and RCA greater than one for at least a few years are set out in Appendix 1.

We then classified the product groups in which Slovakia achieves a comparative advantage according to the criterion of whether the unit values of their export were higher or lower compared to imports and according to the criterion whether the exported or imported volume of a given product group was higher (REVELAST method). This allowed us to categorise the traded product groups into four segments and determine what type of competitiveness a given export was based on. The character of competitiveness for more broad product groups

is shown in Table 2, and more detailed values for items with comparative advantages can be found in Appendix 2.

Figure 1. Revealed Comparative Advantage (RCA index) in the Slovak Republic in period 1999–2021 (SITC Sections)



Source: Author´s calculations, Eurostat data

At the beginning of the analysed period, the Slovak Republic achieved a comparative advantage (RCA greater than one) in traditional labour- and capital-intensive industries (Wolfmayr-Schnitzer, 1998; Peneder, 1999; Yilmaz & Ergun, 2003) such as iron and steel production, machinery, paper and related products, clothes, and some chemical products. At this time, the Slovak Republic achieved the lowest export unit values among transition economies (Aiginger, 1998). Sectors with successful price competition were particularly dominant, mainly due to low labour costs. In a sector with successful qualitative competition, apparel and footwear industries prevailed at the beginning of the reporting period, where imports were re-exported after low value-added processing. The Slovak economy in this period was characterised by technological backwardness, an insufficiently restructured economy, an imbalance between domestic supply and demand, and a high need for imports of energy and minerals. However, Slovak export specialisation as well as the nature of its competitiveness changed due to transformation, European integration, and FDI inflows.

Table 2. Level and character of Slovak foreign trade competitiveness in selected years (SITC Sections)

Product	RCA index					REVELAST				
	1999	2005	2010	2015	2021	1999	2005	2010	2015	2021
0 Food and live animals	0,44	0,62	0,50	0,44	0,43	SPC	SPC	UQC	SPC	SPC
1 Beverages and tobacco	0,36	0,20	0,12	0,11	0,18	UQC	UQC	UQC	UQC	UQC
2 Crude materials, inedible, except fuels	1,49	1,16	0,92	0,67	0,70	UPC	UPC	UPC	UPC	UQC
3 Mineral fuels, lubricants and related materials	2,02	1,20	0,89	0,68	0,53	UPC	UPC	UPC	UPC	UPC
4 Animal and vegetable oils, fats and waxes	0,32	0,48	0,44	0,47	0,35	UQC	UPC	UPC	UPC	UPC
5 Chemicals and related products, n.e.s.	0,60	0,39	0,28	0,28	0,24	SPC	SPC	UQC	UQC	UQC
6 Manufactured goods classified chiefly by material	1,66	1,55	1,26	1,21	1,24	SPC	SPC	SPC	SPC	SPC
7 Machinery and transport equipment	0,92	1,08	1,43	1,51	1,69	SPC	SPC	SQC	UPC	SQC
8 Miscellaneous manufactured articles	1,03	0,94	0,92	0,86	0,74	SPC	UQC	SPC	SPC	UPC
9 Commodities and transactions not classified elsewhere in the SITC	0,60	1,20	0,14	0,19	0,11	SPC	SPC	SPC	SPC	SPC

Source: Author´s calculations, Eurostat data

Throughout the period under review, Slovakia remained competitive in manufacturing goods (6), although the comparative advantage decreased slightly. The biggest decreases can be seen in paper production (64), textile yarn and fabrics (65), and various metals and mineral manufactures. A revealed comparative advantage was achieved by Slovakia in the production of iron and steel (67). Historically, steel production was, is, and will remain one of the main pillars of the development of Slovak industry, although it accounts only for just over 5% of total exports. However, the Slovak comparative advantage in steel production has declined in recent decades (see Appendix 1), mainly due to increasing competitiveness from cheap Asian steel. For most of the above items, with a few exceptions, price competitiveness prevailed over the whole period.

Higher values of the RCA index can also be found in some items of the miscellaneous manufactured articles (8), such as prefabricated buildings etc. (81), furniture (82), and footwear (85), but as a whole these traditional sectors of the Slovak economy were in decline and did not account for a large share of the exports. Footwear (85) and articles of apparel and clothing (84) initially had RCA values above 2 and their successful competitiveness was based on quality. However, within a few years, and especially after joining the EU, this success disappeared and there was a shift of production to other, cheaper areas. We can

see this trend in many developed countries, with production of these items moving to areas with an abundance of cheap labour, such as India, Bangladesh or China (Fitzpatrick, 1983; Bobáková & Hečková, 2007). Nevertheless, there was still a comparative advantage in the production of footwear. On the other hand, the textile industry lost its status and many production plants closed down. In recent years, the only sector in this segment that has been able to compete in terms of quality is that of prefabricated buildings, sanitary, plumbing, heating, and lighting fixtures and fittings (81).

During the whole period, Slovakia experienced a comparative disadvantage in the section food and live animals (0), beverages and tobacco (1), chemicals (5), and other goods (9). Products in these taxonomic classes faced a lack of competitiveness or structural problems. The only exceptions are sugar production (06), fertilisers (27 and 56), and, in particular, the export of coins (96) due to the company Kremnica Mint, which was founded in 1328 and has been continuously producing coinage products for many centuries. The success of these items was based on low prices, but their share in exports was very small.

The largest decrease in competitiveness based on the RCA index occurred in the section of mineral fuels, lubricants, etc. (3), in particular the production of petroleum and petroleum products (33). Products in this segment did not have the ability to compete on the market due to their prices. At the beginning of the period, the RCA value for this group was 2.67 and this gradually decreased to values just above 0.5. The opposite development can be seen in the export of electric current (35), the production of which became increasingly competitive, thanks to the growth of production and investment in atomic energy.

The production of crude materials (2) also suffered a loss of competitiveness in all items. The comparative advantage in exports of oil-seeds (22), cork and wood manufactures (24), and crude fertilisers (27) decreased most significantly, with Slovakia being relatively competitive at the beginning of the period (RCA > 2.5), but underinvestment (Darmo, 2019) and increasing competition from other EU member states after integration caused it to decline. Despite this, Slovakia still maintained a certain comparative advantage in these items, based mainly on the abundance of natural resources in the form of forests and lower prices. In the case

of cork and wood manufactures (24), we can see a shift from price to quality competitiveness.

The Slovak Republic achieved the most significant competitiveness on the basis of the RCA index in the category of machinery and transport equipment (7), in which Slovakia still has the highest competitive advantage, also among the V4 countries (Brinčíková, 2022). The competitiveness of this sector, the main component of which is production in the automotive industry, has grown in recent decades and this growth has been strengthened by joining the EU. If we look at a closer specification, we can see that the RCA index achieved long-term high values in exports of road vehicles (78) and telecommunications and sound-recording and reproducing apparatus and equipment (76). In these sectors, Slovakia showed high comparative advantages vis-à-vis the EU-27.

The automotive industry is the basic pillar of the Slovak economy and its foreign trade, as confirmed by the highest and increasing values of the RCA index and the strong revealed comparative advantage. The share of the road vehicles group in exports increased from 18.8% in 1999 to 31.7% in 2021. In 2021, more than one million vehicles were produced in Slovakia, according to the Automotive Industry Association of the Slovak Republic (ZAP SR), and the country is the world leader in the production of cars per capita. There are four automobile companies operating in Slovakia (Volkswagen, Kia Motors, Stellantis, Jaguar Land Rover) and in July 2022 the fifth (Volvo) announced its arrival. The automotive industry's share of the total industry reached 47.7% in 2021, 13% of GDP, and the share of exports was 42 %. One of the incentives for the creation of the strong automotive industry in the Slovak Republic and the growth of its competitiveness took the form of the tradition of Slovak engineering and arms production and the amount of unemployed skilled labour with engineering experience during the period of transformation (Brinčíková, 2020). Furthermore, the advantageous geographical location of the Slovak Republic in the middle of Europe encouraged investors from other countries to invest in Slovakia because the distribution of cars to other countries is easier thanks to this. Foreign investors brought in new technologies and built more modern plants than in their home countries, which, together with low labour costs, formed the basis for competitive production. At the same time, the growth of this sector supported the development of other downstream sectors. A good example is the production of

tyres and other rubber components (62), in which Slovakia reached the RCA value 2.54 and thus a revealed comparative advantage.

The production and export of road vehicles compete on quality, although the success in quality competition is based on assembling components, whereby the value added is quite low. The high inflow of FDI into the sector (Darmo, 2019; Brinčíková, 2020) has created the conditions for restructuring and changing the nature of their competitiveness. Foreign ownership supports the export orientation of the economy, as foreign affiliates trade more on average than domestically owned firms. Foreign-owned companies have higher productivity than local producers since foreign ownership makes it possible to exploit knowledge and innovations that are not locally available (Kostoska & Mitrevski, 2016). By importing technologies from parent companies, they ensure transfer of technology. FDI bring positive effects on the productivity of domestic companies through knowledge spill overs and linkage effects. They also increase the quality and efficiency of domestic suppliers by demanding higher standards, thereby increasing the quality of deliveries in the country. This can be seen in the example of rubber manufactures (62), where, in addition to price competitiveness, qualitative competitiveness was also revealed over several years.

The high values of the RCA index can be seen in the production of telecommunications etc. (76). The strongest sector of Slovak electrical engineering was the production of televisions, screens, printed circuit boards, and other electrotechnical components for televisions, which accounted for almost half of the entire electrical industry. The production of televisions has been a tradition in Slovakia since 1958. In particular, manufacturers' easier access to European markets following the enlargement of the EU, cheap labour, and quality suppliers of plastics and packaging materials contribute to the growth of production of this industry, what is also confirmed by the increasing share of this industry in total exports (from 1.5% in 1999 to more than 10% in 2021). All these factors are the basis for the successful price competitiveness of the sector, which was observed in most of the years under review.

Although the competitiveness structure of Slovak exports has changed, its character has been preserved in most cases. Most of the competitive exports were and are based on low prices (the SPC segment – see Appendix 2), that is the result

of low labour costs which represent only half of average EU labour costs (14.2 euro/hour in Slovakia as compared to 29.1 euro/hour in the EU-27 in 2021). These sectors include, in particular, labour-intensive industries such as manufactured goods (6) and various machinery equipment, some agricultural products (live animals – 00, cereals – 04, sugar – 06, oil-seeds – 22) and fertilisers (27; 56), which were price competitive during most of the period analysed. The gradual rise in labour costs[1] followed by the rise in prices during the transition caused a loss of price competitiveness in some sectors. This can be seen in the production of chemicals, in particular plastics (57; 58), dairy products and eggs (02), non-ferrous metals (68) and manufactures of metals (69), power-generating (71), metalworking (73) and electrical machinery (77), office machines (75), and furniture (82). On the other hand, an increase in price competitiveness can be seen in the case of pulp and waste paper (25). However, even though some product groups in this segment have a price advantage, they can only be sold more cheaply in nearby markets due to high unit transport costs (agricultural products).

The SQC segment, in which export unit values and export quantities are high, includes industries in which quality is important and Slovakia is able to compete in the foreign market. In this segment, we can find industries whose export is strongly associated with import for further processing. These are road vehicles (78) and other transport equipment (79) sectors and the downstream rubber industry (62). It is characteristic of the production of these items that Slovakia imports semi-finished goods, which are processed by cheap labour in new factories and re-exported, which is confirmed by the high import values in this group (more than 15% of total imports for road vehicles). This means that the simplest and most labour-intensive stage of production, which takes place in Slovakia as a low-wage country, is excluded from the main production process. This segment also includes several product groups with very few imports, or their qualitative advantage is based on natural resources (ores, wood, etc.) such as cork and wood production (24), and prefabricated buildings, sanitary, etc. (81), where the quality of production increased. In contrast to this, a loss of non-price competitiveness can be observed mainly in the production of articles of apparel

[1] The average labour costs in Slovakia rose from 2.76 euro/hour in 1999 to 14.2 euro/hour in 2021 (Eurostat database, 2021).

and clothing accessories (84), footwear (85), and live animals (00). In the latter, successful quality was replaced by a low price while maintaining competitiveness.

The segments with insufficient price competitiveness or with structural problems (UQC and UPC sectors) include mainly beverages and tobacco production (1), crude materials (2), mineral fuels and lubricants (3), animal and vegetable oils, fats and waxes (4), and chemicals (5). This also corresponds to a great extent to the results of the RCA index, which is lower than one for these groups and represents revealed comparative disadvantage. It is characteristic of these sectors that Slovakia does not have sufficient resources for their production or their production shows a lack of investments and new technologies, which makes it expensive and inefficient. However, some of these product groups had the potential to increase their performance by increasing production efficiency and optimising transport costs.

Our results confirm the findings of other authors concerning trade in previous decades. As observed by Vokorokosová & Čarnický (2003), Bobáková & Hečková (2007), and Pavličková (2013), Slovakia´s production structure is still raw and material abundant and specialised in simpler steps of production processes benefiting from lower production costs, and this specialisation continues to persist at present. The results fit into the expectations of international trade theory that transition countries newly integrated into foreign trade compete with low wages and seek to undercut prices in standardised markets. However, we can see some changes in the specialisation and competitiveness of Slovak exports. Confirming the expectations of Borbély (2006), integration into the EU and the eurozone stimulated structural adjustment and economic specialisation and attracted capital inflows. As a result of FDI and the change in the structure of the economy, the quality of production has risen. A slight shift towards the export of more sophisticated products promotes more sustainable development. However, the present study has its limitations. The results are based on static data analysis. They nevertheless provide a basis for further investigation in the form of an analysis of the dynamics of comparative advantages or an extension of the comparison of export competitiveness from the European market to the world market.

5. CONCLUSION

Maintaining and increasing competitiveness is one of the fundamental conditions of a country´s economic growth and development. Applying export data to the RCA index has enabled us to identify in which product groups Slovakia achieves a comparative advantage and is competitive vis-a-vis the rest of the European Union. At present, Slovak exports are concentrated in several competitive sectors, namely the production of transport equipment (passenger cars, their parts and accessories), electrical and telecommunication equipment, and base metals and articles made from these (iron, steel, wires), the segments with a long tradition of production. Development in these sectors are the main drivers of the Slovak economy.

We can consider the following factors as the main sources of the identified Slovak comparative advantages which impact on the scope and specialisation of its foreign trade:

- *Strategic location*: The central location of Slovakia within Europe connects the markets of Eastern and Western Europe as well as the South and the North of Europe and brings production closer to the markets. Its location between the Czech Republic, Poland, and Hungary makes it possible to take advantage of external economies of scale, especially in the automotive industry, which is concentrated not only in production in these countries, but also in customer-supplier relations.
- *Industrial tradition*: A rich industrial heritage in the former arms and heavy industries underpinned the enlargement of the automotive, electrotechnical, engineering, and metal-processing sectors during and after the transition.
- *Participation in international institutions and blocs:* Membership of the EU and EMU, WTO, OECD, and NATO has removed barriers to trade with member countries, which has increased the scope of mutual trade and investment flows and accelerated the specialisation and technological improvement of production. Open borders have allowed foreign companies, mainly from the EU, to outsource part of their production process to Slovakia via FDI.
- *Low labour costs combined with relatively high labour productivity*: The low labour costs at the beginning of the reporting period attracted investments in

labour-intensive types of production, including processing operations such as car assembly or electrical engineering.

- *The availability of highly specialised professionals and a skilled workforce:* The beginning of the transformation process was accompanied by the emergence of a high level of structural unemployment, characterised by the fact that Slovakia had a large number of available workers with experience and skills from the manufacturing industry without the possibility of employment in the defunct arms industry.
- *Low operational costs*: Slovakia offers not only low labour costs, but also other operating costs for industrial production, such as maintenance, rents or supplies or shared services centres (including IT centres). Moreover, participation in the eurozone also eliminates foreign currency conversion costs for transactions with headquarters, suppliers, and purchasers.
- *Evolving infrastructure:* Slovakia has good rail connections between the East and the West and is building new highways that connect other parts, making it easier to import parts and export finished products to other countries.
- *High R&D potential:* This is represented by the presence of R&D centres and technology communities, extensive R&D and innovation networks, R&D incentives and collaborations between companies and local universities.
- *A favourable investment environment:* Slovakia´s stable market economy with high growth potential, economic reforms together with government incentives, mainly in the form of the preferential tax regime, job contributions or discounted prices for real estate, have attracted huge foreign direct investments from developed countries.

Slovakia's position as a former centrally planned economy has long been affected by many historical factors in terms of international trade. As a transition economy with low costs and prices, its trade in the early 2000s was price competitive and based on the export of labour- and capital-intensive products with low added value. Even after two decades, Slovak production is still competitive on the European market mainly through prices. However, integration into the European trading area and the gradual catching up with more advanced member states have caused a slight loss of price competitiveness. At the same time, as a result of FDI and the changing structure of the economy, the quality of its production has grown at a higher rate, compensating the increase in

prices, and Slovakia has experienced an improvement in non-price competitiveness.

Based on our results, we can define the risks of the observed patterns of foreign trade. Production is import intensive with a low value added and is price elastic. The high share of foreign trade in the economy and its concentration in several industries also have drawbacks. Due to the high level of openness and extensive trade flows, the Slovak economy is very exposed to external conditions and strongly depends on the economic development of its foreign trade partners and their demand. However, the long-term development of economic performance cannot depend solely on the revenues of the main trading partners in selected sectors, but must be based primarily on an increase in the added value of export production. This is a problem in the automotive industry, as research and development are carried out in the FDI home countries and only assembly operations are carried out in Slovakia.

The sources of competitiveness, mainly based on lower prices, are weak in terms of sustainability. The problem arises from focusing the economy on manufacturing, which requires a considerable labour force. In recent years, the automotive and electronics sector, in particular, have been facing labour shortages and rising labour costs. This is a challenge that almost all industries in the Slovak economy are facing. Thus, labour costs, which were one of the main sources of comparative advantages, have risen, but not been accompanied by growth in productivity. This together with high inflation may cause a loss in price advantage. The emerging lack of skilled workers and rising labour costs are considered to be two of the challenges for Slovakia. Furthermore, international markets are making Slovak exports increasingly vulnerable to competition from emerging low-wage regions. Another challenge is the transition to a green economy enforced by the EU, which may significantly affect the automotive industry as the basic pillar of the Slovak economy. The response to all these threats requires investment and the development of new technologies. Maintaining the competitiveness of the Slovak economy requires a high degree of innovative ability of domestic companies. However, its exports are currently dominated by production on the basis of FDI. Their impact on the Slovak economy has been and still is significant and can be assessed positively. However, the problem is that the development of science and research with the consequent

creation of industries with higher added value has not been supported in parallel with FDI. Policy makers should therefore focus on support, particularly on those foreign investments that support domestic innovation potential, diversify production, and create backward and forward linkages replacing imports, and reconsider the investment incentives that do not currently meet such criteria. Too much focus on the production of the automotive and electrical industries, goods with low added value, and weak territorial diversification should be avoided.

