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Modeling of Cash Flows from Nonperforming Loans in a Commercial Bank

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Abstract

The purpose of this paper is to derive a model for calculation of maturities and volumes of repayments that a bank may expect from nonretail nonperforming loans (hereafter NPLs). Expected inflows from nonretail NPLs follow a probability distribution, defined by size and timing of historic repayments of NPLs. Empirical analysis has shown that probability distribution of expected inflows from nonretail NPLs considerably deviates from symmetric distribution and is asymmetric to the right. Accuracy of derived model depends upon available data in banks about NPLs by corporate sectors and recovery rates by time intervals. The model in this paper is in interest of any bank and in particular of banks with a higher fraction of NPLs in their loan portfolio. Contribution of this paper to the added value in the area of liquidity risk management in banks is high because the remaining literature does not deliver other models for the same purpose.

Keywords: bank, liquidity risk, cash flow modeling, credit risk, non-performing loans

Introduction

An NPL is a loan that is subject to late repayment or is unlikely to be repaid by the borrower. Each NPL not only reduces profitability of the bank but deteriorates its liquidity situation. If the NPL portfolio increases, the bank needs to increase loan loss provisions. Loan loss provisions reduce bank profits. If enlargement of loan loss provisions due to the NPL portfolio increase is greater than operating profit, the bank ends up with a loss. And a loss over a number of subsequent time horizons requires owners to increase capital of the bank. Therefore, appearance of each new NPL in the loan portfolio of a bank reduces equity value of bank owners. More about equity value and goal of corporate operations can be found in Levy and Sarnat (1977).

Business environments with low interest rates are particularly demanding for banks, as low interest rates reduce interest income and consequently operating profit of a bank. The lower operating profit of a bank, the sooner will the bank end up with a loss at a given level of loan loss provisions. Enlargement of the NPL portfolio will additionally worsen a bank's position as appearance of an NPL stops contractual interest payments. Interest income of the bank will therefore additionally decline. The larger the NPL portfolio of a bank, the lower is the bank's interest income. This paper is organized as follows. We will first review available literature, relevant to our research. Then, we will build a model for calculation of maturities and volumes

of repayments, which a bank may expect from NPLs. Based on empirical data about nonretail NPLs from a sample bank, we will then estimate probability distribution of expected inflows from NPLs. In the following section, we will review results and discuss them. In the last section, we will provide a conclusion, which also shows model limitations and recommendations for further research.

Literature Review

Absence of interest payments deteriorates a bank's liquidity. But this is not the only reason why a bank's liquidity deteriorates in the case the NPL portfolio of the bank increases. At the moment of NPL identification become contractual maturities and amounts of repayments random variables. Cutoff times and corresponding amounts of repayments in the future are linked to probabilities, which vary. A bank can steer the level of probabilities with the quality of its internal workout process. Guo, Jarrow, and Zeng (2009) explained that the earlier a bank identifies an NPL, the higher is the expected recovery rate. The authors assumed that default triggers the recovery rate process, which, if triggered, depends on asset value of the firm. If the debt matures before the firm becomes insolvent (defined as the firm's asset value falling below an insolvency barrier), then the debt is paid in full or at some fractional level. The fractional recovery when the firm is solvent exceeds the amount that would be paid if the firm becomes insolvent and enters bankruptcy. Guo, Jarrow, and Zeng (2009) also showed that, if the firm's asset value is below an insolvency threshold at the time of default, then the default and bankruptcy intensity are equal. However, if the asset value is above or equal to this critical level, then the default and bankruptcy intensities are distinct, and default does not necessarily lead to immediate bankruptcy.

Carey and Gordy (2007) offered a model and evidence that private debtholders play a key role in setting the endogenous asset value threshold below which corporations declare bankruptcy. The model, in the spirit of Black and Cox (1976), implies that the recovery rate at emergence from bankruptcy on all of a firm's debt is related to the pre-bankruptcy share of private debt in all of a firm's debt.

Recovery rates depend on general activity of business subjects in the economy. The number of defaulting firms in recessions rises and average recovery rate decreases (Bruche & Gonzales-Aguado, 2010). Trück *et al.* (2005) also explain that recoveries in recessions are much lower in comparison with times of economic expansion. Carey (1998) found that, especially for risky loans, recessions have an enormous impact on the distribution of recovery rates. According to his findings, this is especially true for the tails of the loss distribution.

While for investment-grade loans, the cyclical effect is rather small; thus, the author found that loss rates for subinvestment grade loans during a recession are more than 50% higher than during an expansion of the economy. Deshpande and Iyer (2009) explored correlations between loss rates and proposed a model for measurement of credit concentration risk and for calculation of the portfolio loss distribution.

Despite abundant literature on the determinants of default on loans and other debt instruments, relatively little is known about the factors that influence bank recoveries following default. However, recovery is critical to bank performance as well as to the proper measure of the capital needed to buffer against risk. Therefore, Khieu *et al.* (2012) identified determinants of bank loan recovery rates. The authors show that loan characteristics are, in general, more significant determinants of recovery rates than borrower characteristics prior to default. A variety of loan contract features are strongly related to the ultimate payoff for creditors. Secured loans have higher recoveries, especially when the collateral takes the form of inventories and accounts receivable. Loans to borrowers with prior defaults yield higher recoveries than first-time defaults, and arranging a prepackaged bankruptcy increases recoveries. Loan recoveries vary significantly and nonlinearly with the length of time to emerge. Macroeconomic conditions significantly affect recovery prospects, but the probability of default at the time of loan origination is unrelated to ultimate recoveries.

