Univerza v Mariboru
Ekonomsko-poslovna fakulteta

Letnik: 62 | Številka: 4 | 2016
Volume: | Number:

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NAŠE GOSPODARSTVO
Revija za aktualna ekonomska in poslovna vprašanja

OUR ECONOMY
Journal of Contemporary Issues in Economics and Business

NAŠE GOSPODARSTVO

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Letnik 62, št. 4, 2016

Izdajatelj:
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Spletna stran:
http://www.ng-epf.si

Revija je indeksirana v ABI/INFORM Global, EconLit in ProQuest ter vključena v EBSCO in Ulrich's Periodicals bazo.

OUR ECONOMY

Journal of Contemporary Issues in Economics and Business

Vol. 62, No. 4, 2016

Published by:
Faculty of Economics and Business, Maribor (FEB)

Editorial and administrative office address:
Maribor, Razlagova 14, Slovenia,
phone: +386 2 22 90 112

E-mail:
our.economy@um.si

WWW homepage:
http://www.ng-epf.si

The review is indexed in ABI/INFORM Global, EconLit and ProQuest. It is included in EBSCO and Ulrich's Periodicals Directories.

Lektorji: mag. Darja Gabrovšek Homšak in ServiceScape Incorporated

Dtp: NEBIA, d. o. o.

Letno izidejo 4 (štiri) številke. Letna naročnina: za pravne osebe 46 €, za fizične osebe 29 € in za tujino 57,5 €.

ISSN 0547-3101

Revijo sofinancira Javna agencija za raziskovalno dejavnost Republike Slovenije.

Vsebina / Contents

ARTICLES

Growth Effects of Cross-border Mergers and Acquisitions in European Transition Countries

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ORIGINAL SCIENTIFIC PAPER

RECEIVED: JUNE 2016

REVISED: OCTOBER 2016

ACCEPTED: OCTOBER 2016

DOI: 10.1515/ngoe-2016-0019

UDK: 339.727.22:330.12

JEL: E22; F21; F23

Citation: Zvezdanović Lobanova, J., Kračun, D., & Kavkler, A. (2016). Growth Effects of Cross-border Mergers and Acquisitions in European Transition Countries. *Naše gospodarstvo/Our Economy, 62*(4), 3–11. DOI: 10.1515/ngoe-2016-0019

Abstract

This paper deals with the economic effect of cross-border mergers and acquisitions on GDP per capita in European transition countries for the 2000–2014 period. Our analysis shows that cross-border mergers and acquisitions have a negative effect on GDP per capita in the current period, whereas their lagged level positively impacts output performance. We found that transition countries characterized by a higher quality of institutional setting have achieved a positive impact on GDP per capita.

Key words: cross-border mergers and acquisitions; institutions; GDP per capita; transition countries

Introduction

During the 1990s, the contribution of cross-border mergers and acquisitions (C-B M&As) to the production growth was much higher than in the case of greenfield investments (especially in transition countries). Their importance relies on the fact that they lead to crucial institutional and organizational changes within and across industries and regions as these transactions generate a large reallocation of resources, especially in the short run (Ferraz & Hamaguchi, 2002, p. 383). Foreign direct investment (FDI) inflows have played a crucial role in strengthening the private sector and removing structural and macroeconomic imbalances, which are common to many transition countries (UNCTAD, 2003).

After the collapse of the administrative and planning system, post-socialist countries did not have sufficient financial resources to implement a costly innovative model of technological modernization, so they focused their attention on large-scale FDI mobilization. They created conditions for attracting multinationals and the growth of C-B M&A activity as the dominant mode of foreign entry. In order to improve investment attractiveness, these countries used special incentives, such as customs and tax exemptions or direct investment incentives for foreign investors,

NG
OE

NAŠE GOSPODARSTVO
OUR ECONOMY

Vol. 62 No. 4 2016

pp. 3–11

such as the establishment of customs-free zones and industrial parks (UNCTAD, 2003). By opening their economies to foreign trade and investment, transition countries allowed the unhindered entry of multinational companies in order to overcome an obsolete production structure. Consequently, FDI inflows started to grow in several countries that succeeded in the process of market liberalization and privatization (particularly in the Czech Republic, Hungary, and Poland). The pattern and impact of C-B deals largely depended upon the legal and institutional environments in the host and home countries (Rossi & Volpin, 2004). Their economic effects varied significantly across transition countries in line with the development of institutional arrangements and structural economic transformation.

Central and Eastern European countries that became candidates for EU membership had to accomplish the various institutional requirements, primarily the Copenhagen economic accession criteria. Aiming to fulfil EU institutional criteria, some transition countries succeeded in improving the quality of institutional setting by fostering institution building or changing legal and institutional framework. The integration with the EU played a role in establishing the external anchor for institutional changes, and the prospect of membership was a powerful magnet for the transition process (Roland, 2004, p. 57).

The aim of this paper is to investigate the economic effects of C-B M&As on GDP per capita in 22 European transition countries[1] from 2000 to 2014 by applying dynamic panel data approach. We seek to demonstrate that current and lagged levels of C-B M&As have a positive impact on macroeconomic performance in European transition countries. We also conduct the research in order to show that transition countries characterized by a higher quality of institutional setting achieve a positive impact on GDP per capita.

This study makes several contributions to the literature. We did not succeed in finding empirical studies dealing with the impact of C-B M&As on economic growth in transition countries. Therefore, our empirical research contributes to the debate on the economic effects of capital flows by analysing the dynamic nature of this form of FDI and its influence on GDP per capita. In addition, we argue that, in order to accelerate the economic and social development of the countries in transition, it is crucially important to build institutions by creating new ones or improving the quality of existing institutions. Our paper is organized as follows. We first give a brief overview of recent literature on growth effects of FDI inflows in transition countries. We then discuss the data and research methodology, followed by our empirical findings and concluding remarks.

Literature Review

The empirical studies on the FDI as a determinant of economic growth are quite substantial, but they have not yielded consensual results. Melnyk, Kubatko, and Pysarenko (2014) examined the growth effects of FDI in 26 transition countries between 1998 and 2010, performing a fixed-effects panel data analysis. The authors demonstrated that well-developed institutional and financial sectors represented a crucial impetus for GDP growth and FDI inflows' attraction in former Comecon (the Council for Mutual Economic Assistance) transition and developing economies. Their results are in line with the findings of Silajdzic and Mehic (2016), who argued that FDI exerted a positive impact on economic growth in 10 Central and Eastern European countries from 2000 to 2011. Their findings demonstrated that FDI tends to have a larger impact on economic growth in host countries with sufficient absorptive capacity.

Mehic, Silajdzic, and Babic-Hodovic (2013) also found a positive and statistically significant effect of FDI on economic growth in the sample including seven South-eastern European countries from 1998 to 2007. Using the Prais–Winsten regression model with panel-corrected standard errors, the authors showed that FDI is one of the crucial catalysts of economic growth in this group of countries compared to the contribution of domestic capital formation to output performance.

Hudea and Stancu (2012) investigated the relationship between FDI and economic growth for seven Eastern European countries from 1999 to 2009. By applying different panel estimations, panel co-integration, and causality analyses, the authors found that FDI has a direct and positive impact on GDP in the short and long run. This type of capital flow represents an opportunity for transition countries to reduce their technological gap compared to advanced countries. The authors also pointed out that a bi-directional causal relationship exists between GDP and FDI. Another interesting finding relates to the fact that FDI cannot contribute to the income growth in countries that did not implement a comprehensive process of privatization.

Botrić, Bačić, and Slijepčević (2015) evaluated the underlying relationship among FDI, trade, and growth in the group of post-transition countries denoted as late reformers. Their findings suggested that the FDI-led growth hypothesis is valid as a positive long-run relationship exists between

[1] Countries included in the sample: Albania, Armenia, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, the Czech Republic, Estonia, Georgia, Hungary, Latvia, Lithuania, Macedonia, Moldova, Montenegro, Poland, Romania, Russia, Serbia, Slovakia, Slovenia, and Ukraine.

growth and FDI for these countries. Elkomy, Ingham, and Read (2016) examined the role of transition status and the level of political development in determining the effects of FDI on growth for a panel of 61 transition and developing countries between 1989 and 2013. The authors found that the economic effects of FDI on output performance were insignificant in 10 transition countries whereas FDI played a pivotal role in the economic growth and development of non-transition countries.

Yet FDI can be a source of negative economic effects because its impact depends on the underlying economic and political factors in the host transition countries. Mencinger (2003) examined the relationship between FDI and economic growth with the help of panel data for eight EU candidate countries between 1994 and 2001. He found that transition countries did not achieve the growth-enhancing effect of FDI because it mainly took the form of acquisitions related to massive and often politically motivated privatizations. According to him, FDI in transition countries mainly led to the creation of a monopoly in the host market, which destroyed and/or enabled the entry of potential domestic enterprises. Consequently, total investment does not increase by the amount of FDI, which is directly reflected in economic growth and real convergence of the candidate countries with the EU.

Mencinger's (2003) findings are consistent with the conclusions drawn by Curwin and Mahutga (2014), who examined the influence of FDI on economic growth for 25 transition countries from 1990 to 2010. They argued that an increase of FDI leads to an economic decline in the short and long term if the FDI penetration is implemented too quickly. They further demonstrated that domestic investment is more beneficial for economic growth compared to FDI as it is not accompanied by deleterious consequences at the macroeconomic level. According to their opinion, this negative FDI affecting economic growth could be explained by a weak institutional setting as a crucial mediator of the economic effects of FDI.

By applying the fixed effects dynamic panel estimation method, Sapienza (2010) found that the current FDI has a negative impact on economic performance while its lagged value has a significant and positive effect on economic growth in host countries. The author pointed out that spill-over effects from this type of capital flow in terms of know-how and technology need time to arise.

Data and Research Methodology

Our sample consisted of 22 European transition countries for the 2000–2014 period; this panel data set was strongly balanced. Data on C-B M&As were taken from the United Nation Conference on Trade and Development (UNCTAD) database. We expressed this variable as a percentage of GDP, like other authors. Data for our dependent variable—GDP per capita in current US$—were taken from the World Bank. We calculated domestic investment as the difference between gross fixed capital formation and inward FDI (based on data from the World Bank). The source of governance indicators was database compiled by Kaufmann, Kraay, and Mastruzzi (2010). The data for governance balance were obtained from EBRD and Eurostat.

Initial conditions in transition countries are presented with the help of data on purchasing power parity income per capita in 1989, which came from an IMF (2000) publication (except for Serbia, Bosnia and Herzegovina, and Montenegro, whose data were based on the authors' calculations). By using GDP per capita in 1989, we considered the fact that the characteristics of economic and institutional development of these countries depend on different initial conditions at the beginning of their transition process. We provide the descriptive statistics in Table 1 and correlation coefficients in Table 2. According to the descriptive statistics, significant variations emerged between levels of economic development in transition countries. For example, the mean C-B M&As share in GDP for the total sample is 0.78%, with a standard deviation of 1.68. We also found large variations in domestic investment and budget balance among transition countries. For instance, the domestic investment amounted to approximately 18% on average, far exceeding C-B M&As as a percentage of GDP.

Table 1. Descriptive Statistics

Variable	Observation	Mean	Standard Deviation	Minimum	Maximum
Log(GDP pc)	330	8.5673	0.9215	5.8693	10.2220
C-B M&As	330	0.7799	1.6788	-1.7933	13.2099
Budget	327	-2.7964	-2.7964	-15	8.4
Income	220	8.5188	0.5230	7.2442	9.1269
DI	327	18.4148	6.2387	-15.2087	36.8126

Source: Authors' research

Table 2. Correlation Matrix for GDP Per Capita Determinants

#	Log(GDP pc)	C-B M&As	Budget	Income	DI
Log(GDP pc)	1.00				
C-B M&As	-0.03	1.00			
Budget	-0.13	-0.05	1.00		
Income	0.49	0.01	0.09	1.00	
DI	0.23	-0.21	-0.03	0.41	1.00

Source: Authors' research

We investigated the economic effects of C-B M&As on GDP per capita in 22 European transition countries for the 2000–2014 period. We applied a dynamic panel data analysis to test the following hypotheses:

H1: C-B M&As have a positive impact on GDP per capita in the year of the merger or acquisition in European transition countries.

H2: The positive economic effect of one-year lagged C-B M&As on the host country's GDP per capita was also recorded one year after the merger or acquisition.

H3: Transition countries characterized by a higher quality of institutional setting have a positive impact on GDP per capita.

Following the previous empirical research (e.g., Efendić, Geoff, & Adnett, 2014; Mehić et al., 2013; Sapienza, 2010), we estimated this form of panel model specification in order to test these hypotheses:

$$\begin{aligned} \text{Log}(\text{GDPpc}_{it}) = {} & \beta_0 + \beta_1 \text{Log}(\text{GDPpc}_{it-1}) + \\ & + \beta_2 \text{C-B M\&As}_{it} + \beta_3 \text{C-B M\&As}_{it-1} + \\ & + \beta_4 \text{INS}_{it} + \beta_5^{T} \text{CON}_{it} + \varepsilon_{it} \end{aligned} \quad (1)$$

where the subscript i denotes i^{th} country ($i = 1…22$) and the subscript t denotes the t^{th} year ($t = 1…15$), while β_0 to β_5 are regression coefficients. Transposed vector is denoted by T while ε_{it} are the error terms. GDPpc_{it} is the GDP per capita (in natural logarithm), GDPpc_{it-1} is the lagged dependent variable, C-B $\text{M\&As}_{it}$ represents C-B M&As as a percentage of GDP, C-B $\text{M\&As}_{it-1}$ is the lagged variable, INS_{it} is the institutional quality dummy variable equal to 1 when a chosen governance indicator is greater than its median, and CON_{it} is a vector of control variables including:

- government balance (Budget_{it}),
- domestic investment as percentage of GDP (DI_{it}), and
- GDP per capita PPP in 1989 dollars (in natural logarithm) (Income_{it}).

We expected all of the identified independent variables to have a positive impact on economic growth, with the exception of initial GDP per capita. We also estimated the C-B M&As adjustment by including only their first lag, as the higher order lags proved to be insignificant.

Following previous empirical works (Morrissey & Udomkerdmongkol, 2012), we included dummy variables for the overall institutional quality index and separate governance indicators in order to distinguish countries with a high and low quality institutional environment. As these dummy variables are highly correlated among each other, we included them separately in different regression equations (see Table 3) in order to avoid multicollinearity.

Based on the calculated percentile rank, dummy variables were assigned the value 1 if the transition country had a good institutional setting (value of overall institutional quality index or chosen governance indicator was above the median) and 0 otherwise. First, we calculated the overall institutional quality index with the help of the principal component analysis (PCA) method. This multivariate procedure summarized the six worldwide governance indicators (WGIs)—voice and accountability (VA), political stability and absence of violence (PSAV), government effectiveness (GE), regulatory quality (RQ), rule of law (RL), and control of corruption (CC)—into one factor. The value of each indicator ranged from -2.5 to 2.5, with higher values indicating a better quality of institutional setting. The first principal component obtained from these indicators captured 86% of the variations in the original governance indicators. In addition, according to the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy (0.90), the data were suitable for PCA.[2]

In order to estimate the extent to which C-B M&As influence GDP per capita, we applied a two-step system generalized method of moments (GMM) estimator (Blundell & Bond, 1998) including the Windmeijer finite sample correction (Windmeijer, 2005). The usage of this estimation technique is preferred for panels with a small number of periods and a large number of observations, a linear functional relationship, a dynamic dependent variable (dependence on its own past values), and independent variables that are not strictly exogenous and fixed individual effects (Roodman, 2009). It takes into account the specificity of each observation unit and allows for heteroscedasticity and autocorrelation within the units, but not among them. According to Blundell, Bond, and Windmeijer (2000, p. 2), a system GMM is based on relatively mild restrictions on the initial condition process.

Compared to the difference GMM, the system GMM leads to the improvement of the precision and reduction of the finite sample bias by exploiting instruments available for the equations in levels (Blundell et al., 2000, p. 30). Its specificity is reflected in the fact that the instruments in levels remain good predictors for the endogenous variables in this model even when the series are highly persistent like institutions (Blundell & Bond, 1998, p. 138). Moreover, the first difference transformation could remove the fixed country-specific effect, which might lead to misleading results. The use of the system GMM estimator also solves the problem of magnifying gaps arising from the difference GMM estimator, as pointed by Roodman (2009, p. 104). The system GMM

[2] These results can be provided by the authors, upon request.

enabled us to capture the effects of lagged C-B M&As on the current economic effects of C-B M&As.

We applied the Hansen test to analyse the appropriateness of the model specification and validity of over-identifying restrictions. If the system is over-identified, a test statistic for the joint validity of the moment conditions (identifying restrictions) falls naturally out of the GMM framework (Roodman, 2009, p. 97). We strictly adhered to the rule that the number of instruments should be less than or equal to the number of groups (in contrast to Efendić et al., 2014; Morrissey & Udomkerdmongkol, 2012). In addition, we provided the standard set of GMM diagnostics to allow us to assess the validity of our results. The presence of the serial correlation of residuals was tested in order to achieve consistent estimates of the parameters. Therefore, we checked for the second-order serial correlations of the differenced residuals. According to Arellano and Bond (1991), no second-order serial correlation should occur in the first-difference residuals.

In our panel model specification, the one-year lagged GDP per capita, C-B M&As, and domestic investment were assumed to be endogenous variables instrumented with GMM-style instruments, while the others were considered exogenous. We used lags 2 to 4 of endogenous variables in order to alleviate the instrument proliferation problem. The collapse option was also used to reduce the size of the instrument matrix in order to obtain one instrument per variable instead of one instrument for each variable in each period.

For the estimation of the coefficient and the standard error of the long-run effects of C-B M&As on GDP per capita, we considered the explanation given by Papke and Wooldridge (2005) and used the "nlcom" command in STATA 12. The long-term effect is the product of multiplying estimated coefficients by the long-run multiplier $\frac{1}{(1-\beta_1)}$, (where β_1 is the estimated coefficient of the lagged dependent variable).

All the estimations are performed using the xtabond2 program written by Roodman (2009).

Empirical Results and Discussion

Our estimates of the equations in Table 3 are largely consistent with the results achieved by the other authors. In terms of diagnostics, the results of the Hansen test showed that the chosen instrument set is exogenous, while the AR(2) test also indicated no problem of autocorrelation. The lagged level of GDP per capita had a positive and highly significant impact on the GDP per capita in the current period in all our specifications.

Column 1 shows that current C-B M&As had a negative and statistically significant effect on GDP per capita, while their lagged level had a highly significant positive impact on output performance. The budget balance as a proxy of macroeconomic stability had a statistically significant positive impact on GDP per capita in all our regressions, indicating the importance of stabilization measures for output performance. Domestic investment had a positive regression coefficient in all our regressions, but its influence was insignificant. On the other hand, the impact of the initial GDP per capita was positive, but its *p*-value was not close to the conventional level of significance. Overall, the institutional quality dummy was also positive and significant at the 0.01 level, suggesting that transition countries characterized by a higher quality of institutional setting achieved a positive impact on GDP per capita.

In column 2, we replaced the overall institutional dummy with the CC, yielding a positive and highly significant coefficient for this variable. We also found that contemporaneous C-B M&As had a negative sign but were insignificant, while their lagged level had a positive and statistically significant coefficient at the 0.01 level. In column 3, we included the PSAV dummy, which had the expected positive sign but was not statistically significant. None of the control variables had statistically significant coefficients, with the exception of government balance and lagged GDP per capita, which had statistically significant coefficients in all columns. Column 4 shows that the coefficient of RL was positive and significant. The coefficients of current and lagged C-B M&As had signs and significances as in the previous column. After including the VA in column 5, the coefficient of lagged C-B M&As became significant at the 0.05 level. In columns 6 and 7, we included the RQ and GE, and the evidence suggests that these dummy variables exerted a positive and statistically significant impact on GDP per capita. We found that the significance of other variables was unaffected after including VA, RQ, and GE in equations.

The main results of our growth regression indicate that C-B M&As had a negative effect (only significant in one column) on GDP per capita in the current period. In the year of the merger or acquisition, transition countries characterized by open capital accounts experienced an increase in economic instability. This form of FDI was related to the privatization of public assets, which usually caused layoffs and decreases in production immediately after the merger or acquisition. Privatization, as one of the strategies for the restructuring of state-owned enterprises in these countries, was implemented in conditions of underdeveloped financial and capital market, low quality of institutional setting, and poor macroeconomic conditions. As privatization aims to improve management quality and raise employment capacity in an inefficient economic system, it is not surprising that this

type of enterprise restructuring leads to an increase in unemployment in a short period of time. We conclude that local authorities' concerns about the decrease of production capacity, employee layoffs, and business restructuring in the frames of outsourcing process are fully justified in the short run. Therefore, our findings do not confirm H1 that C-B M&As have a positive economic effect on GDP per capita in the host transition countries in the period of study.

On the other hand, the lagged value of C-B M&As showed a significant positive impact on GDP per capita in five of the seven columns, which leads to the conclusion that this form of FDI needs time to produce positive economic effects. Our results provided evidence in favour of accepting H2: The positive economic effect of C-B M&As on GDP per capita was recorded one year after the merger or acquisition. An increase of GDP per capita might arise due to technology spill-over effects (in the case of proper innovation absorption capacity), development of employees' knowledge and skills, as well as strategic partnerships between domestic and foreign companies. In addition, the operation of large foreign investors encourages other international companies from their supply chain to open production facilities in transition countries. Our finding is consistent with the study of Sapienza (2010), who found that contemporaneous FDI has a negative and insignificant impact on economic growth whereas its lagged level shows a positive effect.

From the long-term perspective, C-B M&As do not positively contribute to an increase in GDP per capita as their coefficient is negative and highly significant (-0.425). This long-term coefficient estimate was calculated using the "nlcom" command in STATA 12 (the results are reported in Table 4). Our explanation for such an influence relies on the fact that foreign investors tend to reduce the number of employees and production in the long run or even leave transition countries after they exploit preferences of the local market. However, our long-term estimates should be considered with a certain amount of scepticism as they were based on several assumptions that do not correspond to economic reality (stability of the whole system and ceteris paribus factors).

Table 3. Economic Effect of C-B M&As on GDP Per Capita with Respect to Governance Variables Dummies

Variables	Overall institutional quality index	Governance indicators					
		CC	PSAV	RL	VA	RQ	GE
	1	2	3	4	5	6	7
lngdppc(-1)	0.792*** (0.024)	0.778*** (0.044)	0.814*** (0.051)	0.790*** (0.035)	0.828*** (0.032)	0.794*** (0.064)	0.805*** (0.033)
M&As	-0.088** (0.035)	-0.102 (0.064)	-0.082 (0.094)	-0.080 (0.056)	-0.078 (0.060)	-0.087 (0.104)	-0.079 (0.073)
M&As (-1)	0.024*** (0.006)	0.023*** (0.005)	0.020 (0.013)	0.024 (0.008)	0.025** (0.009)	0.025* (0.012)	0.025* (0.012)
Budget	0.019*** (0.006)	0.016*** (0.005)	0.016** (0.007)	0.018*** (0.005)	0.019** (0.006)	0.018** (0.007)	0.018** (0.007)
INS	0.244*** (0.057)	0.208*** (0.061)	0.144 (0.097)	0.217*** (0.073)	0.197*** (0.061)	0.193** (0.079)	0.171*** (0.048)
Income	0.009 (0.067)	0.017 (0.072)	0.053 (0.062)	0.048 (0.060)	-0.009 (0.142)	-0.010 (0.155)	0.008 (0.072)
DI	0.005 (0.009)	0.009 (0.012)	0.003 (0.015)	0.002 (0.011)	0.009 (0.019)	0.011 (0.027)	0.009 (0.015)
Time effect	yes	yes	yes	yes	yes	yes	yes
No. of Obs.	280	283	280	283	284	281	281
No. of groups	22	22	22	22	22	22	22
No. of instruments	16	16	16	16	16	16	16
Hansen test (*p* value)	0.679	0.770	0.124	0.664	0.265	0.249	0.288
AR(2) (*p* value)	0.658	0.726	0.446	0.709	0.416	0.633	0.571

Source: Authors' calculations

Note: The variable INS is defined differently in each model (column). It is an institutional quality dummy based on either an overall institutional quality index or one of the governance indicators (CC, PSAV, RL, VA, RQ, GE). Standard errors are in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Table 4. Long-run Effect of Change in C-B M&As on GDP Per Capita

Variable	Coefficient	Standard Errors	t	P>|t|	[95% Conf. Interval]	
C-B M&As	-0.425	0.149	-2.85	0.009	-0.734	-0.116

Source: Author's calculations

Note: The coefficient is calculated using the "nlcom" command in Stata 12. The results are based on column 1 from Table 3.