ACKNOWLEDGEMENTS

This article was supported by the Grant Agency VEGA, under project no. 1/0679/23 entitled "Zadlžovanie sa ekonomických subjektov a krajín v Európskej únii".

REFERENCES

Aiginger, K. (1997). The use of unit values to discriminate between price and quality competition. *Cambridge Journal of Economics*, *21*(5), 571–592, https://doi.org/10.1093/oxfordjournals.cje.a013687

Aiginger, K. (1998). Unit values to signal the quality position of CEECs. The competitiveness of transition economies. *OECD Proceedings, WIFO, WIIW and OECD Centre for Co-operation with Non-members, Vienna*.

Aiginger, K. (2001). *Europe´s position in quality competition. Background report for the European competitiveness report 2000.* (Enterprise Papers No. 4, 2001) Brussels: DG Enterprise.

Balassa, B. (1965). Trade liberalisation and ´revealed´ comparative advantage. *The Manchester School*, *33*(2), 99–123.

Bobáková, V., & Hečková, J. (2007). Analýza konkurencieschopnosti slovenského spracovateľského priemyslu [The competitive abilities analysis of processing industry of the Slovak republic]. *Politická ekonomie. 2007*(4), 490–507. https://doi.org/10.18267/j.polek.610

Borbély, D. (2006). *Trade Specialisation in the Enlarged European Union*. Heidelberg: Physica-Verlag.

Brinčíková, Z. (2020). Špecifiká vývoja zahraničného obchodu SR. In *Revue sociálno-ekonomického rozvoja,* (Vol. 6(1), pp. 5–16). Bratislava: Katedra sociálneho rozvoja a práce NHF EU. ISSN 2453-6148.

Brinčíková, Z. (2022). External competitiveness of the V4 countries. In *BEE Conference: The 7th Business & Entrepreneurial Economics 2022* (pp. 10–20), Plitvice Lakes, Croatia. ISSN 2459-5225.

Brito, R. D. D. O., Chami, J., & Souza, E. C. D. (2012). *The quality-cost choice of R&D in the nations' exports*. (Insper Instituto de Ensino e Pesquisa Working Papers WPE:286), https://repositorio.insper.edu.br/bitstream/11224/5925/1/2012_wpe286.pdf.

Coldwell, D. (2000). The question of international competitiveness. *International Advances in Economic Research*, *6*(3), 417–426.

Darmo, L. (2019). Prílev priamych zahraničných investícií do krajín V4. In *Vybrané aspekty makroekonomického prostredia v Slovenskej republike a v Európskej únii : zborník vedeckých statí,* 36–44. Bratislava: Vydavateľstvo EKONÓM.

Edwards, L., & Schoer, V. (2002). Measures of competitiveness: A dynamic approach to South Africa's trade performance in the 1990s. *South African Journal of Economics*, *70*(6), 1008–1046, https://doi.org/10.1111/j.1813-6982.2002.tb00055.x

Fertö, I., & Hubbard, L. J. (2003). Revealed comparative advantage and competitiveness in Hungarian agri-food sectors. *The World Economy*, *26*(2), 247–259, https://doi.org/10.1111/1467-9701.00520

Fitzpatrick, J. (1983). Why textile and clothing industries are shifting to the third world. *Long Range Planning*, *16*(6), 42–45, https://doi.org/10.1016/0024-6301(83)90006-7

French, S. (2017). Revealed comparative advantage: What is it good for? *Journal of International Economics*, *106*, , 83–103, https://doi.org/10.1016/j.jinteco.2017.02.002

Greenaway, D., & Milner, C. (1993). *Trade and Industrial Policy in Developing Countries: A Manual of Policy Analysis.* The Macmillan Press.

Heckscher, E. F. (1919). The effect of foreign trade on the distribution of income. *Ekonomisk Tidskrift*, *21*, 497–512.

Kostoska, O., & Mitrevski, P. (2016). Evaluating foreign trade specialization and qualitative competitiveness of a transition economy: The case of Macedonia. *Empirica*, *43*(3), 633–655,https://doi.org/10.1007/s10663-015-9308-0

Krugman, P. R., Obstfeld, M., & Melitz, M. (2018). *International Economics: Theory & Policy* (11th ed.). Harlow: Pearson.

Liesner, H. H. (1958). The European common market and British industry. *Economic Journal*, *68*(270), 302–316, https://doi.org/10.2307/2227597

McGeehan, J. M. (1968). Competitiveness: A survey of recent literature. *The Economic Journal*, *78*(310), 243–262. https://doi.org/10.2307/2229462

OECD (1992). *Technology and the Economy: The Key Relationships*. Paris: OECD

Ohlin, B. (1933). *Interregional and International Trade*. Cambridge, MA: Harvard University Press.

Pavličková, V. (2013). The competitiveness of Slovak foreign trade in the European market. *Economic Annals, 58*(196), 7–49, https://doi.org/10.2298/EKA1396007P

Peneder, M. (1999). *Intangible Investment and Human Resources: The New WIFO Taxonomy of Manufacturing Industry*. (WIFO Working Papers 114).

Ricardo, D. (1817). On the Principles of Political Economy and Taxation (John Murray, London). In P. Sraffa, (Ed.). *The Works and Correspondence of David Ricardo, Vol. 1*, Cambridge: Cambridge University Press.

Vokorokosová, R., & Čarnický, Š. (2003). Komparatívne a konkurenčné výhody Slovenska v globálnom obchodnom prostredí. *Ekonomický časopis*, *51*(9), 1065–1076.

Vollrath, T.L. (1991). A theoretical evaluation of alternative trade intensity measures of revealed comparative advantage. *Weltwirtschaftliches Archiv*, *127*, 265–280, https://doi.org/10.1007/BF02707986

Wolfmayr, S. (1998). Trade performance of CEECs according to technology classes. In *OECD proceedings The Competitiveness of Transition economies*, *OECD-Paris, Cedex*.

Yilmaz, B., & Ergun, S.J. (2003). *The foreign trade pattern and foreign trade specialization of candidates of the European Union*. (Ezoneplus Working Paper No. 19).

Yu, R., Cai, J., & Leung, P. (2009). The normalized revealed comparative advantage index. *The Annals of Regional Science*, *43*(1), 267–282, https://doi.org/10.1007/s00168-008-0213-3

Zábojník, S., & Borovská, Z. (2021). Competitiveness of the Slovak Republic as a Determinant of its Success in Third Country Markets, In *SHS Web of Conferences* (Vol. 92, p. 09018). EDP Sciences.

Received: August 26, 2022
Accepted: September 28, 2023

APPENDIX 1

Table 2. RCA indices for Slovak foreign trade (SITC Divisions, 1999–2021)

Product/Time	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
0 Food and live animals	**0,44**	**0,39**	**0,42**	**0,41**	**0,37**	**0,46**	**0,62**	**0,62**	**0,55**	**0,48**	**0,49**	**0,50**	**0,54**	**0,55**	**0,48**	**0,44**	**0,44**	**0,43**	**0,42**	**0,40**	**0,41**	**0,41**	**0,43**
00 Live animals	0,80	0,73	0,75	0,91	0,71	1,08	1,36	1,34	1,29	1,07	1,16	1,26	1,39	1,48	1,60	1,46	1,31	1,23	1,22	1,03	0,98	0,95	0,97
06 Sugars, sugar preparations and honey	0,65	0,65	0,81	1,02	0,64	1,60	1,90	2,07	2,35	1,62	1,78	2,62	2,65	3,12	2,24	1,61	1,40	1,17	1,28	1,07	1,26	1,18	1,31
1 Beverages and tobacco	**0,36**	**0,34**	**0,33**	**0,30**	**0,27**	**0,23**	**0,20**	**0,16**	**0,16**	**0,13**	**0,15**	**0,12**	**0,16**	**0,16**	**0,12**	**0,12**	**0,11**	**0,10**	**0,09**	**0,11**	**0,11**	**0,13**	**0,18**
2 Crude materials, inedible, except fuels	**1,49**	**1,25**	**1,38**	**1,24**	**1,01**	**1,10**	**1,16**	**0,90**	**0,79**	**0,95**	**0,88**	**0,92**	**0,85**	**0,90**	**0,81**	**0,69**	**0,67**	**0,65**	**0,68**	**0,70**	**0,68**	**0,66**	**0,70**
22 Oil-seeds and oleaginous fruits	3,12	1,85	3,49	2,75	1,30	2,91	2,56	1,98	2,10	2,32	2,82	3,19	3,73	4,72	3,50	1,93	1,71	1,62	1,77	1,99	1,77	1,61	1,80
24 Cork and wood	3,31	2,99	3,12	2,75	2,19	2,21	2,86	2,14	1,58	1,96	2,27	1,99	1,69	1,80	1,59	1,44	1,31	1,32	1,25	1,25	1,24	1,16	1,21
25 Pulp and waste paper	1,27	1,12	1,07	1,10	1,00	0,92	0,94	0,59	0,66	0,57	0,69	0,86	0,72	0,78	0,81	0,84	0,95	0,77	0,86	0,82	0,79	0,92	0,89
27 Crude fertilizers and minerals	2,59	2,38	2,40	1,99	1,77	1,75	1,72	1,52	1,53	1,59	1,38	1,34	1,41	1,18	1,05	1,10	1,12	0,89	0,97	1,09	1,09	1,03	0,98
3 Mineral fuels, lubricants and rel. materials	**2,02**	**2,10**	**2,13**	**1,92**	**1,53**	**1,81**	**1,20**	**1,04**	**0,90**	**0,76**	**0,86**	**0,89**	**0,91**	**0,74**	**0,71**	**0,65**	**0,68**	**0,62**	**0,65**	**0,52**	**0,55**	**0,66**	**0,53**
33 Petroleum, petrol. products and rel. materials	2,67	2,49	2,65	2,38	1,88	2,04	1,68	1,31	1,16	0,98	1,11	0,89	0,98	0,81	0,84	0,74	0,78	0,70	0,69	0,56	0,54	0,61	0,56
35 Electric current	0,59	1,71	1,88	2,52	2,51	3,12	0,04	0,65	0,20	0,33	0,24	1,56	2,40	2,53	1,93	2,02	1,90	1,67	2,07	1,56	2,16	2,63	1,25
4 Animal and vegetable oils, fats and waxes	**0,32**	**0,32**	**0,36**	**0,31**	**0,42**	**0,58**	**0,48**	**0,26**	**0,22**	**0,18**	**0,59**	**0,44**	**0,67**	**1,17**	**0,83**	**0,58**	**0,47**	**0,39**	**0,21**	**0,26**	**0,16**	**0,42**	**0,35**
5 Chemicals and related products, n.e.s.	**0,60**	**0,60**	**0,53**	**0,46**	**0,36**	**0,36**	**0,39**	**0,37**	**0,33**	**0,32**	**0,26**	**0,28**	**0,31**	**0,26**	**0,29**	**0,29**	**0,28**	**0,28**	**0,27**	**0,25**	**0,24**	**0,22**	**0,24**
56 Fertilizers (other than those of group 272)	2,33	2,97	3,46	2,82	2,16	2,61	2,19	1,96	1,43	1,41	1,38	1,30	1,67	1,46	1,67	1,42	1,65	1,48	1,45	1,45	1,35	1,35	1,71
6 Manufactured goods classified chiefly by material	**1,66**	**1,63**	**1,72**	**1,69**	**1,53**	**1,55**	**1,55**	**1,43**	**1,25**	**1,24**	**1,24**	**1,26**	**1,23**	**1,25**	**1,19**	**1,19**	**1,21**	**1,21**	**1,25**	**1,23**	**1,20**	**1,12**	**1,24**
61 Leather, leather manufactures, dressed furskins	1,22	1,10	1,31	1,38	1,34	1,14	1,24	1,14	1,00	0,82	1,07	1,09	1,00	1,09	0,99	1,04	1,31	1,63	1,84	1,68	1,31	1,32	1,17
62 Rubber manufactures, n.e.s.	2,15	2,10	2,48	2,87	2,61	2,63	2,71	2,35	2,01	1,94	1,77	2,05	2,15	2,24	2,38	2,48	2,90	2,83	2,83	2,80	2,73	2,57	2,54
63 Cork and wood manufactures (excl. furniture)	1,10	1,15	1,37	1,50	1,34	1,40	1,56	1,49	1,37	1,33	1,61	1,09	1,02	0,94	0,90	0,90	0,99	0,97	1,09	1,12	1,11	0,99	1,01
64 Paper, paperboard and articles thereof	1,53	1,55	1,65	1,54	1,19	1,27	1,28	1,23	1,10	1,09	1,10	0,90	0,85	0,84	0,85	0,82	0,85	0,89	0,84	0,83	0,86	0,83	0,89
65 Textile yarn, fabrics, made-up articles, etc.	1,13	1,11	1,14	1,18	1,02	1,06	1,08	1,01	1,02	0,95	0,85	0,77	0,91	0,83	0,82	0,86	0,87	0,81	0,83	0,80	0,82	0,73	0,78
66 Non-metallic mineral manufactures, n.e.s.	1,22	1,08	1,13	1,09	0,97	0,91	0,92	0,80	0,73	0,77	0,77	0,70	0,73	0,80	0,67	0,63	0,58	0,64	0,63	0,68	0,73	0,75	0,74
67 Iron and steel	3,26	3,21	3,29	3,05	2,85	2,64	2,50	2,18	1,77	1,80	1,88	2,04	1,77	1,79	1,83	1,79	1,68	1,72	1,82	1,75	1,60	1,52	2,02
68 Non-ferrous metals	1,56	1,47	1,55	1,46	1,13	1,11	0,94	1,16	0,84	0,67	0,82	1,00	0,97	1,11	0,78	0,86	0,81	0,71	0,76	0,70	0,74	0,63	0,68
69 Manufactures of metals, n.e.s.	1,23	1,17	1,28	1,32	1,26	1,33	1,39	1,28	1,26	1,25	1,27	1,25	1,24	1,21	1,17	1,20	1,23	1,26	1,25	1,24	1,24	1,20	1,20
7 Machinery and transport equipment	**0,92**	**0,91**	**0,89**	**0,94**	**1,14**	**1,10**	**1,08**	**1,19**	**1,31**	**1,38**	**1,44**	**1,43**	**1,41**	**1,49**	**1,54**	**1,53**	**1,51**	**1,54**	**1,53**	**1,56**	**1,60**	**1,69**	**1,69**
73 Metalworking machinery	1,30	1,22	1,19	1,18	1,04	0,91	0,82	0,84	0,79	0,77	0,60	0,62	0,67	0,62	0,64	0,67	0,72	0,72	0,73	0,70	0,73	0,76	0,77
74 General industrial machinery and equipment, etc.	0,70	0,80	0,88	0,86	0,79	0,84	0,90	0,86	0,79	0,76	0,72	0,89	0,99	0,93	0,94	0,96	1,03	1,07	1,11	1,07	1,10	1,08	1,13
76 Telecommunications and sound-recording and ...	0,41	0,35	0,55	0,51	0,43	0,74	1,45	2,77	3,82	4,84	5,75	5,12	4,74	5,05	5,40	5,28	4,68	4,71	4,76	4,28	3,89	3,45	3,56
77 Electrical machinery, apparatus and appliances, etc.	1,02	0,90	0,96	1,09	1,17	1,28	1,24	1,15	1,05	1,04	1,06	1,03	0,99	0,91	0,94	0,99	1,03	1,03	1,02	1,04	1,04	0,99	0,99
78 Road vehicles (including air-cushion vehicles)	1,61	1,83	1,59	1,66	2,24	1,89	1,55	1,73	2,00	1,97	2,01	1,98	2,01	2,30	2,34	2,27	2,29	2,33	2,23	2,54	2,76	3,14	3,11
8 Miscellaneous manufactured articles	**1,03**	**1,02**	**1,09**	**1,17**	**1,09**	**0,96**	**0,94**	**0,89**	**0,91**	**0,89**	**0,92**	**0,92**	**0,93**	**0,87**	**0,85**	**0,89**	**0,86**	**0,78**	**0,80**	**0,81**	**0,77**	**0,75**	**0,74**
81 Prefabricated buildings; sanitary, plumbing, etc.	1,31	1,33	1,67	2,02	1,74	1,66	2,23	2,42	2,88	2,60	2,57	2,44	2,30	2,30	2,40	2,56	2,48	2,24	2,15	2,29	2,40	2,58	2,42
82 Furniture and parts thereof; bedding, mattresses, etc.	1,27	1,73	1,89	2,40	2,78	1,98	1,66	1,43	1,37	1,32	1,51	1,39	1,31	1,28	1,34	1,33	1,30	1,30	1,37	1,43	1,30	1,17	1,14
84 Articles of apparel and clothing accessories	2,00	1,80	1,80	1,75	1,32	1,23	1,15	0,95	0,88	0,83	0,79	0,91	0,92	0,89	0,83	0,93	0,85	0,66	0,65	0,68	0,64	0,57	0,58
85 Footwear	2,09	2,11	2,05	2,26	2,17	2,11	2,01	1,71	1,75	1,96	2,07	2,09	2,35	1,88	2,02	2,05	1,90	1,65	1,61	1,55	1,34	1,27	1,19
9 Commodities and transactions not classified elsewh	**0,60**	**0,57**	**0,52**	**0,43**	**0,01**	**0,21**	**1,20**	**0,47**	**0,71**	**0,54**	**0,57**	**0,14**	**0,11**	**0,12**	**0,17**	**0,23**	**0,19**	**0,21**	**0,22**	**0,31**	**0,32**	**0,14**	**0,11**
96 Coin (other than gold coin), not being legal tender	0,07	0,03	4,65	9,73	2,84	13,43	19,89	5,20	8,38	9,14	11,86	8,07	2,50	4,83	9,75	9,06	14,17	9,87	10,98	12,16	21,25	6,22	2,08

Source: Author´s calculations, Eurostat data

APPENDIX 2

Table 3. Results of the REVELAST method for Slovak foreign trade (SITC Divisions, 1999–2021)