In an annual default study, Moody's (2013) explained the corporate default and recovery rates on a time horizon between 1920 and 2012. Measured by post-default trading prices, the average recovery rate for senior unsecured bonds in 2012 rose to 43,4% from 39,7% in 2011.

If the size of the NPL portfolio has raised rapidly, a liquidity crisis becomes inevitable for a bank (Sohaimi, 2013). Appearance of a new NPL deteriorates a bank's liquidity because cutoff times and amounts of future repayments for this loan deviate from contractually agreed maturities and amounts of repayments. As NPL appears due to inability of the obligor to pay on time, we can expect future repayments to occur later than contractually agreed. This reduces liquidity surplus of a bank in the short-term and increases the probability of illiquidity. The impact on probability is lower if an NPL is an amortizing loan and not a bullet loan. Consequently, it holds that, among two completely identical banks, which differ among themselves only in type of loans in the loan portfolio, where the first bank only has amortizing loans and the second bank only has bullet loans, exposure to liquidity risk is lower in the first bank.

We can conclude that the timing and size of future repayments of a new NPL based upon the timing and size of

historic repayments of NPLs, which have either been already repaid or written off by the bank (historic NPLs). We are going to show a possible approach in this paper.

The Model

Assume a bank maintains a database, in which all NPLs are included. Also assume for each NPL the following data are available: exposure at default, default start date, default end date, cut-off date, and amount of each payment between default start and default end date, and exposure at default end date. If an NPL has a default end date, then recovery process for this particular loan was finished. This happened either because the counterparty fully repaid its debt or because the outstanding debt was written off. In the first case, exposure at the default end date was zero; in the second case, exposure at default end date was positive, but the bank wrote off the remaining debt, as it expected no additional repayment. On the other hand, if an NPL does not have a default end date in the database, then this NPL is a pending NPL. For the NPL cash flow modeling, pending NPLs in the database cannot be considered, as the default end date for pending NPLs is unknown. Only historic NPLs can therefore be used for modeling of cash flows from NPLs.

BIS (2008) defined a set of principles for sound liquidity risk management and supervision. Principle 5 defines that a bank should have a sound process for identifying, measuring, monitoring, and controlling liquidity risk. This process should include a robust framework for projecting cash flows arising from assets, liabilities, and off-balance sheet items over an appropriate set of time horizons. The number of time horizons should correspond to a variety of factors. These include vulnerabilities to changes in liquidity needs and funding capacity on an intraday basis, day-to-day liquidity needs and funding capacity over short – and medium-term horizons up to one year, longer-term liquidity needs over one year and vulnerabilities to events, activities, and strategies that can put a significant strain on internal cash generation capability.

Assume that a bank is in line with principles for sound liquidity risk management and supervision calculates net cash flows over a number of predefined time intervals, which are in general defined as $(t_{i-1}, t_i]$, $i \in \{1, 2, \ldots, n\}$.

For each historic NPL, a bank should first calculate the number of all payments in a time horizon between default start date and default end date. Each payment is an inflow for the bank and reduces outstanding exposure to the counterparty in default. Then, cut-off dates of payments should be observed, and the time difference between cutoff date of each payment and default start date should be calculated. Let m be the number of all payments between the default start date and default end date. Time difference δ_j between cutoff date c_j of payment p_j and default start date d_s is in general defined as $\delta_j = c_j - d_s$, where $j \in \{1, 2, \ldots, m\}$. Calculated δ_j indicate into which time interval payment p_j of an NPL should be mapped. Assume the bank defined n time intervals. Then, payment p_j should be mapped to time interval i, where $i \in \{1, 2, \ldots, n\}$ such that $t_{i-1} < \delta_j \le t_i$. All m payments p_j of an NPL should be mapped to corresponding time intervals the bank has defined for management of liquidity risk and for calculation of net cash flows. Then, payments p_j should be aggregated by time intervals such that only one payment per time interval exists. Let l_i be the number of all payments p_j, $j \in \{1, 2, \ldots, m\}$, which meet the criteria $t_{i-1} < \delta_j \le t_i$. Aggregated payment p_i for time interval $i \in \{1, 2, \ldots, n\}$ is defined as the sum $p_i = \sum_{k=1}^{l_i} p_{j_k}$, where $j_k \in \{1, 2, \ldots, m\}$ and $t_{i-1} < \delta_{j_k} \le t_i$ for every $k \in \{1, 2, \ldots, 1_i\}$.

If w is the number of all NPLs in the bank, then the sum of all payments s in time interval $i \in \{1, 2, \ldots, n\}$ equals $s_i = \sum_{k=1}^{w} p_{ik}$. Consequently, $\sum_{i=1}^{n} s_i$ equals total recovery value, which, in comparison with the NPL portfolio value, gives an expected total recovery rate g for an NPL in the bank. For modeling of cash flows from NPLs, expected recovery rate r_i per time interval $i \in \{1, 2, \ldots, n\}$ should be calculated.