Table 5. Differences in GDP Per Capita and C-B M&As as Percentage of GDP, with Respect to Quality of Institutional Setting in Given Countries, 2000–2014

#	Low governance countries			High governance countries		
	GDP per capita	C-B M&As	Institutional quality	GDP per capita	C-B M&As	Institutional quality
Observations	153	153	153	177	177	177
Mean	3892.42	0.6374	-1.2374	10671.19	0.9030	1.0696
Standard Deviation	2733.40	1.2714	1.9853	6143.70	1.9595	1.6025
Minimum	354.00	-1.7933	-8.0801	407.73	-0.8305	-7.2794
Maximum	14487.28	6.8755	1.2051	27501.82	13.2099	3.2121

Source: Authors' calculations

The coefficients' sign of the dummy variables for higher governance quality is in line with our predictions. All measures for institutional quality were positive and significant (with the exception of PSAV in regression 3), thereby confirming H3—that transition countries characterized with a higher quality of institutional setting (above the median)[3] achieved a positive impact on GDP per capita. The coefficient of PSAV was positive but insignificant, suggesting that once a country achieves a certain level of political stability, further progress made in this area produces a negligible impact on GDP per capita.

Transition countries seeking to join the EU and OECD achieved better results in the improvement of their institutional environment. They were encouraged to adopt Western market economic and legal systems and accomplish all necessary requirements for integration. These requirements were very similar to the conditions for the successful transition period. The accession of eight former socialist economies during the "wave" of the fifth enlargement in 2004 and further EU enlargement in 2007 (Bulgaria and Romania) and 2013 (Croatia) meant that candidate countries accepted the *acquis* in its existing form and succeeded in institutional harmonization, but to different extents. After joining the EU, the given countries enjoyed the benefits of membership, which positively reflected on their rate of economic growth and export expansion.

[3] Bulgaria, Croatia, the Czech Republic, Hungary, Latvia, Lithuania, Estonia, Poland, Romania, Slovenia, and Slovakia.

Table 5 also provides support for our prediction that institutional setting improvement corresponded not only with higher volumes of this type of FDI, but also gave impetus for GDP per capita performance in transition countries. The table shows the differences in the level of GDP per capita and C-B M&As (as a percentage of GDP) among the chosen transition countries according to the quality of their institutional settings. As a criterion for grouping countries, we used the overall institutional quality index calculated by the PCA analysis. Those transition countries whose overall institutional quality index was above the median are denoted as countries with a better quality of institutional setting. We found that the level of GDP per capita and C-B M&As as a percentage of GDP were higher in those transition countries characterized by better institutional quality.

Conclusion

This paper investigated the economic effect of C-B M&As on GDP per capita in 22 European transition countries from 2000 to 2014. The main finding of our empirical study is that the impact of this type of FDI is positive and statistically significant only one year after the merger or acquisition. We argued that C-B M&As need time to produce positive economic effects that arise due to technology spill-over effects, the development of employees' knowledge and skills, and strategic partnerships between domestic and foreign companies. From a long-term perspective, their

impact on GDP per capita is negative and highly statistically significant. We believe that foreign companies' activities may be guided by short-term interests, which lead to the crowding-out of domestic companies from the local market. We determined that all measures for institutional quality are positive and significant (with the exception of political stability and absence of violence), thereby confirming our hypothesis that transition countries characterized by a higher quality of institutional setting (above the median) achieved a positive impact on economic growth.

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Vpliv čezmejnih združitev in prevzemov na gospodarsko rast v evropskih tranzicijskih državah

Izvleček

V članku se ukvarjamo z ekonomskim učinkom čezmejnih združitev in prevzemov na BDP na prebivalca v evropskih tranzicijskih državah v obdobju med letoma 2000 in 2014. Naši empirični rezultati kažejo, da imajo čezmejne združitve in prevzemi negativen učinek na BDP na prebivalca v tem obdobju, vpliv odložene spremenljivke pa je pozitiven. Ugotavljamo, da so tranzicijske države, ki izkazujejo višjo kakovost institucionalnega okolja, uresničile pozitiven vpliv na BDP na prebivalca.

Ključne besede: čezmejne združitve in prevzemi, institucije, BDP na prebivalca, tranzicijske države

ORIGINAL SCIENTIFIC PAPER

RECEIVED: OCTOBER 2016

REVISED: NOVEMBER 2016

ACCEPTED: NOVEMBER 2016

DOI: 10.1515/ngoe-2016-0020

UDK: 339.5:338.2

JEL: F17

Citation: Yuhong, S., Yifei, M., & Yang, J. (2016). An Analysis of Interaction Effects of China–South Korea and China–Australia FTAs and the Expanding TPP. *Naše gospodarstvo/Our Economy, 62*(4), 12–22. DOI: 10.1515/ngoe-2016-0020

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**NAŠE GOSPODARSTVO
OUR ECONOMY**

Vol. 62 No. 4 2016

pp. 12–22

An Analysis of Interaction Effects of China–South Korea and China–Australia FTAs and the Expanding TPP

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Abstract

On 5 October 2015, the Trans-Pacific Partnership Agreement (TPP) led by the U.S. was signed. Already, 12 countries[1] have joined the agreement, but China has not. Thus, lots of research has focused on the negative effect of the TPP on China's foreign trade. On the other hand, China is moving forward in its own efforts to establish bilateral free trade agreements (FTAs) and free trade zones. In June 2015, China–South Korea and China–Australia signed bilateral FTAs which went into effect in December 2015. Several questions were raised: Since South Korea and Australia are the major trade partners in the Pacific area and the bilateral FTAs will be effective before the TPP, will these FTAs' positive effects on China's foreign trade offset some of the negative effects of the TPP? If China and the U.S. adopted a competitive trade policy, which countries would benefit? If China and the U.S. adopted a cooperative trade policy, how would the trade value and economic welfare change? This paper simulates and analyses the mutual effects of China–South Korea and China–Australia FTAs and the enlarging TPP using the computable general equilibrium model. The major conclusions drawn suggest that China–South Korea and China–Australia FTAs will significantly offset the TPP's negative effect on China's foreign trade. If China is not included, the U.S. economic benefit from the TPP will be limited. The economic welfare for a country like Australia, which joined both the bilateral FTA and the TPP, will be increased the most. In the long run, China joining the TPP would be the most beneficial decision for its national interest. However, if the TPP cannot be approved by the US congress, the U.S.'s economic indicators and export would be decreasing sharply. China's economy and export will benefit from FTAs.

Key words: China–South Korea FTA, China–Australia FTA, TPP, interaction effects

[1] The 12 countries are New Zealand, Singapore, Chile, Brunei, the U.S., Australia, Malaysia, Peru, Vietnam, Mexico, Canada, and Japan.

Introduction

Since 2009, when the U.S. initiated discussions regarding the Trans-Pacific Partnership Agreement (TPP), 12 countries have agreed to participate in the TPP, with the final agreement being reached on 5 October 2015. Much attention has been focused on the TPP's negative effects on China's foreign trade, because China is not a TPP member despite being one of the most important economies in the trans-Pacific area. On the other hand, two of the most significant achievements for China's free trade policy in 2015 were two bilateral free trade agreements (FTAs): the China–South Korea FTA and the China–Australia FTA. Both FTAs were signed in June 2015 and went into effect on 20 December 2015. Both South Korea and Australia are major trade partners with China in the trans-Pacific area, and the two FTAs came into effect before the TPP. People are interested in knowing if the FTAs' positive trade effect will offset the negative effect of the TPP for China. If both China and the U.S. were to adopt a competitive trade policy, which countries would benefit most? If a cooperative trade policy between the two were adopted, how would the economic welfare change?

Focusing on these questions, this paper simulates the mutual economic effects of the TPP and China's FTAs to evaluate the effectiveness of each trade policy. Measuring and simulating the mutual effects of multiple trade agreements are relatively novel and complicated research objectives. To design the scenarios of simulation, this paper simulates the different scenarios of the China–South Korea and China–Australia FTAs as well as the dynamic expansion of TPP. Likewise, analysis is made of the change of economic welfare and export value for different time frames of the FTAs and the TPP and the potential mutual economic impact. As the TPP's dynamic expansion is mainly reflected in the interests of the game between China and the U.S., in order to clarify the policy interaction between the two countries, this paper also analyses the scenarios if China were to join the TPP or not in the future; the results should have strong policy implications for governments' policy adoption.

Literature Review

By using the computable general equilibrium (CGE) model, it is possible to simulate and analyse the economic effect of trade agreement. The Global Trade Project (GTAP) model, developed in 1992 at Purdue University in the U.S., is a standard CGE model based on the neoclassical theory of firm and household behaviour assuming perfect competition as well as rational and utility-optimizing behaviour. Many researchers use the GTAP model to analyse the effect of China's FTAs and TPP. Wei (2010) and Wei (2009) used the GTAP6 model to analyse the expectation of the macro-economic impact of the China–South Korea FTA. They suggested that the establishment of the China–South Korea FTA may improve both countries' GDP, economic welfare, terms of trade, and total trade value. Huang and Wang (2010) simulated two scenarios of the China–South Korea FTA by using GTAP7 and made suggestions on the FTA negotiation strategy. Wang and Zheng (2013) simulated three scenarios of the tariff-cutting process by using GTAP7 to analyse the impact on both countries' agriculture industry. Zhao (2008) pointed out that, on some tariff-cutting processes, there will be a win-win situation for both China and South Korea. He also analysed the FTA's impact of both countries' domestic production. Wang (2013) also simulated the economic effect of the China–South Korea FTA by using GTAP 7. There is also research focusing on the China–Australia FTA. Zhou, Wu, Hu, and Cui (2006) analysed the economic effect of the China–Australia FTA and suggested that the FTA will increase the trade value between the two countries and create a trade diversion effect, thereby decreasing the welfare of the nearby countries. All these researches are focused on one single FTA. Most adopted the GTAP 6 or GTAP 7. However, far less research adopting the GTAP9 is focused on the mutual effect of these two FTAs.

The U.S. announced its participation in the TPP negotiations in 2009. Since then, many researchers have focused on the negotiation and economic effect of the TPP. Some of the research adopted GTAP to make quantitative simulations and analyses. Wan (2011) simulated three scenarios of the TPP using GTAP 6. She focused on the economic effect of Japan's participation in the TPP. According to the findings, there will be a positive effect on the U.S. economy and a negative effect on China's economy if Japan were to join the TPP. J. Zhao (2012) suggested that there will be a significant negative impact on China's economy and trade if both South Korea and Japan were to join the TPP. Lu(2013) simulated the effect of the TPP on China's textile industry. His research suggested that there will be a negative effect on China's textile export. Y. Zhao (2014) simulated the economic welfare change of trans-Pacific countries, suggesting that the majority of the economic indicators of the countries will be improved if the trans-Pacific countries, including China, were to join the TPP. A. Todsadee et al.(2012) used GTAP 7 to analyse the economic effect of the countries that have joined the TPP, suggesting that there will be an improvement of the countries' GDP, welfare, and trade if China, Japan, and South Korea were all to join the TPP. However, according to their findings, there will be a negative effect for countries outside of the TPP. Todsadee, Kameyama, & Lutes (2012) analysed the effect of the TPP on the stock farming industry. Compared to previous studies, this paper varies the simulation scenarios' setting and research objective.

Some research has also focused on the mutual effect of the TPP and other free trade policies. Petri, Plummer, and Zhai (2011) adjusted the tariff setting of the TPP and previous tariff cutting between regional comprehensive economic partnership (RCEP) countries to simulate the tariff-cutting and service-liberalization effect on the U.S. economy welfare when the TPP membership expands. Yang and Lu (2013) used GTAP 8 to analyse the TPP and China's, Japan's, and South Korea's FTA using five different scenarios. Liu (2014) analysed the mutual effect of the TPP and China–South Korea FTA, suggesting that the China–South Korea FTA is the best choice for China regardless of the TPP's negotiation outcome. Aslan, Mavus, and Oduncu (2014) suggested that there will be a larger negative effect on China's trade if both the TTIP and TPP are established. However, there would be a positive effect if China joined the TPP. Cheong and Tongzon (2013) analysed the mutual effect of the TPP and RCEP. All mentioned studies focused on the mutual effect of the TPP and one FTA, such as RCEP, TTIP, China–South Korea FTA, or China–South Korea–Japan FTA. In order to be closer to reality, this paper focuses on the mutual effect of TPP and the two FTAs—both the China–South Korea FTA and China–Australia FTA—at the same time.

Methodology and Simulation Scenarios Designation

Methodology

Based on the trade creation and trade diversion theory, free trade policy will improve trade partners' welfare due to the trade creation effect.[2] However, the welfare level will not be increased due to the trade diversion and may even cause a decline for certain members and the countries not involved in the policy. In addition, if many countries adopt the FTA strategy and continuously strengthen the self-centred networks of trade agreement or regional block at the same time, the increasing overlapping FTAs are in a dynamic process, which will affect not only members' trade relations and welfare level, but also those of countries outside the FTAs. Thus, we will estimate how the expanding TPP, China–South Korea FTA, and China–Australia FTA will all have their own trade creation effect and trade diversion effect. Different timeframes and overlapping participants between these agreements will make the analysis more demanding.

This paper adopted the CGE model to analyse the economic impact of these trade agreements. The objective of this paper is to simulate and analyse China's bilateral FTAs' effect based on the background establishment of the TPP. The GTAP model is a multiregional, applied general equilibrium model, with perfect competition and constant returns to scale, which built up a framework of production, trade, and consumption through a series of behaviour equations and parameters. The total supply and demand determines the numerical value of endogenous variables while the product market and factor market clear the equilibrium at the same time and the inputs into production are a nested structure. The GTAP model is designed to work with bilateral trade flows among all regions and linkages between economies and between sectors within economies. Each region has a single representative household. The share of aggregate government expenditures in each region's income is held at a fixed level. There is a global banking sector that intermediates between global savings, and bilateral trade is handled via the Armington assumption. Primary factors (land, unskilled labour, skilled labour, capital, and natural resources) are substitutable, but as a composite are used in a fixed proportion to intermediate inputs (Hertel, 1997). The GTAP Agg program is used to prepare databases for the GTAP economic model. The full GTAP Version 9 database is the latest version and covers approximately 57 commodities and 140 regions.[3] To get the best results, we separated the regions into 10 groups: China; South Korea; Australia; Japan; Hong Kong; Taiwan; the U.S.; other TPP partners[4]; the European Union; and other countries and regions. We also separated the different industry sectors into 10 industry sectors: grains and crops; livestock and meat products; mining and extraction; processed food; textile and clothing; light manufacturing; heavy manufacturing; utilities and construction; transport and communication; and other services. As the major characteristic of trade agreement is tariff cutting, this paper uses tariffs as the target of the analysis.

Simulation scenario designation

South Korea and Australia joined both FTAs with China and the TPP, and all these trade agreements will cause different economic effects. To clarify the effectiveness of China's FTA and trade policy in the future, the scenarios' designation will include two parts. One is making a quantitative simulation analysis on the mutual effect of the China–South Korea China–Australia FTAs as well as the TPP. Another is China and U.S. future trade policies' impact on bilateral trade and economic welfare, based on the background

[2] Viner, J. (1950). *The customs union issue*. New York: Carnegie Endowment for International Peace.

[3] https://www.gtap.agecon.purdue.edu/databases/v9/default.asp

[4] Not including Brunei as there are no data in the GTAP database for Brunei.

of the China–South Korea and China–Australia FTAs. We designed five simulation scenarios:

(1) No FTA for China or the TPP (including 12 countries) come into effect.[5]
(2) China–South Korea and China–Australia FTAs come into effect and the TPP was established but did not come into effect.
(3) China–South Korea and China–Australia FTAs as well as the TPP come into effect.
(4) China–South Korea and China–Australia FTAs come into effect and the TPP is expanded into 13 countries, with South Korea joining it.[6]
(5) China–South Korea and China–Australia FTAs come into effect and China joins the TPP [7](see Table 1).

Table 1. Five Simulation Schemes

Scenarios	China–South Korea/ China–Australia FTAs	TPP
1	Not in effect	In effect for 12 countries
2	In effect	Agreed on, but not in effect
3	In effect	In effect
4	In effect	In effect plus South Korea
5	In effect	In effect plus South Korea and China

Note: The authors designed the schemes by combining the research purpose with realty.

Analysis of Mutual Economic Effect of China–South Korea and China–Australia FTAs and the TPP

Impact on countries' and districts' economic welfare[8]

The economic welfare impacts on major countries and districts are listed in Table 2. The first column shows relatively large improvements for the welfare of the U.S., Japan, and Australia. Other TPP partners' welfare would also increase. Welfare would decline for China, South Korea, European Union, Hong Kong, and Taiwan. The welfare decline for China would be the largest. This shows that the TPP would generate a positive effect for TPP partners. However, there is no China–South Korea FTA in scenario one; thus, both China's and South Korea's welfare would decrease. Australia's welfare would increase even though there is no China–Australia FTA as Australia is a TPP partner. Other non-TPP partners' welfare would also decrease.

The second column of Table 2 shows an improvement for China's, South Korea's, and Australia's economic welfare in scenario two. The U.S.'s and Japan's welfare would decline, Other TPP partners' welfare would also decline. China, South Korea, and Australia would benefit from the FTA, and other countries would be worse off. The U.S.'s and Japan's welfare decline would be relatively larger compared to that of other countries.

In the third column of Table 2, South Korea's, Australia's, and Japan's economic welfare would increase relatively more than that of other countries. Especially for Australia, the welfare is tripled compared to scenario two. Even if China were not to join the TPP, China's welfare would still be increased due to the FTAs with South Korea and Australia. The positive effect of the China–South Korea and China–Australia FTAs offsets the negative effect of China not being a TPP partner. The impact on the U.S.'s welfare would still be positive, although it would significantly less compared to scenario one. This result demonstrates that the mutual effect of the FTAs and the TPP would limit the increase in welfare for both China and the U.S. when some countries join both trade agreements.

Scenario four suggests relatively large improvements for South Korea and Japan. Especially for South Korea, the welfare would be triple that in scenario three. There would also be a large increase for the U.S.'s welfare. China's welfare would decrease significantly. However, compared to scenario one, the decline would still be smaller. South Korea's trade policy decision would not just impact its own economic welfare, but also impact the other countries at a much larger economic scale.

The fifth scenario in Table 2 shows a large improvement for China's welfare. Compared to the fourth scenario, the impact would not only change China's welfare from negative to positive, but also make China the largest beneficiary. Japan's welfare would also double compared to scenario four. However, other TPP partners' welfare would decline compared to scenario four. The countries and districts that did not join FTAs or the TPP would suffer a relatively large loss. The economic welfare of the U.S. and China would not be balanced if China were to join the TPP. Thus, trade policy adoption would be different for the two countries.

[5] This scenario will reflect the negative impact for China from the TPP, even against the fact that China's FTAs have already come into effect.

[6] South Korea applied to join the TPP in 2013. It is listed as a primary candidate for the TPP's expansion.

[7] China has not applied to join the TPP yet. There are controversies about China joining the TPP. However, it is not impossible for China to join.

[8] Equation 67 in *Structure of GTAP* written by Thomas W. Hertel and Marinos E. Tsigas (n.d.); see https://www.gtap.agecon.purdue.edu/resources/download/86.pdf

Table 2. Impacts on Countries' and Districts' Economic Welfare[10] (in millions of U.S. dollars)

	S1	S2	S3	S4	S5
CHN	-4513.89	5320.16	806.27	-2551.9	26504.17
KOR	-1037.72	9179.56	8141.84	25150.73	22072.35
AUS	2102.74	1013.34	3116.09	3683.57	2850.5
JPN	11488.04	-1681.01	9807.02	13184.74	26095
HKG	-131.89	-139.72	-271.61	-328.79	-883.27
TWN	-492.7	-552.87	-1045.56	-1393.02	-3147.97
USA	4083.87	-2210.98	1872.89	4226.36	3979.45
otherTPP	1620.38	-1043.42	576.96	615.43	-166.01
EU	-2641.72	-1331.57	-3973.29	-5633.59	-11290.5
RestofWorld	-4918.52	-2755.38	-7673.9	-12415.3	-20736.1

Source: GTAP 9 Model Simulation

Table 3. Impacts on Countries' and Districts' Export Values (in percentages)

	S1	S2	S3	S4	S5
CHN	-0.01	1.02	1.01	0.93	3.91
KOR	0.08	1.38	1.46	1.79	1.73
AUS	0.5	0.52	1.02	1.26	1.45
JPN	0.25	0.15	0.4	0.54	0.72
HKG	0.04	-0.07	-0.03	-0.02	-0.15
TWN	-0.04	-0.14	-0.17	-0.23	-0.5
USA	0.4	0.07	0.46	0.65	2.05
otherTPP	0.73	-0.01	0.72	0.92	1.42
EU	0.09	0.01	0.1	0.16	0.27
RestofWorld	0.06	-0.02	0.04	0.09	0.11

Source: GTAP 9 Model Simulation

Impact on countries' and districts' export value[10]

The impacts on export value for major countries and districts are listed in Table 3. All the TPP partners would experience relatively large increases in export value in scenario one. China and Taiwan's export value would decrease due to the trade diversion effect of the TPP.

The second scenario shows improvements for China's, South Korea's, and Australia's exports due to the trade creation effect. The U.S.'s, Japan's, and the European Union's exports would not benefit much. Exports from the other countries and districts group would decline due to trade diversion effects from the China–South Korea and China–Australia FTAs.

In scenario three, exports from China, South Korea, Australia, the U.S., Japan, and other TPP partners would increase whereas those from other countries and districts would decrease. Thus, when both China's FTAs and the TPP come into effect, all the agreement partners' export values would increase. However, the improvements would not be even across each country. Exports from China, Australia, and South Korea would increase more than those from Japan and the U.S.

Compared to scenario three, there would be no change in the signs in scenario four. Due to South Korea joining the TPP, there would be a relatively large increase in South Korea's

[9] This welfare is the equvalent variation (EV) in GTAP, which refers to the Cobb-Douglas super-utility function for region r. It is computed using Equation 67 in *Structure of GTAP* (Hertel & Tsigas, n.d.). See https://www.gtap.agecon.purdue.edu/resources/download/86.pdf

[10] Eqution 91 in *Structure of GTAP* (Hertel & Tsigas, n.d.). See https://www.gtap.agecon.purdue.edu/resources/download/86.pdf

export. China's exports would increase less compared to scenario three due to the trade diversion effect. Exports from Australia, Japan, the U.S., and other TPP partners would also increase compared to the third column. Taiwan's and Hong Kong's exports would decline.