Product/Time	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
0 Food and live animals	**SPC**	**UQC**	**UPC**	**UQC**	**UQC**	**UQC**	**SPC**	**SPC**	**UQC**	**UQC**	**SPC**	**UQC**	**SPC**	**SPC**	**SPC**	**SPC**	**SPC**	**SPC**	**SPC**	**SPC**	**SPC**	**SPC**	**SPC**
00 Live animals	SQC	SQC	SQC	SPC	SPC	UPC	UPC	SQC	SQC	SQC	SQC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC
06 Sugars, sugar preparations and honey	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC
1 Beverages and tobacco	**UQC**	**UQC**	**UQC**	**UQC**	**UQC**	**UPC**	**UQC**	**UQC**	**UQC**	**UQC**	**UQC**	**UQC**	**UQC**	**UQC**	**UQC**	**UQC**	**UQC**	**UQC**	**UQC**	**UQC**	**UQC**	**UQC**	**UQC**
2 Crude materials, inedible, except fuels	**UPC**	**UQC**	**UQC**	**UPC**	**UPC**	**UPC**	**UPC**	**UPC**	**UPC**	**UPC**	**UPC**	**UPC**	**UPC**	**UPC**	**UPC**	**UQC**	**UPC**	**UPC**	**UPC**	**UPC**	**UQC**	**UQC**	**UQC**
22 Oil-seeds and oleaginous fruits	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC
24 Cork and wood	SPC	SPC	SPC	SPC	SPC	SQC	SQC	SQC	SQC	SQC	SQC	SQC	SQC	SPC	SPC	SPC	SPC	SPC	SQC	SQC	SQC	SQC	SQC
25 Pulp and waste paper	UPC	UPC	UPC	UPC	UQC	SPC	UQC	UQC	UQC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC
27 Crude fertilizers and minerals	SPC	SPC	SPC	SPC	SPC	SPC	SQC	SPC	SQC	SQC	SPC	SPC	SQC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC
3 Mineral fuels, lubricants and rel. materials	**UPC**	**UPC**	**UPC**	**UPC**	**UPC**	**UPC**	**UPC**	**UPC**	**UPC**	**UPC**	**UPC**	**UPC**	**UPC**	**UPC**	**UPC**	**UPC**	**UPC**	**UPC**	**UPC**	**UPC**	**UPC**	**UPC**	**UPC**
33 Petroleum, petrol. products and rel. materials	UPC	UPC	UPC	UPC	UPC	UPC	UPC	UPC	UPC	UPC	UPC	UPC	UPC	UPC	UPC	UPC	UPC	UPC	UPC	UPC	UPC	UPC	UPC
35 Electric current	UPC	UQC	SQC	SQC	UQC	SPC	*nd*	*nd*	*nd*	*nd*	*nd*	*nd*	*nd*	*nd*	*nd*	*nd*	*nd*	*nd*	*nd*	*nd*	*nd*	*nd*	*nd*
4 Animal and vegetable oils, fats and waxes	**UQC**	**UQC**	**UQC**	**UQC**	**UQC**	**SPC**	**UPC**	**UQC**	**UQC**	**UQC**	**UPC**	**UPC**	**UPC**	**UQC**	**UPC**	**UQC**	**UPC**	**UQC**	**UQC**	**UQC**	**UQC**	**UPC**	**UPC**
5 Chemicals and related products, n.e.s.	**SPC**	**SPC**	**SPC**	**SPC**	**SPC**	**SPC**	**SPC**	**UQC**	**UQC**	**UQC**	**UQC**	**UQC**	**UQC**	**UQC**	**UQC**	**UQC**	**UQC**	**UQC**	**UQC**	**UQC**	**UQC**	**UQC**	**UQC**
56 Fertilizers (other than those of group 272)	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC
6 Manufactured goods classified chiefly by material	**SPC**	**SPC**	**SPC**	**SPC**	**SPC**	**SPC**	**SPC**	**SPC**	**SPC**	**SPC**	**SPC**	**SPC**	**SPC**	**SPC**	**SPC**	**SPC**	**SPC**	**SPC**	**SPC**	**SPC**	**SPC**	**SPC**	**SPC**
61 Leather, leather manufactures, dressed furskins	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC
62 Rubber manufactures, n.e.s.	SPC	SPC	SPC	SPC	SPC	UPC	SPC	SPC	SPC	SQC	SPC	SPC	SPC	SPC	SPC	SQC	SQC	SQC	SPC	SPC	SPC	SPC	SPC
63 Cork and wood manufactures (excl. furniture)	SPC	SPC	SPC	SPC	SPC	SQC	SQC	SQC	UPC	SPC	SQC	UPC	SQC	SPC	SQC	SQC	SPC	SPC	SPC	SPC	SPC	SQC	SPC
64 Paper, paperboard and articles thererof	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SQC	SPC	SPC	SPC	SPC	SQC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SQC	SPC	SPC
65 Textile yarn, fabrics, made-up articles, etc.	UQC	SPC	SPC	SPC	SPC	UPC	SPC	SPC	UQC	UQC	SPC	UQC	UPC	UQC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC
66 Non-metallic mineral manufactures, n.e.s.	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC
67 Iron and steel	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC
68 Non-ferrous metals	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SQC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	UQC	UQC	UQC	UQC	UQC	UQC	UQC	UQC
69 Manufactures of metals, n.e.s.	UQC	SPC	UQC	SPC	SPC	UPC	UPC	UQC	UPC	UPC	UPC	UPC	UPC	UPC	UPC	UPC	UPC	UPC	UPC	UPC	UPC	UPC	UPC
7 Machinery and transport equipment	**SPC**	**SPC**	**SPC**	**SPC**	**SPC**	**UPC**	**SPC**	**SPC**	**SPC**	**SPC**	**SQC**	**SQC**	**SQC**	**UPC**	**UPC**	**UPC**	**UPC**	**SPC**	**SQC**	**SPC**	**SPC**	**SQC**	**SQC**
73 Metalworking machinery	SPC	SPC	SPC	SPC	SPC	UQC	UQC	UQC	UPC	UPC	SPC	UQC	UQC	UPC	UQC	UQC	UQC	UQC	UPC	UQC	UQC	SPC	UPC
74 General industrial machinery and equipment, etc.	UPC	SPC	SPC	SPC	SPC	UPC	SPC	SPC	UPC	SPC	SPC	UPC	UPC	UPC	UPC	UPC	SQC	SPC	SQC	SPC	SPC	SPC	SPC
76 Telecommunications and sound-recording and ...	SPC	SPC	SPC	SPC	SPC	UPC	SPC	UPC	UPC	SPC	SPC	SPC	SPC	SQC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC
77 Electrical machinery, apparatus and appliances, etc.	SPC	SPC	UQC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	UQC	UPC	UPC	UPC	UQC	SPC	SPC	UQC	UQC	UQC
78 Road vehicles (including air-cushion vehicles)	SQC	SQC	UPC	SQC	SQC	SQC	SQC	SQC	UPC	UPC	UPC	UPC	SQC	UPC	UPC	UPC	UPC	SQC	SQC	SQC	SQC	SQC	SQC
8 Miscellaneous manufactured articles	**SPC**	**SPC**	**SPC**	**SPC**	**SPC**	**SPC**	**UQC**	**SPC**	**UQC**	**UQC**	**SPC**	**SPC**	**SPC**	**SPC**	**SPC**	**SPC**	**SPC**	**UQC**	**UPC**	**UPC**	**UPC**	**UPC**	**UPC**
81 Prefabricated buildings; sanitary, plumbing, etc.	SPC	SPC	SPC	SPC	SPC	SQC	SQC	SQC	UPC	SQC	UPC	SQC	UPC	SQC	SQC	SQC	SPC	SQC	SQC	SQC	SQC	SQC	SQC
82 Furniture and parts thereof; bedding, mattresses, etc.	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	UQC	UPC	UPC	UPC	UPC
84 Articles of apparel and clothing accessories	SQC	SQC	UPC	SQC	SQC	UPC	UPC	UPC	UPC	UPC	UPC	UPC	UPC	UPC	UQC	UQC	UPC	UPC	UPC	UQC	UPC	UPC	UPC
85 Footwear	SQC	SQC	SQC	SQC	SQC	UPC	UPC	UPC	UPC	UPC	SQC	SQC	UPC	UPC	SQC	SQC	UPC	UPC	UPC	UPC	UPC	UPC	UPC
9 Commodities and transactions not classified elsewl	**SPC**	**SPC**	**SPC**	**SPC**	**SPC**	**SPC**	**SPC**	**SPC**	**SPC**	**SPC**	**SPC**	**SPC**	**SPC**	**SPC**	**SPC**	**SPC**	**SPC**	**SPC**	**SPC**	**SPC**	**SPC**	**SPC**	**SPC**
96 Coin (other than gold coin), not being legal tender	*nd*	*nd*	*nd*	*nd*	SPC	*nd*	*nd*	*nd*	*nd*	SPC	SPC	SPC	SPC	SPC	SPC	SQC	SQC	SPC	UPC	SPC	SPC	SPC	SQC

Source: Author´s calculations, Eurostat data

ECONOMIC ANNALS, Volume LXVIII, No. 239 / October – December 2023
UDC: 3.33 ISSN: 0013-3264

https://doi.org/10.2298/EKA2339059R

*Marija Radulović**
*Milan Kostić*****

ANALYSIS OF THE IMPACT OF FDI ON THE HOST COUNTRY MARKET CONCENTRATION: EVIDENCE FROM THE SERBIAN BANKING MARKET

ABSTRACT: *Foreign direct investment (FDI) is an important factor in economic development. The impact of FDI on the host country is achieved by transferring capital, knowledge, technology, organisational structure, and strategies. In addition, FDI affects the condition of competition in host country markets, which is the focus of this study. Our purpose is to estimate the impact of FDI on market concentration and competition conditions using the example of the Serbian banking market. The autoregressive distributed lag (ARDL) approach was used to test the long- and short-run relationship between market concentration, FDI, and the number of banks from Q4 2004 to Q2 2019. The results suggest that increases in FDI volume reduce the Serbian banking market's concentration level in the long and short run. On the other hand, a decrease in the number of banks leads to an increase in market concentration in the long and short run. Our study's recommendation for competition authorities is to pay more attention to the concentration of undertakings, especially in financial sectors such as the banking market. The process of concentration of undertakings carries a high risk of violating competition conditions, and authorities need to mitigate this risk.*

KEY WORDS: *FDI, market concentration, banking*

JEL CLASSIFICATION: L13, L41, L80, G21

* Faculty of Economics University of Kragujevac, e-mail: marijaradulovicvb@gmail.com, ORCID: 0000-0002-4037-415X
** Faculty of Economics University of Kragujevac, e-mail: mkostic@kg.ac.rs, ORCID: 0000-0003-2883-1474

1. INTRODUCTION

The impact of foreign direct investment (FDI) on the host economy is high. These investments play an important role in development in national economies as one of the drivers of growth (Carp, 2015). Most authors agree that increased FDI inflow increases economic activity by transferring capital, knowledge, technology, new organisational structure, and strategies to the host country (Pavlínek, 2004; de Mello, 1997; Saini & Singhania, 2018; Knoerich, 2017). However, the impact on development depends on the technological level and specifics of the host country, i.e., the size of the technological gap between a donor country and recipient country of FDI (de Mello, 1999). In addition, the development effects of FDI are influenced by the general level of education and population health, the nature of trade policy, the level of competitiveness, and the management system in the host country.

In the past, a number of researchers studied the impact of FDI on the conditions of competition, particularly market concentration. Market concentration is a very significant indicator of competition in the market. Although not the only one, it is certainly the most important indicator of competition conditions (Maksimović & Kostić, 2012). Important as it is for other sectors, it is also important for financial markets, especially the banking market and evaluating the competition in it. It has turned out that banks' business policy depends on competition conditions and when banks' concentration in the market declines, they turn to non-interest income, i.e. commissions (Hahm, 2008; Vozková & Teplý, 2018). Furthermore, the level of risk that banks are willing to take in their business depends on the level of concentration and the conditions of competition (Shy & Stenbacka, 2004). Kick and Prieto (2015) argue that banks' incentive to take risk also increases with increased competition. On the other hand, if there is an increase in market concentration, the interest rate (as the price of capital) tends to rise, which means more expensive capital for new investments. This could reduce economic growth, especially when there is a lack of alternative financial services. As one can see in Figure 1, after decreases in the market concentration in the Serbian banking market from 2004 to 2007, there is a trend of increasing market concentration from 2011 to 2017. We seek to investigate if that process is caused by FDI inflows.

There is no clear answer to be found on how FDI impacts competition in the small number of papers dealing with the relationship between FDI and competition. Some authors claim an increase in FDI inflows reduces concentration (Driffield, 2001; Forte & Sarmento, 2014; Orazalin & Dulambaeva, 2013; Panjaitan et al., 2016). On the other hand, some authors claim that FDI worsens the conditions of competition by increasing concentration in the markets where these investments are made (Cho, 1990; Lall, 1979; Bourlakis, 1987; Willmore, 1989; Singh, 2011; Wu & Tu, 2014).

We will therefore attempt to explain the relationship between FDI and market concentration. The analysis will focus on the banking market of the Republic of Serbia. The aim of this paper is to examine whether there is a long- and short-run relationship between FDI and market concentration as a very important indicator of competition. This study's main motivation is to provide recommendations for improving the conditions of competition in an important market for developing countries such as Serbia. Of course, use of concentration indicators does not tell the whole story about competition conditions, which also depend on some other factors (Encaoua & Jacquemin, 1980), such as behaviour of undertakings, potential new entrants, and potential substitutes (Motta, 2008). Estimation of these factors exceeds the scope of this research. The goal of this study is to identify the real influence of FDI on market concentration and competition conditions, and how to improve competition policy and its effects in terms of regulation of FDI inflows, concentration of undertakings and reduction in the number of banks. Kumar (2018) suggests that the consumers benefit more from larger banks and more local branches than from the negative price effects due to market power.

The following research hypotheses are the starting points of this study:

H1: An increase in FDI amount reduces market concentration in the Serbian banking market. The assumption is that a larger volume of FDI decreases market concentration and thus positively impacts the conditions of competition.

H2: A decrease in the number of banks (NB) increases market concentration in the Serbian banking market. The hypothesis is based on the reality of the Serbian banking sector, which is characterised by a reduction in the number of banks.

The paper consists of the following. In addition to the introduction and conclusion, the paper presents three interconnected parts. In the next part, Section 2, the theoretical basis and a review of the previous literature on FDI impact market concentration are provided. In the third section, the research's methodological basis is presented, and the results of the study are provided in Section 4.

2. LITERATURE REVIEW

The literature examining the impact of FDI on market concentration, especially in the banking sector, is not extensive. Most studies examine the manufacturing industry and countries outside Europe. The research results are very diverse. Some articles have confirmed that an increase in the inflow or volume of FDI reduces market concentration, thus improving competition conditions. On the other hand, some articles suggest that an increase in the inflow or volume of FDI increases market concentration. Some authors claim that the impact of FDI differs in the long and short run (Petrochilos, 1989). Furthermore, some studies argue that there is no statistically significant impact of FDI on market concentration (Sathye, 2002).

Petrochilos (1989) examined the effects of FDI on concentration in the Greek manufacturing industry using concentration ratios of the five largest companies (CR5) (i.e. the market share of the five largest companies). He found that in the short run, FDI decreases concentration, while in the long run, FDI increases concentration level in the Greek manufacturing industry. Driffield (2001) investigated the impact of FDI volume on market concentration in the manufacturing industry of Great Britain between 1983 and 1992. Using the concentration ratios of the five largest companies (CR5) as the dependent variable, Driffield found that a larger volume of FDI reduces market concentration.

Singh (2011) examined the impact of FDI volume on market concentration in India's manufacturing industry between 2001 and 2006. Panel regression analysis was used to analyse the data, where the concentration ratio CR3 (market share of the three largest companies) was used as the dependent variable, while the share of foreign companies in total industry sales (FDI) and the market growth rate were used as independent variables. The research results showed that a one per

cent change in the FDI variable led to an increase in market concentration of 24.90 per cent. In contrast, Forte and Sarmento (2012), using a panel regression analysis of data from 2006 to 2009, found that a rise in FDI volume lowered market concentration in Portugal's manufacturing industry. The concentration ratio of the four largest firms (CR4) was used as the dependent variable, while the share of foreign firms in the total manufacturing industry sales (used as FDI volume), total industry sales, and the market growth rate were used as independent variables. Orazalin and Dulambaeva (2013) investigated the impact of FDI volume on market concentration and profitability of companies in 26 countries of Central and Eastern Europe (CEE) and the Commonwealth of Independent States (CIS) using the method of instrumental variables for data analysis. According to their results, the increase in FDI lowered market concentration in the observed countries. Kastratović (2018) examined the impact of FDI on market concentration in the manufacturing sector of Bosnia and Herzegovina and found that FDI reduced market concentration in industries with low levels of FDI, but after an optimal point, additional FDI could increase market concentration.

Mulyaningsih (2014) examined the relationship between stability and competition in Indonesia's banking sector between 1980 and 2010, finding a long-run relationship between competition and FDI. Using the vector error correction model (VECM) for data analysis, the author found that a large number of foreign banks in the market, a lower market concentration, and a more favorable macroeconomic environment led to increased competition in the sector. Wu and Tu (2014) investigated the impact of FDI on market concentration in the Chinese port industry between 1991 and 2011. By applying the Granger causality test, they determined that FDI inflow significantly increased market concentration in the port industry. Radulović (2018) examined the relationship between FDI and market structure in Serbia's automotive industry using the three firms concentration ratio (CR3) as the dependent variable and FDI inflow in the automotive industry as the independent variable. The results showed a statistically significant and positive relationship between FDI and market concentration in Serbia's automotive industry. Panjaitan et al. (2016) examined the impact of FDI, measured through the share of foreign banks in the total assets of the banking sector of Indonesia, on market concentration, measured through

CR3, between 2005 and 2014 and concluded that an increase in FDI of one unit led to a decrease in CR3 of 0.348 units.

Cho (1990) investigated the impact of FDI volume on market concentration in the Indonesian banking sector between 1974 and 1983. In his study, he used the concentration ratio of the four largest banks (CR4) as the dependent variable, while using the share of foreign-owned banks in the overall credit placements of the banking sector as a proxy of FDI volume. He found that the increase in FDI volume increased the market concentration in the Indonesian banking sector, as did increases in the number of banks.

Finally, Sathye (2002) in exploring the impact of FDI on market concentration in India's banking sector for 1997 and 1998 stands out among the authors. The Herfindahl–Hirschman Index (HHI) was used as a dependent variable, while a dummy variable that indicates whether or not a bank is foreign-owned (1 – foreign bank, 0 – domestic bank) was used as an independent variable. According to the research results, there was no statistically significant impact of FDI volume on market concentration.

Although the results are diverse, most of the studies suggest that increasing the total amount of FDI reduces market concentration and only some the reverse. This will be the starting point of our research. In many studies, the authors did not separately analyse the short- and long-run impacts of FDI on market concentration. Our study will improve on this by doing so.