Expected recovery rate r_i, $i \in \{1, 2, \ldots, n\}$ is defined with the equation

$$r_i = \frac{\sum_{k=1}^{w} p_{ik}}{\sum_{i=1}^{n} s_i} \cdot g = \frac{s_i}{\sum_{i=1}^{n} s_i} \cdot g = \frac{g \cdot s_i}{\sum_{i=1}^{n} s_i} \cdot$$

Payments p_{ik} for each $k \in \{1, 2, \ldots, w\}$ in the NPL portfolio of the bank should be distributed over all $i \in \{1, 2, \ldots, n\}$ time intervals. Therefore, in case of full recovery, it holds $\sum_{i=1}^{n} r_i = 1$, as are expected write-offs equal to zero; therefore, is $g = 1$. In case expected write-offs differ from zero and holds $g < 1$, consequently, it also holds $\sum_{i=1}^{n} r_i = g$.

Recovery rate r_i is an inflow from each cash unit, which is expected from an NPL in time interval $i \in \{1, 2, \ldots, n\}$.

EU Commission adopted the Basel 3 framework and in the *Official Journal of the European Union* (L 176, 2013) published a corresponding framework for the supervision of credit institutions, investment firms, and their parent companies in all member states of the European Union and the EEA.

This framework is capital requirements directives CRD 4, which replace capital requirements directives 2006/48 and 2006/49. They are composed of the capital requirements directive (hereafter CRD) and of the capital requirements regulation (hereafter CRR) (Ernst & Young, 2011).

Default of a nonretail obligor is defined in Article 178 of the CRR. A default of a particular obligor shall be considered to have occurred when the institution considers that the obligor is unlikely to pay its credit obligations to the institution, the parent undertaking, or any of its subsidiaries in full, without recourse by the institution to actions such as realizing security, or when the obligor is past due more than 90 days on any material credit obligation to the institution, the parent undertaking or any of its subsidiaries.

Empirical Data and Analysis

Probability distribution of expected inflows from NPLs will now be estimated empirically. For this purpose, we are going to use data about NPLs from the database of a sample bank. A database with NPLs of the bank only includes nonretail NPLs; therefore, probability distribution of expected inflows from nonretail NPLs will be estimated. For estimation of probability distribution, we need for each NPL recovery rate and data about size and timing of all repayments. Recovery rate is only available for historic NPLs. The same is true for data about size and timing of all repayments. Consequently, we should only use data about historic NPLs from database of the bank.

Average recovery rate and average repayment speed depend on general activity of business subjects in the economy (Bruche & Gonzales-Aguado, 2010). The higher general activity of business subjects in the economy, the higher is the average recovery rate and average repayment speed. In order to estimate time invariable probability distribution of expected inflows from NPLs, historic NPLs with default start dates on time horizon over at least one economic cycle should be considered.

Modeling of inflows from NPLs connects liquidity with a bank's credit risk management. Connection exists in the area of models for loss given default (hereafter LGD) estimation. Therefore, the minimal spread between maximum and minimum default start dates of historic NPLs is defined with CRR requirements for one's own LGD estimates. CRR requires that banks estimate LGDs by facility grade or pool on the basis of the average realized LGDs by facility grade or pool using all observed defaults within the data sources (default weighted average). For exposures to corporates, institutions, and central governments and central banks, own LGD estimates shall be based on data over a minimum of five years (The European Parliament, 2013).

Consequently, we conclude that the difference between maximum and minimum default start date of historic NPLs should be at least five years. However, five years might not be enough to calculate time invariable probability distribution of inflows from NPLs—particularly not in times with high volatility of GDP in the economy. In the case of one's own LGD estimations, CRR requires that banks use LGD estimates, which are appropriate for an economic downturn if those are more conservative than the long-run average. Consequently, the same also holds for differences between default end date and default start date at historic NPLs.

High volatility of GDP since 2007 helps to conclude that historic NPLs with default start dates over last five years do not cover a sufficiently long-time horizon for estimation of time invariable probability distribution of expected inflows from NPLs. Minimum historic observation period should therefore be much longer than five years.

Assume that the bank defined time intervals for calculation of liquidity position as follows: one day, two days, three days, four days, five days, six days, seven days, eight days, nine days, 10, days, 11 days, 12 days, 13 days, 14, days, 15 days, 30 days, two months, three months, six months, one year, two years, three years, four years, five years, seven years, 10 years, and more than 10 years. Because we assume that a time interval for liquidity positions with remaining maturities over 10 years exists, also NPLs with difference between default end dates and default start dates of more than 10 years should be considered. If the last condition is not met, then it is not possible to estimate the probability distribution of expected inflows from NPLs on the time horizon beyond maximum difference between default end date and default start date.

Lower bound of the open interval is important because it defines maximum tenor of a liquidity position, which a bank would like to include in the management of liquidity risk. The higher the lower bound of the open interval, the higher is precision of the bank with management of the structural liquidity risk.

Results and Discussion

For each historic NPL in the database of the bank, we are now going to calculate the difference between the default end date and default start date. Consequently, obtained results are values of the variable X, i.e., the difference between default end date and default start date, which we can describe with the following descriptive statistics.