Compared to the fourth column, there would be a large increase in exports from both China and the U.S. if China were to join the TPP. China's exports would quadruple compared to scenario four, and the U.S.'s exports would triple. All other TPP partners' export values would also increase. However, exports from Taiwan and Hong Kong would decline even more.

Among all these five scenarios, both China's and the U.S.'s exports would benefit most if China were to join the TPP. Exports' improvements would be significantly higher compared to other scenarios—not only for China, but also for the U.S. This would lead to a win–win situation for both countries. Therefore, trade policy adoption would be the same for the two countries if measured by export value.

Analysis of Mutual Economic Effects of China–South Korea and China–Australia FTAs and the TPP

China–South Korea and China–Australia FTAs and the TPP's impact on China–U.S. bilateral trade

Impacts on China's exports[11] to the U.S.

The quantitative and structural changes of China's exports to the U.S. are listed in Table 4. No China–South Korea or China–Australia FTAs and no TPP serves as the baseline. China's exports to the U.S. are focused on manufacturing industries. The top three industries are the textile and clothing industry, light manufacturing industry, and heavy manufacturing industry. Agriculture, mining, and construction industries' exports are relatively lower.

No significant change occurred in scenario one compared to the baseline scenario; thus, the TPP's trade diversion would not have a large effect on China's exports to the U.S.

In scenario two, China's exports to the U.S. would be reduced for all industries, which would lead to a decline in total value. This shows that China–South Korea and China–Australia FTAs would create a trade diversion effect if the TPP were not to come into effect. China's exports would be redirected towards South Korea and Australia.

In scenario three, China's exports to the U.S. would decline due to the trade diversion effect from both China's FTAs and the TPP, because no trade agreement exists between China and the U.S. However, no significant difference would emerge compared to scenario two. China–South Korea and China–Australia FTAs' trade diversion effects would dominate the trade diversion effect from the TPP. Because there would be no significant change between scenario one and the baseline scenario, the major impact would come from China's FTAs.

Compared to the baseline scenario, the grains and crops industry and the livestock and meat products industry's exports would increase while the light manufacturing industry's export would decrease in scenario four. A change would occur in the structure of China's exports to the U.S. South Korea's light manufacturing goods would compete with China's products in the U.S. market when South Korea joins the TPP. The U.S. food industry would export more to the South Korean market and would benefit China's food industry export to the U.S.

In scenario five, almost all the industries' exports to the U.S. would increase for China except the transport communication and services industries. Especially the textile industry and manufacturing industry's exports would increase significantly and lead to a raise in China's total export value to the U.S. This reveals that China's comparative advantage in the textile industry and manufacturing industry would increase if China joined the TPP, and China's exports in these industries would also increase. The U.S. comparative advantage in the transport and services industries would also increase, and China's exports in these industries would decline. Overall, China's exports to the U.S. would increase if China joined the TPP.

Impacts on the U.S.'s exports[12] to China

Quantitative and structural changes in the U.S.'s exports to China are listed in Table 5. We still use the no China–South Korea or China–Australia FTAs and no TPP as the baseline. The U.S. exports to China are focused on the grain and crops industry and the manufacturing industries.

Compared to the baseline scenario, all industries' exports to China would decline except in the mining industry. This reveals that the trade diversion effect from the TPP would decrease the U.S.'s exports to China.

[11] Equation 29 in *Structure of GTAP* (Hertel & Tsigas, n.d.). See https://www.gtap.agecon.purdue.edu/resources/download/86.pdf

[12] Equation 29 in *Structure of GTAP* (Hertel & Tsigas, n.d.). See https://www.gtap.agecon.purdue.edu/resources/download/86.pdf

Table 4. Impacts on China's Exports to the U.S. (in millions of U.S. dollars)

	Base	S1	S2	S3	S4	S5
GrainsCrops	795.88	821.79	778.03	803.94	823.72	842
MeatLstk	555.9	558.87	549.64	552.62	565.5	555.24
Extraction	601.49	598.82	596.22	593.55	592.54	607.05
ProcFood	5756.2	5734.65	5697.01	5675.46	5702.38	6190.63
TextWapp	28397.28	27410.91	28206.66	27220.29	27217.85	40476.14
LightMnfc	104197	104380.7	103558.7	103742.5	104339.9	125151.9
HeavyMnfc	246415	247126.1	245112.7	245823.8	246853.8	255887.3
Util_Cons	413.55	417.54	410.56	414.55	417.4	403.85
TransComm	6242.42	6284.4	6190.71	6232.69	6264.49	6030.05
OthServices	7986.89	8044.06	7920.18	7977.35	8026.63	7709.3
Total	401361.5	401377.8	399020.4	399036.7	400804.2	443853.5

Source: GTAP 9 Model Simulation

Table 5. Impacts on U.S. Exports to China (in millions of U.S. dollars)

	Base	S1	S2	S3	S4	S5
GrainsCrops	16989.27	16304.9	17162.72	16478.34	15808.9	18171.51
MeatLstk	2712.86	2638.96	1953.62	1879.72	1809.82	3268.99
Extraction	3565.63	3570.82	3569	3574.2	3563.2	3716.21
ProcFood	3245.17	3198.15	3210.49	3163.47	3099.44	4141.77
TextWapp	1274.72	1265.84	1240.84	1231.96	1221.25	1862.69
LightMnfc	24337.75	24162.19	23966.89	23791.32	23734.08	34243.75
HeavyMnfc	68015.73	67682.27	66479.34	66145.88	66165.66	83408.18
Util_Cons	140.2	139.12	141.7	140.62	140.46	144.17
TransComm	3410.05	3382.49	3430.79	3403.23	3387.32	3449.71
OthServices	7366.1	7301.15	7417.36	7352.41	7318.34	7459.48
Total	131057.5	129645.9	128572.8	127161.2	126248.5	159866.5

Source: GTAP 9 Model Simulation

Scenario two would see an even greater decline in the U.S.'s exports to China compared to scenario one. China–South Korea and China–Australia FTAs would create an even larger trade diversion effect and decrease the U.S.'s exports to China even more.

Scenario three would decline more than scenario two. The trade diversion effects from both of China's FTAs and the TPP would decrease the U.S.'s exports to China as no trade agreement exists between China and the U.S.

Scenario four would decline even more than scenario three. The trade diversion effect would be larger if South Korea joined the TPP. The U.S.'s exports to China would be realigned towards other TPP partners.

The U.S. would experience an improvement in its exports to China if China joined the TPP. All industries' exports would increase. Total export value would increase by 22%, which would have a positive impact on the U.S. economy.

China–South Korea and China–Australia FTAs and the TPP's impact on macroeconomic indicators of China and the U.S.

We analyse the impacts of China's FTAs and the TPP on consumption, investment, government spending, exports, imports, and GDP for China and the U.S. The baseline scenario is no China–South Korea or China–Australia FTAs and no TPP.

Table 6. Impacts on China's Macroeconomic Indicators (in millions of U.S. dollars)

	Consumption	Investment	Gov. Spd.	Export	Import	GDP
Base	2658237	3375387	988370.1	1951878	-1651997	7321875
S1	2652023	3365412	986061.6	1948612	-1646463	7305646
S2	2662622	3385039	990129.0	1972993	-1677621	7333163
S3	2656408	3375065	987820.5	1969728	-1672087	7316934
S4	2651251	3367299	985973.1	1965796	-1666515	7303804
S5	2676021	3406529	995911.2	2032150	-1741993	7368618

Source: GTAP 9 Model Simulation

Table 7. Impact on the U.S. Macroeconomic Indicators (in millions of U.S. dollars)

	Consumption	Investment	Gov. Spd.	Export	Import	GDP
Base	10887626	2874598	2567570	1880767	-2676776	15533785
S1	10900094	2880156	2570469	1890051	-2690646	15550123
S2	10875822	2868550	2564797	1880345	-2671935	15517578
S3	10888288	2874108	2567696	1889628	-2685805	15533914
S4	10893874	2874147	2568948	1893942	-2689903	15541008
S5	10868465	2868939	2563015	1916843	-2712454	15504808

Source: GTAP 9 Model Simulation

Impacts on China's macroeconomic indicators[13]

Compared with the baseline scenario, all macroeconomic indicators for China would decline (see Table 6) in scenario one. The TPP would have a negative impact on China's economy if China doesn't sign any FTA.

In scenario two, all the indicators would increase. A slight decrease in trade surplus would occur. The China–South Korea and China–Australia FTAs would have a positive impact on China's economy.

In scenario three, China's exports and imports would increase. However, China's consumption, investment, government spending, and GDP would drop. The decline would not be as large as in scenario one. For China, the positive impact from China–South Korea and China–Australia FTAs and the negative impact from the TPP would be neutralized.

Scenario four's performance would be similar to scenario three, but the decline would be expanded. Consumption and government spending would be even less compared to scenario one. There would be a relatively large negative impact if South Korea joined the TPP.

In scenario five, there would be large improvements for all indicators. China's economy would benefit more than in other scenarios if China joined the TPP. Thus, joining the TPP would be China's best choice in the future.

Impact on the U.S.'s macroeconomic indicators[14]

All the macroeconomic indicators would increase for the U.S. in scenario one compared with the baseline. The U.S. would benefit from the TPP when it comes into effect.

In scenario two, all the indicators would decrease for the U.S. China–South Korea and China–Australia FTAs would have a negative impact on the U.S. economy.

In scenario three, a slight drop in consumption, investment, government spending, exports, and imports would occur while the GDP would slightly increase. On average, no notable differences are evident between scenario three and the baseline scenario. For the U.S. economy, the negative impact from China–South Korea and China–Australia FTAs and the positive impact from the TPP would be neutralized.

Compared to scenario three, all the indicators would increase if South Korea joined the TPP. There would be a positive

[13] Equation 72 in *Structure of GTAP* (Hertel & Tsigas, n.d.). See https://www.gtap.agecon.purdue.edu/resources/download/86.pdf

[14] Equation 72 in *Structure of GTAP* (Hertel & Tsigas, n.d.). See https://www.gtap.agecon.purdue.edu/resources/download/86.pdf

impact on the U.S. economy, especially in consumption, exports, and imports.

In scenario five, the U.S.'s export and import values would increase. However, consumption, investments, and government spending would decrease. Thus, it would not necessarily be the best situation for the U.S. if China joined the TPP.

Conclusions and Policy Implications

This paper analysed the mutual effect of China–South Korea and China–Australia FTAs as well as the TPP. We simulated the impacts on welfare and export value for different countries and districts. Furthermore, this paper simulated the impacts on bilateral trade between China and the U.S. We also analysed the trade agreements' impact on macroeconomic indicators for China and the U.S.

China's welfare and total export value would decline if the TPP came into effect without either the China–South Korea or China–Australia FTAs. TPP partners' welfare and total export value would increase. The trade diversion effect due to the TPP is limited to China's exports to the U.S. However, the trade diversion effect would decrease the U.S.'s exports to China. There would be a negative impact on China's economy and a positive impact on the U.S. economy.

In the scenario where China–South Korea and China–Australia FTAs came into effect but the TPP did not, welfare and total export values would increase for China, South Korea, and Australia. Welfare for TPP partners would decline. Both China's exports to the U.S. and the U.S.'s exports to China would decrease due to the trade diversion effect caused by China's FTAs. China's economy would benefit from the FTAs. However, the U.S.'s economic indicators would drop.

If China–South Korea and China–Australia FTAs and the TPP were all in effect, changes in welfare for both China and the U.S. would be relatively small due to the neutralization of the FTAs and the TPP. China's exports to the U.S. would be almost the same as in scenario two. The trade diversion effect from China–South Korea and China–Australia FTAs would dominate the change of China's exports to the U.S. As for the U.S.'s exports to China, the trade diversion effect from both of China's FTAs and the TPP would have negative impacts. Effects from the FTAs and the TPP would offset each other in terms of both countries' macroeconomic indicators.

China's welfare would decline if South Korea joined the TPP. However, the drop would still be smaller compared to the case in scenario one. The U.S.'s welfare would improve in scenario four. South Korea's welfare and total export value would benefit most compared to other countries. There would be a structural change for China's exports to the U.S. The manufacturing sector's exports to the U.S. would shrink due to competition with South Korea's products in the U.S. market. The U.S. food sector products would export more to South Korea. Hence, China's food sector's exports to the U.S. would expand because of less competition with local products. The U.S.'s exports to China in almost all industries would decline due to trade redirection toward South Korea. There would be a negative impact on China's economy and a positive impact on the U.S. economy if South Korea joined the TPP.

In scenario five, welfare for China and Japan would increase significantly. However, the improvements in welfare for the U.S., South Korea, and Australia would not as notable as the cases in scenario four. China would benefit most. The total export value for both China and the U.S. would increase if China joined the TPP. Industries in which China has a more comparative advantage would benefit more in terms of exports to the U.S. Almost all of the U.S. industries' exports to China would benefit. All the macroeconomic indicators for China would increase. However, only export and import value would increase for the U.S.

From the results in scenario one, the TPP would bring a negative impact to China's trade and overall economy. However, the results in scenario two and three suggest that China–South Korea and China–Australia FTAs would positively impact China's trade and economy and neutralize the negative impact from the TPP. As seen from the results in scenarios three and four, the U.S.'s benefits would be limited if China were excluded from the TPP. In particular, the U.S.'s benefits from trade would be limited. The countries that participate in both China's FTAs and the TPP would enjoy the most benefit. As the China–South Korea and China–Australia FTAs have already come into effect, participating in the TPP is the best choice for China, whether measured by welfare or by trade. Letting China join the TPP is be the best choice for improving the U.S.'s trade and the second best choice for improving its welfare. This may result in trade policy diversion for the U.S. and China if measured by welfare. However, it will be a win–win situation if measured by trade. A more liberalized trade policy reform and further efforts to participate in the TPP are ultimately a good option for China.

Acknowledgement

Supported by Program for Changjiang Scholars and Innovative Research Team in University (PCSIRT) (Grant No. CW201412).

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Analiza interakcijskih učinkov sporazuma o prosti trgovini med Kitajsko in Južno Korejo ter Kitajsko in Avstralijo ter razširjenega transpacifiškega sporazuma o partnerstvu

Izvleček

Transpacifiškemu sporazumu o partnerstvu, ki je bil sklenjen 5. oktobra 2015, se je že pridružilo 12 držav. Ker Kitajska k sporazumu ni pristopila, je bilo veliko raziskav osredotočenih na negativne učinke na kitajsko zunanjo trgovino po sklenitvi tega sporazuma. Po drugi strani si Kitajska prizadeva, da bi omogočila svoj razvoj z bilateralnim sporazumom o prosti trgovini in z območji proste trgovine. Junija 2015 je Kitajska podpisala bilateralna sporazuma z Južno Korejo in Avstralijo; veljati sta začela decembra 2015. Pojavila so se številna vprašanja: Ker sta Južna Koreja in Avstralija glavni trgovinski partnerici na pacifiškem območju in ker bosta bilateralna sporazuma o prosti trgovini učinkovita še pred transpacifiškim sporazumom o partnerstvu, ali bodo pozitivni učinki sporazumov o prostem trgovanju nadomestili nekatere negativne učinke transpacifiškega sporazuma o partnerstvu? Katere države bodo imele korist od tega, da bi Kitajska in Združene države Amerike privzele tekmovalno trgovinsko politiko? Kako bi se spremenili tržna vrednost in ekonomska blaginja, če bi Kitajska in ZDA privzele sodelovalno trgovinsko politiko? V prispevku simuliramo in analiziramo vzajemne učinke sporazumov o prosti trgovini med Kitajsko in Južno Korejo ter Kitajsko in Avstralijo ter razširjenega transpacifiškega sporazuma o partnerstvu z uporabo izračunljivega modela splošnega ravnovesja. Glavne ugotovitve so: sporazuma o prosti trgovini med Kitajsko in Južno Korejo ter Kitajsko in Avstralijo bosta značilno nadomestila negativne učinke transpacifiškega sporazuma o partnerstvu na kitajsko zunanjo trgovino. Če Kitajska ne bo vključena, bo ekonomska korist transpacifiškega sporazuma o partnerstvu za ZDA omejena. Ekonomska blaginja za državo, kot je Avstralija, se bo s pridružitvijo tako bilateralnemu sporazumu o prosti trgovini kot transpacifiškemu sporazumu o partnerstvu najbolj povečala. Na dolgi rok bo odločitev Kitajske, da se pridruži transpacifiškemu sporazumu o partnerstvu, za njene nacionalne interese prinesla največ koristi.

Ključne besede: sporazum o prosti trgovini med Kitajsko in Južno Korejo, sporazum o prosti trgovini med Kitajsko in Avstralijo, transpacifiški sporazum o partnerstvu, interakcijski učinki

The Panel VAR Approach to Modelling the Housing Wealth Effect: Evidence from selected European post-transition economies

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ORIGINAL SCIENTIFIC PAPER

RECEIVED: OCTOBER 2016

REVISED: NOVEMBER 2016

ACCEPTED: NOVEMBER 2016

DOI: 10.1515/ngoe-2016-0021

UDK: 332.27:519.2

JEL: C33, E21, R30

Citation: Čeh Časni, A., Dumičić, K., & Tica, J. (2016). The Panel VAR Approach to Modelling the Housing Wealth Effect: Evidence from selected European post-transition economies. *Naše gospodarstvo/Our Economy, 62*(4), 23–32. DOI: 10.1515/ngoe-2016-0021

Abstract

Following Friedman's permanent income hypothesis and Ando and Modigliani's lifecycle hypothesis, this paper empirically studies the role of house prices and income in determining the dynamic behaviour of consumption in selected European post-transition economies using the panel vector autoregression (PVAR) approach and quarterly data covering the period from the first quarter of 2002 until the second quarter of 2012. With the shocks being recognized using the customary recursive identification scheme, we found that the response of personal consumption to the housing wealth shock is initially positive, but short lived.

Key words: consumption; housing wealth effect; house prices; panel vector autoregression; European emerging markets

Introduction

The housing wealth effect can be defined as the change in consumer spending caused by an exogenous movement in housing wealth; it has been back on the research schedule ever since the recent[2] boom–bust behaviour of housing markets. Conventional macroeconomic models of private consumption generally include household wealth and income in the analyses, following Friedman's (1957) permanent income hypothesis and Ando and Modigliani's (1963) lifecycle hypothesis. However, quite different views have challenged them (Mishkin,

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[2] The subprime mortgage crisis in the US and the European sovereign debt crisis associated with great fluctuations in housing (and stock) markets in late 2008.

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OUR ECONOMY

Vol. 62 No. 4 2016

pp. 23 – 32

2007). One such view claims that the housing wealth effect should be larger than the stock wealth effect on personal consumption simply because a household's ownership of housing wealth is larger than an ownership of equity. Furthermore, the housing wealth effect should be more prominent because property prices are less volatile compared to stock prices. As shelter is one of the most basic requirements of human life, housing costs are considered the biggest item in a household budget (Sowell, 2009).

As the theoretical effect of higher house prices on the total consumption seems unclear, the dynamic relationship between consumption and house prices needs to be analysed empirically. In recent decades, a vast number of empirical studies dealing with wealth effect have been published, yet most still refer only to developed countries. Also, the studies of post-transition European economies are sporadic, focusing on the importance of consumer expenditures on the total GDP development. As real house prices in European emerging markets have rapidly changed trends after the financial and real estate crisis in late 2008 (Ciarlone, 2011), it is especially interesting to evaluate the importance of the macroeconomic impact of housing wealth effect on personal consumption in those countries. Hence, the aim of this study is to explore the impact of housing wealth effect on personal consumption in selected European emerging economies, as relevant existing literature tends to treat the impact on housing wealth on consumption as ambiguous.

The contribution of this paper to the existing empirical literature is twofold. First, very few studies employ system estimation of the wealth effects in general, not to mention the studies for European emerging markets. Thus, we make use of the system estimation of housing wealth effect on consumption by employing panel vector autoregressive model that can estimate the housing wealth effect on consumption irrespective to the existence of cointegrating relationship, as the stationary series for all the variables in the equations are used. Our second contribution is a sample period covering the most significant boom–bust housing wealth cycle in the selected European emerging economies along with the global financial crisis period, thereby enabling us to detect housing wealth effect on personal consumption.

Using the panel vector autoregression (PVAR) approach in the manner of Abrigo and Love (2015), we estimated housing wealth effect on consumption for a panel of seven selected emerging European economies. As suggested by Larson, Lyhagen, and Løthgren (2001) and Larsson and Lyhagen (1999), a panel VAR approach allows insights into the role that housing wealth and income play in restoring the long-term equilibrium. Furthermore, the VAR approach has the advantage of explicitly allowing for response effects from consumption to wealth and income, for which a single-equation approach cannot account. It also illustrates how the responses of consumption and wealth differ according to the nature of shocks on them. To the best of our knowledge, this is the first study to address exclusively housing wealth effect on personal consumption in European emerging markets using panel VAR methodology for the period that covers the recent global financial crisis.

The remainder of this paper proceeds as follows. After the introduction, a brief literature review on important empirical papers that exclusively study housing wealth effect is provided. The next section describes data and applied methodology, followed by a section giving the results of the estimated PVAR model. The final section concludes the paper and gives some policy recommendations.

Brief Literature Review of the Housing Wealth Effect

Concerning the modelling of the wealth effect on personal consumption, relevant scientific literature can be classified into two broad groups: papers that model the wealth effect based on aggregated macroeconomic data and papers that examine the wealth effect based on micro data. Paiella (2009) provided detailed insights into both categories and distinguished three sub-groups among them: papers dealing with merely the financial wealth effect on personal consumption, those modelling only the housing wealth effect on personal consumption, and those dealing with both the housing and the financial wealth effect on personal consumption. In their recent study, Ahec Šonje, Čeh Časni, and Vizek (2014) provided an overview of macro-econometric studies concerning the wealth effect. Yet, in this research only the housing wealth effect on personal consumption is modelled, as many studies, including Čeh Časni and Vizek (2014), Ahec Šonje, Čeh Časni, and Vizek (2012), Bertaut (2002), Carroll, Otsuka, and Slacalek (2006), Case, Quigley, and Shiller (2005), Ciarlone (2011), and Bayoumi and Edison (2003), have reported a larger housing wealth effect than the stock market wealth effect. According to Belsky and Prakken (2004), housing accounts for a considerable share of the total household net worth, which makes house prices a crucial component in formulating decisions about consumption.

Furthermore, empirical studies on the impact of housing wealth on personal consumption are mainly focused on advanced economies (e.g., Case et al., 2005; Dvornak & Kohler, 2003; Labhard, Sterne, & Young, 2005). However,

still no consensus exists on the concrete quantity of the housing wealth effect, probably due to dissimilarities in data collection methodology,[3] economic settings, or sampling periods.

Current empirical research also provides very limited insights into asymmetric responses to housing wealth shock, as the real estate market had not gone through such a dramatic decline prior to 2008. Nevertheless, the previously mentioned drop in housing prices due to the global financial crisis allows for an analysis of the asymmetric housing wealth effect on consumption.

In general, in the post-transition European countries, mostly due to data unavailability that prevents complete and effective empirical analysis, the impact of housing wealth on consumption has not been sufficiently explored. A limited number of existing studies provide evidence of significant housing wealth effect in European post-transition countries (e.g., Aben, Kukk, & Staehr, 2012; Ahec Šonje et al., 2012; Čeh Časni, 2014; Seč & Zemčík 2007). Even so, most previously mentioned studies apply a single-equation method relying on the cointegrating[4] relationship among consumption, income, and housing wealth when determining the housing wealth effect on personal consumption. However, in order to identify the response of consumption to a shock, it is important to take into account all the variables in the system. This is where the VAR model comes into play, as it has the advantage of explicitly allowing for responses from consumption to housing wealth and income. By employing PVAR methodology, our study addresses the issue of unobserved heterogeneity by correcting for fixed effects.