3. DATA AND METHODOLOGY

The model used in our study is primarily based on the studies by Cho (1990) and Forte and Sarmento (2012), who investigated the impact of FDI and the number of banks on market concentration. In our study, the number of banks were used as a kind of control variable, but this has some impact that will be explained in Section 4. The reason for this is the constantly increasing market concentration in Serbia from 2011 to 2017, which could not be explained by the impact of FDI. The variable number of banks is also important because of the way foreign banks enter the domestic market. For example, the entry of foreign banks as a greenfield investment increases the number of banks, which should improve competition, while the entry of foreign banks through mergers and acquisitions does not

change the number of banks in the domestic market (Delis et al., 2016). The concentration ratio CR5 (the market share of the five largest undertakings or firms) was used as a dependent variable and obtained by calculating the share of the five largest banks' assets in the Serbian banking sector's total assets. This index ranges from 0 to 100 units. Markets in which the index is above 50 are considered highly concentrated, 25 to 50 moderately concentrated, and those below 25 are non-concentrated markets (Savić, 2001; Kostić, 2009). There are some better indicators for estimating market concentration, such as the Herfindahl–Hirschman Index (HHI), which has been widely used since the 1980s (Carlton & Perloff, 2005), but because of a lack of data the CR5 indicator was used in this study. CR5 is extensively used as an indicator of market concentration in the reports of the National Bank of Serbia. Papers dealing with the analysis of market concentration in the Serbian banking sector (Ljumović et al., 2014; Marinković, 2012; Filipović et al., 2016; Mirković, 2016) and some papers relating to the manufacturing sector (Petrochilos, 1989; Driffield, 2001) have also used CR5. CR5 is also used in the National Bank of Serbia's reports on bank supervision. The independent variables used in our model are (a) foreign presence (FP) as the amount of FDI in the Serbian banking industry determined through the share of foreign banks in the total assets of the Serbian banking sector (see Cho, 1990; Forte & Sarmento, 2012) and (b) the total number of banks (NB) in the Serbian market. The following equation constitutes the model:

$$CR5_t = f(FP_t, NB_t), \tag{1}$$

where $CR5_t$ is the concentration ratio of the five largest banks in Serbia, FP_t is the share of foreign banks in the total assets of the Serbian banking sector (this represents FDI in the Serbian banking sector), and NB_t is the total number of banks in the Serbian market, *t = Q4 2004, …, Q2 2019.*

We used quarterly data taken from the reports of the Bank Supervision Department of the National Bank of Serbia for the period from 2004 to 2019. The data were processed using the statistical software EViews 9.5 SV. The unit root test was used to determine whether variables are stationary or not. The autoregressive distributed lag (ARDL) approach was used to test whether there is a long- and short-term relationship between market concentration, FDI

(presented as FP), and the number of banks. The following ARDL model was estimated to test cointegration between CR5, FP, and NB:

$$\Delta CR5_t = c + \beta_1 CR5_{t-1} + \beta_2 FP_{t-1} + \beta_3 NB_{t-1} + \sum_{i=1}^{p} \delta_i \Delta CR5_{t-i} + \sum_{j=0}^{q1} \varphi_j \Delta FP_{t-j} + \sum_{l=0}^{q2} \gamma_l \Delta NB_{t-l} + \varepsilon_t \,, \quad (2)$$

where β_1, β_2, and β_3 are the long-run coefficients, c is the intercept, and ε_t is a white noise error.

The bounds test was used to determine the long-run relationship between variables. The test is based on Wald's transformation of F-statistics. If the value of F-statistics is higher than the upper I(1) and lower limit I(0) at the 10%, 5% and 1% significance levels, we conclude that there is a long-run relationship between the variables (Nkoro & Uko, 2016). Pesaran et al. (2001) provide critical values for the F-statistic. When cointegration between the variables was established, the following conditional ADRL long-run model was estimated:

$$CR5_t = \sum_{i=1}^{p} \beta_1 CR5_{t-i} + \sum_{j=0}^{q1} \beta_2 FP_{t-j} + \sum_{l=0}^{q2} \beta_3 NB_{t-l} + c + \varepsilon_t \,. \quad (3)$$

Equation (4) presents short-run estimates:

$$\Delta CR5_t = \sum_{i=1}^{p} \delta_i \Delta CR5_{t-i} + \sum_{j=0}^{q1} \varphi_j \Delta FP_{t-j} + \sum_{l=0}^{q2} \gamma_l \Delta NB_{t-l} + \vartheta ECT_{t-1} + c + \varepsilon_t, \quad (4)$$

where δ_i, φ_j, γ_l are the short-run coefficients, and ϑ is the speed of adjustment (error correction term).

The Granger causality test was used to determine whether there is unidirectional or bidirectional causality between the dependent variable CR5 and the independent variables FP (as the amount of FDI) and NB.

4. RESEARCH RESULTS AND DISCUSSION

Our results begin with descriptive statistics of the data relating to the variables entering the econometric model (Table 1). Table 1 shows that the average concentration level (CR5) in the analysed period in the Serbian banking market

was 50.03 units. The minimum concentration value was 44.00 in the first quarter of 2011, while a maximum of 55.50 was reached in the first quarter of 2018. The movement of the quarterly concentration ratio CR5 is shown in Figure 1. As one can see, there was a rapid decrease in the market concentration of the Serbian banking market from 2004 to 2007. After that, the level of concentration remained at a similar level, below 50 units. From 2011 to 2017, the market concentration increased, reaching over 50 units. After 2014, the level of market concentration remained above 50 units for the entire period. A level of CR5 above 50 means that the market is highly concentrated (Savić, 2000; Kostić, 2009).

Table 1: Descriptive Statistics for CR5, FP, and NB

	CR5	**FP**	**NB**
Mean	50.03	72.67	33
Maximum	55.50	78.70	43.00
Minimum	44.00	38.00	26.00
Standard deviation	3.80	7.65	3.91
Number of observations	59	59	59

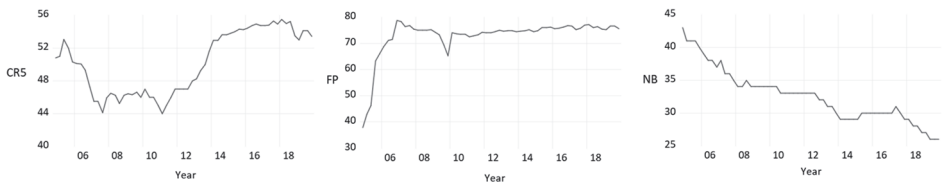
Source: Author's calculation in EViews 9.5

The average value of FP (as a measure of FDI) in the analysed period was 72.67%. The minimum value of 38.00% was recorded in the fourth quarter of 2004, while the highest value of 78.70% was reached in the last quarter of 2006 (Table 1). A significant increase in foreign banks' share in the Serbian market occurred from 2004 to 2006, when most banks' privatisation was completed (Mirković & Knežević, 2013). After the first wave of privatisation from 2003 to 2007, the Serbian banking system changed its ownership structure, so that at the beginning of the transition 65% of banks were state-owned, 21% private, and only 4% foreign-owned, and from 2007 on foreign banks had about 78% of total assets (Corić, 2019). The share of foreign-owned banks in the Serbian banking sector's total assets increased from the last quarter of 2004 (38.00%) to the last quarter of 2006 (78.70%). From the last quarter of 2005 to the end of the observed period, the share of foreign-owned banks in the total assets was above 65.00% (Figure 1). The share of foreign-owned banks corresponds to that found by Fišerová et al. (2015), who using a sample of seventeen countries, concluded that 65 percent of the studied countries' banking markets belonged to foreign banks. Throughout the observed period, two foreign-owned banks had the largest share in total assets

(from 21.00% in the first quarter of 2010 to 27.90% in the third quarter of 2017). Banks from Italy, Austria, France, and Greece (a total of eight banks) still held the major share of Serbia's banking sector with a share of total assets of 57.50% (National Bank of Serbia, 2018).

The average number of banks in Serbia in the observed period was 33. The largest number of active banks in Serbia was found in the fourth quarter of 2004 (43 banks), while the smallest number of active banks was recorded in the second quarter of 2019 (26 banks) (Table 1 and Figure 1). There was a continuous decrease in the number of banks in the Serbian banking market throughout the observed period. Hungary had a situation similar to that of Serbia in the banking sector during the transition period, with the number of banks dropping from 44 in 1995 to 35 in 2002, followed by a decrease in market concentration (CR5) (Várhegyi, 2004). The average number of foreign-owned banks in Serbia was 21. In the same period, the average number of domestic-owned banks was 10. The Serbian banking sector underwent substantial change last decade, among which was the reduction in the number of state-owned banks (Popović et al., 2017). The number of foreign-owned banks ranged from 21 to 23 banks throughout the period, while the number of domestic banks ranged from 8 to 13. There were more domestic banks at the beginning of the observed period. In the last quarter of 2017, 8 domestic banks operated in Serbia's banking market, with a share in the total assets of 23.10% (24.20% in the third quarter of 2017). State-owned banks generally had a smaller share in the total assets than foreign-owned banks. In the same period, out of 8 domestic banks, six banks were state-owned with a share in total assets of 16.10% (National Bank of Serbia, 2018).

Figure 1: Time series of the model variables (CR5, FP, NB) for Serbia, 2004 Q4 – 2019 Q2



Source: Author's calculations in EViews 9.5

Given that the short-run and long-run relationships between the independent variables (FP and NB) and market concentration (CR5), as the dependent variable, are determined according to the hypotheses set, after analysing the descriptive statistics, it is necessary to check whether the used variables are stationary. This was performed using the Augmented Dickey-Fuller test (ADF test) (Dickey & Fuller, 1981). In addition, the Phillips-Perron unit root test (PP) was also used (Ng & Perron, 2001). According to the results of the ADF test and PP test, we cannot reject the null hypothesis that variables CR5 and NB have a unit root at level, but we can reject the null hypothesis that these variables have a unit root at first difference. The results of the ADF and PP test show that variable FP is stationary at level. (see Appendix Table 1). Therefore, we conclude that CR5, FP, and NB are of a different order of integration: CR5 and NB are integrated of order I(1), while FP is integrated at the order I(0). According to Baum (2004), unit root tests such as ADF and PP can provide biased results since these tests do not test for structural breaks in time series. Therefore, we also applied the Zivot and Andrews structural breaks unit root test (Zivot & Andrews, 1992). The results showed that variables CR5 and NB are integrated of order I(1) and variable FP of order I(0). (see Appendix Table 2).

Since the variables are of a different order of integration, and no variable is of order I(2), the ARDL bound test approach was applied (Pesaran et al., 2001) for the analysis of the relationship between the variables CR5, FP, NB. The Akaike Information Criterion (AIC) was used to determine the optimal number of lags and the optimal model because it provides more robust and reliable information than other information criteria. However, it does not identify the simplest model as optimal (Lütkepohl & Krätzig, 2004). The Akaike information criterion identified ARDL (1, 0, 1) as the optimal model (see Appendix Figure 1). The optimal number of lags in the model does not change with the use of the Hannan-Quinn criterion (HQ) (Hannan & Quinn, 1979) (see Appendix Figure 2).

Table 2: Bound test results

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	6.43	10%	3.17	4.14
K	2	5%	3.79	4.85
		1%	5.15	6.36

Source: Author's calculation in EViews 9.5

The bounds test was used to examine the long-run relationship between the variables CR5, FP, and NB. The bounds test is based on Wald's transformation of F-statistics and tests the null hypothesis that there is no levels relationship between the variables. If the F-statistics value is greater than the upper I(1) and lower limit I(0) at the 10%, 5% and 1% significance levels, the null hypothesis is rejected. According to the results in Table 2, we can conclude that there is a long-run relationship between the variables CR5, FP, and NB.

Since there is a long-run relationship between variables (Table 2), it is necessary to evaluate the long-run coefficients (Table 3). These estimates also include the error correction term (ECT), which shows the speed of adjustment towards equilibrium (Table 4). According to the results in Table 4, the error correction term is negative (-0.09) and statistically significant ($p < 0.01$), which shows that the system returns to an equilibrium 9.00% quarterly.

Table 3: Long-run coefficients

Variable	Coefficient	Std. Error	t	p
FP	-0.81	0.29	-2.74	0.009
NB	-1.90	0.54	-3.50	0.001

Source: Author's calculation in EViews 9.5

The long run coefficients show that the variable FP has a statistically significant and negative effect on CR5. Consequently, FDI has a statistically significant and negative impact on the level of market concentration in the Republic of Serbia's banking sector in the long run. An increase in FDI as the share of foreign banks in the Serbian banking sector's total assets will reduce market concentration in the long run. The results also showed a statistically significant and negative impact of the number of banks on the level of market concentration in the long run. The decrease in the number of banks, the reality in Serbia's banking sector, increases the market concentration. Equations (5), (6) and (7) show the long-run and short-run relationships between the variables and the error correction term:

$$\Delta CR5_t = -0.10\Delta CR5_{t-1} - 0.08\Delta FP_t - 0.35\Delta NB_t - 0.18\Delta NB_{t-1} - 0.09ECT_{t-1} + 16.43 \quad (5)$$

$$CR5_t = -0.09\big(CR5_{t-1} - (-0.81FP_t - 1.90NB_t)\big) + 16.43 \quad (6)$$

$$ECT_{t-1} = CR5_{t-1} - (-0.81FP_t - 1.90NB_t) \quad (7)$$

In the short run, FP (as a measure of FDI) has a negative and statistically significant effect on CR5. Moreover, the number of banks (NB) has a negative and statistically significant impact on CR5 (Table 4). This means that an increase in the FDI volume will reduce market concentration in the short run. Also, if the number of banks increases, the market concentration will decrease in the short run. In Serbia, there is a permanent process of reducing the number of banks, which increases market concentration.

Table 4: Short-run coefficients

Variable	Coefficient	Std. Error	T	p
$\Delta(CR5_{t-1})$	-0.10	0.03	2.90	0.005
$\Delta(FP_t)$	-0.08	0.02	-3.41	0.001
$\Delta(NB_t)$	-0.35	0.17	-2.08	0.042
$\Delta(NB_{t-1})$	-0.18	0.04	-4.29	< 0.001
ECT_{t-1}	-0.09	0.02	4.47	< 0.001
C	16.43	16.43	4.23	< 0.001

R-squared	0.96	Mean dependent var	50.02
Adjusted R-squared	0.96	S.D. dependent var	3.83
S.E. of regression	0.77	Akaike info criterion	2.41
Sum squared resid	31.86	Schwarz criterion	2.59
Log likelihood	-64.93	Hannan-Quinn criter.	2.48
F-statistic	335.11	Durbin-Watson stat	1.90
Prob(F-statistic)	<0.001		

Source: Author's calculation in EViews 9.5

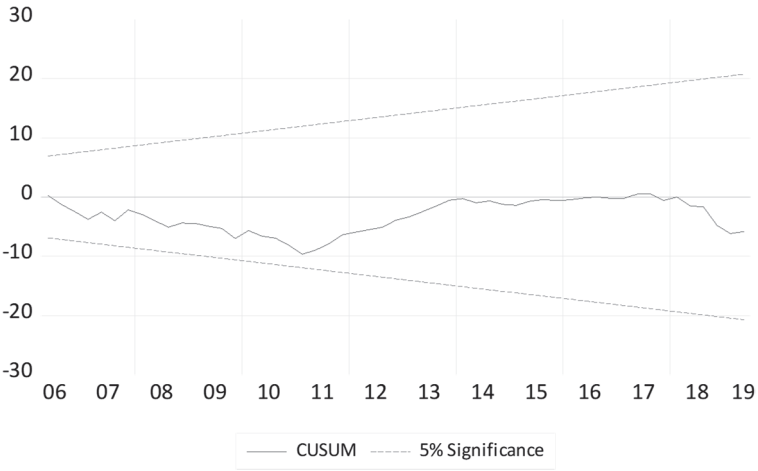
We can conclude that FDI and NB have a negative statistically significant effect on CR5 both in the short run and the long run. The impact of foreign banks' share in the Serbian banking sector's total assets on market concentration is greater in the long run than in the short run. Moreover, the effect of the number of banks in the Serbian banking market is greater in the long run than in the short run.

Based on the results of our study, it can be said that hypothesis H1 is confirmed in both the short and the long run. An increase in FDI leads to a short- and long-run decrease in market concentration. Also, the reduction in the number of banks leads to an increase in market concentration. In this way, the second research hypothesis (H2) is confirmed.

The coefficient of determination of the observed model is 0.96 (R^2 = 0.96) and shows that 96.00% of the variance in the dependent variable is explained by the independent variables, while the impact of other factors causes the remaining 4.00% of the variance. The model was tested for serial correlation, autocorrelation, heteroscedasticity, and normal distribution of residuals. In addition, model stability was tested. The serial correlation was tested using the LM serial correlation test, which shows no serial correlation between the model variables (p = 0.78) at the significance level of 5%. The existence of heteroscedasticity in the model was tested using the White test, and it was found that there was no heteroscedasticity (p = 0.21) at the significance level of 5%. The Jarque-Bera test was used to determine the normal distribution of residuals (Jarque & Bera, 1980), which confirmed that the residual was normally distributed (p = 0.22) at the significance level of 5%. Autocorrelation was tested using the Durbin-Watson statistic (DW = 1.90), indicating no autocorrelation problem in the model. Field (2009) considers that values below one and above three are worrying, while Dufour and Dagenais (1985) believe that these values are above 2.50 and below 1.50.

The results of our analysis of the model stability are shown in Figure 2. According to the CUSUM test results, the plots do not fall outside the 5% critical bounds, so the model satisfies the stability condition.

Figure 2: CUSUM test results



Source: Author's calculations in EViews 9.5

After estimating the long- and short-run relationship between variables CR5, FP, and NB and concluding that the ARDL model is stable, exhibits no heteroscedasticity and no serial correlation, and the residuals are normally distributed, we conducted a causality test to determine whether there is unidirectional or bidirectional causality between the dependent variable CR5 and the independent variables FP and NB. Table 5 shows the results of the Granger causality test.

Table 5: Results of the Granger causality test

Null Hypothesis:	Obs	F-Statistic	p
FP does not Granger Cause CR5	56	3.73	0.017
CR5 does not Granger Cause FP		1.98	0.129
NB does not Granger Cause CR5	56	5.18	0.004
CR5 does not Granger Cause NB		0.87	0.463

Source: Author's calculation in EViews 9.5

According to the Granger causality test results, the null hypothesis that FP does not Granger cause CR5 is rejected, while the null hypothesis that CR5 does not Granger cause FP cannot be rejected. Therefore, there is unidirectional causality between FP and CR5, from the share of foreign banks in the total assets of the Serbian banking sector (FP) to market concentration (CR5), at the 5% significance level. The Granger causality test results show that the null hypothesis that NB does not Granger cause CR5 is rejected, but the null hypothesis that CR5 does not Granger cause NB cannot be rejected. Consequently, there is unidirectional causality between NB and CR5, from the number of banks to market concentration (CR5). This means that FDI and NB cause CR5, whereas the opposite situation is not realistic.

5. CONCLUDING REMARKS AND IMPLICATIONS FOR POLICYMAKERS

The impact of FDI on market concentration is quite controversial. Our study showed that in the short run and the long run, the increase in FDI volume (which is measured by the share of foreign banks in the total assets of the Serbian banking sector, FP) reduces market concentration, which practically means that the increased FDI volume in the Serbian banking sector improves the conditions of competition in the market. The results are in line with the short run results

obtained by Petrochilos (1989) for the manufacturing industry in Greece and the results obtained by Panjaitan et al. (2016) for Indonesia's banking sector. Furthermore, the results are in line with those of Kastratović (2018), who found that FDI reduces market concentration in Bosnia and Herzegovina's manufacturing sector. Furthermore, as expected, the decrease in the number of banks in the Serbian market leads to increased market concentration in the short and long run.