Maximum difference between default end date and default start date is 2948 days, which is $\frac{2948}{365} = 8{,}1$ years. This

Table 1. Descriptive Statistics for Difference Between Default End Date and Default Start Date

Statistics difference between default end date and default start date		
N	Valid	375
	Missing	0
Mean		829,55
Median		727,00
Mode		422
Std. Deviation		607,333
Variance		368853,938
Skewness		,626
Std. Error of Skewness		,126
Minimum		1
Malximum		2948

Source: Author's calculation.

measure of dispersion explains that we will not be able to estimate probability distribution of inflows from NPLs over a time horizon with a minimum tenor of over 10 years. It also explains that calculated probability distribution of expected inflows from NPLs will correspond to economic downturn and will therefore not be time invariable, however conservative and therefore appropriate for estimation of expected inflows from NPLs.

Mean explains average difference between default end date and default start date. On average, the bank in the last 8,1 years needed $\frac{829,55}{365} = 2,3$ years to reach default end date after identification of a NPL.

We can show frequency distribution of differences between default end date and default start date also with a histogram.

From Figure 1, we can see that the distribution of differences between default end date and default start date is asymmetric to the right. The skewness statistics, as defined by Campbell, Lo, and MacKinlay (1997) for a population with mean μ and standard deviation δ, is

$$S = \frac{1}{(n-1)\cdot\sigma^3}\cdot\sum_{i=1}^{n}(y_i-\mu)^3 = 0,626.$$

Result shows explicit deviation from symmetric distributions, for which holds $S = 0$. This is in line with expectations, as, on the one hand, some NPLs are simple in complexity and can be therefore repaid quickly; on the other hand, some NPLs are complex and require more time until final repayment.

Figure 1. Frequency Distribution of Differences Between Default End Date and Default Start Date
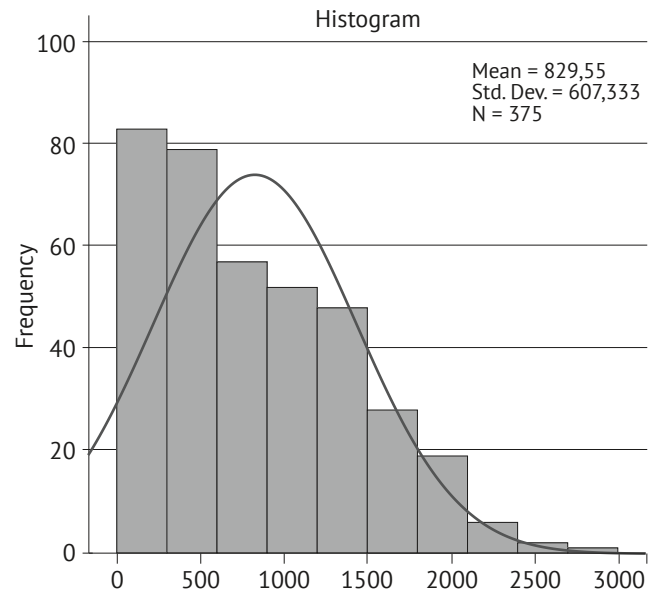
Difference between default end date and defaulst start date
Source: Author's calculation.

Assume that expected total recovery rate for an NPL is $g = 1$. With a mathematical model for calculation of expected recovery rates r_i by time intervals, we can now estimate probability distribution of expected inflows from nonretail NPLs on time intervals, which were defined by the bank for calculation of liquidity positions. Results are shown in Figure 2.

Figure 2. Probability Distribution of Expected Inflows from Nonretail NPLs by Time Intervals of the Bank
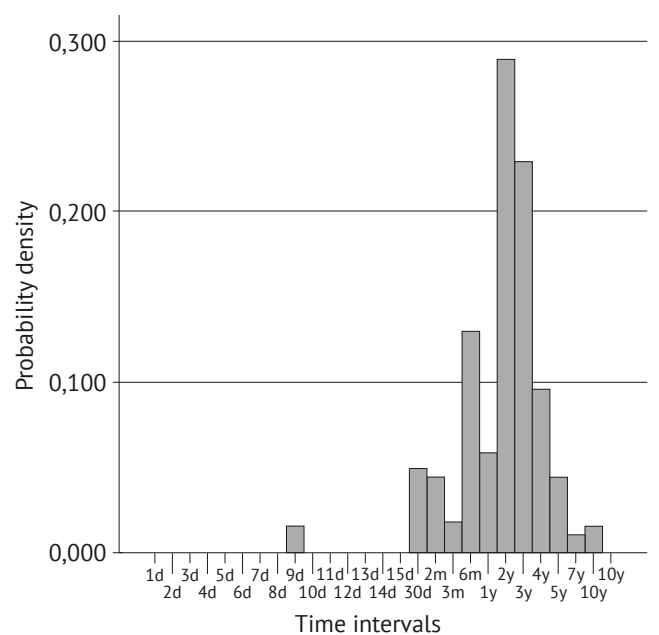
Source: Author's calculation.