Data and Methodology

We used the data from an unbalanced panel of seven selected European post-transition economies—Bulgaria, Croatia, the Czech Republic, Estonia, Lithuania, Hungary, and Slovenia—selected on the basis of the availability of data for variables of interest. Our dataset consisted of quarterly indices for personal consumption, disposable income, wages, and real estate prices. We used total consumption[5] as a proxy variable for personal consumption. Furthermore, disposable income and wages were the two proxy variables used for income, with the aim of checking the robustness of the estimated baseline model. Real estate prices[6] were used as a proxy variable for housing wealth.

Our data—namely, housing wealth, wages, disposable income, and personal consumption—were first recalculated into base indices (2005 = 100), then deflated and deseasonalized using the X-12-ARIMA method (Hood, 2002) and finally expressed in logs. We used the first-differences[7] of the log variables (which were time demeaned before being differenced). When available, the data cover the period from the first quarter of 2002 to the second quarter of 2012.

Data sources used in the empirical analysis include the Vienna Institute for International Economics (WIIW), the International Financial Statistics and Eurostat databases for personal consumption, disposable income, and wages as well as the Bank for International Settlements databases for real estate price indices.[8] Data sources and time periods for each of the seven countries under analysis, forming an unbalanced panel, are given in Table 1.

This study benefits from the PVAR methodology evolved by Abrigo and Love (2015) in exploring the housing wealth effect on personal consumption by modelling the endogenous behaviour between consumption, income, and housing wealth. The PVAR approach combines the traditional VAR approach, treating all the variables in the system as endogenous, and the panel-data approach, allowing for unobserved individual heterogeneity by introducing fixed effects, resulting in an improved consistency of the estimation (Love & Zicchino, 2006). According to Lettau and Ludvigson (2004), who showed that consumption and wealth are both endogenous, conventional econometrics methods that treat wealth as an exogenous variable may cause biasness, as wealth also responds to exogenous shocks.

The first step of the empirical analysis was to choose optimal lag order in PVAR and in the moment condition (Abrigo & Love, 2015). According to Andrews and Lu (2001), consistent moment and model selection criteria

[3] The deficient data on housing prices might be the main reason for inconclusive results in the existing empirical literature on whether the stock market wealth effect or the housing wealth effect has a stronger impact on personal consumption.

[4] The crucial assumption of the panel cointegration literature is the independence assumption of the error term. Keeping in mind that national markets are highly integrated, this assumption is very likely violated. In that sense, a more appropriate econometric alternative would be a panel VAR modelling approach.

[5] For a discussion, see, for instance, Mehra (2001).

[6] In a number of other studies, such as Ludwig and Sløk (2004), Labhard et al. (2005), Case et al. (2005), Carroll et al. (2006), real estate price indices were also used as a proxy variable for housing wealth.

[7] According to the performed panel unit root tests (which are not presented here, but are available from the authors upon request), all analysed variables have a unit root, so they are difference-stationary.

[8] The comparability of real estate price indices from BIS across countries is discussed in Girourard and Blöndal (2001, p. 36).

Table 1. Data Description and Sources

Country	Time span	Variable			
		Real estate price (HW)	Personal consumption (C)	Wage (w)	Disposable income (Y)
Bulgaria	2002q1–2012q2	Flats, existing, big cities, BIS	Constant prices, IFS	WIIW database	IFS database
Croatia	2002q1–2011q4	All types of dwellings, new and existing, Croatian National Bank	Constant prices, IFS	WIIW database	IFS database
Czech Republic	2002q1–2012q1	Single family houses and flats, BIS	Constant prices, IFS	WIIW database	IFS database
Estonia	2002q1–2012q1	All types of dwellings, new and existing, BIS	Constant prices, IFS	WIIW database	IFS database
Lithuania	2002q1–2012q2	All types of dwellings, new and existing, BIS	Constant prices, IFS	WIIW database	IFS Database
Hungary	2002q1–2012q2	All types of dwellings, new and existing, BIS	Constant prices, IFS	WIIW database	IFS Database
Slovenia	2003q1–2011q4	All types of dwellings, new and existing, BIS	Constant prices, IFS	WIIW database	IFS Database

(MMSC) for general method of moments (GMM) models are based on Hansen's (1982) J statistic of over-identifying restrictions.[9] Hence, based on three model selection criteria by Andrews and Lu (2001), the preferred model in our case was first-order PVAR.[10] Thus, we specify the following first-order three-variable PVAR model:

$$Z_{i,t} = \mu_i + \Theta(L)\, Z_{i,t} + f_i + d_{c,t} + \varepsilon_{i,t} \quad (1)$$

where μ_i is the vector of constant terms for each variable, $\Theta(L)$ is the lag operator, and $Z_{i,t}$ represents a vector of three endogenous variables (C, Y, HW), where C and Y are the changes of household total consumption and disposable income[11] and HW denotes changes in housing wealth. Subscripts i and t refer to country and time, respectively. Furthermore, f_i denotes the fixed effect, $d_{c,t}$ represents the country-specific time dummy, and $\varepsilon_{i,t}$ denotes the vector of residuals.

In the PVAR framework, in order to make sure that the underlying structure is equal for all the countries in the panel, some constraints[12] on parameters need to be imposed. Yet in practice, such constraints are likely to be violated; one way to overcome this problem is to allow for individual heterogeneity in all the variables by introducing fixed effects, denoted by f_i in equation (1). However, the fixed effects are correlated with the regressors due to the lags of the dependent variable; therefore, we use forward mean-differencing, also known as the Helmert procedure (Arellano & Bover, 1995).[13] The Helmert procedure removes the mean of all future observations available for each country and time in order to preserve the orthogonality between transformed variables and lagged independent variables (Love & Zicchino, 2006). Even so, the differencing might result in a simultaneity problem due to the correlation between regressors and the differenced error term. Moreover, heteroscedasticity may also exist due to maintenance of heterogeneous errors with different countries in the panel. Accordingly, after eliminating fixed effects by differencing, we applied the panel GMM, where lagged regressors were used as instruments in order to estimate coefficients more consistently.[14]

In our model, we assumed that the vector of residuals ($\varepsilon_{i,t}$) is independent and identically distributed. However, this assumption normally fails in practice, as the concrete variance-covariance matrix of the errors is unlikely to be diagonal. Thus, in order to isolate shocks to one of the VAR errors, it is necessary to decompose the residuals in such a way that they become orthogonal. According to Sims (1980), variables in VAR should have a recursive causal ordering based on their degree of exogeneity. This procedure is also known as the Cholesky decomposition of the variance-covariance matrix of residuals and ensures the orthogonalization of shocks. Simply stated, the variables that come earlier in ordering affect the subsequent variables at the same time and with a lag, while the variables that

[9] For more details, please refer to the original paper: Andrews and Lu (2001).

[10] To save space, we do not present the results of the model selection, but they are available from the authors, upon request.

[11] In our baseline model, as a proxy variable for disposable income we use wage; disposable income is used as a baseline model robustness check.

[12] The PVAR approach requires the underlying structure to be the same across all countries in the panel by imposing pooling restrictions across countries.

[13] In our case, we use the option *fod* in a package of programs for Stata developed by Abrigo and Love (2015).

[14] Namely, we used the first three lags of consumption, wage, and housing wealth as instruments.

come later only affect previous variables with a lag (Love & Zicchino, 2006). In our paper, the housing wealth effect is ordered after personal consumption and income, which is based on previous research concerning this matter.[15] Within the chosen empirical framework, the dynamic responses delivered via the Cholesky decomposition are not structurally interpretable. The reason for this is the lack of theoretical foundation about the behaviour of the variables in the analysis—namely, a shock in housing wealth should be interpreted as an orthogonalized reduced-form shock, but it is impossible to determine if the underlying structural moving force is a housing-demand or housing-supply shock. Structural shocks may be identified by using a more sophisticated identification scheme, which is beyond the scope of this paper.[16]

In our analysis, we also focused on the impulse-response functions (IRFs), which describe the reaction of one variable in the system to the innovations in another variable in the system, holding all other shocks at zero. IRFs are constructed from the estimated VAR coefficients and their standard errors. We also present the variance decomposition expressing the magnitude of the overall effect of a shock, providing the proportion of the movement in one variable explained by the shock to another variable over time.

Results of Empirical Analysis

The main results of the baseline PVAR model are given in Table 2. We report estimates of the coefficients given in equation (1), where the fixed effects and country-time dummies have been removed.

In Table 2, we report the 1-lag baseline model with wage as a proxy variable for income. We also performed some post-estimation tests: Granger causality Wald test and stability condition of estimated PVAR. The results of Granger causality tests[17] show the consumption Granger-causes wage and housing wealth at the 1% significance level. Wage Granger-causes consumption and housing wealth at the 1% significance level, while housing wealth Granger-causes wage at the 1% significance level, but it does not Granger-cause consumption. We checked for the stability condition of our PVAR model by calculating the modulus of each eigenvalue of the estimated model. According to Lutkepohl (2005) and Hamilton (1994), the VAR model is stable if all moduli of the companion matrix are strictly less than one. In our case, the estimated PVAR model satisfies the stability condition, as all eigenvalues lie inside the unit circle.[18]

Table 2. Main Results of a Baseline (1-lag) PVAR Model (with wage)

Response of:	Response to (GMM estimates):		
	C(t-1)	w(t-1)	HW(t-1)
C(t)	-0.4437*** [0.0305]	-0.4066*** [0.0574]	0.0808*** [0.0256]
w(t)	-0.2841*** [0.0341]	-0.1692*** [0.0467]	0.0957*** [0.0172]
HW(t)	0.0429 [0.0477]	-0.2451*** [0.0595]	-0.1136** [0.0533]

Source: Authors' calculations.

Note: The three-variable VAR model is estimated by GMM; country-specific and fixed effects are removed prior to estimation. Heteroscedasticity and serial correlation robust standard errors are in brackets. *** and ** denote significance at the 1% and 5% significance level, respectively.

As already mentioned, the impulse response functions capture the time profile of the effect of shocks at a given point in time on the expected future values of variables in a dynamic system (Simo-Kengne, 2012). We present them in Figure 1. The sign of estimated coefficients given in Table 2 are in line with our expectations, thereby producing theoretically consistent impulse response functions. According to the estimated PVAR model with wage (as a proxy variable for disposable income), it can be concluded that responses of personal consumption to disposable income, consumption, and housing wealth in a 1-lag model are statistically significant at the 1% significance level. Furthermore, wage responds negatively to the changes in consumption and wage, with statistically significant coefficients at the 1% significance level, with the coefficients being -0.284 and -0.169, respectively. Furthermore, according to the estimated baseline 1-lag PVAR model, housing wealth responds positively to changes in consumption, but negatively to changes in housing wealth and wage, with statistically significant coefficients at the 1% and 5% significance levels, respectively.

Figure 1 plots the responses of consumption, wage, and housing wealth to a shock in the 1-lag PVAR model. We observe that a wage shock of one standard deviation results in a personal consumption decrease and then an increase of about 0.04% after two quarters. That influence diminishes

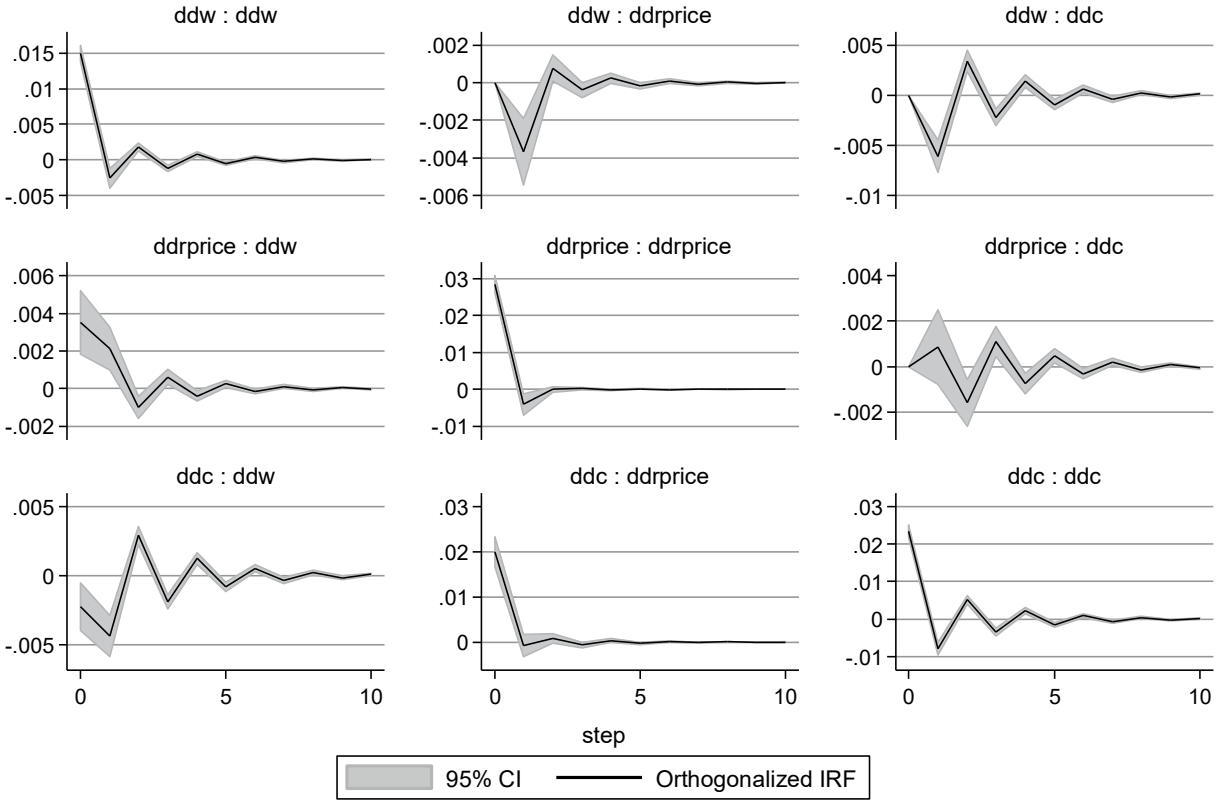
[15] For a discussion, please see Lettau and Ludvigson (2004), Patelis (1997), Thorbecke (1997), Neri (2004), Cochrane (1994), and Fisher and Voss (2001).

[16] For details please read Andre, Gupta, and Kanda (2011).

[17] The results of Granger causality tests are not presented, but they are available from the authors, upon request.

[18] Results are available from the authors, upon request.

Figure 1. IRF for baseline (1-lag PVAR) model with wage (Stata 13)



Note: ddc = C, ddi = w, ddpp = HW

after six quarters. The result of particular interest is the response of personal consumption to a one standard deviation shock in housing wealth. It initially increases personal consumption, following a decrease after three quarters and another increase after three quarters. Finally, after six quarters the influence of housing wealth on personal consumption diminishes.

Variance decomposition of the baseline 1-lag PVAR model presents an alternative way of summarizing the information described by IRFs in Figure 1. Accordingly, the contribution of the housing wealth shock to the variance of consumption is 0.76% at the 10-quarter horizon. Furthermore, the housing wealth shock accounts for 6.3% of the variation in wage, which accounts for 7.9% of the variation in personal consumption.

Table 3. Variance Decomposition (for 1-lag PVAR baseline model)

Variables	Shocks		
	C(t-1)	w(t-1)	HW(t-1)
C(t)	0.9130	0.0794	0.0076
w(t)	0.1320	0.8046	0.0633
HW(t)	0.3218	0.0115	0.6667

Source: Authors' calculations.

Note: The table reports the percentage of variation in the row variable explained by the column variables in the three-variable VAR model. The variance decomposition is at a horizon of 10 quarters after the shock.

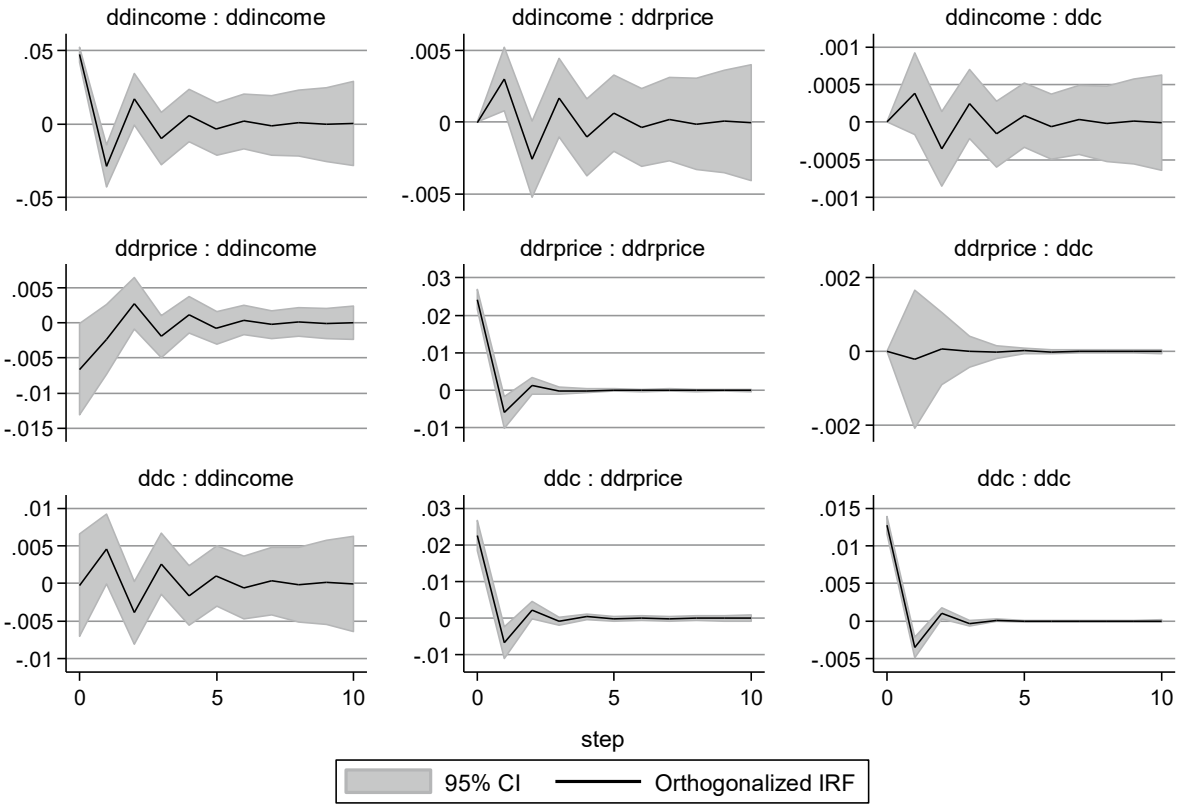
Table 4. Robustness Check: Results of a (1-lag) PVAR Model with Income

Response of:	Response to (GMM estimates):		
	C(t-1)	Y (t-1)	HW(t-1)
C (t)	-0.2646*** [0.0929]	0.0081 [0.0059]	-0.0065 [0.0363]
Y (t)	0.8137*** [0.1639]	-0.6058*** [0.1527]	-0.2613*** [0.0675]
HW(t)	-0.1177 [0.2272]	0.0643** [0.0249]	-0.2264** [0.0880]

Source: Authors' calculations.

Note: The three-variable VAR model is estimated by GMM; country-specific and fixed effects are removed prior to estimation. Heteroscedasticity and serial correlation robust standard errors are in brackets. *** and ** denote significance at the 1% and 5% significance level, respectively.

Figure 2. Robustness check: IRF for 1-lag PVAR model with income (Stata 13)



Note: ddc = C, ddw = Y, ddpp = HW

In order to check the robustness of our baseline model with wage (as a proxy variable for income), we used disposable income. The results of the estimated PVAR model with one lag with disposable income are given in Table 4.

According to the estimation results, we can conclude that our baseline model is robust to the changes in the proxy variable for income.

Figure 2 shows the impulse response functions for the 1-lag model with disposable income, which is estimated from the respective PVAR model. Accordingly, we can conclude that it is compatible with theoretical expectations.

Implications and Concluding Remarks

The aim of this study was to explore the impact of the housing wealth effect on personal consumption in selected post-transition European countries. Using the PVAR approach in the manner of Abrigo and Love (2015), we estimated the housing wealth effect on consumption for a panel of seven selected post-transition European economies.

In our analysis, we also focused on the IRFs, which describe the reaction of one variable in the system to the innovations in another variable in the system, holding all other shocks at zero. Following Friedman's permanent income hypothesis and Ando and Modigliani's lifecycle hypothesis, we included household housing wealth and income in the analyses. We estimated the baseline consumption PVAR 1-lag model with wage as a proxy variable for disposable income. Our model has the advantage of explicitly allowing for responses from consumption to housing wealth and income and addresses the issue of unobserved heterogeneity by correcting for fixed effects. In order to check the robustness of the baseline model, we estimated another model with disposable income. The results of the estimated models show that the response of personal consumption to a housing wealth shock is initially positive, but transitory, which is in line with previous research in this field.

Our results also have strong policy implications. Policymakers need to identify a housing bubble in its early stage to avoid a much larger bubble burst in the future. Furthermore, it is necessary to preclude over-consumption as a response to a positive housing price shock that may result in the volatility of the future GDP growth. In addition, the real estate market

should receive priority from policymakers as the housing price effect has significantly increased in recent years. Therefore, monetary stabilization policies need to be implemented.

Although these conclusions are based on particular statistical methodology, they shed some light on the response of consumption to the housing wealth shock in selected European emerging markets and can serve as a solid foundation for further research in this area.

Acknowledgment

This work has been fully supported by the Croatian Science Foundation under the project

ST*atistical Modelling for* RE*spo*N*se to Crisis and Economic* G*row*TH *in We*S*tern Balkan Countries* -STRENGTHS (No. IP 2013-9402)

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Panelni VAR-pristop k modeliranju učinka stanovanjskega premoženja: dokazi iz izbranih evropskih posttranzicijskih gospodarstev

Izvleček

Upoštevaje Friedmanovo hipotezo o permanentnem dohodku in Ando-Modiglianijevo hipotezo o življenjskem ciklu, v članku empirično proučujemo vlogo cen stanovanj in dohodkov pri določanju dinamičnega obnašanja pri potrošnji v izbranih evropskih posttranzicijskih gospodarstvih. Uporabljen je bil vektorski avtoregresijski pristop na podlagi panelnih podatkov od prve četrtine leta 2002 do druge četrtine leta 2012. S spremembami, ki so bile pripoznane z uporabo običajne rekurzivne identifikacijske sheme, smo ugotovili, da je odziv pri osebni potrošnji na spremembo v začetku pozitiven, vendar kratkotrajen.

Ključne besede: potrošnja, učinek stanovanjskega premoženja, cene stanovanj, panelna vektorska avtoregresija, evropski rastoči trgi

Older Knowledge Workers as the Labour Market Potential (Slovenia versus Finland)

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ORIGINAL SCIENTIFIC PAPER

RECEIVED: AUGUST 2016

REVISED: SEPTEMBER 2016

ACCEPTED: SEPTEMBER 2016

DOI: 10.1515/ngoe-2016-0022

UDK: 331.5-053.9

JEL: J14

Citation: Zupančič, M. (2016). Older Knowledge Workers as the Labour Market Potential (Slovenia versus Finland). *Naše gospodarstvo/Our Economy, 62*(4), 33–41. DOI: 10.1515/ngoe-2016-0022

Abstract

This article refers to the challenge of demographic changes gaining attention in many developed countries. The European Union recognized the need to activate older knowledge workers, who are underrepresented and pushed out of the labour market or are inadequately motivated to continue their employment for various reasons, despite their accumulated knowledge and experiences. EU member states respond differently to their ageing, with more or less successful national policies. This article is based on research of the labour market development for older knowledge workers in Slovenia compared to the Finnish age management policy at the end of the 1990s that successfully increased Finnish older knowledge workers' employment through focused and holistic measures. Slovenia stagnated in the same period due to a lack of holistic solutions—a situation that continues today. The results and deficiencies of past bad and good practices in these two compared EU member states might offer some further reflections on possible steps to follow or avoid regarding active ageing solutions in the EU.