The results of our study reveal a trend of increasing market concentration in the Serbian banking sector, especially from 2011 to 2017. In the last few years of the observed decade, market concentration (calculated using CR5) was very high, above 50 units. The reason for this situation could be a decrease in the number of banks. Our results show that a decrease in the number of banks increases the market concentration in both the short and long term. They also indicate that the increase in FDI reduces market concentration in both the short run and long run. There are two influences which affect market concentration in different directions. The first is the impact of FDI; the second is the influence of the number of banks (undertakings). At the beginning of the period, the FDI effect was stronger because the FDI inflow was higher. After that, especially from 2011 to 2017, the influence of the number of undertakings (banks) was stronger because the inflow of FDI became slower. Furthermore, from 2011 to 2019, there was a strong consolidation of the banking sector, which means numerous concentrations between undertakings. In this period, foreign-owned banks acquired domestic-owned banks. The processes of acquisition are an additional influence of FDI. It is expected that processes of concentration in which foreign-owned banks play a crucial role could lead to higher market concentration. This is a kind of transfer of the oligopolistic market structure from the global to the national level.

The results of our study provide some recommendations for regulators and policymakers, who need to motivate new undertakings from abroad to come to Serbia, mainly through greenfield investments. Such investments will increase the number of participants and thus lower market concentration. One could think that this approach is not realistic for financial sectors such as the banking market, but the theory of industrial organisation and competition policy holds that the only sure way of improving competition is by increasing the number of

undertakings in the market. The results of our study confirm this approach. Our recommendation based on our research is that competition authorities pay more attention to concentration of undertakings, especially in financial sectors such as the banking market. The process of concentration of undertakings carries a high risk of violating competition conditions, and authorities need to mitigate this risk.

REFERENCES

Baum, C. F. (2004). CLEMAO_IO: Stata module to perform unit root tests with one or two structural breaks, Statistical Software Components S444302, Boston College Department of Economics, revised 23 Apr 2018.

Bourlakis, C. A. (1987). Multinational Corporations and Domestic Market Structure: The Case of Greek Manufacturing Industry. *Weltwirtschaftliches Archiv, 123*(4), 719–733, https://doi.org/10.1007/bf02708577

Carlton, D., & Perloff, J., (2005). *Modern Industrial Organization*. Boston: Pearson/Addison Wesley.

Carp, L. (2015). FDI and Economic Growth in CEE Countries. *SEA–Practical Application of Science, 3*(7), 21–26.

Cho, K. R. (1990). Foreign Banking Presence and Banking Market Concentration: The case of Indonesia. *Journal of Development Studies, 27*(1), 98–110. https://doi.org/10.1080/00220389008422185

Corić, G. (2019). Uticaj bankarstva u Srbiji na privredni razvoj od osnivanja prvih banaka do savremenog bankarstva–doktorska disertacija [The impact of banking in Serbia on economic development from the founding of the first banks to modern banking] [Doctoral dissertation, Singidunum University].

Delis, M. D., Kokas, S., & Ongena, S. (2016). Foreign ownership and market power in banking: Evidence from a world sample. *Journal of Money, Credit and Banking*, *48*(2–3), 449–483, https://doi.org/10.1111/jmcb.12306

de Mello Jr, L. R. (1999). Foreign Direct Investment-led Growth: Evidence from Time Series and Panel Data. *Oxford Economic Papers*, *51*(1), 133–151, https://doi.org/10.1093/oep/51.1.133

de Mello Jr, L. R. (1997). Foreign direct investment in developing countries and growth: A selective survey. *The Journal of Development Studies*, *34*(1), 1–34.

Dickey, D.A., & Fuller, W.A. (1981). Likelihood ratio statistics for autoregressive time series with a unit root. *Econometrica: journal of the Econometric Society,* 49(4), 1057–1072. https://doi.org/10.2307/1912517

Driffield, N. (2001). Inward investment, industry concentration and the speed of adjustment. *Weltwirtschaftliches Archiv, 137*(2), 193–214. https://doi.org/10.1007/bf02707263

Dufour, J. M., & Dagenais, M. G. (1985). Durbin-Watson tests for serial correlation in regressions with missing observations. *Journal of Econometrics, 27*(3), 371–381, https://doi.org/10.1016/0304-4076(85)90012-0

Encaoua, D. & Jacquemin, A. (1980). Degree of Monopoly, Indices of Concentration and Threat of Entry. *International Economic Review*, *21*(1), 87–105.

Field, A. (2009). *Discovering Statistics Using SPSS* (3rd ed.). London: Sage.

Filipović, M., Avramović, D., & Račić, Ž. (2016). Analiza nivoa koncentracije aktive u bankarskom sektoru Republike Srbije. Škola biznisa, *2*(2016), 111–119. https://doi.org/10.5937/skolbiz2-11822

Fišerová, T., Teplý, P., & Tripe D (2015). The Performance of Foreign-Owned Banks in Host Country Economies. *Prague Economic Papers*, *24*(5), 1–24, https://doi.org/10.18267/j.pep.527

Forte, R., & Sarmento, P. (2012). *Foreign Presence and Market Concentration: The Case of Portuguese Manufacturing Industries*. (FEP Working Papers No. 444) Universidade do Porto, Faculdade de Economia do Porto.

Forte, R., & Sarmento, P. (2014). Does FDI increase market concentration? An evaluation of the Portuguese manufacturing industries. *Acta Oeconomica*, *64*(4), 463–480, https://doi.org/10.1556/AOecon.64.2014.4.4

Hahm, J. H. (2008). Determinants and Consequences of Non-Interest Income Diversification of Commercial Banks in OECD Countries. *Journal of International Economic Studies*, *12*(1), 3–32.

Hannan, E. J., & Quinn, B. G. (1979). The determination of the order of an autoregression. *Journal of the Royal Statistical Society: Series B (Methodological)*, *41*(2), 190-195.

Jarque C.M., & Bera, A.K., (1980). Efficient tests for normality, homoscedasticity and serial independence of regression residuals. *Economic Letters, 6*(3), 255–259. https://doi.org/10.1016/0165-1765(80)90024-5

Kastratović, R. (2018). Foreign Direct Investment Impact on Market Concentration in the Manufacturing Sector of Bosnia and Herzegovina. *Facta Universitatis, Series: Economics and Organization*. *15*, 135–148. https://doi.org/10.22190/FUEO1802135K

Kick, T., Prieto, E., (2015). Bank Risk and Competition: Evidence from Regional Banking Markets. *Review of Finance, 19*(3), 1185–1222, https://doi.org/10.1093/rof/rfu019

Knoerich, J. (2017). How does outward foreign direct investment contribute to economic development in less advanced home countries?. *Oxford Development Studies, 45*(4), 443–459.

Kostić, M. (2009). Analiza koncentracije ponude u sektoru osiguranja Srbije/Supply concentration analysis in the Serbian insurance sector. *Industrija*, *37*(2), 59–77. https://scindeks-clanci.ceon.rs/data/pdf/0350-0373/2009/0350-03730902059K.pdf

Kumar, P. (2018). Market power and cost efficiencies in banking. *International Journal of Industrial Organization*, *57*, 175–223. https://doi.org/10.1016/j.ijindorg.2018.02.003

Lall, S. (1979). Multinational and Market Structure in an open developing economy: the case of Malaysia. *Review of World Economics* (*Weltwirtschaftliches Archiv), 115*(2), 325–350. https://doi.org/10.1007/bf02696333

Ljumović, I., Pavlović, V., & Cvijanović, J. M. (2014). Two aspects of concentration in Serbian banking sector. *Industrija, 42*(3), 6177. https://doi.org/10.5937/industrija42-5867

Lütkepohl, H., & Krätzig, M. (2004). *Applied Time Series Econometrics*. Cambridge: Cambridge University Press.

Maksimović, Lj., & Kostić, M. (2012), Limitations in the application of concentration indicators: Example of insurance market in Serbia, Croatia, Slovenia, Romania and Austria. *Ekonomika preduzeća*, *60*(3–4), 199–205, https://doi.org/10.5937/ekopre1204199

Marinković, M. (2012). Nivo koncentracije u bankarskom sektoru Srbije. *Makroekonomske analize i trendovi, 217*, 39–41.

Mirković, V. (2016). *Analiza trenda koncentracije u bankarskom sektoru Srbije* [Paper presentation]. International May Conference on Strategic Management – IMKSM2016, Bor, Serbia.

Mirković, V., & Knežević, M. (2013), *Doprinos stranih direktnih investicija rastu i razvoju bankarskog sektora: slučaj Srbije* [Paper presentation]. Possibilities and perspectives for foreign direct investments in the Republic of Serbia, Institut za međunarodnu politiku i privredu, Belgrade, Serbia

Motta, M., (2008). *Competition Policy: Theory and Practice*. Cambridge: Cambridge University Press.

Mulyaningsih, T. (2014). *Banking competition and its relationship with banking stability: Evidence from Indonesia 1980–2010.* [Doctoral dissertation, University of Canberra]

Narodna banka Srbije [National Bank of Serbia] (2018). *Bankarski sektor – analize i izveštaji 2010–2017.* https://www.nbs.rs/internet/cirilica/55/55_4/index.html

Narodna banka Srbije [National Bank of Serbia] (2020). *Bankarski sektor – analize i izveštaji 2004–2019.* https://www.nbs.rs/sr_RS/finansijske-institucije/banke/izvestaji-i-analize/

Ng, S., & Perron, P. (2001). Lag length selection and the construction of unit root tests with good size and power. *Econometrica*, *69*(6), 1519-1554.

Nkoro, E., & Uko, A. K. (2016). Autoregressive Distributed Lag (ARDL) cointegration technique: application and interpretation. *Journal of Statistical and Econometric Methods*, *5*(4), 63–91.

Orazalin, R., & Dulambaeva, R. (2013). FDI impact on host country's market concentration and profitability. *Actual Problems of Economics, 1*(139), 428–438.

Panjaitan, R., Primiana, I., Ariawati, R. R., & Masyita, D. (2016). The effect of foreign bank penetration on the banking concentration and its impact on financial stability in Indonesian banking industry. *International Journal of Economics, Commerce and Management*, *4*(8), 197–210.

Pavlínek, P. (2004). Regional Development Implications of Foreign Direct Investment in Central Europe. *European Urban and Regional Studies*, *11*(1), 47–70. https://doi.org/10.1177/0969776404039142

Pesaran, M. H., Shin, Y., & Smith, R. J. (2001). Bounds testing approaches to the analysis of level relationships. *Journal of Applied Econometrics*, *16*(3), 289–326.

Petrochilos, G.A. (1989). *Foreign direct investment and the development process*. England: Gower Publishing Company

Popović, Ž., Stanković, J. J., & Marjanović, I. (2017). Analysis of bank efficiency in the Republic of Serbia: DEA. *International Scientific Conference Contemporary approaches in the analysis of economic performances*, 233–242. https://www.researchgate.net/publication/324482975_Analysis_of_bank_efficiency_in_the_Republic_of_Serbia_DEA_approach

Radulović, M. (2018). The impact of foreign direct investments on host country market structure: A case of Serbia's automotive industry. *5th International Scientific Conference on Contemporary Issues in Economics, Business and Management*, Kragujevac: Faculty of Economics University of Kragujevac

Saini, N. & Singhania, M. (2018). Determinants of FDI in developed and developing countries: a quantitative analysis using GMM. *Journal of Economic Studies*, *45*(2), 348–382. https://doi.org/10.1108/JES-07-2016-0138

Sathye, M. (2002). The Impact of Foreign Banks on Market Concentration: The case of India. *Applied Econometrics and International Development, 2*(1), 7–20.

Savić, Lj. (2000). Market structures in Yugoslav industry. *Industrija*, *26*(1–4), 1–19. https://scindeks-clanci.ceon.rs/data/pdf/0350-0373/2000/0350-03730001001S.pdf.

Shy, O., & Stenbacka, R., (2004). Market Structure and Risk Taking in the Banking Industry. *Journal of Economics, 82*(3), 249–280. https://doi.org/10.1007/s00712-003-0053-7

Singh, J. (2011). Inward Investment and Market Structure in an Open Developing Economy: A Case of India's Manufacturing Sector. *Journal of Economics and Behavioral Studies,* 2(6), 286–297.

Várhegyi, É. (2005). Bank Competition in Hungary. *Acta Oeconomica, 54*(4), 403–424.

Vozková, K., & Teplý, P. (2018). Determinants of Bank Fee Income in the EU Banking Industry - Does Market Concentration Matter?. *Prague Economic Papers*, *27*(1), 3–20. https://doi.org/10.18267/j.pep.645

Willmore, L. (1989). Determinants of Industrial Structure: A Brazilian Case Study. *World Development, 17*(10), 1601–1617. https://doi.org/10.1016/0305-750x(89)90031-4

Wu, R., & M. Tu (2014). The influence of FDI on the market structure of the port industry. *Applied Mechanics and Materials, 590*, 895–900. https://doi.org/10.4028/www.scientific.net/amm.590.895

Zivot, E., & Andrews, D. (1992). Further evidence of great crash, the oil price shock and unit root hypothesis. *Journal of Business and Economic Statistics*, *10*(3), 251–270.

Received: October 09, 2022
Accepted: October 01, 2023

APPENDIX

Table 1: Unit root test results (ADF and PP)

	ADF test		PP test	
Variable	Intercept	Trend & intercept	Intercept	Trend & intercept
CR5	-0.56	-1.91	-0.71	-1.91
D(CR5)	-6.19*	-6.32*	-6.19*	-6.30*
FP	-6.52*	-5.66*	-7.87*	-6.64*
NB	-2.25	-3.32	-2.37	-3.32
D(NB)	-9.41*	-9.40*	-9.17*	-9.18*

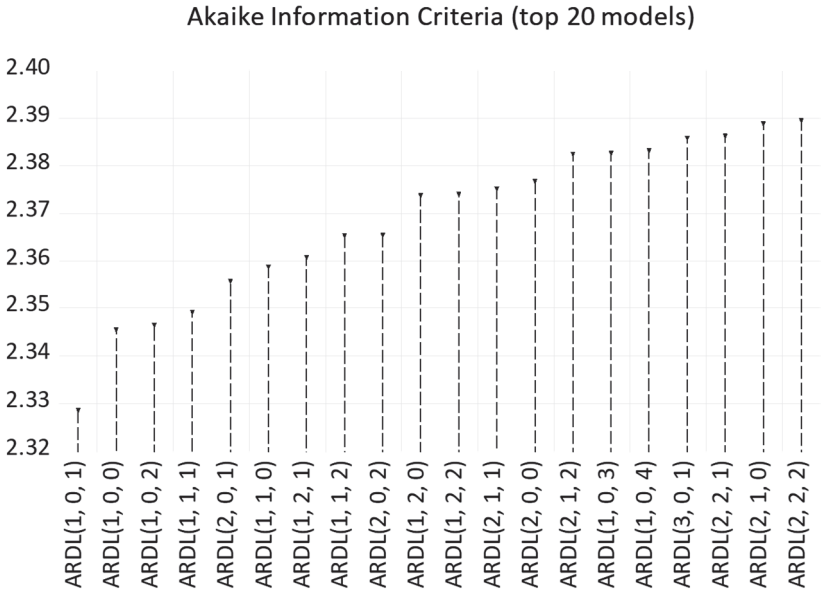
Source: Author's calculation in EViews 9.5

Table 2: Unit root test results with structural breaks

Variable	t	Time break
CR5	-3.28	2013Q1
D(CR5)	-7.01*	2007Q3
FP	6.43*	2019Q1
NB	-3.53	2017Q3
D(NB)	-10.66*	2008Q3

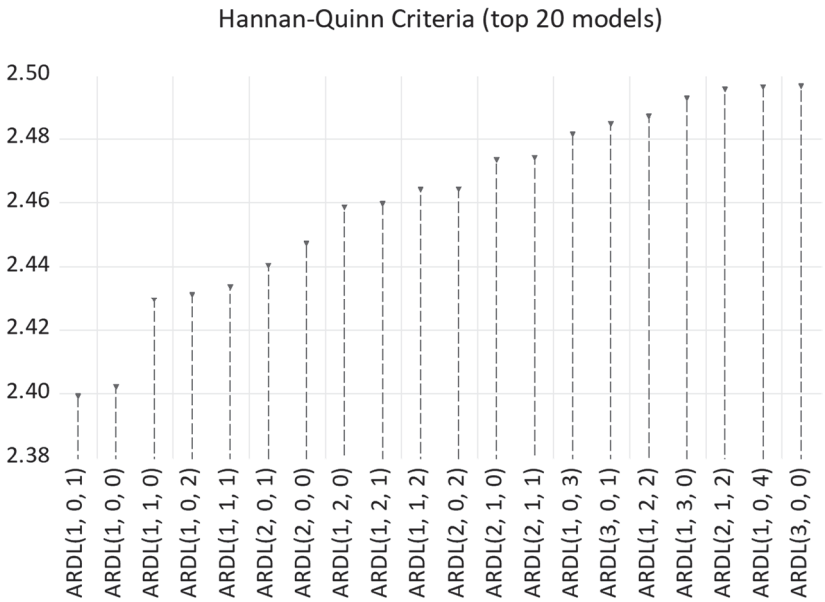
Source: Author's calculation in EViews 9.5

Figure 1: Model selection (Akaike Information Criteria)



Source: Author's calculation in EViews 9.5

Figure 2: Model selection (Hannan-Quinn Information Criteria)



ECONOMIC ANNALS, Volume LXVIII, No. 239 / October – December 2023
UDC: 3.33 ISSN: 0013-3264

https://doi.org/10.2298/EKA2339083S

*Aleksandra Stevanović**
*Jelena Erić Nielsen***
*Vesna Stojanović-Aleksić****

BUSINESS PROCESS ORIENTATION AND EMPLOYEE ENGAGEMENT: THE MEDIATING ROLE OF JOB AUTONOMY

ABSTRACT: *In this paper, we start with the research question of how business process orientation influences employee engagement with job autonomy as a mediator. We found that process orientation improves job autonomy, which then leads to higher employee engagement. The empirical research study was conducted in the IT (information technology) industry as an example of a digital environment where organisation design is often process-oriented. The findings of the study highlight the significance of business process orientation, not only for company performance, as most of the existing literature has already suggested, but for employee well-being as well. The paper indicates that employees in process-oriented organisations usually have greater control over their work, feel empowered, and, therefore, develop more enthusiasm and dedication towards their work role.*

KEY WORDS: *business process orientation, job design, employee engagement, IT industry, digital environment*

JEL CLASSIFICATION: M21, M120

* Faculty of Economics University of Kragujevac, e-mail: aboskovic@kg.ac.rs, ORCID: 0000-0001-7726-8783
** corresponding author
Faculty of Economics University of Kragujevac, e-mail: jelena_eric@kg.ac.rs, ORCID: 0000-0003-4168-6216
*** Faculty of Economics University of Kragujevac, e-mail: vesnasa@kg.ac.rs, ORCID: 0000-0002-3304-5606

1. INTRODUCTION

Business process orientation (BPO) and constant improvement of business processes are essential for the development of competitive advantage and long-term success of modern organisations (Janićijević, 2010; Kohlbacher, 2010; McCormack et al., 2009). There are various benefits of process orientation and business process management (BPM), such as *"reduced lead times, less hand-off errors, and more flexibility to change the structure of supported business processes"* (Reijers, 2006, p. 389). The organisational *process* represents a set of activities that transform inputs into outputs to achieve defined goals (Zaheer et al., 2010). Many authors define the process in the context of creating value for consumers, as transforming inputs into outputs that have value for consumers, bearing in mind that consumers represent the most significant border point and the reason for the existence of the process according to market-based business orientation (Stojanović-Aleksić, 2017). Process orientation requires an understanding of organisation through processes and a holistic approach to the implementation of process management (Willaert et al., 2007). For a traditional, functional organisation to adopt a process orientation, a fundamental rethinking and redesign of business processes, known as business process reengineering (Hammer & Chumpy, 1993), is usually required. Reengineering implies the association of tasks divided by functions and the formation of teams that perform the entire business processes (Stojanović-Aleksić, 2017, pp. 23–24). The extensive literature on business process management shows that process orientation can have a variety of benefits for a company (e.g., Antonucci et al., 2021; Škrinjar et al., 2008; Armistead & Machin, 1998). However, there is a lack of research that deals with the impact of process orientation on employees, especially topics related to employee engagement. The psychological and social implications of adopted business models are significant, especially in a digital environment and remote working, where social interaction is reduced, making conditions conducive for the development of feelings of isolation, dissatisfaction, and demotivation.