If write-offs differ from zero and total recovery rate for a NPL is $g < 1$, then expected recovery rate r_i per time interval $i \in \{1, 2, …, n\}$ reduces to $\sum_{i=1}^{n} r_i = g < 1$ and by definition also

$$r_i = \frac{\sum_{k=1}^{w} p_{ik}}{\sum_{i=1}^{n} s_i} \cdot g = \frac{\sum_{k=1}^{w} p_{ik}}{\sum_{i=1}^{n} s_i} \cdot \sum_{i=1}^{n} r_i \Rightarrow \sum_{k=1}^{w} p_{ik} = s_i = \frac{r_i \cdot \sum_{i=1}^{n} s_i}{\sum_{i=1}^{n} r_i} \quad .$$

However, the probability distribution of expected inflows from nonretail NPLs by time intervals of the bank remains unchanged.

Conclusion

Modeling of inflows from NPLs connects liquidity with a bank's credit risk management. Data requirements for modeling of inflows from NPLs are therefore implicitly defined with CRR requirements for one's own LGD estimates. Based on sample data about historic nonretail NPLs of a bank, we found that probability distribution of expected inflows from nonretail NPLs considerably deviates from symmetric distribution and is asymmetric to the right. The result is in line with expectations, as, on the one hand, some nonretail NPLs are simple in complexity and can be repaid quickly; on the other hand, some nonretail NPLs are complex and require more time until final repayment and default end date.

The first limitation of the model presented in this paper is linked to available data in banks about NPLs. Banks were not collecting data about NPLs and, therefore, are available time series of data short. Only recent regulations in the area of credit risk management, which offers to banks a possibility for construction of their own models for credit risk measurement, introduce new requirements for data collection. A longer data series, especially data series over a few economic cycles, will enable derivation of a more stable and time invariable probability distribution of expected inflows from NPLs. The second limitation of this model is its generality. There is only one model for all corporate sectors, but recovery rates and repayment possibilities by corporate sectors may be different. Consequently, this is one recommendation for future research and development. The third limitation of this model is equal recovery rate by time intervals. Various studies have shown that recovery rates reduce as time passes after default start date. Guo, Jarrow, and Zeng (2009) explain that the earlier a bank identifies an NPL, the higher is the expected recovery rate. Consequently, the key impact on model quality has identification of an NPL and hence definition of a default start date, which reflects the quality of credit risk management function in a bank. Finally, a similar model could be developed for a retail NPL, which is another recommendation for future research and development.

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Modeliranje denarnih tokov iz slabih posojil v komercialni banki

Izvleček

Namen tega članka je izpeljati model za izračun zapadlosti in obsega odplačil, ki jih lahko banka pričakuje iz nepotrošniških slabih posojil (NPL). Pričakovani prilivi iz nepotrošniških NPL-jev sledijo verjetnostni porazdelitvi, opredeljeni z velikostjo in izbiro pravih trenutkov zgodovinskih odplačil NPL-jev. Empirična analiza je pokazala, da verjetnostna porazdelitev pričakovanih vplačil nepotrošniških NPL-jev znatno odstopa od simetrične porazdelitve in je asimetrična v desno. Natančnost izpeljanega modela je odvisna od razpoložljivih bančnih podatkov o NPL-jih korporativnih sektorjev in stopnjah vračil po časovnih intervalih. V tem članku izoblikovan model je v interesu katerekoli banke, še posebej bank z višjimi deleži NPL-jev v njihovem posojilnem portfelju. Dodana vrednost tega članka se kaže na področju upravljanja tveganja likvidnosti v bankah, saj v preostali literaturi ni drugega modela za isti namen.

Ključne besede: banka, tveganje likvidnosti, modeliranje denarnega toka, kreditno tveganje, slaba posojila

Effect of Self-esteem on Perceived Job Insecurity: The Moderating Role of Self-efficacy and Gender

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Abstract

The high rate of job loss in most crude oil dependent countries, which may be attributed to the recent drop in the price of this commodity in international markets, has intensified the perception of threats associated with potential job loss among the employees who are still employed. Hence, perceived job insecurity, its associated outcome, coupled with how it can be mitigated has become a global phenomenon, which requires the attention of managers and practitioners alike. In this work, we built upon Hobfall's conservation of resource theory (CRT) to present a research model that links employee's self-efficacy and gender to the strength or weakness of the relationship between self-esteem and self-perceived job insecurity. Research data were collected from 153 randomly selected Nigerian Bank employees out of 217 drawn from a total population of 509. Based on the results from relevant statistical analysis, it is discovered that, while increase in self-esteem would lead to a significant decrease in job insecurity perception, such significant decrease is, however, not associated with self-efficacy and gender meaning that these variables are not moderators in the self-esteem/perceived job insecurity relationship. In line with these outcomes, we conclude by recommending that managers should focus on developing intervention strategies aimed at improving employee self-esteem with a view of reducing perceived job insecurity. In addition, important areas in need of future research were also identified.