Key words: older knowledge workers, Slovenia, Finland, EU

Introduction

The research problem focuses on the shrinking working age population in many European countries, with an emphasis on Slovenia and a comparison with innovative ageing management solutions in Finland. Fewer workers mean lower productivity and weaker competitiveness; a lower share of older knowledge workers in the labour market results in a lower level of innovation and a lack of knowledge transfer. Therefore, one must motivate older workers, especially knowledge workers, to not retire. The key research question addresses the search for (1) existing barriers, inappropriate practices, and disadvantages that demotivate older knowledge workers from retiring; and (2) good practices and measures that can motivate a longer working life for the elderly. The objective of the study is to present a requisitely holistic innovative age management model, suitable for Slovenia, that includes all the relevant measures for the longer working life of older knowledge workers and can contribute to a more efficient overall labour market performance.

Theoretical Background

Europe is ageing. To reach the Europe 2020 benchmark of average 75% overall employment rate (20–65 years) by 2020, the higher employment of older workers,

NG OE

NAŠE GOSPODARSTVO
OUR ECONOMY

Vol. 62 No. 4 2016

pp. 33–41

especially the most productive ones, matters. Many EU member states have implemented diverse measures to increase the employment rate of older knowledge workers and to delay their retirement. But poor permanent attention and binding political will are dedicated to ageing; therefore, negative impacts of ageing within the EU economies will be seen soon.

The number of people between the ages of 55 and 64 in the overall labour activity (20–64 years) in Europe will increase from 15.5% in 2013 to 19.5% in 2060 (European Commission [EC], 2015b). This trend, if accompanied with insufficient integration or retention of older knowledge workers in the labour market, will deteriorate the age pyramid, widen the professional gaps, and even increase the existing mismatches in the labour markets. The structural imbalances are increasingly intensively stressed in the EC's major strategic documents, including country-specific recommendations (CSRs), suggesting a focus on longer working lives. No systematic support and more binding measures at the EU level related to demographic decline are required as yet. The most recent awareness-raising initiative was reported in the European Year of Active Ageing and Intergenerational Solidarity in 2012, but with no further binding follow-up activities.

Fortunately, the European Semester required more detailed long-term ageing impact monitoring. It will enable measurement of the potentially lower GDP growth and productivity impacts due to ageing and shrinking population. Hence, fewer workers should be substituted by higher productivity to sustain economic growth in the EU (EC, 2015b).

Without prompt actions to raise the older knowledge workers' employment, negative social and economic consequences of ageing will hinder the EU's growth and well-being. Adding the impact of the so-called lost generation (young inactive or NEETs), the actual future labour market potential might be even lower. The promotion of longer working lives with adequate tools is essential. In 2012, 43.1% of pensioners retired through the early retirement schemes. Even in 2014, the average employment rate of older workers in the EU (55–64 years) was only 51.8% (EC, 2016b), only 1.8 percentage points above the 50% target employment rate for older workers, as set for an ambitious Lisbon Strategy benchmark in 2000. Due to the importance of older workers' potential in the labour market, it is worrisome that a more precise monitoring of employment trends is omitted in the new EU strategy for the current decade.

Since the 1990s, Finland has managed to improve its labour market and economic situation, finding suitable solutions and technological niches that proved right for its long-term development (OECD, 2010). Unlike Slovenia, Finland was able to adapt its restructuring economy's needs with workers' needs and to keep pace with innovation and productivity, including investments into humans. Finland reacted fast to its population's ageing by making improvements in its business environment, including efficient public sector innovations. Hence, in 2014, 71.1% of Finnish workers aged 55 to 64 with ISCED 5–8 worked (compared to 53.4% in Slovenia). The gap is still wider in the 60–64 age group: 53.7% of Finnish workers with ISCED 5–8 worked compared to only 29.2% in Slovenia (Eurostat, 2015).

In the EU's labour market, only the number of older workers increased modestly during the crisis, confirming their role as experienced workers. Unfortunately, the focus on the elderly in the labour market mainly covers low-skilled and unemployed persons. Too little attention is paid to older knowledge workers who, in many EU member states, suffer from unjustified prejudices and stereotypes, including discrimination in the labour market. In the knowledge economy, the contribution of older knowledge workers, who are capable of innovation and productivity, should be welcomed more than many reports have shown (Zupančič, 2016).

Active Approaches to Ageing: Comparison of Slovene and Finnish paths

Slovenia and Finland followed similar structural shifts in their economies and labour markets in the 1990s, reaching diversely intense and holistic impacts and leading to interesting conclusions on the appropriate measures to activate older knowledge workers. Slovenia faced a huge restructuring and market reorientation after independence in the 1990s. It increased unemployment and generous early retirement. Along the slow progress in reforming the economy and the labour market, deficiencies of inadequate structural changes occurred. The effects of gradual changes were even more pronounced in the time of crisis, followed by required fast adaptation to changes in the global markets. Prolonged early retirement schemes and poor attention to retaining workers or providing them with on-the-job training, including older knowledge workers, resulted in lower overall and elderly employment since then. Due to diverse approaches towards the ageing workforce, the difference in employment rates (55–64 years) between Finland and Slovenia was still more than 20 percentage points in 2013 (58.5% versus 33.5%; Eurostat, 2015; see Table 1).

As Table 1 shows, Finland increased its older knowledge workers employment from 2005 to 2014 in relative and absolute terms. The increase was caused by the successful implementation of the FINPAW strategy (a holistic active ageing program). From 1997 to 2002, the employment rate of the elderly (55–64 years) in Finland grew by more than 20 percentage points—more than anywhere in the EU.

Table 1. Comparison of Older Workers' Employment (aged 55–64) in EU-28, Finland, and Slovenia, 2005–2014

55–64 years	ISCED 0–2									
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
EU-28	33.9	34.7	35.5	34.8	34.8	34.9	35.2	35.8	36.4	37.7
Slovenia	26.7	29.6	29.7	25.7	25.5	27.7	23.5	25.0	25.2	28.6
Finland	43.4	45.0	44.3	45.5	43.7	43.5	44.4	43.9	44.2	44.8
55–64 years	ISCED 3–4									
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
EU-28	44.6	45.8	47.0	47.4	47.7	48.0	49.1	50.5	52.0	53.8
Slovenia	26.9	27.6	29.6	30.3	32.7	32.3	28.4	29.9	30.9	32.8
Finland	53.4	54.9	55.5	56.5	55.1	55.2	55.8	57.8	57.6	57.2
55–64 years	ISCED 5–8									
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
EU-28	63.4	64.2	65.3	65.0	65.3	65.1	65.7	67.2	68.2	69.1
Slovenia	50.7	55.1	54.4	53.7	61.4	57.1	53.7	54.6	53.0	53.4
Finland	65.6	67.0	67.7	69.5	69.1	70.5	70.0	70.4	70.9	71.1

Source: Eurostat (2015)

Table 2: Participation in Education and Training (in the preceding 4 weeks) in the 55–74 Year Age Group and Educational Level from 2005 to 2014 in EU 28, Finland, and Slovenia

55–74 years	ISCED 0–2									
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
EU-28	:	:	1.5	1.8	1.9	1.8	1.7	1.9	2.3	2.2
Slovenia	1.3	1.4	1.6	1.3	1.5	1.7	1.9	1.6	1.5	1.4
Finland	6.0	6.1	6.4	6.1	5.6	5.8	6.1	6.1	6.3	6.6
55–74 years	ISCED 3–4									
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
EU-28	:	:	3.1	3.4	3.3	3.3	2.9	3.0	3.9	4.1
Slovenia	4.5	4.2	3.9	4.1	4.4	4.8	5.2	5.0	4.8	4.2
Finland	10.8	10.8	11.0	10.7	10.9	10.2	9.9	10.7	10.7	10.6
55–74 years	ISCED 5–8									
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
EU-28	:	:	9.3	10.1	9.7	9.4	8.7	8.9	10.7	11.0
Slovenia	12.9	13.4	12.7	13.3	14.9	15.4	16.8	14.6	13.8	12.6
Finland	19.5	20.3	21.0	20.2	19.7	19.7	20.0	20.9	20.2	21.6

Source: Eurostat (2015)

Finland faced similar turbulent challenges in the 1990s, but reacted faster and more efficiently. The comparison is interesting not only due to Finland's successful increase of the elderly employment rate in the described period, but also due to a variety of measures, well-developed working environments, and high quality social dialogue practices. In terms of the importance of knowledge workers' inclusion in the labour market, it is even more interesting to compare employability in both countries with an emphasis on qualification levels. To increase competitiveness and productivity, Finland substantially invested in humans during its restructuring period (Ministry of Social Affairs and Health, 2002). Evaluations proved that productivity does not depend on age, but on investment in humans and on adaptability of work process to the lifecycle of the individual workers. Thus, the employment rate increased very fast during the FINPAW program implementation and even after the program ended. Higher employability in Finland was linked with high investments in lifelong learning for all age groups (see Table 2).

The inclusion of older workers in lifelong learning matters even more for employability than the formal educational level (OECD, 1997). Despite this fact, inclusion in the lifelong learning process is decreasing with age in most EU member states. One must stress that older knowledge workers' specific knowledge is going obsolete even faster. The advantage of upskilling is generally recognized as 88% of employees confirmed the positive impact of upskilling for better employability options (Eurobarometer, 2006). Unfortunately, many employers do not recognize the needed skills of the elderly to include them in lifelong learning. Neglecting the training needs of the elderly, especially knowledge workers, although they are the most productive older workers and their exit age is increasing, is not responsible. Finland—again, unlike Slovenia—has shown a much more positive attitude towards the elderly in training than many other EU member states.

Employers will soon face a lack of adequate workers due to a rapidly shrinking working age population and a poor age management. Already 40% of enterprises in the EU have problems finding workers with an appropriate skills mix (i.e., skills shortages; EC, 2016b). Finland recently saw decreased competitiveness and innovation and reacted fast with renewed relevant policies and programs to regain its lost position in global economies. The described EU member states' comparison confirms the possible effectiveness of an age policy if one has a holistic, clearly defined goal and balanced economic and labour market targets. Previous age management efforts in Finland can be described in general as a balanced interaction among economic, employment, and social policies, which can support a long-term working life (Eurofound, 2003).

Factors of More or Less Work Motivation for Elderly Knowledge Workers

Scandinavian countries in particular recognize the potentials and advantages of competent elderly workers in the labour market whereas some countries, including Slovenia, still neglect the role of the elderly in achieving more efficient and productive labour markets. Many unjustified excuses not to employ older workers arise from the assumption of the lower productivity of older employees. This assumption has not been confirmed on an individual basis, but can be justified if the approach to upskilling during the whole working period is wrong. As knowledge goes obsolete at always faster pace, the constant investment into human resources no longer depends on age. With this approach to skills aimed to preserve employability and productivity, older knowledge workers in particular are valuable and productive parts of the multigenerational work environment.

Legislative changes alone cannot substantially improve the willingness of older knowledge workers to remain employed. The main barriers hindering a higher share of older workers, especially knowledge workers, in the labour market include the need for a smaller tax wedge, more flexibility at work, gradual retirement options, a better attitude towards the elderly in the labour market, and an adaptable working environment (Eurobarometer, 2012). These barriers do not necessarily require huge financial burdens, but rather a willingness to change practice or adapt it in one's lifecycle.

A Slovenian survey carried out by the author in 2016 confirmed the mentioned barriers (Zupančič, 2016). The survey identified reasons for retirement decisions. Most respondents confirmed that they need autonomy at work, followed by the possibility of work after retirement, more flexibility at work, and the possibility of gradual retirement. In addition, 40% of (recently retired) respondents felt they retired too early, despite reaching full retirement criteria. Even more, many agreed they would retire later if the employer invited them to keep working.

Why are older knowledge workers worth further employment?

- Older knowledge workers possess the knowledge, skills, and characteristics employers need (including soft skills). Due to the mentioned values, older knowledge workers enable more innovative and productive working processes and are desired by clients. Indeed, 63% of employees in the multigenerational teams agree that the age differences contributed to higher innovation and creativity at work (European Business Test Panel, 2008). The invisible treasure of older knowledge workers includes the transfer of knowledge and counselling services through mentoring.
- The EC's (2016b, p. 31) annual labour and social report states that "an important part of economic growth stems from investment in knowledge creation or intangible assets".
- The most prevailing prejudice in the case of older workers is decreased working capacity and productivity due to age. The (sometimes) justified decrease in productivity arises from neglected need for investments into human resources rather than decreased working capacity alone. A Finnish study showed that only 30% of workers aged 50–64 had lower working capacity. Holistic research about health at work in Finland started with the launch of the FINPAW program and even before, all through interactions with employers, to enable workers' higher workability (Ilmarinen, 2012).
- As knowledge grows obsolete in a short time, age plays no crucial role in investment decisions. Training options should be available for each individual, whether young or old. Variations in employment are the highest in the 60–64 age group, possibly due to implemented or

neglected age policies (CEDEFOP, 2015). Finland even raised the age ceiling for education or training.

The implementation of innovative age management approaches, as Finland shows, importantly impacts the retaining and attracting of older knowledge workers in employment. About half of correspondents confirmed that older workers retire too early (Eurobarometer, 2012), and 70% of older workers feel unwelcome at work (EC, 2012). The 2012 European Year of Active Ageing and Intergenerational Solidarity presented a welcomed approach to highlighting the ageing and its consequences. Unfortunately, the willingness to enable follow-up activities made room for other, more prominent agendas.

Innovative Solutions for More Elderly in the Labour Market

A comparison of different paths and achievements between Finland and Slovenia in the last two decades indicates possible success factors in different age management approaches. Finland is adapting its skill needs with various forecasting systems and modelling; educational processes are aligned with labour market needs. Quantitative and qualitative analyses, together with practical applicative technological solutions, were crucial for economic growth in the active age strategy implementation period. The share of workers without education decreased from 55% to 18% between 1997 and 2003 through systematic investments in human resources; meanwhile, the share of knowledge workers grew from 12% in 1988 to 39% in 2000 (Eurofound, 2007; Ministry of Social Affairs and Health, 2002).

Results of the FINPAW program evaluation show that the situation of the elderly in the labour market in Finland significantly improved after five years of active ageing strategy implementation (Arnkil, Nieminen, Rissanen, Pitkanen, & Lyytinen, 2003). During the implementation phase, 50% of the Finnish population noticed the program framework; the same share felt the program was important and that it had a positive impact on the employability of the elderly (Ministry of Social Affairs and Health, 2002). The FINPAW program included more than 40 measures and policies for longer working life, and the emphasis was placed on research and improvements of work environment and quality at work. Additional focus was dedicated to investments in human capital and workplace adaptability, broad national awareness-raising campaigns, the promotion of active ageing, and many seminars and issued publications. However, the most important and successful element of the strategy was the introduction of workability measurement through the workability index.

Ilmarinen's (1999) model of workability presents an interesting innovative concept that contributed to the better perception of preconditions for a quality working life and dimensions of workability (work, values, competences, and health). It was designed for the population over 45 years old with a goal of timely interventions for longer working lives. Consequently, the workability measurement in Finland led to an improved—or at least preserved—level of workability of older workers as well as increased satisfaction and competences (Eurofound, 2007). Furthermore, an evaluation in Finnish enterprises confirmed that investments in workability results in a three- to five-fold gain in returns for the individual worker within a few years. The implementation of Ilmarinen's (1999) workability model was realized in time in 90% of Finnish enterprises with more than two employees, and the awareness of workability for employability increased significantly (Ministry of Social Affairs and Health, 2002).

The retirement age increased, and the employment rate of the elderly approached the employment rate of other age groups in Finland. The report identified key factors for improvement in governmental support and broad political consensus for age challenges progress, substantial financial funding availability, and focus on SMEs support, including support for employers' needs. To sum up, the FINPAW promotion positively affected individual jobs and work conditions, to some extent due to extensive managerial training for age management. The additional value added to the program was significant public funding (4.2 million euros in 5 years of implementation); funding demonstrated a serious governmental commitment to improving the labour market situation of older workers in Finland.

What must be changed in Slovenia and other EU member states with low employment of the elderly? As older knowledge workers already possess skills and knowledge, substantial investments in their skills and competences are not needed, but they are in other age groups. Until 2030, there will be a shortage of 20.8 million (6.8%) of workers in the EU (EC, 2015a), including critical knowledge workers (EC, 2013). The contribution of older knowledge workers will matter in the EU labour market.

The service sector prevails in the EU; the older knowledge workers possess the required skills and competences. Knowledge banks, learning organizations, the introduction of interim management, IT-supported work arrangements, and counselling services for older knowledge workers might serve as interesting options for prolonged employment (Eurofound, 2015). A well-developed IT infrastructure allows for more autonomy at work and location irrelevance for aged workers.

The importance of the quality of work increases with age, as Finnish initiatives have recognized in the past. The quality of work affects the organization and the work environment; both matter to older knowledge workers (Eurofound, 2012). Work intensity is one of the major reasons for stress and may accelerate retirement (Eurofound, 2003, 2012). Satisfaction at work is linked with work conditions. Work satisfaction decreases with age; this can easily be ascribed to too few innovative measures for adaptability at work for older workers (Eurobarometer, 2012). Not surprisingly, Slovenia is recognized as a country with the lowest ranking regarding the ability "to do their current job or a similar one until one's age of 60" (Eurofound, 2016, p. 121).

Furthermore, 60% of all employees in EU-27 still have a fixed working time; among them, 55.3% are older than 50 (Eurofound, 2010). Even more worrisome, age discrimination is the most usual discrimination; it even intensifies for more educated older workers (Eurobarometer, 2012). Age discrimination starts as early as the age of 50 for men and even earlier for women (EC, 2011). Managers, human resource officers, and co-workers doubt the adaptability of older workers most of all (CEDEFOP, 2010a, 2010b). The prohibition of work after retirement in some countries, including Slovenia, is very limiting for knowledge workers due to their skills, knowledge transfer, and counselling possibilities. The government should serve as a role model for holistic solutions to increase the employment rate of the elderly, especially knowledge workers, as potentially the most employable ones. They should bear the responsibility for a more positive attitude towards the elderly by implementing pilot projects in the governmental sector, building a framework for the "silver economy", and ensuring elderly-friendly workplace adaptation.

Lessons to be Reconsidered for the Elderly in the Slovenian Labour Market

The future labour markets' demands in service sectors will require highly competent and knowledgeable workers (CEDEFOP, 2015). Due to the shrinking population in Europe, the demands will be even higher. The available workforce (aged 20–64) will decrease between 2023 and 2060 by 19 million persons (EUROPOP, 2013). Hence, a demographic policy is individual countries' responsibility and priority.

The educational structure of the population in Europe is constantly rising; Europe will face older, more educated and skilled human resources. In addition, older workers can provide added value in the contemporary society as a source of competitiveness (Griliches, 1970; Temple, 2001). Are we ready to adapt their workplaces and work environments with adequate measures and tools to keep them working longer?

Compared to the Finnish treating of age challenges, successful active age management in Slovenia requires:

- A long-term vision of age management development and the revision of the existing partial, but inadequate, solutions, if necessary;
- The cooperation of relevant sectors to achieve holistic and mutually supportive solutions;
- More government cooperation with social partners related to the elderly in the labour market and expectations of improved management and work environment (in this respect, Finland played a very positive role during its strategy implementation);
- The transparency of conduct and continuity of actions/reform, clear language, and intensive inclusion of social partners in the age management preparation;
- The implementation of non-technological innovations (in work processes, especially in the governmental sector, registering the most older knowledge workers);
- Sufficient and reliable analytical data for efficient and focused solutions concerning age challenges to foresee future social and economic impacts of ageing;
- Continued increasing awareness of ageing's trends and impacts on society as 74% of Finns compared to only 45% of Slovenes surveyed agreed that older persons contribute to society as workers (Eurobarometer, 2012);
- The introduction of career plans, pre-retirement activities, and changing working environments for ageing workers; and
- Lifelong reconciliation policies (not only childcare, but also elderly care facilities), taking into account women's significant human capital and potentially longer contribution to the labour market.

As a proven example of good practice in age management, Finland confirmed the necessity of steps from the micro towards the macro level of actions (Ilmarinen, 2002). Better said, one must proceed from individuals' needs towards adequate policies. The confirmation of a positive impact of simultaneousness and mutual impacts of the labour market and economic measures might contribute to a successful and inclusive labour market for older, especially very productive, knowledge workers in Slovenia.

Finally, the Norwegian Centre for Senior Policy presented an interesting good practice of a politically neutral institution, dealing with counselling and increased awareness of ageing in society. It might serve as a role model for future national settings by identifying country-specific barriers for higher inclusion and the retaining of older knowledge workers, promoting their potentials and advantages for inclusive and productive work.

Conclusion

Competitiveness requires more work effectiveness. Ageing is inevitable; it cannot be eliminated, but it can be better managed. The growing number of older workers needs more adaptive work environments aligned with their life-cycle characteristics. The share of older knowledge workers is growing, becoming a significant age group. They need adequate work conditions to keep them motivated and productive.

Autonomy at work, flexible working conditions, an adaptive work environment, and gradual retirement are among the most desired factors of work motivation. These approaches are not expensive to implement. When coping with the increasing share of demotivated older workers, retiring too early is much more expensive for companies and societies. An important signal can be the fact that 65% of respondents and 70% of managers find the combination of part-time work and partial retirement to be an attractive option (Eurobarometer, 2012).

During 2000–2010, the share of older workers in the EU increased from 16.2% to 18.1%, exceeding the share of 15- to 24-year-old workers, which decreased from 19.7% to 18% during the same period (EC, 2011). The central attention to ageing should expose the state of workability (Ilmarinen, 1999). A decrease in workability is often caused by a delay in monitoring potential health risks and workplaces' poor adaptability due to fast ageing. This is why Finland was probably more successful in age policies than other countries: Its ageing agenda was incorporated into its strategic goals and adopted by all relevant stakeholders. The mature approach towards ageing recognizes that achievements are not seen in the short or even mid-term, but later. Finland offered a good practice in awareness-raising campaigns. However, the end of the ageing program also showed a slowdown in further employment rate increases. It might confirm the fact that the ageing agenda is "visible" and highly effective as long as it is found to be politically important.

Therefore, holistic solutions are important, but the best and innovative solutions must also be constantly active to keep positive improvements in the attitude towards the elderly. During the time of demographic changes, the contribution of older knowledge workers is necessary for a higher employment rate, higher productivity, and greater competitiveness in the European labour markets and economies. The Finnish case confirms that economic and social goals are mutually supported. The work environment for older workers can be highly productive by ensuring a high quality of the work outcomes. The highest barriers to innovation lie in the lack of human capital or financial sources (i.e., 52%) (Innobarometer, 2010). The advantages of a proactive and holistic approach to age challenges have been demonstrated, especially in terms of concerns for older knowledge workers in the EU. More binding recommendations to implement them in EU member states, and more serious progress monitoring might alleviate many unnecessary labour market shocks as well as human capital loss and innovation gaps.