Engaged individuals are those who are vigorous, fully dedicated, and absorbed by the work they do (Schaufeli et al., 2002; Bakker, 2011; Soane et al., 2012). Engagement implies dedication to work, which includes physical, cognitive, and emotional components (Kahn, 1990; May et al., 2004; Macey & Schneider, 2008). This concept has received considerable attention from scholars and managers in

recent decades due to its dual benefits, for individuals and organisations. Engaged individuals feel fulfilled and satisfied performing their work roles, which positively affects their motivation and general psychological state. Furthermore, they are motivated and committed to organisational goals, as evidenced by the results that confirm the positive effects of engagement on performance (Belyaeva & Kozieva, 2020; Motyka, 2018; Kim et al., 2012; Truss et al., 2013). Engagement is especially important in modern, process-oriented structures, which mainly rely on organic forms of design and flexible coordination mechanisms, where control is weaker, so the results often depend on the personal motivation of team members.

Although there is no compelling evidence of a strong direct relationship between business process orientation and engagement, it can be assumed that indirect effects exist. Namely, process orientation is highly focused on achieving superior performance, relying on contemporary trends in organisational design. In flat, horizontal organisations, where grouping is done around processes, there is intense collaboration between experts from different fields. In such circumstances, teamwork comes to the fore, and the organisational culture should be adapted to knowledge management processes, especially knowledge exchange. Training and empowerment of employees are among the critical success factors for business process management (Trkman, 2010; Willaert et al. 2007). Management needs to put people first and encourage them to passionately pursue goals while directing their activities toward value creation. The focus is on the development of new skills, as well as on rewarding employees according to their competencies and contribution to process innovation. This kind of environment is stimulating and motivating, enables personal development, and incorporates several antecedents of employee engagement, such as social support, cooperation, autonomy, and feedback. These are just some of the reasons why process orientation can be considered a more favourable environment for the personal and professional development of individuals, as well as for their engagement, which will be discussed in more detail in the following sections.

In order to achieve high engagement, process orientation must be followed with proper job design, since engagement is highly dependent on job demands and resources, according to the *Job Demands-Resources Model* (Bakker & Demerouti, 2007). Management should define and design jobs within the organisation in a

way that motivates employees to perform tasks. People are generally not motivated by tasks that are routine, repetitive, and without an individual's ability to control and influence them. One approach is to expand jobs, which involves adding more diverse tasks, and another one is job enrichment, which involves adding only those tasks that require a higher level of skills and responsibility. There are several aspects of the job that employees usually perceive as motivating or interesting. The core job characteristics that can be modified include (Hellriegel et al., 2005, pp. 384–386, pp. 400–401):

- Variety of skills – different competencies, talents, and activities required for job performance;
- Job relevance – how much impact it has on others;
- Work autonomy – autonomy and discretion to decide about work and relevant working procedures;
- Identity – whether the job involves performing the logical sequence of the activities, from a beginning to an end;
- Feedback – the possibility of evaluating the work outcome.

Research shows that job autonomy, among other job features, has a critical role in enhancing engagement (Shantz et al., 2013; Christian et al., 2011; Marinova et al., 2008), especially in technologically intensive industries, such as IT, which is one of the most rapidly growing industries in the digital era (Bošković, 2021). Autonomy provides the freedom, flexibility, and opportunity to initiate entrepreneurial activities (Lumpkin et al., 2009). Insufficient research attention has so far been paid to autonomy, perceived as a prerequisite but not an essential ingredient of entrepreneurial behaviour (Miller, 1983; Covin & Slevin, 1989). It is paramount for taking advantage of unutilised resources, identifying opportunities outside the core competence, and new venture development. Independent thinking and latitude to act are necessary for new value creation (Burgelman, 2001). If people have the freedom to work on process improvement, they will feel that their work is more valuable and their contribution to the organisation more significant, so that they can benefit from the achieved performance. In organisations where process orientation is adopted, the role of processes is more emphasised than the role of functional areas. Such organisations move from a hierarchical to a flatter, horizontal structure in which job autonomy must increase. Therefore, the subject of research in this paper

is an examination of the mediating role of job autonomy in the relationship between process orientation and employee engagement. The goal is to show that business process orientation has an indirect effect on employee engagement through autonomy as a mediating variable.

2. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Process orientation means shifting the focus from functional areas to business processes, namely those that create value for consumers (Reijers, 2006). It implies abandoning a strict hierarchy and moving to more flexible, horizontal organisational models with the aim to maximise customer satisfaction and the overall value for consumers (e.g., Trkman et al., 2015; Gustafsson et al., 2003). An important characteristic of organisational processes is also reflected in establishing integration between organisational parts or roles. Processes connect people and ensure the flow of information throughout the organisation. The integrative role of organisational processes, as an element of organisational design, is also reflected in job design. There are several characteristics by which a process-oriented organisation differs from a traditional organisation, of which the author Kohlbacher (2010) singled out the following as the most important:

- precise identification of the processes performed in the organisation;
- strong support of the process programme by senior executives;
- the existence of process owners – managers who have an end-to-end responsibility for the process;
- established process performance management;
- an organisational culture based on collaboration, teamwork, readiness to change, and customer orientation;
- developed information technology;
- organisational structure that "follows the process";
- organisational knowledge about process management;
- process-oriented HR systems; and
- the existence of a formal instance that coordinates business process management (i.e., BPM office).

To this, it should be added that it is important that organisations have an alignment between processes, structure, and strategy. Aleksić-Mirić (2019)

highlights the significance of organisational alignment in the digital era more than ever before. A study has shown that one of the main shortcomings of business process management is precisely the lack of alignment of BPM with the business strategy (Neubauer, 2009). There must be consistency between the layers of the organisational design, which will enable not only the realisation of the efficiency to which process orientation aspires, but also effectiveness, which largely depends on engaged employees.

In our research, we start from the assumption that the process orientation of the company represents a favourable environment for the development of employee engagement. Although a direct causal relationship is not expected, it is possible to consider different mechanisms and mediating variables through which this type of organisation leads to an increase in employee engagement. As previously mentioned, process orientation inevitably entails corresponding changes in the structure, systems, and culture of the organisation.

Given that the ultimate goal of process orientation is the creation of value for customers, BPO favours the development of innovation and involves rewarding innovative behaviour (Kohlbacher, 2013; Brem, 2011), which creates space for individual creative expression. Creativity is one of the personal resources that can represent a source of intrinsic motivation and lead to engagement (Gilson & Shalley, 2004). Processes, by themselves, establish lateral connections throughout an organisation (Kates & Galbraith, 2007). Therefore, BPO implies a high level of cooperation and knowledge sharing within and between teams. This usually means high task interdependence, skill variety, autonomy, and feedback, which are antecedents of engagement (Crawford et al., 2014).

A particularly important aspect of BPO is the organisational culture. Namely, the process orientation and appropriate organisational structure must be supported by a system of values, beliefs, and behavioural norms. It is believed that the key characteristics of the culture that will stimulate the development of process orientation are related to awareness of a common mission, teamwork, interdepartmental cooperation, promoting innovation and proactivity, as well as leadership based on inspiration and support (Willaert et al. 2007, p. 9). All these elements create a stimulating environment for the development of engagement, given that the social framework is among the antecedents of engagement.

In our paper, we are particularly concerned with the organisational structure, and more specifically the structural component of job design, which should be adapted to the process orientation, i.e., enable and support it. Process orientation implies corresponding changes in the structure. Starting from the position that organisational parameters should be aligned (Minztberg, 1979), the reduction of hierarchy should usually be followed by a reduction in centralisation as well as lower vertical and horizontal specialisation. Lower vertical specialisation implies higher job autonomy. Decentralisation refers to the delegation of decision-making authority across the organisation, and autonomy refers to freedom and independence in how employees perform their specific job tasks. These two concepts do not always have to accompany each other, but with process orientation, both these trends are present, which is part of organic organisational design. In process organisation, employees are expected to perform a variety of activities and always keep the whole process in mind so that their work becomes more creative and provides more opportunities for personal development. This approach to process orientation often involves an inverse division of labour and assigning one person to oversee a multitude of tasks within a given process, and, in some cases, even within the entire process. As a result, these individuals are granted greater autonomy due to their level of expertise and the responsibilities they hold.

Although process orientation is strongly focused on productivity and outputs with a significant reliance on standardisation, in areas that are not standardised, modern approaches to organisational design imply a high degree of autonomy. A strategy of employee independence is applied, which is a consequence of both the high degree of delegation of authority and the redesign of job depth. The bottom line is that employees gain a high degree of freedom in deciding about work in terms of work design, choosing the way to do work, use their time, etc. They can set their own goals and evaluate their own performance (Petković et al., 2016, p. 70). According to the McCormack maturity model, there is even a term *process job* that describes job design in organisations that are business process oriented (BPO). Such jobs include horizontal rather than vertical responsibility, which means that they are based on the high participation of people who are enabled to take ownership of the entire process (McCormack et al., 2009). The authors Vanderfeesten and Reijers (2006) suggest that the successful implementation of software and systems that support business process management must be based

on a sufficient degree of influence given to the users of these systems to avoid the formation of rigid and inflexible business practices.

Market orientation implies frequent changes, meaning that the organisation must be flexible and innovative. Therefore, the focus is on knowledge as a key resource, and employees are expected to be creative and constantly improve their skills. Instead of a large number of narrowly specialised jobs, people perform multidimensional jobs, which are more cognitively demanding, but because of this, they act as incentives for those carrying out these tasks. For the effective performance of such jobs, it is necessary to delegate a greater degree of authority to individuals (Bošković, 2021; Ozlati, 2015; Liu et al., 2011).

Therefore, the first hypothesis is:

Hypothesis 1: Business process orientation affects job autonomy.

The influence of job autonomy on the attitudes, behaviour, and performance of employees has been examined most often. Autonomy has its pros and cons. Recent studies highlight the importance of job autonomy for the improvement of innovation, creativity, satisfaction, commitment, and overall individual performance (Nasution et al., 2021; Bogićević-Milikić & Čučković, 2019; Garg & Dhar, 2017; Cerasoli et al., 2016; Wenjing et al., 2013; Langfred & Moye, 2004), while others examine the negative aspects of autonomy, among which they emphasise the possibility of opportunistic and unethical behaviour of decision makers (Lu et al., 2017). Erić Nielsen (2020) explains how structural challenges can be a barrier to the development of corporate entrepreneurship when employees are exposed to intensive monitoring and space for creativity is narrowed, causing frustration and dissatisfaction.

Most of the authors agree that employees who have great independence in their work feel motivated and empowered (Marinova et al., 2008). According to self-determination theory (Deci & Ryan, 1985), satisfaction of the human need for autonomy motivates people to be proactive and engaged. Employee engagement is the simultaneous expression and employment of the "preferred self" in work in a way that has physical, cognitive, and emotional dimensions (Kahn, 1990, p. 700). Individuals develop a strong connection between their personality and the work they do, that is, their work role. In this way, they do not sacrifice their

personality for the sake of work, or vice versa, but achieve personal and professional growth and development at the same time.

Kahn (1990) was one of the first to establish that autonomy affects the development of the perception of job meaningfulness, which is one of the basic factors of engagement, although this hypothesis was later somewhat questioned by authors who believe that autonomy does not create a perception of meaningfulness, but a sense of responsibility and knowledge of the results of the work, and therefore affects engagement (Humphrey et al., 2007; Christian et al., 2011). Autonomy creates a psychological sense of ownership over the work, and thus the person develops a higher degree of enthusiasm and responsibility, which leads to greater engagement (Shantz et al., 2013; Salanova et al., 2005). If people are aware that they are personally responsible for their performance, they will be ready to invest more energy and effort, to face and overcome obstacles and be much more involved than in the case of simple execution of the assigned tasks. Both the ability to decide on the job methods and timing as well as the awareness that performance depends personally on the individual who performs them lead to the desire to maximise one's performance and consequently higher effort (Bošković, 2022). For example, Akinwale (2019) argues that employees may not be engaged enough because they are discouraged from speaking their mind and exchanging views. Bošković (2021) shows that autonomy is particularly important in the IT industry, where it enhances vigour and dedication as engagement dimensions. Another study from the IT industry also found that autonomy, among the five core job design features, is the most important predictor of positive job-related outcomes (Bogićević-Milikić & Čučković, 2019).

Thus, we hypothesise:

Hypothesis 2: Job autonomy affects employee engagement.

According to the previous considerations, it can be assumed that process orientation has an indirect effect on employee engagement through job autonomy. If process orientation is followed by an adequate job design, which is based, among other things, on high job autonomy, a higher degree of employee engagement can be expected as a consequence. Research shows that higher working autonomy, available time, flexible organisational boundaries, and an adequate compensation system increase the number of ideas implemented by

middle and senior management (Floyd & Lane, 2000). Employees who work in a process-oriented organisation gain greater independence, which is one of the most important factors of engagement. Working on processes is reflected in a high degree of independence and self-organisation. In addition, independent people who work together on a process are both individually and collectively responsible for the process results (Stojanović-Aleksić, 2017, pp. 201–204). In process teams, the results are permanently being measured and analysed, so that employees have access to relevant feedback about their performance from the job itself. Developing a sense of responsibility increases the perception of task importance and purposefulness, which encourage energy and commitment. We, therefore, hypothesise that:

Hypothesis 3: Job autonomy mediates the relationship between business process orientation and employee engagement.

3. METHODOLOGY

3.1. Data collection and processing

Data collection was carried out by the survey method using a structured questionnaire. The questionnaire was designed on the basis of existing, well-founded measurement scales used in previous research, which increases the validity and reliability of the research instruments, but certain adjustments were made following the research objectives, context, and language. All scalar questions are based on a seven-point Likert scale ranging from 1 to 7. *Business process orientation* was measured using five items referring to process management and measurement based on the scale developed by McCormack (2001), which is generally accepted in research in the field of business process management. The measurement of *autonomy* as a job characteristic is based on the original job design questionnaire developed by Morgeson and Humphrey (2006). The UWES-9 questionnaire, which is the most commonly used in employee engagement research, was used to measure *employee engagement* (Schaufeli & Bakker, 2003).

The data was collected from a sample of 100 companies in the IT industry in the Republic of Serbia, where 270 respondents, consisting of managers and employees, were surveyed. We decided on this industrial branch not only as an

example of a rapidly growing industry in Serbia but also in the world, where modern approaches to organisational design are often applied, such as digital business models which heavily rely on BPM. The questionnaire relating to process orientation was completed only by managers as respondents who are most familiar with the organisational design of the company, while the questions regarding autonomy at work and engagement were completed by employees regardless of their position in the organisation. These instructions were provided in an email sent to the respondents, who could answer the questions intended for them based on their position in the organisation. The data were then aggregated so that the arithmetic mean of the respondents' answers to each question was calculated for each company, and further analysis was performed on the aggregated data. In this way, an effort was made to reduce the subjectivity of the research since not all data on independent and dependent variables were collected from the same source, but from two different sources, i.e., two categories of respondents.

For data processing, SPSS 25.0 and AMOS 24.0 were used. We used descriptive statistics, Cronbach's alpha coefficient analysis, confirmatory factor analysis, and structural equation modelling (SEM).

4. RESULTS

4.1. Sample characteristics

The structure of the sample was based on the size of the company and measured only in terms of the number of employees, whereby micro companies are those with fewer than 10 employees, small companies those with fewer than 50 employees, medium-sized companies those with 50–250 employees, while large companies are considered those with more than 250 employees. In Table 1, it can be seen that the sample is dominated by small and micro enterprises (55%), followed by medium-sized enterprises (26%), and the smallest number is large enterprises (19%). It can be assumed that this sample structure is a reflection of the population, i.e., that the IT industry in Serbia is generally dominated by smaller companies.

Table 1. The sample structure

Company size	Number	Frequency
Large companies (more than 250 employees)	19	19%
Medium companies (50-250 employees)	26	26%
Micro and small companies (fewer than 50 employees)	55	55%
Total	100	100%

Source: Authors' calculations

The sample consisted of 270 respondents, of whom 112 were managers. Most of the respondents in the sample were male (60%), 38.52% were female, and 1.48% did not want to declare their gender. As for age, most of the respondents were between 31 and 40 years old and most of them had a higher education degree.

4.2. Scale Reliability

Cronbach's alpha coefficient was applied to check the reliability of the scale and it should show whether all questions (items) from the scale measure the same construct, i.e., whether there is internal consistency within the scale. The value of Cronbach's alpha coefficient for the process orientation variable is 0.925 and indicates the high reliability of this scale. Autonomy has a satisfactory coefficient of 0.760. The employee engagement scale shows high internal consistency of the items, with an alpha coefficient value of 0.916. Thus, all subscales showed a satisfactory level of reliability (alpha above 0.7).

4.3. Hypotheses testing and discussion

All three hypotheses were tested using a single structural equation model. First, a confirmatory factor analysis was conducted, and the results are shown in Table 2. In the first step, those items whose factor loadings were too low, i.e., below 0.6, were eliminated. After that, the value of $\chi 2/df$ is 1.379, which is below the threshold of 3 (Carlmines & McIver, 1981), while CFI = 0.977, TLI = 0.968, and IFI = 0.977 are higher than 0.90 (Byrne, 1998). The indication RMSEA is 0.062, which is below the threshold of 0.1 (Steiger, 1990). Values of CR and AVE coefficients are also satisfactory, namely, CR is above 0.6, while AVE is higher than 0.5 (Bagozzi & Yi, 1988; Fornell & Larcker, 1981). Therefore, the model is assessed as valid, and we may proceed to further analysis.