Keywords: self-esteem, perceived job insecurity, self-efficacy, gender, moderator

Introduction

The dynamism associated with events in the work-place these days has brought the issue of insecure working conditions to the forefront (Shoss, 2017). According to Smith (2013) these activities, most especially among internationally competitive organizations is characterized by the need for information dissemination at a fast speed, the need for consistency in operations and an overbearing pressure to enhance organizational performance. As a result of this competitive landscape and the need to save costs, these organizations have resulted into downsizing and restructuring (Laszlo *et al.*, 2010). Meaning that, in addition to trying to optimize workplace performance, employees also have to lurk in the shadow of uncertainty regarding the security of job positions. By highlighting the work of Stoner, Robins, and Russell-Chapin (2005), it may be argued that, when the perception of job insecurity is high, the demand of work and associated lack of organizational

commitment will have a negative effect on individuals and the organization. Based on the authors' observation, the negative physiological responses are insomnia:- over-eating and poor nutrition, depression, physical health complaints, and hypertension, which could translate into absenteeism, high turnover, and low job performance. Its effect could carry over into the family domain (see spillover theory by Leiter and Durup, 1996). By comparing a potential job loss perception with actual job loss, Borra and Gomes-Garcia (2014) indicated that the fear of experiencing the former can be more harmful than the latter in that those who are already out of job might have become normalized to the situation and, hence, be less stressed as compared with others who are still faced with the uncertainties associated with potential job loss (see Hobfoll, 1989).

For the Nigeria banking industry, the banking consolidation exercises in the year 2006 and 2009 have completely changed the operational basis of the industry and have also reduced the previous total of 89 independent banking institutions to just 21, through reorganizations, mergers, and acquisitions (Okurame, 2014). According to Okurame (2014), this has resulted in the retirement, retrenchment/summary dismissal of about 26.6% representing about 55,000 of the total employees in the industry with those still in service facing a daily threat of sack, casualization, or demotion by their employers. In reaction to this unpleasant trend, Kolawole, Ajani, and Adisa (2013) lamented that it has put these employees in uncertain working conditions with a resultant fear of losing their jobs at anytime. Consistent with this view, Kunle, Shittu, and Kolawole (2013) stressed that, when labor forces are subjected to such workplace reorganization, it creates fear and uncertainty among those who are still employed. In addition to this inevitable reorganization is the current drop in the price of crude oil, which accounts for about 90% of the nation's foreign earnings, the subsequent loss in value of the national currency, coupled with a significant drop in consumer power and ability to save, it has resulted in mass retrenchment and pay cut across banks (Vanguard, August, 2016). This is likely to intensify the threat of job loss among those who are still employed (Okurame, 2014; Borra & Gomes-Garcia, 2014), thereby making the perception of job insecurity an important area of concern within the industry circle and the academia. With the view that job insecurity can be harmful to employee and organizational well-being, it has become important to place emphasis on those factors that may aid in its predictability (Cheng, 2013). In this regard, the literature has proposed some important drivers: (1) the environmental or "nurture-like" determinants of job insecurity, which can be in form of perceived economic situation and precarious employment conditions of the company (De-Witte, 2005): (2) the nature-like characteristics such as people's attitudes, beliefs, and values that determine how they generally view the world and respond to external

stimuli around them (Debus, Konig, & Kleinman, 2014). Other identified factors are personality traits (Greenhalgh & Rosenblatt, 2010), job status (Shoss, 2017), employability (De Cuyper & De Witte, 2011); and social support (Clark, 2005). In this research, the focus shall be on self-esteem as a personality characteristic with a view to determine its effect on perceived job insecurity among employees in the Nigerian banking industry. In addition, the potentiality of self-efficacy and gender as a moderator in this proposed relationship would be investigated.

The choice of self-esteem as a potential driver is predicated on three major arguments by previous researchers: (1) Semmer (2003) who indicated that it has been previously recognized by stress researchers that differences in cognitive processes play a key role in the understanding of stressors in organizational settings: (2) Lasdat (2010) who highlighted the construct of self- esteem as a core self evaluation that is related to the way we perceive and create meaning about the world in general, and therefore also influence our perceptions of insecurity within the work context: (3) the theory of behavioral plasticity, advanced by Brockner (1988), which states that individuals lower in self-esteem are prone to exhibit more responses to external stimuli such as social cues meaning that, in an organizational context, it is likely that employees higher in self- esteem would be less responsive to negative information related to job loss threat, when compared with their counterparts, who have less of this attribute (Hui & Lee, 2000). Nonetheless, because very few studies have focused on these variables in an empirical atmosphere, and coupled with the fact that results from these few studies have been inconsistent (see Kinnunen, Feldt & Mauno, 2003; Orpen, 1994; De-Paola & Charkhabi, 2016; Lasdat, 2010). One issue that came to the attention of this researcher is that it appears that the nature of the relationship between the two constructs is inconclusive and can still derive some measures of benefits from further empirical testing by focusing on investigating potential or undiscovered moderators (see Selenko, Mäkikangas, & Kinnunen, 2013).

In this study, it is proposed that because the perception of job insecurity varies across individuals (Kekesi & Agyemang, 2014), and because self-esteem has been identified as a characteristic whose effect varies across situations and individuals (Pierce, Gardner, Cummings, & Dunham, 1989), it is likely that those factors, which aids in definition of human beings, based on their unique characteristics, may assist in explaining the highlighted variation in the self-esteem/ perceived job insecurity relationship. Considering that self-efficacy has been identified as a cognitive resource, differing across individuals (Debus, Haeusler, Lendenmann, & Kleinmann, 2010) in addition to (1) having the potential to mitigate the perception of job insecurity (Smith, 2013) and (2) the

existence of strong connections between this construct and self-esteem (Bayani, 2016; de Souza & Huts, 2016). Then, it may be reasonable to suggest that the proposed negative relationship between self esteem and perceived job insecurity would be stronger among individuals with a higher perception of self efficacy. Additionally, based on the recommendation by De-Paola and Charkhabi (2016), which indicated the need for future studies to consider the role of demographic information in the self-esteem and perceived job insecurity relationship, the declaration by Okurame (2014) and Cheng (2013), which both link the concept of gender to the perception of job insecurity, coupled with the empirically generated data by (see Aregu, 2013; Nupur & Mahapatro, 2016) showing evidence that males are significantly more superior than females in perceived self esteem, we draw on previous studies to also propose that the strength or weakness of the relationship would be determined by gender differences. In the subsequent sections, the literature review, methodology, results, and conclusion of the findings are presented.