Concretely, to provide for the well-being and motivation of older knowledge workers in Slovenia, one can submit a requisitely holistic innovative age management model, built on identified barriers and Finnish good practices. The model includes all the most important political measures that can contribute to more efficient labour-market performance for older knowledge workers, if implemented. The variety of measures within the model can be grouped into four main areas of implementation. The first set includes innovations at the workplace/work environment for older workers (innovative legislative changes in labour code, pension systems, age management, innovations in job creation and organization, non-technological changes). The second set focuses on measures to raise motivation not to retire (innovations in tax policy, intensive social partners' involvement, awareness-raising campaigns, intergenerational management). The third set covers lifelong investments into competences (changed role of educational institutions, socially responsible restructuring). The fourth set emphasizes a stronger need for investments into the health of older workers at the individual, company, and society levels.

Slovenia has a long way to go to achieve substantial progress to motivate older knowledge workers to remain employed longer. The Finnish example shows it is possible; the strongest barrier probably lies in the maturity of policy decision makers. The implementation of the mentioned model in Slovenia is achievable; the start requires sincere commitments of all relevant stakeholders for needed changes and the recognition of reality in the labour market for the elderly. Despite the fact that improvements will not be immediately visible, it is socially responsible and economically justifiable to change some existing and less productive Slovene priorities towards priorities of some of the best performers in the field of active ageing, as Finland still is. This shift might have multiplications that are more positive for the Slovene economy than some others.

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Starejši znanjski sodelavci kot potencial trga dela (primera Slovenije in Finske)

Izvleček

Članek se navezuje na izziv demografskih sprememb, ki pridobiva pomen v mnogih razvitih državah. Evropska unija je prepoznala potrebo po aktivaciji starejših znanjskih sodelavcev, ki so premalo zastopani na trgu dela in z njega izrinjeni oziroma premalo motivirani za nadaljevanje delovne aktivnosti zaradi najrazličnejših razlogov, in to kljub pridobljenemu znanju in izkušnjam. Države članice Evropske unije se različno odzivajo na izziv staranja, z bolj ali manj uspešnimi nacionalnimi politikami. Članek sloni na raziskavi o razvoju trga dela starejših znanjskih sodelavcev v Sloveniji v primerjavi s politiko upravljanja s starejšimi sodelavci na Finskem ob koncu devetdesetih let preteklega stoletja. Z omenjeno politiko staranja je Finska uspešno dvignila zaposljivost starejših znanjskih sodelavcev s poudarkom na celovitih in usmerjenih ukrepih. Slovenija je v istem obdobju zaradi odsotnosti celovitih ukrepov aktivnega staranja stagnirala, napredka pa še zdaj ni videti. Rezultati in pomanjkljivosti preteklih dobrih in slabih praks v omenjenih dveh državah članicah Evropske unije ponujajo nadaljnji razmislek o možnih korakih za napredek ali opustitev neuspešnih politik s ciljem, poiskati rešitve za izziv aktivnega staranja v Evropski uniji.

Ključne besede: starejši znanjski sodelavci, Slovenija, Finska, Evropska unija

ORIGINAL SCIENTIFIC PAPER

RECEIVED: OCTOBER 2016

REVISED: NOVEMBER 2016

ACCEPTED: NOVEMBER 2016

DOI: 10.1515/ngoe-2016-0023

UDK: 005.72:334.012.61-022.56

JEL: L20, L26, M10

Citation: Delić, A., Đonlagić Alibegović, S., & Mešanović, M. (2016). The Role of the Process Organizational Structure in the Development of Intrapreneurship in Large Companies. *Naše gospodarstvo/ Our Economy, 62*(4), 42 – 51. DOI: 10.1515/ngoe-2016-0023

The Role of the Process Organizational Structure in the Development of Intrapreneurship in Large Companies

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Abstract

Modern companies' business environments have become increasingly complex, dynamic, and uncertain as a consequence of globalization and the rapid development of information communications technology. Companies are urged to increase their flexibility in order to keep their competitiveness in the global market. The affirmation of intrapreneurship becomes one of the basic ways for achieving higher adaptability and competitiveness of large companies in the modern business environment. In this context, the choice of an organizational solution that improves the development of entrepreneurial orientation and increases employee entrepreneurship and innovativeness becomes an important task for large companies. Research studies and business practices have indicated that various types of modern organizational forms enable the development of intrapreneurship. Therefore, the main aim of this paper is to identify dominant characteristics of organizational solutions and analyse their influence on the development of intrapreneurship in large companies in Bosnia and Herzegovina (BiH). The research results indicate that current organizational characteristics are not favourable for the development of intrapreneurship in large BiH companies and that improvement is necessary in order to create an enabling environment for intrapreneurship and innovativeness. Based on these findings, recommendations for appropriate organizational changes are presented that might result in a more intensive development of intrapreneurship in large BiH companies.

Keywords: Intrapreneurship, organizational structure, process organizational structure, large companies, Bosnia and Herzegovina Federation

Introduction

The globalization process has generated the growth of competition in the international market, the necessary implementation of flexible adaptation to ever-demanding customers, the constant development of new products and services, and

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NAŠE GOSPODARSTVO
OUR ECONOMY

Vol. 62 No. 4 2016

pp. 42 – 51

their related innovations in the segment of business processes and organizational practices. In order to successfully meet the requirements set forth by transition on the one hand and globalization on the other hand, large companies in Bosnia and Herzegovina (BiH) need to provide the conditions for the more intensive development of intrapreneurship.

Intrapreneurship, *inner entrepreneurship*, and *corporate entrepreneurship* are terms frequently used as synonyms denoting the presence and dynamics of entrepreneurship in existing large companies, manifested in the entrepreneurial activities of employees aimed at the creation of added value evident in the improvement of existing and creating new products and services. The employees in large companies can become intrapreneurs only if the organizational design is created that would enable them to act in an entrepreneurial way. Scientific research and business practice show that organic forms, such as the process of organizational structure, have the characteristics that enable all employees—regardless of the level or division of the company to which they belong—to engage in entrepreneurial activities. Hence, they are considered a more appropriate infrastructure for the development of intrapreneurship than the bureaucratic/mechanical forms.

Literature Review

Importance of intrapreneurship development in large companies

Due to its flexibility and entrepreneurial orientation, small and medium companies are more successful in managing modern business challenges than large companies that are more passive and often prone to doing business by following traditional rules. For large companies to become more competitive, they need to affirm the entrepreneurial orientation of their employees and make more efforts in the development of intrapreneurship. Drucker (2005) stated that a company's size is not an obstacle to success in entrepreneurship and innovation as large companies have more resources (employees, knowledge, financial assets, and equipment) for the development of innovations than small and medium companies. Drucker also stated that conventional business logic is wrong to emphasize the fact that entrepreneurial behaviour and innovationsare something spontaneous, natural, and absolutely creative.

Thus, according to Drucker (2005, p. 82), entrepreneurship in the modern business environment is neither "an innate characteristic" nor the result of "natural creative processes"—it is "hard work and effort", which is why Drucker claimed that large companies also need to be able to simultaneously do three important things: improve, expand, and innovate. Therefore, large companies wanting to achieve a competitive advantage over small and medium companies need to consciously and systematically implement the entrepreneurial concept and act in an entrepreneurial way, as today rigidness and price-based competitiveness have given way to the introduction of new and more superior products in the market. Intrapreneurship development enables large companies to ensure competitiveness on this new basis.

Definition of intrapreneurship

The term *intrapreneurship*was introduced into the economics literature in the 1980s. In 1985, Pinchot's *Intrapreneuring: Why you don't have to leave the corporation to become an entrepreneur* used the term *intrapreneurship* as a compound developed from the term *intraorganizational entrepreneurship*. No unique definition of intrapreneurship has yet been developed. We might say that the number of definitions of the term is directly linked to the rapid interest in this phenomenon by theoreticians who, in numerous studies since the 1980s, have given their own definitions and interpretations. However, all these definitions share a common denominator emphasizing that the concept of intrapreneurship is different from classic entrepreneurship in the sense that the entrepreneurial process is active within the existing company (Kuratko & Hodgest, 1995, p. 94).

Intrapreneurship is a process of creating new ventures within the existing companies in order to improve business results and strengthen a company's competitive position (Milovanović, 2009, p. 191). Zahra (1991) defined intrapreneurship as a set of formal and informal activities aimed at creating new business ventures in the existing companies in the form of new products, services, and process innovations that would enable the opening of new markets. According to this author, the implementation of intrapreneurship also affects a company's self-renewal, which includes redefining the key ideas and postulates serving as a company's base, as well as the implementation of strategic and organizational changes within the company.

Nielsen, Peters, and Hisrich (1985) identified the inner development of relatively smaller and independent organization units whose goals are to create, self-examine, and introduce new services, technologies, or methods. In other words, intrapreneurial activities, based on new combinations of the existing resources, increase a company's market potential and strengthen its competitiveness (Covin & Slevin, 1991, p. 7). Based on these definitions, we can conclude that intrapreneurship is entrepreneurship of large companies whose main goal is to develop innovations and create added

value. The main goal of intrapreneurship can be realized by creating the appropriate organizational structure that enables employees' entrepreneurial activities.

The role of organizational structure in the development of intrapreneurship

Large companies can develop intrapreneurship provided that they establish an appropriate organizational structure that might improve employees' entrepreneurial activities. The identification of the organizational characteristics that enable and improve employees' entrepreneurial activities has been the subject of research conducted by many authors in the field of organization and management. The results of these studies as well as the business practices showed that a more shallow organizational structure with fewer hierarchical levels is convenient for the development of intrapreneurship. A limited number of organizational levels are related to decentralization and a wider range of control as well as whether authority and greater autonomy for employees enable them to act in an entrepreneurial way. According to Ireland, Kuratko, and Morris (2006), a higher level of decentralization fosters the horizontal and lateral interaction of employees, which facilitates cooperation, the expression of creativity, and the development of new ideas. The research focusing on organizational structure, conducted from the 1960s to the late 1980s, showed that a relatively decentralized structure allows for generating more creative ideas, which results in more innovation in an organization (Burns & Stalker, 1969; Kanter, 1983; Thompson, 1961). In addition, it has been established that a higher degree of participation in decision making positively affects the development of employees' innovativeness (Cohn, 1981; Hage & Aiken, 1970; Kim, 1980). Regarding formalization as a dimension of organization structure, researchers have concluded that a lower level of formalization largely fosters innovative processes in an organization (Kanter, 1983; Van de Ven; Angle, & Poole, 1989). Studies have further indicated that a higher level of organizational complexity means a higher level of organizational innovativeness (Hage & Aiken, 1970; Van de Ven, 1986).

Zahra (1993) asserted that high-quality communication between managers and their subordinates encourages the development of entrepreneurial spirit, while the over-usage of control mechanisms prevents it. However, some weaknesses exist related to the lack of control mechanisms in organizations, which can result in employees' dysfunctional behaviour. Hence, Zahra suggested that the "levers of control" framework includes such a level of control that prevents anarchy but also leaves enough space for generating creative ideas. A decentralized organization facilitates horizontal, vertical, and lateral communication within an organization, along with the exchange of creative ideas and the promotion of entrepreneurial spirit (Carrier, 1996). Nielsen et al. (1985) argued that the development of entrepreneurial spirit in an organization requires support from top management, which should create a positive culture encouraging and sustaining new ideas (Altinay & Altinay, 2004, pp. 334–336).

An organizational structure that includes all of the mentioned characteristics to enable and speed up employees' entrepreneurial activities aimed at the development of innovations in a company is the process organizational structure.

Basic characteristics of the process organizational structure

Hammer and Champy's (1993) *Reengineering the Corporation: A manifesto for the business revolution* introduced the concept of reengineering into the theoretical debates in the field of organizational change managementand to the business practice of many companies that wanted to significantly improve their business performances by implementing business process reengineering (BPR). Hammer and Champy defined the main cause of the business crisis on the global market in the 1990s as the inability of American companies to adapt to the challenges of the most important forces of the environment, which these authors called the 3Cs: customers, competitors, and change. According to Hammer and Champy, the ability to overcome the main difficulties of the current business practice, the difficulties that result from the traditional and therefore outdated reflections on business, can be found in a totally different reflection on business, which should be based on the orientation to the business processes. These authors further identified business process as a series of business activities that, in the process of transforming input into output business items, create specific value for customers (Delić, 2012; Hammer & Champy, 1993).

The traditional way of organizing a company is evident in the functional organizational structure, which includes grouping equivalent, similar, or inter-dependent tasks in such a way that all the tasks of a given function are linked and grouped together in an appropriate organizational unit. However, this type of organization in contemporary business conditions does not secure a company's adaptability to changes in the environment, and it hinders the development of intrapreneurship. In other words, this type of structure includes a large number of organizational levels, formally and vertically

directed (mainly from the top to the bottom of the organizational pyramid) communication, a low level of cooperation among functional divisions, unclear results of the activities of organizational units, slow decision making, long material and information flows, etc. Unlike the traditional structure, whose main cohesive elements are organizational units in which certain business functions are performed, the main cohesive elements of the process organizational structure are business processes. Harrington (1991), Martin (1995), and Davenport (1993) identified the business process as a series of logically related activities that use a company's resources to satisfy customers' needs for products or services of the appropriate quality and price in the appropriate time period, while realizing a certain value (Bosilj Vukšić & Kovačić, 2004, p. 9).

The main characteristics of the process organizational structure can be established by means of analysing the organizational focus, structural elements, operational processes, people, and communication (Hernaus, 2006, pp. 95–96). The focus of the process organizational structure is oriented to business processes, which are adjusted to a company's mission that is clear to employees, thereby making their work and tasks more rational. Their tasks are not strictly specialized, and employees have a relatively high level of autonomy while performing them, which leads to measurable outcomes and results in companies meeting more of their customers' or clients' needs.

The process organizational structure also includes process teams made up of individuals with complementary skills and knowledge. Their tasks are not formalized, but are rather wide and flexible while their common action creates a synergy effect and consequently leads to multiple benefits for the company (Love & Gunasekaran, 1998, as cited in Hernaus, 2006). In the process-oriented organization, managerial responsibility is divided among the "owners" of the process, who are responsible for the process itself (Hernaus, 2006, p. 169). Managers in the process-oriented organization are actually coaches and mentors to their employees. Actually, managers in this type of organization provide support to their subordinate employees by directing them, coordinating their activities, bi-directionally communicating, and integrating their disperse knowledge and skills, thereby enabling them to show their creativity and innovativeness and proactive entrepreneurial activity.

Operational processes at a company are interrelated by means of simplified work and communication channels, which make organizations more synchronized and integrated. The process organizational structure simplifies the ways tasks are performed while resources are treated as a common input, thereby avoiding unnecessary competition among organizational units. Control is performed only as a means of prevention and is directed to the decrease of variation rather than to the detection of those responsible and the correction of errors, which gives greater freedom to employees to carry out independent, creative, and innovative actions.

The process organizational structure emphasizes the integration of its employees' skills and knowledge, which leads to the development of their skills, the acquisition of new knowledge, and the expansion of competencies. Employees are awarded based on their own contribution to the realization of the process. In addition, the awards are given not only for individual successes, but also for team successes, which encourages employees to act proactively at both the individual and team levels.

The process organizational structure is characterized by intensive and high-quality horizontal communication. This type of structure does not recognize strict boundaries among the organizational units, typical of traditional organizational forms, thereby enabling the faster flow and sharing of information among employees. In addition to mutual communication, employees communicate with customers to collect information about their needs and wishes. The information collected is interesting to all the functions and is mutually shared. Consequently, employees develop innovations aimed at improving the existing and creating new products and services in order to meet customers' needs. We can conclude that the process organizational structure motivates employees' entrepreneurial activity as it enables them to express their innovativeness, search for creative problem solutions, take risks, and be proactive—all with the purpose of using entrepreneurial opportunities and more efficiently satisfying customers' needs.

Research Methodology

Research subject, hypotheses, and goals

The subject of the empirical research presented and interpreted in this paper is the development of intrapreneurship in large companies in Bosnia and Herzegovina Federation (FBiH), influenced by the implementation of the process organizational structure. The general goal of the research is to establish the relationship between the process organizational structure and the development of intrapreneurship in large companies in FBiH. According to the research subject and general goal, the central research hypothesis is formulated as follows:

H1: The process organizational structure has a positive effect on the development of intrapreneurship in large companies of FBiH.

Research sample and methods

A questionnaire was designed for this empirical research, and it was used as the main instrument for collecting primary data. The questionnaire included three parts. The first part was related to the general facts about a company and subjects, the second part included the questions related to the analysis of the level of entrepreneurial orientation and employees' entrepreneurial activity, and the third part covered the questions aimed at the identification of the level to which the structure of large BiH companies resembles the process organization. The empirical research was conducted in all 10 cantons in the territory of FBiH (i.e., Sarajevo, Tuzla, Zenica-Doboj, Central Bosnia, Herzegovina-Neretva, West Herzegovina, Una-Sana, Bosnia-Drina, West Bosnia, and Sava Region). The main research sample included 54 large companies, of which 28 were in the manufacturing industry and 26 in the service industry. The data were analysed using descriptive statistical analysis and a canonical correlation analysis by means ofappropriate software support (IBM SPSS, MS Excel, etc.).

Findings and Discussion

Analysis and interpretation of the research results

Of the 54 total participants, 28 were male and 26 were female. In terms of their education, 40 participants (74.07%) had a university degree, 4 (7.41%) had a two-year college degree, 4 (7.41%) had completed high school, and 6(11.11%) had a master's degree. The survey included 22 participants (40.74%) in middle-level management, 14 (25.93%) in top management, 9 (16.67%) in charge of non-managerial/administrative tasks, 6 (11.11%) belonging to the lower/operational level of management, and 3 (5.56%) who were heads of certain business processes.

Employees' attitude towards innovativeness as an assumption of the development of intrapreneurship

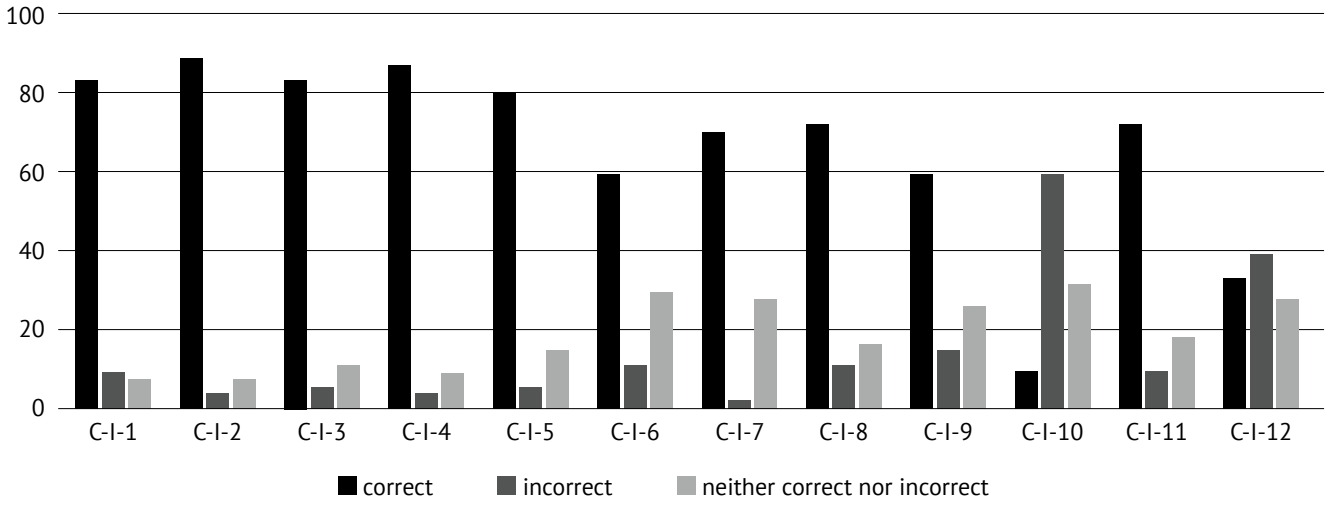
Figure 1 shows the results of the empirical research related to employees' orientation towards the development of innovations, which is one of the assumptions for the development of intrapreneurship in BiH companies.

The questionnaire included the following statement: While defining the strategic orientation and realizing business activities, the company's management focuses on research and development, technological leadership, and innovations in the company. The research results showed that the largest number of participants (83.4%) believed this statement to be correct; 9.3% disagreed while 7.4% thought it was neither correct nor incorrect when it comes to their respective companies.

The second statement in this field was related to management's interest in manufacturing and/or providing new products and/or services. The results indicated that the majority of participants (88.9%) agreed that the company's management was oriented towards innovation in the production or provision of services. Some 3.7% of participants did not agree with this statement while 7.4% were undecided.

The results for the statement that the management encourages employees to think and behave in an original and innovative

Figure 1. Employees' attitude towards development of innovations



way showed that 83.4% of participants agreed with this statement, 11.1% were undecided, and 5.6% disagreed.

Eighty-seven percent of participants agreed with the statement that the management, along with employees, initiates innovations in working methods and business processes in order to improve them. Some 9.3% of participants thought that this statement was neither correct nor incorrect for their respective companies, while 3.7% disagreed with this statement.

A number of participants (79.7%) agreed with the statement that the company's management shows extreme openness to new ideas and suggestions given by employees. For 14.8% of participants, this statement was neither correct nor incorrect. Only 5.6% thought that this statement was incorrect.

The statement that work is designed in such a way that employees are able to act innovatively was agreed with by 59.2% of the participants. As many as 29.6% of them were undecided while the remaining 11.1% disagreed with this statement.

The results of the empirical research indicated that 70.4% of the participants believed that they have the ability to recognize various opportunities for development of innovations while they perform their everyday tasks. Some 27.8% of participants did not have a clear opinion on this matter while 1.9% were not able to recognize opportunities for development of innovations while at work.

Furthermore, the majority of participants (72.2%) agreed with the statement that employees have a high level of autonomy in developing innovations. Other employees had a somewhat different opinion: 16.7% were undecided while 11.1% neglected the high level of autonomy.

A number of participants (59.3%) agreed with the statement that managers hold constant meetings with their employees in order to make decisions about accepting creative and innovative solutions. Some 25.9% of participants were undecided while 14.8% disagreed with this statement.

The participants were asked to express their opinion on whether managers tend to criticize employees if they value employees' ideas and suggestions as "bad". The research results showed that 59.2% of participants disagreed with the statement that managers are prone to such criticism, 31.5% did not have a clear opinion on this matter, and 9.3% agreed with this statement.

The research results also showed that 72.2% of participants thought that the company's management encourages radical innovations in a company. Some 18.5% of participants were undecided while 9.3% gave a negative opinion. However, the results related to the statement that managers are focused on innovations and changes within the existing activity showed that managers were still not so prone to implementing radical changes. In other words, 38.9% of participants disagreed with the statement that management is not prone to innovations that include the company's leaving the existing field of activity. Some 33.3% of participants believed that management is not inclined to such radical innovations while 27.8% were undecided.

Based on these results, it can be concluded that BiH companies are highly aware of the importance of innovations. This clearly suggests managers' strategic orientation to innovativeness, which is manifested in relatively developed conditions for employees to express their innovativeness. Such results can lead to a significant assumption for the development of intrapreneurship as support for building the competitiveness of BiH companies in the market.