Table 2. Confirmatory factor analysis

Items	Factor loadings	AVE	CR
Model ($\chi 2/df=1.379$; CFI = 0.977; TLI = 0.968; IFI = 0.977; RMSEA=0.062)			
Process orientation		**0.66**	**0.91**
Proc1	0.80		
Proc2	0.69		
Proc3	0.82		
Proc4	0.75		
Proc5	0.81		
Job autonomy		**0.56**	**0.79**
Autonomy1	0.69		
Autonomy2	0.77		
Autonomy3	0.78		
Employee engagement		**0.72**	**0.94**
ENG1	0.86		
ENG2	0.84		
ENG3	0.93		
ENG4	0.90		
ENG5	0.77		
ENG7	0.77		

Source: *Authors' calculations*

Given that the validity of the model has been confirmed, it is possible to test the indirect effect of organisational processes on engagement using structural equation models. The standardised path estimates are presented in Table 3.

Table 3. Hypotheses testing for process orientation – job autonomy – employee engagement model

Relation	Standardised estimate (β)	Estimate (B)	p
Process orientation → Job autonomy → Employee engagement	0.239	0.207	**0.017***
* **p<0.05**			

Source: *Authors' calculations*

In organisations where the process orientation is rated higher by the respondents, the degree of autonomy is also higher according to the obtained results. Likewise, those who report a higher job autonomy showed higher employee engagement. Therefore, Hypotheses 1, 2, and 3 all are supported.

5. DISCUSSION AND CONCLUSION

In the era of digitisation, intense global competition, shortening of life spans, and economic crisis, the challenges for organisational design are increasing. Companies need to be more agile than ever, and one way to achieve this is by adapting their organisational design. Modern design models, which are often called horizontal or process models, imply a change in the way of thinking and a departure from the traditional hierarchy so that organisations can achieve faster growth through a focus on customers, networking, and knowledge exchange. The development of process orientation means less hierarchy and it is highly correlated with decentralisation. The jobs performed in such organisations are usually multidimensional, focused on output, and require high employee autonomy, which has been confirmed by research. The level of business process orientation proved to have an indirect positive effect on employee engagement through autonomy, which is a mediating variable. Namely, with an increase in process orientation, there is an increase in job autonomy, which then has a positive effect on engagement. The results are in line with previous research that indicates the connection between process orientation and job design (e.g., Stojanović-Aleksić, 2017; McCormack, 2001), but they also provide additional knowledge about the implications of this interdependence on employee engagement. This is also consistent with and builds on previous research that identified a strong relationship between autonomy and job satisfaction in the Serbian ICT sector, with engagement mediating this relationship (Bogićević-Milikić & Čučković, 2019).

The paper has implications for theory in the fields of business process management, organisation design, job design, and employee engagement because it provides a connection between these areas, which are not considered often enough in research. The paper indicates the benefits of process orientation for the development of autonomy at work, as well as engagement, which, in this case, was evidenced as a result of greater individual autonomy. As such, this work also provides certain suggestions to managers which refer to the benefits of adopting

a modern approach to managing business processes as well as to the need to adapt the job design to this kind of organisational design. Emphasising the importance of process orientation and autonomy, as one of its logical implications, is also relevant from the aspect of the modern needs of companies to develop an entrepreneurial orientation. Expanding a business portfolio by new venture creation depends on its relation to an existing business, the degree of innovation, the nature of support, but one of the most important factors that influence further development and performance is *structural autonomy* (Westhead et al., 2011, pp. 140–141).

The main limitations of the work refer to the fact that the research was conducted only in one industrial branch, only in the Republic of Serbia, and only at one point in time. The limitations of the questionnaire instrument are always present as are the possibilities a larger sample would offer. In addition to its advantages, the use of data from two different sources may also be considered a limitation because it can lead to certain biases in the results. Furthermore, the work is limited only to autonomy as a mediating variable between process orientation and employee engagement, while in fact, other job characteristics can play a significant role.

The paper offers some recommendations for future research. First, longitudinal research is needed to provide stronger evidence of the causal nature of the relationships between process orientation, autonomy, and engagement. Furthermore, since we started from the job characteristics model (Morgeson & Humphrey, 2006), it would be useful to examine other potential mediators, such as various job characteristics. For example, do social characteristics of work mediate the relationship between process orientation and engagement? This is especially important in the digital environment and remote working conditions. Future research should also explore potential moderators of the observed relationships as well as different characteristics of the context (i.e., company size and age, environment, and national culture) as control variables. This is particularly significant considering the insufficient attention paid to contingency factors in management research on this topic, especially in terms of isolated consideration of a particular factor or insufficient use of a quantitative approach to research on these variables (Spasojević-Brkić & Mihajlović, 2023).

Acknowledgement

This research was partially supported by Ministry of Education, Science and Technological Development of the Republic of Serbia (project no. III-41010).

REFERENCES

Akinwale, O. E. (2019). Employee voice: speaking up in organisation as a correlate of employee productivity in oil and gas industry - an empirical investigation from Nigeria. *Serbian Journal of Management*, *14*(1), 97–121. https://doi.org/10.5937/sjm14-15308

Aleksić-Mirić, A. (2019). Digitalna transformacija i organizacioni dizajn: pristup organizacionog slaganja. XXIV Internacionalno naučni simpozijum Strategijski menadžment i sistemi podrške odlučivanju u strategijskom menadžmentu. Beograd: Ekonomski fakultet Univerziteta u Beogradu.

Antonucci, Y.L., Fortune, A., & Kirchmer, M. (2021). An examination of associations between business process management capabilities and the benefits of digitalization: all capabilities are not equal, *Business Process Management Journal*, *27*(1), 124–144. https://doi.org/10.1108/BPMJ-02-2020-0079

Armistead, C., & Machin, S. (1998). Business process management: implications for productivity in multi-stage service networks. *International Journal of Service Industry Management*, *9*(4), 323–336. https://doi.org/10.1108/09564239810228849

Bagozzi, R. P., & Yi, Y. (1988). On the evaluation of structural equation models. *Journal of the Academy of Marketing Science, 16*(1), 74–94. https://doi.org/10.1007/BF02723327

Bakker, A. B. (2011). An evidence-based model of work engagement. *Current Directions in Psychological Science, 20*(4), 265–269. https://doi.org/10.1177/0963721411414534

Bakker, A. B., & Demerouti, E. (2007). The Job Demands-Resources model: state of the art. *Journal of Managerial Psychology*, *22* (3), 309–328. https://doi.org/10.1108/02683940710733115

Belyaeva, T., & Kozieva, I. (2020). Employee engagement in HR analytical systems. *Economic Annals-XXI, 186*(11–12), 94–102. doi: https://doi.org/10.21003/ea.V186-11

Bogićević-Milikić, B., & Čučković, M. (2019). How to increase job satisfaction and organisational commitment in the ICT sector through job design. *Economic Annals, 64*(222), 81–116. https://doi.org/10.2298/EKA1922081B

Bošković, A. (2021). Employee autonomy and engagement in the digital age: The moderating role of remote working. *Economic Horizons*, *23*(3), 231–246. https://doi.org/10.5937/ekonhor2103241B

Bošković, A. (2022). *The Influence of Organisation Design on Employee Engagement in Digital Environment, doctoral dissertation*. Kragujevac, Serbia: Faculty of Economics, University of Kragujevac.

Brem, A. (2011). Linking Innovation and Entrepreneurship - Literature Overview and the Introduction of a Process-Oriented Framework, *International Journal of Entrepreneurship and Innovation Management*, *14*(1), 6–35. http://dx.doi.org/10.1504/IJEIM.2011.040820

Burgelman, R.A. (2001). *Strategy is destiny: how strategy-making shapes a company's future*. New York: NY Free Press.

Byrne, B. M. (1998). *Structural Equation Modeling with LISREL, PRELIS, and SIMPLIS: Basic Concepts, Applications, and Programming,* New Jersey, NJ: Lawrence Erlbaum, Hillsdale.

Carlmines, E., & McIver, J. (1981). Analysing models with unobserved variables: Analysis of covariance structures. In G. Bohmstedt, & E. Borgatta (Eds.). *Social Measurement: Current Issues* (pp. 56–77). Beverly Hills, CA: Sage.

Cerasoli, C. P., Nicklin, J. M., & Nassrelgrgawi, A. S. (2016). Performance, incentives, and needs for autonomy, competence, and relatedness: A meta-analysis. *Motivation and Emotion, 40*(6), 781–813. https://doi.org/10.1007/s11031-016-9578-2

Christian, M. S., Garza, A. S., & Slaughter, J. E. (2011). Work engagement: A quantitative review and test of its relations with task and contextual performance. *Personnel Psychology, 64*(1), 89–136. https://doi.org/10.1111/j.1744-6570.2010.01203.x

Covin, J.G., & Slevin, D. (1989) Strategic Management of Small Firms in Hostile and Benign Environments. *Strategic Management Journal, 10*, 75–87. http://dx.doi.org/10.1002/smj.4250100107

Crawford, E. R., Rich, B. L., Buckman, B., & Bergeron, J. (2014). Antecedents and drivers of employee engagement. In C. Truss, R. Delbridge, K. Alfes, A. Shantz, & E. Soane (Eds.). *Employee engagement in theory and practice* (pp. 57-81). London & New York: Routledge, Taylor & Francis Group.

Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behaviour.* New York: Plenum.

Erić Nielsen, J. (2020). *Corporate Entrepreneurship* (*Korporativno preduzetništvo)*. Faculty of Economics University of Kragujevac.

Floyd, S. W., & Lane, P. J. (2000). Strategizing throughout the organisation: Managing role conflict in strategic renewal. *Academy of Management Review, 25*(1), 154–177. https://doi.org/10.2307/259268

Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research, 18*(1), 39–80. https://doi.org/10.2307/3151312

Garg, S., & Dhar, R.L. (2017). Employee service innovative behaviour: The roles of leader-member exchange (LMX), work engagement, and job autonomy. *International Journal of Manpower, 38*, 242–258. https://doi.org/10.1108/IJM-04-2015-0060

Gilson, L. L., & Shalley, C. E. (2004). A Little Creativity Goes a Long Way: An Examination of Teams' Engagement in Creative Processes. *Journal of Management, 30*(4), 453–470. https://doi.org/10.1016/j.jm.2003.07.001

Gustafsson, A., Nilsson, L., & Johnson, M. (2003). The role of quality practices in service organisations. *International Journal of Service Industry Management*, *14*(2), 232–244. https://doi.org/10.1108/09564230310474183

Hammer, M., & Champy, J. (1993) *Reengineering the Corporation A Manifesto for Business Revolution*. New York: Harper Collins.

Hellriegel, D., Jackson, S. E., & Slocum, J. W. Jr. (2005). *Management: a competency-based approach*, 20th ed. Mason, Ohio: South-Western Thomson Learning.

Janićijević, N. (2010). Business processes in organisational diagnosis. *Management*, *15* (2), 85–106.

Kahn, W. A. (1990). Psychological conditions of personal engagement and disengagement at work. *Academy of management journal*, *33*(4), 692–724.

Kates, A. & Galbraith, J. (2007). *Designing Your Organization Using Star Model to Solve 5 Critical Design Challenges*. San Francisco: John Wiley and Sons.

Kim, W., Kolb, J. A., & Kim, T. (2012). The Relationship Between Work Engagement and Performance: A Review of Empirical Literature and a Proposed Research Agenda. *Human Resource Development Review, 12*(3) 248–276. https://doi.org/10.1177/1534484312461635

Kohlbacher, M. (2010). The effects of process orientation: a literature review, *Business Process Management Journal*, *16*(1), 135–152. https://doi.org/10.1108/14637151011017985

Kohlbacher, M. (2013). The Impact of Dynamic Capabilities through Continuous Improvement on Innovation: the Role of Business Process Orientation, *Knowledge and Process Management*, *20*(2), 71–76. https://doi.org/10.1002/kpm.1405

Langfred, C. W., & Moye, N. A. (2004). Effects of Task Autonomy on Performance: An Extended Model Considering Motivational, Informational, and Structural Mechanisms.*Journal of Applied Psychology, 89*(6), 934–945. https://doi.org/10.1037/0021-9010.89.6.934

Liu, D., Chen, X.-P., & Yao, X. (2011). From autonomy to creativity: A multilevel investigation of the mediating role of harmonious passion. *Journal of Applied Psychology, 96*(2), 294–309. https://doi.org/10.1037/a0021294

Lu, J. G., Brockner, J., Vardi, Y., & Weitz, E. (2017). The dark side of experiencing job autonomy: Unethical behaviour. *Journal of Experimental Social Psychology, 73*, 222–234. https://doi.org/10.1016/j.jesp.2017.05.007

Lumpkin, G. T., Cogliser, C. C., & Schneider, D. R. (2009). Understanding and Measuring Autonomy: An Entrepreneurial Orientation Perspective. *Entrepreneurship Theory and Practice*, *33*(1), 47–69. https://doi.org/10.1111/j.1540-6520.2008.00280.x

Marinova, D., Ye, J., & Singh, J. (2008). Do frontline mechanisms matter? Impact of quality and productivity orientations on unit revenue, efficiency, and customer satisfaction. *Journal of Marketing, 72*(2), 28–45. https://doi.org/10.1509/jmkg.72.2.28

Macey, W. H., & Schneider, B. (2008). The meaning of employee engagement. *Industrial and Organizational Psychology*, *1*(1), 3-30. https://doi.org/10.1111/j.1754-9434.2007.0002.x

May, D. R., Gilson, R. L., & Harter, L. M. (2004). The psychological conditions of meaningfulness, safety and availability and the engagement of the human spirit at work. *Journal of Occupational and Organizational Psychology, 77*(1), 11–37. https://doi.org/10.1348/096317904322915892

McCormack, K. (2001). Business Process Orientation: Do You Have It? Placing an emphasis on processes will help organisations move forward. *Quality Progress, 2001*(1), 51–58.

McCormack, K., Willems, J., Bergh, J.V., Deschoolmeester, D.A., Willaert, P., Stemberger, M.I., Skrinjar, R., Trkman, P., Ladeira, M.B., Oliveira, M.P., Bosilj-Vuksic, V., & Vlahovic, N. (2009). A global investigation of key turning points in business process maturity. *Business Process Management Journal, 15*(5), 792–815. https://doi.org/10.1108/14637150910987946

Miller, D. (1983). The Correlates of Entrepreneurship in Three Types of Firms. *Management Science*, *29*(7), 770–791. https://doi.org/10.1287/mnsc.29.7.770

Mintzberg, H. (1979). *The Structuring of Organizations*. Prentice Hall.

Morgeson, F. P., & Humphrey, S. E. (2006). The work design questionnaire (WDQ): Developing and validating a comprehensive measure for assessing job design and the nature of work. *Journal of Applied Psychology, 91*(6), 1321–1339. https://doi.org/10.1037/0021-9010.91.6.1321

Motyka, B. (2018). Employee engagement and performance: a systematic literature review. *International Journal of Management and Economics, 54*(3) 227–244. https://doi.org/10.2478/ijme-2018-0018

Nasution, N.R., Siregar, Z.M., & Pristiyono, P. (2021). The Effect of Job Autonomy on Employee Innovative Behaviour: The Role of Job Satisfaction as Intervening Variable. *Budapest International Research and Critics Institute-Journal (BIRCI-Journal)*, *4*(2), 2846–2853. https://doi.org/10.33258/BIRCI.V4I2.1994

Neubauer, T. (2009). An empirical study about the status of business process management, *Business Process Management Journal, 15*(2), 166–183. https://doi.org/10.1108/14637150910949434

Ozlati, S. (2015). The Moderating Effect of Trust on the Relationship between Autonomy and Knowledge Sharing: A National Multi-industry Survey of Knowledge Workers. *Knowledge and Process Management, 22*(3), 191–205. https://doi.org/10.1002/kpm.1474

Petković, M., Janićijević, N., Bogićević Milikić, B., & Aleksić Mirić, A. (2016). *Organizacija (Organisation)*, 12th. Edition. CID Ekonomski fakultet u Beogradu (Faculty of Economics in Belgrade.

Reijers, H.A. (2006). Implementing BPM systems: the role of process orientation. *Business Process Management Journal*, *12*(4), 389–409. https://doi.org/10.1108/14637150610678041

Salanova, M., Agut, S., & Peiró, J. M. (2005). Linking Organisational Resources and Work Engagement to Employee Performance and Customer Loyalty: The Mediation of Service Climate. *Journal of Applied Psychology, 90*(6), 1217–1227. https://doi.org/10.1037/0021-9010.90.6.1217

Schaufeli, W. B. & Bakker, A. B. (2003). Test manual for the Utrecht Work Engagement Scale. *Unpublished manuscript, Utrecht University, The Netherlands.* Retrieved 15/03/2019 from: http://www.schaufeli.com

Schaufeli, W. B., Salanova, M., González-Romá, V., & Bakker, A. B. (2002). The measurement of engagement and burnout: A two sample confirmatory factor analytic approach. *Journal of Happiness Studies: An Interdisciplinary Forum on Subjective Well-Being*, *3*(1), 71–92. https://psycnet.apa.org/doi/10.1023/A:1015630930326

Shantz, A., Alfes, K., Truss, C., & Soane, E. (2013). The role of employee engagement in the relationship between job design and task performance, citizenship and deviant behaviours. *The International Journal of Human Resource Management, 24*(13), 2608–2627. https://doi.org/10.1080/09585192.2012.744334

Škrinjar, R., Bosilj-Vukšić, V. & Indihar-Štemberger, M. (2008). The impact of business process orientation on financial and non-financial performance. *Business Process Management Journal*, *14*(5), 738–754. https://doi.org/10.1108/14637150810903084

Soane, E., Truss, C., Alfes, K., Shantz, A., Rees, C., & Gatenbytt, M. (2012). Development and application of a new measure of employee engagement: The ISA Engagement Scale. *Human Resource Development International*, *15*(5), 529–547. http://dx.doi.org/10.1080/13678868.2012.726542

Spasojević Brkić, V. & Mihajlović, I. (2023). Development of contingent/contextual theory: A state-of-the-art review. *Tehnika* 78(1), 77–88. http://dx.doi.org/10.5937/tehnika2301077S

Steiger, J. H. (1990). Structural model evaluation and modification: An interval estimation approach. *Multivariate Behavioural Research, 25*(2), 173–180. https://doi.org/10.1207/s15327906mbr2502_4

Stojanović-Aleksić, 2017). *Managing business process changes (Upravljanje promenama poslovnih procesa).* Faculty of Economics University of Kragujevac.