Literature Review

Perceived Job Insecurity

In a view to conceptualize job insecurity, Greenhalgh and Rosenblatt (1984) indicated that it is the "perceived powerlessness to maintain desired continuity in a threatened job situation". In this regard, Huang *et al.* (2016) declared that job insecurity is subjective in that, even at a comparable objective organizational situation, individuals tend to perceive different levels of job insecurity. Accordingly, De- Witte *et al.* (2012) lamented that this subjective feeling represents the difference between the level of security individuals prefer and the level they experience. Thus, the broader the discrepancy between these two extremes, the higher the insecurity perception that is experienced (Lucia & Denisa, 2015). While building up on this line of reasoning, Goretzki (2016) maintains that job insecurity encompasses both the events involving loss of the whole job in addition to events involving the loss of any specific aspect of the job:-, i.e, loss of income, and promotion opportunities. This is in consistent with the earlier observation by Sverke, Hellgren, and Naswall (2002) in which two facets of this construct were identified: multidimensional and uni-dimensional. While the latter, also referred to as quantitative job insecurity focuses on the perceived lack of control of future job loss itself, the former, on the other hand, examines job insecurity as a combination of future job loss and the loss of aspects of the job (Lee, Huang, & Arshford, 2018). Nevertheless, despite its implications for theory and practice in organizational settings, the majority of perceived job insecurity researches

have focused on its consequences with a relatively large neglect of its antecedents (Shoss, 2017). In this particular investigation, the focus shall be on (1) self-esteem, which constitutes an important personality attribute with a view to determine its effect on perceived job insecurity and (2) the moderating influence of self-efficacy and gender in this relationship.

Self-esteem and Perceived Job Insecurity

Self-esteem refers to an individual's overall self-evaluation of his/her competencies (Rosenberg, 1965). It reflects the degree to which the individual "sees self as competent, and need-satisfying" (Korman, 1970, pp.12). In line with these conceptualizations, Afari, Ward, and Khine (2012) identify the construct as one of the major factors in self-image and consider it to be an important determinant in human behavior. Accordingly, Ferkany (2008) stressed that the possession of high self-esteem has numerous psychological and behavioral benefits that include independence, responsibility taking, and toleration of frustration, resistant to peer pressure, willingness to attempt new tasks and challenges, ability to handle positive and negative emotions, and willingness to offer assistance to others. For Khan and Quazi (2015), the high self-esteem individual is characterized by a sense of personal adequacy and a sense of having achieved need satisfaction in the past.

Lasdat (2010) lamented that because it has been sufficiently proven that the interpretation of job insecurity differs among individuals, it may be succinctly stated that those personal characteristics, which can aid in distinguishing among individuals would provide a better understanding of the underlying mechanism of job insecurity. In conformity with these views, De-Keyser, Vlerick, and D'hoore (2011) indicated that self-esteem may affect the perception of work situations, the choice of coping strategies, or the intensity with which a given individual takes action, while Mraz (2013) stated that those who attach more sense of worth to their-selves are more likely to see stress as a challenge or opportunity for growth. Following this line of reasoning, this study deduces that employees high in self-esteem should exhibit less perception of job insecurity.

Additionally, because self-esteem has been identified by Lazarus and Folkman (1984) as an emotional-based coping strategy, which can aid in handling negative emotions associated with the stressful situation, we contend that individuals with a higher sense of esteem should demonstrate more active coping toward any stressed-induced situation than their counterparts who have lower sense of esteem and may thus, find it more desirable to engage in avoidance coping. Additionally, this research would like to make inference

to the behavioral plasticity theory advanced by Brockner (1988). This theory is grounded on the assumption that people's attitudes and behaviors can be determined by the nature of their attention and response to the external factors within their environment. Brockner identified self-esteem as one of these human attributes and declared that people with low self-esteem are likely to react more to external cues than their counterpart who exhibit more of this attribute. Thus, in the context of an organizations, because change related issues such as reorganization, restructuring, retrenchment, downsizing, and introduction of new technology are cues within the work environment, which may manifest in the perception of job insecurity, it could be expected, then, that while a higher level of self- esteem should be less reactive to these cues, and also exhibit less of the outcomes associated with them (perceived job insecurity); on the other hand, those who have lower self-esteem should demonstrate more sensitivity and reactions to this negative information, thereby leading to an increase in the perception of job insecurity (Hui & Lee, 2000). Following this line of reasoning, it is expected in this study that an increase in perceived self-esteem is associated with a corresponding decrease in perceived job insecurity. Thus, in keeping with the aforementioned theoretical arguments, we hypothesize that:

H1: There is a significant relationship between self-esteem and perception of job insecurity.