Correlation between the process organizational structure and intrapreneurship

A canonical-correlation analysis was used for determining the correlation between the space of the process organizational structure related to the system of independent variables and the space of employees' relation to innovations (as the basic assumption for the development of entrepreneurship) as the system of dependent variables. This analysis (see Table 1) resulted in 12 canonical dimensions (significant pairs of factors), two of which were statistically significant. The first obtained function is at the significance level and explains a very high correlation between the two sets of the analysed variables, which means that this function is explained with 89.72% of the total covariability of these two sets of variables. The second obtained canonical function is at the significance level but with somewhat lower values, indicating that its explanation of the correlation between the two sets of analysed variables is slightly lower when compared to the first canonical function. In other words, the second obtained canonical function is explained with 85.99% of the total covariability of these two sets of variables.

Tables 2 and 3 show the coefficients for the calculation of canonical results and the obtained structure of the canonical factors in the independent and dependent systems of variables.

According to the results related to the first obtained function (see Table 2), the process organizational structure is mostly defined by the variables related to the following opinions given by the subjects: Employees are appropriately informed

about the changes made to business processes and actively suggest solutions to their improvement (D-II-III-15=0.8710). Employees are provided with all the required information and have the appropriate knowledge and level of autonomy for undertaking entrepreneurial activities (D-II-III-12=0.8319). Employees in various organizational units work in process teams (D-II-III-8=0.7643). At work employees constantly learn, improve their skills, and expand their competencies (D-II-III-14=0.7579). Control of business processes is made for prevention (D-II-III-11=0.7429). Employees take risks and independently find creative and innovative solutions for the realization of business processes (D-II-III-13=0.7424). The activities that do not contribute to the realization of business processes have been eliminated (D-II-III-5=0.7274). There are no strict boundaries between the organizational parts (D-II-III-6=0.7255). Employees are held responsible for achieving the goals of business processes (D-II-III-16=0.7067). Communication among employees is unimpeded regardless of their level and division (D-II-III-7=0.7051). The company's business processes, whose realization requires cooperation of various organizational units, run without difficulties (D-II-III-1=0.6599). Managers act as coaches and mentors to the employees, who are process team members (D-II-III-9=0.6433). Employees share information and resources of common interest for all business processes (D-II-III-10=0.5776). Tasks at the company are designed in such a way that they include the execution of a wide range of complex tasks (D-II-III-4=0.5621).

Table 1. Canonical-correlation Analysis between the Space of the Process Organizational Structure and the Space of Employees' Relation to Innovations, as the Basic Assumption for the Development of Entrepreneurship

Canonical dimensions	R	R^2	p
1	**0.9472**	**0.8972**	**0.0000**
2	**0.9273**	**0.8599**	**0.0060**
3	0.8144	0.6632	0.4591
4	0.7203	0.5188	0.8664
5	0.6513	0.4242	0.9639
6	0.5978	0.3574	0.9881
7	0.5389	0.2904	0.9961
8	0.4504	0.2029	0.9986
9	0.3791	0.1437	0.9987
10	0.2736	0.0749	0.9978
11	0.2377	0.0565	0.9801
12	0.2216	0.0491	0.8577

Table 2. Canonical Coefficients in the Space of the Process Organizational Structure as the System of Independent Variables with the Isolated Canonical Pair

Variables	Correlations	
	1	2
D-II-III-1	**0.6599**	0.2993
D-II-III-2	0.4651	0.2322
D-II-III-3	0.4978	0.0174
D-II-III-4	**0.5621**	0.3388
D-II-III-5	**0.7274**	-0.2166
D-II-III-6	**0.7255**	-0.2252
D-II-III-7	**0.7051**	-0.0723
D-II-III-8	**0.7643**	-0.0656
D-II-III-9	**0.6433**	**0.3540**
D-II-III-10	**0.5776**	0.0458
D-II-III-11	**0.7429**	0.0330
D-II-III-12	**0.8319**	0.0003
D-II-III-13	**0.7424**	-0.0488
D-II-III-14	**0.7579**	0.2488
D-II-III-15	**0.8710**	-0.0145
D-II-III-16	**0.7067**	-0.0588

According to the results for the first obtained function (see Table 3), employees' relation to innovations is largely defined by the variables pertaining to the following participant attitudes: While performing their everyday tasks, employees recognize various opportunities for development of innovations (C-I-7=0.8869). Employees have a high level of autonomy in developing innovations (C-I-8=0.8388). Managers hold constant meetings with their employees in order to make decisions about accepting creative and

Table 3. Canonical Coefficients in the Space of Employees' Relation to Innovations as a System of Dependent Variables with the Isolated Canonical Pair

Variables	Correlations	
	1	2
C-I-1	**0.6851**	0.4598
C-I-2	**0.6868**	**0.5680**
C-I-3	**0.5945**	0.3979
C-I-4	**0.7106**	0.2206
C-I-5	**0.6464**	-0.0528
C-I-6	**0.7976**	-0.2999
C-I-7	**0.8869**	0.0862
C-I-8	**0.8388**	0.1386
C-I-9	**0.8137**	0.0119
C-I-10	-0.2493	0.0179
C-I-11	0.1291	0.1652
C-I-12	0.3510	0.0230

innovative solutions (C-I-9=0.8137). Work is designed in such a way that employees are able to act innovatively (C-I-6=0.7976). The management along with employees initiates innovations in working methods and business processes in order to improve them (C-I-4=0.7106). The company's management is oriented towards innovation in the production or provision of services (C-I-2=0.6868). While defining the strategic orientation and realizing business activities, the company's management focuses on research and development, technological leadership, and innovations in the company (C-I-1=0.6851).The company's management shows extreme openness to new ideas and suggestions given by employees (C-I-5=0.6464). The management encourages employees to think and behave in an original and innovative way (C-I-3=0.5945).

The analysis of the corresponding canonical functions refers to the fact that the dominant structural form of BiH companies has certain characteristics of the process organizational structure. This has a positive effect on employees' innovative and entrepreneurial activities and the development of intrapreneurship, which confirms the central research hypothesis postulated in this paper.

Conclusion

An appropriate organizational structure is one of the key assumptions for the development of intrapreneurship in large companies. Although knowledge about the importance of intrapreneurship exists, the systems built by the company often standardize their behaviour and encourage conservative actions. In addition, the rigid hierarchy hinders prompt reactions to changes in the business environment and the realization of new ideas, while prescribed rules and strict compliance slow down entrepreneurial ventures and limit intrapreneurs' creativity and innovativeness. Therefore, by constructing the appropriate organizational solution and through its constant improvement in creating the conditions for more intensive development of intrapreneurship, large companies can secure reliable support to build competitiveness in the global market. The appropriate structuring of an organization, which will ensure a company's flexibility, is treated as an important strategic issuenowadays. The results of the theoretical and empirical research indicate that the organic organizational design is convenient for business operations in a changeable and complex environment, typical of most contemporary companies. Such a design is characterized by a lower level of formalization and centralization, a higher level of horizontal rather than vertical complexity/flat structure, wider specialization, teamwork, etc. The process-oriented organizational structure is one of the contemporary organizational forms. Basically, it has an organic character that has proved to be an appropriate infrastructure for the development of intrapreneurship. Bearing in mind the complexity of the contemporary business environment in general, along with the complexity typical of the conditions in which BiH companies operate (inherited "robust" organizational structure, legal and political uncertainty, bureaucracy, unfavourable economic situation, etc.), it is legitimate to ask the what the dominant characteristics of the organizational structure of large BiH companies are and whether these companies, in structural terms, are suitable for the development of intrapreneurship. The results of the research presented in this paper show that, in organizational terms, BiH companies have somewhat developed the process organizational structure to a certain point. The research results show that the process organizational structure affects the development of intrapreneurship in large BiH companies as it, owing to its characteristics, is the appropriate infrastructure for encouraging employees to act in an entrepreneurial way and create innovative products and services that would satisfy customers' needs.

Limitations of the present study and opportunities for future research

The research presented in this paper is rather limited as it was conducted with a relatively small number of participants and not on the entire territory of BiH, but only in one of its parts (FBiH). This is why it is difficult to generalize the research results and make assumptions for all BiH companies. In addition, there is the assumption that, because the sample included mainly managers, they might have wanted to create a more positive image of their respective companies while answering the questions. Therefore, the research results might not reflect the real position of the observed variables. The research results presented in this paper, related to the structural characteristics of BiH companies, are not that compatible to the results from similar studies. Namely, this research showed that, in organizational terms, BiH companies have certain characteristics of the process-oriented structure, while the results of other studies showed that the organizational structure of these companies is more rigid, formal, and with the characteristics of the traditional organizational forms (see, for example, Delić & Ahmetović, 2013; Umihanić & Delić, 2013).The observed differences in the findings from the mentioned research studies can partially be explained by the different samples in these studies. For example, in our study, a third of the sample comprised service companies, whilst in prior research the sample mainly included large production companies. Flexible structures are more typical of service companies than production companies. Furthermore, our research was based on large companies, which are prone to the introduction of process

organizational structure as a precondition for intrapreneurship development, as these enterprises are striving towards more flexibility in order to adapt to business conditions in today's dynamic and uncertain business environment.

Regardless of these limitations, the research results presented in this paper clearly indicate that BiH companies are aware of the necessity to adapt to the changed business conditions as well as the importance of intrapreneurship and the significance of the organizational structure for securing the conditions under which employees would be able to show their creativity and innovativeness and act as entrepreneurs, which is most encouraging. Future research in this field should be conducted on the entire territory of BiH and with a larger sample, while the sample itself should include more operational employees. Also, the results should be compared to similar studies in the surrounding transitional countries so as to establish to which extent BiH companies, when compared to companies in these countries, are successful in facing contemporary business challenges.

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Vloga procesne organizacijske strukture pri razvoju notranjega podjetništva v velikih podjetjih

Izvleček

Posledica globalizacije in hitrega razvoja informacijske in komunikacijske tehnologije je, da je poslovno okolje sodobnih podjetij vedno bolj kompleksno, dinamično in negotovo. Podjetja so prisiljena povečati prilagodljivost, da bi bila na globalnem trgu še naprej konkurenčna. Afirmacija notranjega podjetništva postaja eden temeljnih načinov za doseganje večje prilagodljivosti in kompetitivnosti velikih podjetij v sodobnem poslovnem okolju. V tem kontekstu je izbira organizacijske rešitve, ki izboljšuje razvoj podjetniške usmeritve in povečuje podjetništvo in inovativnost zaposlenih, za velika podjetja pomembna naloga. Raziskave in poslovna praksa kažejo, da različni tipi sodobnih organizacijskih oblik omogočajo razvoj notranjega podjetništva. Temeljni cilj tega prispevka je torej identificirati prevladujoče značilnosti organizacijske rešitve in analizirati njen vpliv na razvoj notranjega podjetništva v velikih podjetjih v Bosni in Hercegovini. Izidi raziskav kažejo, da sedanje organizacijske značilnosti za razvoj notranjega podjetništva v velikih podjetjih v tej državi niso ugodne in da je potrebno izboljšanje, da bi ustvarili podporno okolje za notranje podjetništvo in inovativnost. Na osnovi teh ugotovitev so v članku podani predlogi za ustrezne organizacijske spremembe za intenzivnejši razvoj notranjega podjetništva v velikih podjetjih v Bosni in Hercegovini.

Ključne besede: notranje podjetništvo, organizacijska struktura, procesna organizacijska struktura, velika podjetja, Federacija Bosne in Hercegovine

ORIGINAL SCIENTIFIC PAPER

RECEIVED: OCTOBER 2016

REVISED: NOVEMBER 2016

ACCEPTED: NOVEMBER 2016

DOI: 10.1515/ngoe-2016-0024

UDK: 657.6

JEL: M41, K20

Citation: Novak, A. (2016). Issues in the Recognition versus Disclosure of Financial Information Debate. *Naše gospodarstvo/Our Economy, 62*(4), 52–61. DOI: 10.1515/ngoe-2016-0024

NG
OE

**NAŠE GOSPODARSTVO
OUR ECONOMY**

Vol. 62 No. 4 2016

pp. 52–61

Issues in the Recognition versus Disclosure of Financial Information Debate

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Abstract

Empirical evidence from the academic literature on capital market effects of financial information placement (i.e., recognition on the face of the primary financial statements versus disclosure in the notes to the financial statements) is not straightforward. Therefore, the purpose of this paper is to contribute to the recognition versus required disclosure debate in a standard-setting context by exploring possible reasons for perceived differences between recognized and disclosed amounts. These differences, in our view, arise due to demonstrated auditors' greater tolerance for misstatement in disclosed amounts, allowed non-compliance with disclosure requirements even in strong enforcement regimes, lesser care that preparers of financial statements devote to disclosures relative to recognized items as well as behavioural factors and differential processing costs related to the users of financial information. We believe that these arguments strengthen the case for the general preference for the recognition of financial information in the standard-setting context. The original scientific contribution of this paper is to systematically identify the reasons for the differences between recognized and disclosed amounts in financial statements. As such, this paper may provide a suitable basis for the justification of certain conceptual changes in the field of international accounting standards that are currently underway.

Key words: Auditing, disclosure, financial information, notes, recognition

Introduction

The question regarding whether users of financial information process amounts disclosed in the notes to the financial statements and those recognized on the face of the primary financial statements similarly is of interest to standard setters, regulators, financial statements preparers, auditors, and hence academics. Efficient market theory (EFM) suggests that the markets adopt a substance over form approach and incorporate all publicly available information, irrespective of the location in the financial report (i.e., whether the amount is recognized on the face of the primary financial statements or disclosed in the notes).[1]

[1] It is worth noting that some disclosed items in financial reports are not recognized—and likely never will be—because they cannot be expressed in numbers or, more narrowly, in currency units. Examples include the qualitative description of accounting policies, a summary of inputs to the calculation of a recognized number, and a sensitivity analysis (Schipper, 2007, p. 301).

Yet some (value relevance) archival research suggests that, under certain conditions, note disclosures are less strongly associated with market values (of equity; i.e., share prices), such as Bernard and Schipper (1994), Aboody (1996), Davis-Friday, Folani, Liu, and Mittelstaedt (1999), Davis-Friday, Liu, and Mittelstaedt (2004), Ahmed, Kilic, and Lobo (2006), and Israeli (2015). Davis-Friday et al. (2004) suggested that investors perceive reliability differences between recognized and disclosed amounts, while Ahmed et al. (2006) argued that the differences are due to limited investor attention or processing costs (Bratten, Choudhary, & Schipper, 2013, p. 1185). In addition, Al Jifri and Citron (2009, p. 124) asserted that recognition may imply greater relevance,[2] in which users correctly assign lower weight to disclosed amounts. On the other hand, a few studies have suggested that, for particular classes of firms (for firms engaged in R&D: Al Jifri & Citron, 2009[3]) and for particular accounting items in question (pensions: Gopalakrishnan, 1994; leases: Bratten et al., 2013), the capital market participants perceive recognized and disclosed amounts equivalently, which is consistent with the efficient market hypothesis (EMH).

We can thus conclude that the empirical evidence from the academic literature on capital market effects of recognition versus disclosure in the notes to the financial statements is not straightforward. Therefore, the purpose of this paper is to contribute to the recognition versus required disclosure debate in the standard-setting context by exploring possible reasons for perceived differences between recognized and disclosed amounts. The original scientific contribution of this paper is to systematically identify the reasons for the differences between the amounts recognized and disclosed in the financial statements. As such, the paper may constitute a suitable basis for the justification of certain conceptual changes in the field of international accounting standards that are currently underway within the Conceptual Framework project and with the recently issued IFRS 16 *Leases*.

The paper has the following structure: It begins with recognition and disclosure as financial reporting concepts, proceeds with limited attention and differential processing costs, and then explores auditor behaviour related to recognized and disclosed numbers. The final section concludes the paper.

Recognition and Disclosure as Financial Reporting Concepts

Although no extant academic theory of accounting or standard setting exists, both world's most important standard setters—namely the International Accounting Standards Board (IASB), which issues International Financial Reporting Standards (IFRS), and the Financial Accounting Standards Board (FASB), the accounting standard setter from the USA—articulate their theory of accounting and standard setting in their conceptual frameworks[4] (Barth, Beaver, & Landsman, 2001, p. 78).

On 28 September 2010, the IASB and the FASB announced the completion of the first phase of their joint project to develop an improved conceptual framework for IFRS and US generally accepted accounting practices (GAAP). This announcement actually referred to the issuance of "Chapter 1: The objective of financial reporting" and "Chapter 3: Qualitative characteristics of useful financial information" from the improved conceptual framework. Chapter 2 was intended to deal with the reporting entity concept while Chapter 4 contains the remaining text of the IASB's *Framework for the Preparation and Presentation of Financial Statements* published in 1989.[5] The project's overall objective was to create

[2] Relevant financial information is capable of making a difference in users' decisions. Information may be capable of making a difference in a decision even if some users choose not to take advantage of it or are already aware of it from other sources. Financial information is capable of making a difference in decisions if it has predictive value, confirmatory value, or both (IASB, 2010, para. QC6–7).

[3] The paper exploits the unique UK regulatory framework in which accounting for goodwill moved from note disclosure to balance sheet recognition. According to Al Jifri and Citron (2009, p. 125), their paper adds to the literature in a number of ways. First, it studies the recognition versus disclosure issue in a new context—namely, that of goodwill accounting. Second, it investigates whether the relative importance of recognized and disclosed amounts varies by type of firm (i.e., whether or not a firm engages in R&D).

[4] A conceptual framework can be seen as an attempt to operationalize the accounting theory (Higson, 2003, p. 62). Davies, Paterson, and Wilson (1999, p. 53, as cited in Higson, 2003, p. 63) defined a conceptual framework as a statement of generally accepted theoretical principles that form the frame of reference for a particular field of enquiry. In terms of financial reporting, these theoretical principles provide the basis for both the development of new reporting practices and the evaluation of existing ones. The IASB's framework can be interpreted as a given, external set of high-level principles or norms that reflect fundamental value judgments made by the Board. In the IASB's regulatory context, decisions regarding the identification, definition, and hierarchy of these high-level principles are made in the political sphere—that is, after considering constituents' views (Fülbier, Hitz, & Sellhorn, 2009, p. 462). Solomons (1986, p. 116, as cited in McKernan, 2007, p. 173) identified defence against politicization as one of the key functions of the conceptual framework for financial reporting. If there is a sound conceptual framework, then the basis for the standard-setting decisions can be more widely understood, not only by politicians but also by other market participants, and will hopefully make the actions of the standard setter more defensible (Boyle, 2010, p. 301). See Dye (2001) for discussion about the theory of disclosures.

[5] The FASB's conceptual framework consists of Statements of Financial Reporting Concepts (SFASs). On 28 September 2010, the FASB actually issued SFAS No. 8 to replace SFAS No. 1 *Objectives of Financial Reporting by Business Enterprises* and SFAS No. 2 *Qualitative Characteristics of Accounting Information*.

a sound foundation for future accounting standards that are principles based, internally consistent, and internationally converged. Nevertheless, the IASB subsequently decided not to conduct the project in phases anymore and thus published a comprehensive discussion paper (DP) addressing possible changes to the Conceptual Framework in July 2013. In the light of comments received on the DP, in May 2015 the IASB published an exposure draft (ED)—a new draft of the Conceptual Framework—to gather comments from the public. The deadline for comments on this ED ended on 25 November 2015. When the conceptual framework project is completed, the IASB will have a complete, comprehensive, and single document called the Conceptual Framework for Financial Reporting (IASB, 2016b).

Paragraph OB3 of the IASB's Conceptual Framework for Financial Reporting from 2010 (henceforth Framework 2010) states that "the objective of general purpose financial reporting is to provide financial information that is useful to existing and potential investors, lenders and other creditors in making decisions about providing resources to the entity." Recognition is covered in Chapter 4 of the Framework 2010, where paragraph 4.37 states that:

> recognition is the process of incorporating in the balance sheet or income statement an item that meets the definition of an element and satisfies the criteria for recognition. It involves the depiction of the item in words and by a monetary amount and the *inclusion of that amount* in the balance sheet or income statement totals.

In addition to defining and describing recognized items, Framework 2010 states that disclosure is not a substitute for recognition (paragraph 4.37) and provides recognition criteria (paragraph 4.38), explaining that an item that meets the definition of an element should be recognized if:

(a) it is probable that any future economic benefit associated with the item will flow to or from the entity; and
(b) the item has a cost or value that can be measured with reliability.

This implies that recognition is actually a special case of financial reporting disclosure, restricted to items that meet certain criteria[6] (Schipper, 2007, p. 304). In contrast to the detailed treatment of recognition, IASB's Framework 2010 hardly mentions disclosures in the notes and does not provide their definition. Nevertheless, more information about the content of the notes can be found in IAS 1 *Presentation of financial statements.* Paragraph 10 of IAS 1 states that the complete set of financial statements also comprises notes, containing a summary of significant accounting policies and other explanatory information. In addition, paragraph 7 says that notes provide narrative descriptions or disaggregations of items presented in the primary financial statements and information about items that do not qualify for recognition in those statements.

We can thus conclude that disclosures in the notes can be numerical (i.e., expressed in monetary amounts) or textual (verbal); this paper only deals with the issues related to numerical disclosures. Moreover, numerical disclosures could also provide disaggregation of the monetary amounts presented in the primary financial statements. In this case the amounts disclosed in the notes to the financial statements complement those recognized on the face of the primary financial statements, but this area of interactions between disclosure and recognition is beyond the scope of this paper. Consequently, it should be highlighted that this paper focuses on the amounts recognized on the face of the primary financial statements and the amounts disclosed in the notes to the financial statements as direct quasi financial reporting alternatives.[7]

According to Clor-Proell and Maines (2014), standard setters—at least implicitly—view recognized information as more useful than disclosed information because recognized information is presumably more relevant and/or reliable. This should not come as a surprise, because the Framework 2010 recognition criteria imply that the items that meet the definitions of financial statement elements but fail one or more of the recognition criteria should be disclosed in the notes, and the very likely criterion to matter for this distinction is reliability (Schipper, 2007, p. 303).

We agree with Schipper (2007, p. 311) that no general agreement exists with regard to either the construct of reliability itself or its measurement. Some appear to believe that reliability is the ability of information to be vouched for, or confirmed by, an external archival source. Others appear to believe that reliability means the item's measurement is characterized by a high degree of consensus among independent measurers (a notion that subsumes the first idea of reliability). Still others appear to believe that reliability

[6] An item that possesses the essential characteristics of an element but fails to meet the criteria for recognition may nonetheless warrant disclosure in the notes, explanatory material, or supplementary schedules. This is appropriate when the knowledge of the item is considered relevant to the evaluation of the financial position, performance, and changes in financial position of an entity by the users of financial statements (Framework 2010, paragraph 4.43).

[7] For example, Bratten et al. (2013, p. 1184) pointed out that, in their comparison study of recognized versus disclosed post-retirement benefit (PBR) amounts, Davis-Friday et al. (2004) did not control for differences in their information characteristics. For example, the PRB disclosures were ranges rather than point estimates for 122 of the 199 sample firms, while recognized PRB values were point estimates accompanied by information about underlying assumptions.

refers to the precision of measurement (which is related to but differs from the consensus-of-measurers notion of reliability). Because attempts to explain what reliability was intended to mean in the standard-setting context have proved unsuccessful, the IASB and FASB[8] sought a different term that would more clearly convey the intended meaning. The term *faithful representation*, the faithful depiction in financial reports of economic phenomena, was the result of that search.[9]

To be a perfectly faithful representation, a depiction would have three characteristics. It would be complete, neutral, and free from error (Framework 2010, QC12). The IASB and FASB claim that the term encompasses the main characteristics that the previous frameworks included as aspects of reliability, so the term *reliability* disappeared from "Chapter 3 Qualitative characteristics of useful financial information" of the IASB's Framework 2010. Nevertheless, since the term *reliability* was still used in some recent accounting literature (e.g., Clor-Proell & Maines, 2014; Kadous, Koonse, & Thayer, 2012; Knauer & Wöhrmann, 2016), we decided to use it in this paper as well.