Trkman, P. (2010). The critical success factors of business process management. *International Journal of Information Management*, *30*(2), 125–134. https://doi.org/10.1016/j.ijinfomgt.2009.07.003

Trkman, P., Mertens, W., Viaene, S., & Gemmel, P. (2015). From business process management to customer process management. *Business Process Management Journal, 21*(2), 250–266. https://doi.org/10.1108/BPMJ-02-2014-0010

Truss, C., Shantz, A., Soane, E., Alfes, K., & Delbridge, R. (2013). Employee engagement, organisational performance and individual well-being: exploring the evidence, developing the theory. *The International Journal of Human Resource Management, 24*(14), 2657–2669. http://dx.doi.org/10.1080/09585192.2013.798921

Vanderfeesten, I. & Reijers, H.A. (2006). How to increase work autonomy in workflow management systems?. *Management Research News, 29*(10), 652–665. https://doi.org/10.1108/1409170610712344

Wenjing, C., Wei, S., & Shuliang, Z. (2013). An Empirical Study on the Effects of Creative Personality and Job Autonomy on Individual Innovation Performance of Knowledge Workers. *International Business Management, 6*(2), 24–30. http://dx.doi.org/10.3968/j.ibm.1923842820130602.1045

Westhead, P., Wright, M. & McElwee, G. (2011). *Entrepreneurship: Perspectives and cases*. Essex, UK: Pearson Education Limited.

Willaert, P., Bergh, J.V., Willems, J., & Deschoolmeester, D.A. (2007). The Process-Oriented Organisation: A Holistic View Developing a Framework for Business Process Orientation Maturity. *International Conference on Business Process Management.*

Zaheer, A., Rehman, K.U., & Khan, M.A. (2010). Development and Testing of a Business Process Orientation Model to Improve Employee and Organisational Performance. *African Journal of Business Management, 4* (2), 149–161.

Received: August 02, 2023
Accepted: November 16, 2023

ECONOMIC ANNALS, Volume LXVIII, No. 239 / October – December 2023
UDC: 3.33 ISSN: 0013-3264

*Renzo Daviddi**

DOMENICO MARIO NUTI: COLLECTED WORKS OF AN ECLECTIC ECONOMIST

Book Review of:

The Collected Works of Domenico Mario Nuti, Volume I: Socialist Economic Systems and Transition, [ISBN: 978-3-031-12333-7, pp. 622] *& Volume II: Economic Systems, Democracy and Integration* [ISBN: 978-3-031-23166-7, pp. 697]. Edited by Saul Estrin & Milica Uvalić (2023), Cham: Palgrave Macmillan [Studies in Economic Transition]

Domenico Mario Nuti was undoubtedly one of Italy's leading economists, and his bibliography appears in various editions of 'Who's Who in Economics', being therefore included among the 1,500 most cited economists in the world (Blaug, 1999). He was one of the four Italian economists (along with Pierangelo Garegnani, Claudio Napoleoni and Luigi Pasinetti) to appear in the "Biographical Dictionary of Dissenting Economists" which contained biographies of the 90 most prominent economists working in a non-neoclassical tradition (Arestis & Sawyer, 1982). Furthermore, few can claim of having economists of the calibre of Nicholas Kaldor, Michal Kalecki, Maurice Dobb, Oskar Lange or Joan Robinson among their mentors.

Mario Nuti not only made important academic contributions, but also notes and policy papers resulting from both his academic work and the role as adviser he held for different institutions and countries, including his positions as Professor at the University of Rome, the London Business School and the European University Institute in Florence.

Nuti's relationship with Serbian economists and academia dates back to the 1990s. He was a member of the Editorial Board of *Economic Annals* until his untimely

* European External Action Service (Retired), e-mail: renzo.daviddi@gmail.com

death in December 2020. He visited Belgrade on several occasions, including as a keynote speaker at the Faculty of Economics as well as for the Serbian Association of Economists and at a conference of the European Association of Comparative Economic Studies (EACES) in 2004. When sanctions had just been lifted against FR Yugoslavia in November 1995, Mario was involved by the then central bank governor Dragoslav Avramović on a project on privatisation. Among other things, he contributed a paper on mass privatization at a conference organised by the National Bank of Yugoslavia and the European Centre for Peace and Development of the United Nations University for Peace in Belgrade in 1996. This first initiative led to the creation of an International Permanent Study Group on Transition and Privatisation, set up by the European Centre, of which Mario was an active member. Furthermore, Mario was a reviewer of an extensive two-volumes study prepared by a group of economists under the guidance of Avramović and his ideas and advice influenced the programme of economic reforms presented at the first conference of the Stability Pact for Southeast Europe in Sarajevo in the summer of 2000.

In this edited book, Saul Estrin and Milica Uvalić, have put together and systematised a large part of Mario Nuti's scientific works, from his early contributions in the 1960s to his last, unfortunately not entirely completed project on the political economy of socialism. This monumental work (in all over 1,300 pages) has been published in two volumes by Palgrave MacMillan in the "Studies in Economic Transition" series convened by Jens Hölscher and Horst Tomann.

In their introduction, the book's editors explain the reasons that led them to embark on this challenging work: to make a selection of Mario Nuti's works in order to make the best ones available, including some lesser-known policy contributions; to allow access to some publications that are difficult to find, or have appeared in an incomplete form; to present an anthology that, although not exhaustive, brings together his most important works with the aim to elicit their underlying intellectual framework.

This last aspect is in my opinion particularly significant. Mario Nuti had a coherent intellectual vision combined with the ability to move across various fields of economics while never losing sight of the underlying issue, which the two editors summarise (in my opinion correctly) as the search for a fairer and more just economic, social and political system. To confront this task over many years Mario used different tools, approaches and working methods. This is one of the reasons why it is impossible to corner him into a specific theoretical frame of reference. To use his own words, Mario considered himself "an eclectic omnivorous

economist"[1], a scholar who liked to remind his students and his interlocutors that in economics no paradigm must be accepted a priori, but that its use depends on the nature of the problem they are trying to solve. And it is precisely in bringing out the coherence, but also the eclecticism of the intellectual model of reference that is the thread that has guided Estrin and Uvalić in the choice of works to be included in the edited volumes and in their thematic classification.

The writings are divided into two volumes, the first of which came out in May 2023 and the second in August 2023, grouped into five thematic areas. Volume I, entitled "Socialist Economic Systems and Transition" is divided into two sections. The first section contains writings on socialist economic systems, and on the crises that characterised the socialist economies in the 1980s until their collapse at the end of the decade. The second section includes various writings on the post-1989 transition of the centrally planned economies of Central and Eastern Europe and the Soviet Union to a market economy. Volume II, entitled "Economic Systems, Democracy and Integration", has a more wide-ranging scope. It includes contributions in three thematic areas: the evolution of economic systems, economic democracy, and east-west integration and globalisation. In addition to a general introduction by the editors, the reader is guided in reading each thematic part by a short review that summarises and contextualises the interventions contained therein. The Chapter 2 of the first volume reproduces Mario's autobiography that appeared in the "Biographical Dictionary of Dissenting Economists" referred to above.

The editors emphasise that organising the writings to be included in each section was a daunting task, since some fundamental questions recurred constantly in Mario's research interests, from his first steps exploring the Cambridge capital controversy[2] as a Research Fellow at Cambridge Universityto his most recent work on transition in Central and Eastern Europe and globalisation.

There is also an important, epistemological aspect that emerges from reading the two volumes. This is what Mario was able to pass on to many of his students, namely looking at economics as a complex discipline to which one must refer without dogmatism, completing each analysis by trying to take into account

1 As Mario Nuti himself wrote in 1992, "I am flattered at being classed as a rebel, but I regard myself more as an omnivorous eclectic".

2 Geoffrey Harcourt (1972) ended his review of the Cambridge capital controversy with a chapter entitled "Nuti to the fore!", demonstrating how Nuti had encapsulated the controversy in his commentaries on the topic.

elements borrowed from history and politics and anchoring analysis in facts from the real world.

A meaningful example of this can be found at the end of Volume II, in a chapter entitled "Seismic faults in the European Union" (pp. 621-656) that sets out a dire warning on the stability of the EU:

"The remedies to secure the EU entire system are available, in many cases even without amending the Treaties, but clash with the hyper-liberal design that has gradually perverted European policies, as well as with conflicts of interest between states, ideologies, welfare regimes, classes, bureaucracies, memories and expectations. *Rebus sic stantibus*, there is an increasing probability of an institutional earthquake that sooner or later will disrupt and destroy the EU: the only uncertainty concerns the date, unpredictable as for all earthquakes" (p.621).

This is certainly not the place to give a detailed account of the richness and eclecticism of Mario's thought, as well as his good-natured, but at the same time mordant *vis polemica*. To the interested reader I would suggest in addition to the introduction by Saul Estrin and Milica Uvalić to the two volumes (Ch. 1, pp. 1-13), the article by the same authors in *Acta Oeconomica* (Estrin & Uvalić, 2021). An obituary by Michael Ellman published in the *Cambridge Journal of Economics* (Ellman, 2021) gives an account of the "important contributions (by Mario Nuti) to economic theory, political economy and economic policy", while a paper by Joseph Halevi published in Italian in *r/project* summarises in an excellent manner some of the more technical aspects of Mario's thought (Halevi, 2021).

Having shared my entire professional career with Mario Nuti, starting as one of his students at the Faculty of Economics in Siena in the 1970s, I had the opportunity over the years to appreciate his versatility and eclecticism (as well as his great generosity). Like others, I would have greatly regretted if the great wealth of ideas, thoughts, and policy recommendations that Mario left us were to be lost. Thanks to the work of Milica Uvalić and Saul Estrin we now have a systematic collection of his works. Perhaps we should also consider how to collect some of his notes, contributions, and policy writings (those of Mario the policy advisor) and prevent his "Transition" blog from being lost.

REFERENCES

Blaug, M. (1983, 1986, 1999). *Who's Who in Economics. A Biographical Dictionary of Major Economists*. Cambridge, Mass: MIT Press.

Arestis, P. & Sawyer, M. C. (Eds.) (1992). *A Biographical Dictionary of Dissenting Economists*. London, Elgar Publishing.

Estrin, S. & Uvalić, M., (2021). The life and works of Domenico Mario Nuti, 1937–2020: An appreciation. *Acta Oeconomica*, (71)2, 181-194.

Ellman, M. (2021). Tribute to Domenico Mario Nuti. *Cambridge Journal of Economics*. 45(6), 1361–1372.

Halevi, J. (2021). Ricordo di Domenico Mario Nuti. *http://rproject.it*

Harcourt, G. (1972). *Some Cambridge Controversies in the Theory of Capital*. Cambridge: Cambridge University Press.

Received: September 12, 2023
Accepted: November 15, 2023

ACKNOWLEDGEMENT TO REVIEWERS

Economic Annals owes much to the expertise of our reviewers and to their willingness to generously offer their time to the review process. Their constructively critical reading of submitted manuscripts, and the provision of considered comments to authors, is instrumental in ensuring the highest academic standards of the articles published in the journal. The Editorial Board therefore gratefully acknowledges the assistance of the following scholars who have reviewed manuscripts for Economic Annals during January-December 2023:

Abby Innes
Aleksandra Anić
Aleksandra Nojković
Aleksandra Praščević
Ana Aleksić Mirić
Ana Perić
Barkat Ullah
Biljana Bogićević Milikić
Biljana Jovanović Gavrilović
Bojan Ristić
Branimir Jovanović
Branko Milanović
Branko Radulović
Cristiano Perugini
Cui Tianxiang
Danica Jović
Dejan Molnar
Dejan Šoškić
Djordje Mitrović
Djordjević Aleksandra
Dragan Aleksić
Drini Imami
Elena Batunova
Emil Knezović
Ermira Kalaj
Galjina Ognjanov
Gorana Krstić
Hannu Laurila
Heru Wahyudi
Ibrahim Maji
Irena Janković
Ivan Vujačić
Ivana Popović Petrović
Jadranka Djurović Todorović
Jelena Andjelković Labrović
Jelena Žarković
Koangsung Choi
Kosovka Ognjenović
Lara Lebedinski
Lazar Čolić
Maja Jandrić
Mallika Saha

INSTRUCTIONS TO AUTHORS

Economic Annals is an international professional journal published quarterly by the Faculty of Economics and Business, University of Belgrade. The journal publishes research in all areas of economics and business. It publishes high-quality research articles of both theoretical and empirical character. The journal especially welcomes contributions that explore economic issues in comparative perspective with a focus on Southeast Europe and the wider European neighbourhood. Any paper submitted to the *Economic Annals* should **NOT** be under consideration for publication by other journals or publications. **Contribution written in English should be submitted electronically to ScholarOne**.

The journal will maintain high scientific standards. Papers submitted for publication should be original, relevant and scientifically accurate. Authors are expected to provide new information or analysis, and should present a summary of the basic facts they deal with and the conclusions they draw, maintaining coherence and compactness of their reasoning. The originality of the work is subject to test by iThenticate crosscheck. The texts should also follow appropriate technical standards and stylistic criteria. UK spelling (specialisation, labour, etc.) should be used, while both UK and US abbreviations are acceptable.

An ***anonymous version*** of the paper should be submitted ("document properties and personal information" should also be removed) along with a ***separate cover page***, containing the article's title, author's name and affiliation, ORCID id and e-mail address. During the submission process, authors will be asked to provide a short abstract of between 100 to 200 words summarising the major points and conclusions of the paper; a suggested running head (an abbreviated form of the title of no more than 50 characters with spaces), as well as a list of up to five keywords and up to five two-digit codes following the Journal of Economic Literature (JEL) classification (https://www.aeaweb.org/econlit/jelCodes.php).

Papers should be prepared as a single file (including text, notes, references, and tables) in MS-Word or .pdf format. Tables and footnotes should be included as they are intended to appear in the final version. Footnotes should be kept to a minimum and numbered as superscripts. Figures should be submitted as separate files in Excel format with the original data included in a separate sheet.

As a rule, submitted articles should not exceed 8,000 words. All pages apart from the first one should be numbered. Subtitles should be concise, clearly marked in bold, and numbered (up to two levels of numbering). No other entries should be bolded. Formulae should be numbered on the right-hand side of the page. In case of long proofs, these should be inserted in a separate Appendix, following the References. Tables and Figures must not use colour, and should be in a format easy to edit, for instance they should take half a page (or a full page) within the indicated margins. They should be clearly labelled at the top, with a legend at the bottom, and should be logically ordered, using Arabic numerals. Sources of the data should be given below tables and figures.

Papers should follow APA style guidelines: https://apastyle.apa.org/style-grammar-guidelines/references/examples#textual-works. Some key points watch out for are as follows. Parenthetic references in the text and in footnotes should be listed by the author surname, with the year of publication in parentheses; in case of more than one author use an ampersand, for instance: (Atkinson, Picketty & Emmanuel, 2011). Narrative citations within the text should use "and" rather than ampersand, for instance: Djankov, Glaeser and La Porta (2003). Use an ampersand in the list of references. When citing works with one or two authors, include the author name(s) in every citation. For works with three or more authors, include the name of only the first author plus "et al." in every citation (even the first citation). Include all author names in the list of references. If the author is unknown, the first few words of the reference should be used; this is usually the title of the source. For example: (*A guide for economy*, 2019). Multiple works by the same author are sorted by date in ascending order; if the works are in the same year they should be ordered alphabetically by title and allocated a letter (a, b, c,…) after the date. Only reference the works that you have cited in your text. Within the text, avoid long strings of citations; cite only those works which are relevant to the text that they inform. Before submitting your paper, check that all references cited in the paper are included in the reference list at the end of the paper, and that all papers included in the reference list have been cited in the text.

References should be left aligned in alphabetical order in the reference list, according to the following formats:

• Article in journals

Author surname(s), initial(s). (Year). Article title. Journal, Volume number (issue or part number, optional), page numbers. DOI.

Rodrik, R., Subramanian, D., & Trebbi, F. (2004). Institutions rule: the primacy of institutions over geography and integration in economic development. *Journal of Economic Growth*, 9(2), 131-165.

https://DOI: 10.1023/B:JOEG.0000031425.72248.85.

• Books

Author surname, initial(s). (Year). *Title*. Publisher location: Publisher

De Grauwe, P. (2020) *Economics of Monetary Union* (13th ed.). Oxford: Oxford University Press.

• Edited Book

Author surname, initial(s). (Ed(s).). (Year). *Title*. Publisher location: Publisher

Baltagi, B.H. (Ed.). (2003). *A Companion to Theoretical Econometrics*. Oxford: Blackwell

• Book with several authors

When there are multiple authors, list them all, with the addition of ampersand (&) before the last surname. If there are more than seven authors, list the first six, then write three full stops (…), and at the end write the last author.

Acemoglu, D., & Robinson, J.A. (2006). *Economic Origins of Dictatorship and Democracy*. Cambridge: Cambridge University Press.

Baumol, W. J., Panzar, J. C., & Willig, R.W. (1982). *Contestable Markets and the Theory of Industry Structure*. New York: Harcourt, Brace, Jovanovich, Inc.

• Chapter in Book

Last name of the chapter author, initial(s). (Year). Chapter title. In editor initial(s), surname (Ed.). *Title* (ed., pp.). Publisher location: Publisher

McMillan J., & Woodruff C. (2003) The central role of entrepreneurs in transition economies. In G. S. Fields, & G. Pfefferman (Eds.). *Pathways Out of Poverty* (pp. 105-121). Dordrecht: Springer. https://doi.org/10.1007/978-94-010-0009-3_6.

• E-Book

Author surname, initial(s). (Year). *Title*. URL

Perry, R.B. (1909). *The Moral Economy*.

https://manybooks.net/book/137844/read#epubcfi(/6/2[id00000]!/4/2[id00000]/1:0)

• Technical Reports or Working Papers

Individual authors

Author surname, initial(s) or corporate name. (Year). *Title*. (Report or Working Paper No.). URL.

Cătuți, M., Kustova, I. and Egenhofer, C. (2020) *Delivering the European Green Deal for Southeast Europe: Do we need a regional approach?* (CEPS Research Report No.2020/1). https://www.ceps.eu/wp-content/uploads/2020/06/RR_2020-01_European-Green-Deal-for-South-Eastern-Europe.pdf.

Corporate authors

American Psychological Association, Task Force on the Interface Between Psychology and Global Climate Change. (2009). *Report of the APA Task Force on the Interface Between Psychology and Global Climate Change*.

http://www.apa.org/science/about/publications/climate-change.aspx

• Newspaper Articles

Author surname, initial(s). (Year, Month Day). Title. *Title of Newspaper*, p. or pp. URL*

*only include if the article is online.

Note: the date includes the year, month and date.

Smialek, J. (2020, May 2). Hotel Group Will Return Tens of Millions in Small Business Loans. *The New York Times*, pp. 10.

https://www.nytimes.com/2020/05/02/business/economy/ashford-hotels-virus-monty-bennett.html

• Website

Author surname, initial(s). (Year, month day). *Title*. URL

Mitchell, J.A. (2017, May 21). *How and when to reference*.

https://www.howandwhentoreference.com