One rationale for disclosing monetary amounts in the notes instead of recognizing them on the face of the financial statements is that information is less reliable due to significant uncertainty associated with the measurement of the monetary amount (Johnson & Storey, 1982). For example, opponents to expensing stock compensation (i.e., as recognized in the income statement) often argued in the past that the estimates arising from the fair-value method used in FASB's Statement of Financial Accounting Standards (SFAS) No. 123R *Share-based payment* and IFRS 2 *Share-based payment* are unreliable (Malkiel & Baumol, 2002), that is contain considerable measurement (estimation) uncertainty. Given this rationale, reliability could thus determine information location (Libby, Nelson, & Hunton, 2006, p. 534).

Nevertheless, accounting standard setters may sometimes make monetary information location decisions for other reasons (Bernard & Schipper, 1994). Schipper (2007, p. 302) stated that "it seems implausible that a standard setter would not require the recognition of highly reliable items unless those items do not meet the definitions of financial statement elements"; yet former FASB members have indicated that the decision to allow disclosure rather than recognition has been driven by political pressure in some cases (e.g., Beresford, 1996; Beresford, 1997). This suggests that standard setters' information location decisions can be influenced by factors other than those described in the conceptual frameworks (Libby et al., 2006, p. 534).

Moreover, in our opinion, the concept of limited attention and differential processing costs (discussed in the next section) and auditor behaviour related to recognized and disclosed numbers (discussed in the subsequent section) strengthens the case for the preference for recognition in the standard-setting context.

Limited Attention and Differential Processing Costs

Hirshleifer and Teoh's (2003) paper represents a step towards bridging what appears to be an increasingly wide gap between the views of many accounting and finance researchers (specifically, the views of hard core believers in market efficiency) and the views of just about everyone else in the world with respect to the perceived efficiency of capital markets (Lambert, 2003, p. 387). Their approach departs from theories in assuming that users of financial information—more precisely, investors—have limited attention and processing power. Limited attention is a necessary consequence of the vast amount of information available in the environment and of limits to information-processing power. Attention must be selective and requires effort (Hirshleifer & Teoh, 2003, p. 339). In their model, due to the limits to investor attention, the information presented in prominent, easily processed form is assumed to be absorbed more easily than the information that is less prominent or that is only implicit in the public information set. Thus, (some) investors neglect relevant aspects of the economic environments they face. Although inattention might seem foolish as inattentive investors lose money by ignoring aspects of the economic environment, if time and attention are costly, such behaviour may be reasonable (see Barth, Clinch, & Shibano, 2003).

Hirshleifer and Teoh's (2003) paper develops a theoretical model in which a nontrivial number of investors are inattentive (unsophisticated) and either miss important information disclosures entirely or systematically misinterpret their implications. In such a world, accounting measurement rules, earnings management activities, and discretionary disclosures have an impact on stock prices even when these features bear no relation to the underlying cash flows of the firm (Lambert, 2003, pp. 387–388). Moreover, these features have an impact despite the existence of attentive

[8] Since 1980, the FASB has used the term *reliability* to describe information that is reasonably free from error and bias and faithfully represents what it purports to represent (FASB, 1980). However, in 2010, the FASB (as well as the IASB) replaced the term *reliability* with *representational faithfulness* to describe information that is complete, free from error, and neutral (FASB, 2010). Despite this change, according to Clor-Proell and Maines (2014), the term *reliability* still continues to appear in the FASB Codification (e.g., FASB ASC 820). For more on qualitative characteristics in the IASB's Framework 2010, see Novak (2012).

[9] Based on the current IASB's Framework 2010, BC3.20–BC3.25.

investors who have the ability to "see through" them.[10] The paper derives a link between reporting and disclosure decisions and stock prices and goes on to analyse how sophisticated managers would make reporting and disclosure decisions to exploit the inability of the market to price their firms "correctly", thereby increasing the stock prices of their firms (Lambert, 2003, pp. 387–388).

One of Hirshleifer and Teoh's (2003, p. 380) conclusions is that limited attention may help explain why investors are insufficiently sceptical of firms positioned to conceal liabilities, such as off-balance sheet contractual provisions (e.g., operating leases).[11] Limited attention may also help explain, without appealing to political or contracting constraints, certain peculiarities in the structure of accounting rules. In the age of information technology, it has become cheaper to require detailed reporting of numerous transactions (for a given level of resources devoted to auditing). Actual accounting reports differ from such a standard in ways that, from a pure reporting perspective, seem either irrelevant or harmful. For example, accounting rules permit aggregation, which "throws away" information. A limited attention approach suggests that, even from a pure reporting perspective, aggregation can make sense because investors may have trouble processing disaggregated information. Similarly, redundancy can be helpful when different presentations ease the processing of that information for different uses.

A similar theoretical paper by Barth et al. (2003) compared disclosure with three types of recognition: aggregate recognition with disclosure, separate recognition, and aggregate recognition without disclosure. They assume that investors decide whether to acquire accounting expertise. In doing so, investors trade off the cost of expertise acquisition against informational benefits they obtain from understanding disclosures. They assume that the expertise acquisition is costly because understanding disclosures requires accounting expertise beyond what is needed to understand recognized amounts.

If information is disclosed only in the notes, users of financial statements have to expend time and effort to become sufficiently expert in accounting to know (a) that there are items not recognized on the face of the financial statements, (b) that there is information about those items in the notes, and (c) how to assess the note disclosures. Because gaining that expertise is costly, some users of financial statements (i.e., those whose perceived expertise acquisition costs are higher than perceived informational benefits) will not become accounting experts. Therefore, information that is merely disclosed may not be fully reflected in share prices.

When comparing the disclosure regime with the separate recognition regime, Barth et al. (2003) found that recognition always increases price informativeness because, in this regime, recognition results in the disclosed amount being freely available to all investors. However, when aggregation is part of the recognition, as it is in the aggregate recognition with or without disclosure regimes, the results are more complex. In particular, in the aggregate recognition with disclosure regime, they found that recognition of an accounting component that results in a higher (lower) quality recognized amount does not always result in greater (lower) price informativeness. The differences in how capital market participants use recognized and disclosed items are thus due to differences in processing costs.

Lambert (2003, p. 399) agreed that individual investors cannot possibly process everything or even pay attention to everything that is of potential relevance to the valuation of the firm. In such a world, summary statistics can be of value, even if their role is to reduce economic search costs and is unrelated to psychology reasons. The big questions are how important these effects are and what factors influence their importance.

In addition, as articulated by Bernard and Schipper's (1994, as cited in Clor-Proell & Maines, 2014, p. 667) result of standard setters' view toward recognition versus disclosure, users may rationally perceive that firms report the most important financial information on the face of the financial statements—that is, they believe that recognized information in general is more relevant and reliable (see the discussion on auditor behaviour below) than disclosed information. This perspective suggests that economic differences between recognized and disclosed numbers lead users to

[10] The model assumes that, because attentive investors all have full information, they all calculate identical expected values. Inattentive investors are assumed to calculate the wrong expected value relative to the expected value calculated by attentive investors. Moreover, all inattentive investors calculate the same wrong value. Inattentive investors are assumed to utilize the same value for the residual variance of cash flows, as do attentive investors. As a result, they trade just as aggressively based on their (incorrect) assessment of the firm value as attentive traders do based on their correct assessment. In what sense are market prices inefficient in this equilibrium? They are inefficient in the sense that the price is not the same as it would be if everyone was attentive (Lambert, 2003, p. 392).

[11] Under the operating lease, the lessee does not recognize any lease asset or liability in the balance sheet. Nevertheless, in contrast, it is obliged to disclose future expected rental payments in the notes to the financial statements. For operating leases having initial or remaining non-cancellable lease terms in excess of one year, the following information shall be disclosed in the notes to financial statements: future minimum rental payments required as of the date of the latest balance sheet presented, in the aggregate, and for each of the five succeeding fiscal years as well as the aggregate for the periods beyond five years. The usefulness of only a lump-sum amount disclosure beyond five years is, in our opinion, questionable. For more on lease accounting, see Novak (2011).

weigh recognized information more heavily than disclosed information.

This is indeed demonstrated by Frederickson, Hodge, and Pratt (2006). They noted that the evolution of employee stock option (ESO) accounting in the framework of U.S. GAAP from the initial adoption of SFAS No. 123 to the passage of SFAS No. 123R encompassed three reporting environments for stock option expense: (1) voluntary note disclosure, (2) voluntary income statement recognition, and (3) mandated income statement recognition (Frederickson et al., 2006, p. 1089). They demonstrated that mandated income statement recognition, as required by SFAS No. 123R, leads to higher user assessments of reliability than either voluntary income statement recognition or voluntary note disclosure, options allowed under the "old" SFAS No. 123. Users view voluntary note disclosure as the least reliable reporting alternative. In addition, Choudhary (2011) documented that mandatorily recognized ESO values are more accurate when compared to voluntarily recognized ones.

Auditor Behaviour Related to Recognized and Disclosed Numbers

Libby et al. (2006) examined whether auditors are willing to tolerate more error in disclosed numbers than in recognized numbers, which should reduce the reliability of disclosed numbers. They reported two experiments that examine audit partners' willingness to tolerate misstatements in recognized and disclosed amounts.[12] The results from the experiments indicated that auditors require much greater correction of misstatements in recognized amounts than they do for the same amounts that are only disclosed. Debriefing data showed that this effect is intentional. Although recognition increases expected client resistance to correcting the misstatement,[13] auditors view recognized misstatements as more material than disclosed misstatements and indicate a willingness to pressure the client more to correct recognized misstatements. Recognition also increases the amount of time auditors expend when making a correction decision.

These results suggest that auditors believe their misstatement-reduction responsibilities vary between recognized and disclosed amounts—at least in part because they view misstatements in disclosed amounts to be less material. To the extent that financial markets and contracts rely less on disclosed numbers, setting higher materiality thresholds for disclosed numbers could be viewed as consistent with current accounting and auditing guidance. Therefore, allowing more misstatements in disclosed amounts in such circumstances may be a rational response by auditors to the lower risk of litigation or reputation loss associated with disclosed amounts (Libby et al., 2006, p. 535). However, the lower reliability produced by auditors' greater tolerance for misstatements in disclosed amounts may reduce the overall quality of information available to users. It is unclear whether such an effect was intended by regulators, particularly in cases in which disclosure has been allowed as a political compromise. These results have potential implications for the interpretation of prior research and for accounting standard setters and auditing regulators (Libby et al., 2006, p. 535).

From a financial-reporting research perspective, Libby et al.'s (2006) results indicate that prior findings of reliability differences between recognized and disclosed amounts may be caused, in part, by differences in the extent of misstatement reduction provided by auditors. Thus, accounting standard setters' information-location decisions may to some extent be self-fulfilling prophesies with respect to information reliability. Accounting regulators might consider whether an unintended consequence of relegating information to the notes to the financial statements is that the reliability of such information could be reduced by the interpretations and actions of auditors. Similarly, decisions to require recognition may have a positive effect on information reliability because recognition encourages auditors to require the correction of detected misstatements[14]. Moreover, Bischof, Brüggemann, and Daske (2011) demonstrated that required

[12] One experiment reported data from 44 Big 4 audit partners and found variances in whether a misstatement relates to a stock-compensation expense that is recognized or disclosed. The other experiment reported data from 33 Big 4 audit partners and found variances in whether a misstatement relates to lease liability that is recognized (as a capital lease) or disclosed (as an operating lease). In both experiments, the researchers held constant the company's economic circumstances, the sign, quantitative materiality, and certainty of the misstatement as well as client opposition to the correction of the misstatement (Libby et al., 2006, p. 534).

[13] Results obtained by Clor-Proell and Maines (2014) suggested that preparers may resist the correction of recognized amounts more than disclosed amounts in part because they have invested more effort in estimating recognized amounts.

[14] The effect of information location on post-audit misstatement depends on its effect on both managers and auditors. Libby et al. (2006) held constant the amount of the pre-audit misstatement and demonstrated that auditors tolerate more misstatements in disclosed amounts, producing greater post-audit misstatements in disclosed amounts. Pre-audit misstatements may not be constant in practice. As recognized amounts may be more important in valuation and contracting, client managers may face greater incentives to create pre-audit misstatements in recognized amounts than in disclosed amounts. Alternatively, managers may create more pre-audit misstatements in disclosed amounts in anticipation of laxer auditing. Future research should seek to better understand how information location affects the extent of pre-audit misstatement. See Clor-Proell and Maines (2014) for more about the case of contingent liability estimates for recognized versus disclosed liabilities.

disclosures are not adequately enforced and that, in their case banks, get away with substantial non-compliance with disclosure requirements.[15]

In addition, Clor-Proell and Maines's (2014) paper investigated whether the placement of financial information (recognition versus disclosure in the notes) influences pre-audit judgement and decisions of financial managers who prepare financial statements and who thus establish initial reliability of financial information. Using an experiment with corporate controllers and chief financial officers for contingent liability estimates, the researchers found that public company financial managers generally exhibit less cognitive effort and more bias for disclosure than for recognition. This difference appears to be associated with capital market pressures (i.e., forces exerted by different participants in the capital markets—namely, standard setters, users, and auditors/regulators) because these differences are smaller for private company managers. Furthermore, comparing preparers' estimates to those provided by preparers in an internal reporting setting reveals that public company financial managers exhibit a downward bias in their disclosed estimates, but not in their recognized estimates.[16] In contrast, private company financial managers do not exhibit a bias in either their disclosed or recognized estimates.

Conclusions

In the framework of literature on capital market effects of recognition versus disclosure, we support Al Jifri and Citron's (2009, p. 123) conclusion that further research should investigate the extent to which the market assessment of recognized versus disclosed amounts depends on the accounting item in question, its method of valuation and processing through books of account, which determine the level of judgement and estimation, as well as the characteristics of the firm. For example, empirical results from Bratten et al. (2013) suggested that recognized and disclosed amounts are not treated differently by capital market participants[17] in the lease setting, in which the disclosed amounts (in the notes to financial statements) are reliable and the disclosed information is readily identifiable and easily processed.

Nevertheless, capital market participants are not the only nor the most dominant capital providers in Europe. According to Cascino et al. (2014), virtually all European companies rely on bank loans and trade creditors for capital, and these jointly represent around 70% of the total liabilities in the typical balance sheet. Therefore, capital providers are not homogeneous, and their information needs differ systematically. Cascino et al. (2014) also found that experimental and archival evidence clearly documents that investors tend to ignore or "mis-evaluate" relevant information; furthermore, even professional equity investors may base their decisions on sub-optimal information and decision rules. For example, Hirst, Hopkins, and Whalen (2004) documented that even bank analysts, who are usually considered the most sophisticated users of financial reporting data, process recognized and disclosed information differently. Therefore, these behavioural and processing costs aspects are, in our opinion, even more prominent for non-sophisticated users of financial statements, such as individual investors. Hence, in our opinion, the information location in any case indeed matters.

As different stakeholders try to influence the information-location decisions (recognition versus disclosure) by the standard setters based on considerations other than those described in the conceptual frameworks, it seems that they believe that the information location in practice really matters. Our paper suggests a couple of reasons for the perceived differences between recognized and disclosed amounts. We believe that the relegation of amounts to the notes to the financial statements generally reduces informativeness of financial reports, especially for non-sophisticated users, and reduces the reliability of financial information. In our opinion, the preparers of the financial statements also generally take less care about disclosures relative to recognized items, mainly because of the inadequate auditor pressure, although Clor-Proell and Maines's (2014) findings indicated that there could be a difference between the public company and private company preparers. Libby et al. (2006) demonstrated auditors' greater tolerance for misstatements in disclosed amounts, whereas Bischof et al. (2011) revealed that sometimes the preparers get away with substantial non-compliance with disclosure requirements, even in Western European countries with supposedly strong enforcement regimes.

[15] On 1 July 2008, the IASB introduced an option to retroactively change the fair value measurement of trading financial assets (apart from derivatives) and AFS assets into amortized cost measurement, with write-downs recognized only for other-than-temporary impairment losses. By reclassifying such financial assets, a financial institution could forgo the recognition of unrealized fair value losses deemed to be temporary and thus increase its financial result as well as its regulatory capital during market downturns. Nevertheless, almost two-thirds of the reclassifying banks did not fully comply with the simultaneously introduced IFRS 7 disclosure requirements (Bischof et al., 2012).

[16] Wiedman and Wier (1999) found that firms' unconsolidated subsidiary debt increased when the FASB requirement (FAS 94 Consolidation of all Majority-Owned Subsidiaries) changed from disclosure to recognition, suggesting the understatement of the previously disclosed amount by the preparers.

[17] Altamuro, Johnston, Pandit, and Zhang's (2014) empirical study provided evidence that the current off-balance sheet treatment of operating leases does not result in them being ignored in credit assessments by banks and credit rating agencies, which could be labelled as sophisticated users of financial statements.

We believe that all these factors strengthen the case for the general preference for recognition in the standard-setting context, as manifested in the recently issued IFRS 16 *Leases*, which introduced a single lessee accounting model and requires a lessee to recognize assets and liabilities for all leases with a term of more than 12 months, unless the underlying asset is of low value. A lessee is required to recognize a right-of-use asset representing its right to use the underlying leased asset and a lease liability representing its obligation to make lease payments (IFRS 16.IN10). The distinction between off-balance sheet lease arrangements (i.e., operating leases) and finance leases, which IAS 17 Leases defined as the leases that transfer to the lessee substantially all the risks and rewards incidental to the ownership of the leased asset and hence require recognition of lease payment obligations in the lessee's balance sheet, is therefore abolished.

In addition, it is worth mentioning that the note disclosures are due to both the increasing quantity ("disclosure overload") and quality aspects recently receiving a lot of attention in the accountancy community. For example, in July 2012, the European Financial Reporting Advisory Group (EFRAG) and the national standard setters of France, Autorité des Normes Comptables (ANC), and the UK, Financial Reporting Council (FRC), issued a discussion paper entitled *Towards a Disclosure Framework for the Notes*. It emphasized that a disclosure framework should contain a clear definition of the purpose of the notes, which should drive what (financial) information should be included in the notes and what belongs elsewhere. The FASB from the US launched the disclosure framework project in July 2009 and, in July 2012, issued Invitation to Comment—Disclosure Framework (FASB, 2016), a document very similar to the joint discussion paper of EFRAG, ANC, and FRC.

The IASB formally added a short-term initiative on disclosure to its work program in December 2012 as a part of its response to its Agenda Consultation 2011. The objective of the initiative was to explore opportunities to see how those applying IFRS can improve and simplify disclosures within the existing disclosure requirements. In implementing this initiative, the IASB undertook a constituent survey on disclosure and held a disclosure forum designed to bring together securities regulators, auditors, investors, and preparers. The IASB subsequently issued its Feedback Statement Discussion Forum—Financial Reporting Disclosure in May 2013, which outlined the IASB's intention to consider a number of further initiatives, including short-term implementation and research projects (Deloitte, 2016). Currently the agenda contains one implementation project and two research projects. The implementation project is entitled *Materiality*, in which the IASB considers how materiality is applied in practice in IFRS financial statements; it has tentatively decided to provide guidance on the application of materiality. The first research project is entitled *Principles of Disclosure* and aims to identify and develop a set of principles for disclosure. The second research project is entitled *Standards-level Review of Disclosures* and aims to develop a drafting guide for the IASB to use when setting disclosure requirements in new and amended standards (IASB, 2016c). All these activities are thus directed to address the "lack of both theory and conceptual guidance for determining the purpose of the required note disclosures" (Schipper, 2007, p. 310) that was also clearly documented in this paper.

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Dejavniki v razpravi o pripoznavanju računovodskih informacij v primerjavi z njihovim razkrivanjem

Izvleček

Empirični dokazi iz akademske literature o učinkih položaja računovodskih informacij, tj. o pripoznavanju v okviru temeljnih računovodskih izkazov v primerjavi z razkritjem v pojasnilih k računovodskim izkazom, na kapitalske trge niso enoznačni. Zato je namen tega članka prispevati k razpravi o pripoznavanju v primerjavi z razkrivanjem v okviru oblikovanja računovodskih standardov z raziskovanjem možnih razlogov za zaznane razlike med pripoznanimi in razkritimi zneski. Te razlike se po našem mnenju pojavljajo zato, ker so revizorji bolj tolerantni za napačne navedbe v razkritjih, ker se dopušča neskladnost z zahtevami o razkritjih tudi v striktnih režimih uveljavljanja pravnih določil, ker so pripravljavci računovodskih izkazov pri razkritjih manj skrbni kot pri pripoznanih postavkah, pa tudi zaradi vedenjskih dejavnikov in razlik v stroških procesiranja informacij pri uporabnikih računovodskih informacij. Zato smo prepričani, da vsi ti argumenti krepijo splošno preferenco za pripoznavanje računovodskih informacij v okviru oblikovanja računovodskih standardov. Izvirni znanstveni prispevek tega članka je sistematična opredelitev razlogov za razlike med pripoznanimi in razkritimi zneski v računovodskih izkazih. Članek je tako lahko primerna podlaga za utemeljevanje konceptualnih sprememb na področju mednarodnih računovodskih standardov, ki so trenutno aktualne.

Ključne besede: revidiranje, razkrivanje, računovodske informacije, pojasnila, pripoznavanje

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Morebitne tabele in slike naj bodo oštevilčene ter naslovljene nad, opombe in viri pa pod tabelo oziroma sliko. V tabelah uporabljajte enojne okvirje, debeline pol pike (1/2 point). Sprotne opombe naj bodo oštevilčene in navedene pod tekstom pripadajoče strani. Oštevilčite tudi morebitne enačbe.

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Navedbe virov v tekstu

Primer 1a: Another graphic way of determining the stationarity of time series is correlogram of autocorrelation function (Gujarati, 1995).

Primer 1b: Another graphic way of determining the stationarity of time series is correlogram of autocorrelation function (Gujarati, 1995, p. 36).

Primer 2a: Engle and Granger (1987) present critical values also for other cointegration tests.

Primer 2b: Engle and Granger (1987, p. 89) present critical values also for other cointegration tests.

Navedbe virov v seznamu virov

Primer 1 – Knjiga: Gujarati, D. N. (1995). *Basic Econometrics*. New York: McGraw-Hill.

Primer 2 – Članek v reviji: Engle, R. F., & Granger, C. W. J. (1987). Co-integration and Error Correction: Representation, Estimation and Testing. *Econometrica*, 55(2), 251-276.

Primer 3 – Poglavje v knjigi, prispevek v zborniku: MacKinnon, J. (1991). Critical Values for Cointegration Tests. In R. F. Engle & C.W. J. Granger, (Eds.), *Long-Run Economic Relationships: Readings in Cointegration* (pp. 191-215). Oxford: University Press.

Primer 4 – Elektronski vir: Esteves, J., Pastor, J. A., & Casanovas, J. (2002). Using the Partial Least Square (PLS): *Method to Establish Critical Success Factors Interdependence in ERP Implementation Projects*. Retrieved from http://erp.ittoolbox.com/doc.asp?i=2321

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Some elementary directions:

References in the text

Example 1a: Another graphic way of determining the stationarity of time series is correlogram of autocorrelation function (Gujarati, 1995).

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References in the list of references

Example 1 – Book: Gujarati, D. N. (1995). *Basic Econometrics*. New York: McGraw-Hill.

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Example 3 – Book chapter or article from conference proceedings: MacKinnon, J. (1991). Critical Values for Cointegration Tests. In R. F. Engle & C.W. J. Granger, (Eds.), *Long-Run Economic Relationships: Readings in Cointegration* (pp. 191-215). Oxford: University Press.

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