Self-efficacy as a Moderator between Self-esteem and Perceived Job Insecurity

According to Bandura (1997, p.8) "Self-efficacy are those beliefs in self capabilities to organize and execute the courses of action aimed at producing some specific outcome". Self-efficacy is the judgment of how well an individual thinks he or she can finish a task to completion based on one's assessment of previous success with such task (Filemoni, 2017). Consistent with this view, Bertrams, Baumeister, and Englert (2016) identified the construct as the degree to which people believe they are capable of doing what is needed for success. Thus, from this conceptualization, it may be safe to conclude that, within the organizational settings, it is an employee's overall assessment of self capability in terms of executing job-related tasks. Based on the theoretical argument that this perception of capability exercises a linear and direct relationship with both self-esteem on one side, and perceived job insecurity on the other (cf; Smith, 2013; König, *et al.* 2010; Goretzki, 2016), it is thus suggested that the strength or weakness of any relationship between self-esteem and perceived job insecurity is contingent on perceived self-efficacy. For example, when people are confronted with the incidence of using self-esteem to confront the perception of job insecurity, they may turn to

the evaluation of their capability, and the probability of obtaining new employment in order to decide on how to react to this perception. because those who are higher in self-esteem are less likely to respond to external organizational cues, such as factors associated with threat of job loss (see behavioral plasticity theory by Brockner, 1988) and in view of the fact that perceived self-efficacy should also foster perceived employability (Adekiya, 2015; Van Hootegem, De Witte, De Cuyper, & Vander Elst, 2018).

Further, it may be logical to concede that, in any situation that concerns using the perception of self-esteem in countering the perception of job insecurity, this form of intervention is likely to be more effective among those with higher self-efficacies, who are more of the belief that they are employable both within the internal and external labor market. Consistent with this view, Berntson *et al.* (2010) indicated that, when employees perceive many rather than few job opportunities, they tend to react less to the perception of job insecurity. Following the conservation of resource theory (Hobfol, 1989), which stresses that individuals with a higher level of resources are less negatively affected by stress owing to resource loss, then, as self- efficacy may be classified as a resource within the context of this study due to its ability to enhance the perception of employability, it is arguable that it is a resource with a stress-buffering effect and that employees will exhibit less stress response as a result of this perceived capability. Accordingly, this second hypothesis is also formulated:

H2: Self-efficacy is a moderator in the relationship between self-esteem and perceived job insecurity.

Gender as a Moderator between Self-esteem and Perceived Job Insecurity

While it has been suggested by Okurame (2014) that the concept of gender should be investigated to bring more direction to the variety of findings that previous research has produced regarding its role in the context of job insecurity, it has also been reported that there are evidences to support the existence of variations in perceived job insecurity according to critical demographic characteristics: age, gender, income level, occupational status, and educational qualification (e.g: Cheng, 2013; Richter, 2011; Dachapalli & Parumasur, 2012). Furthermore, based on the suggestion put forward by Yang and Zheng (2015) that women face more difficulties than men in finding new jobs or re-employment after periods of unemployment, it can be theoretically argued that women would experience more job insecurity than men even at the same level of self-esteem. Conversely, Petrongolo (2010) agrees with this notion by maintaining that the disadvantages associated with women positioned in

the labor market has made them more involved in precarious and non-standard types of work, including part-time work, which is often associated with lower pay, insecurity, and poor career possibilities. Hence, this may make them more reactive to situations that foster the perception of job insecurity when compared with their male counterparts, on the same level of self-esteem. Another factor that has been suggested as potential determinants in the perceived job insecurity versus self-esteem relationship is the concept of work family responsibilities. For instance, it being viewed that women carry a higher overall workload, as they take on a larger portion of family duties along with their full-time job responsibilities (Okurame, 2014). By and large, it is possible that this higher workload may result in insufficient time for organizational contribution and may pose a threat to career opportunities, advancement, and organizational relevance, thereby culminating in a perception of more job insecurity, and the tendency that self-esteem will be less useful as a predictor of this perception among them.

Contrastingly, the male bread winner theory by Lewis (2001) emphasizes that because the family represents an economic unit in which different members take on different roles to optimize family and work life, men and women take on different roles and therefore have different sources for their self-esteem and identity: gender role theory (Gaunt & Benjamin, 2007). According to this theory, men are expected to derive their self-esteem and identity from their activities as bread-winners of the family, while their female counterparts

are expected to be involved in the traditional home keeping activities. Consistent with this view, we build on this theory and suggest that, in the event that an employee is confronted with the situation of using self-esteem in countering the perception of job insecurity, it is likely that the outcome of this would, to a large extent, be determined by the perceived responsibilities, associated with their gender affiliation. Put in another way, it is likely that, among females, self-esteem would be more effective in predicting the perception of job insecurity as a result of gender roles, which restricts them to traditional home keeping activities, compared with the men, whose traditional role of bread winning allows them to attach more importance to a secured employment situations. By and large, it could be inferred from the above arguments that one might derive better understanding of the relationship between self-esteem and perceived job insecurity by focusing on gender differences. Accordingly, it is hypothesized that:

H3: Gender is a moderator in the relationship between self-esteem and perceived job insecurity.

Conceptual Framework

In this study, we expand on the job insecurity literature by presenting a framework that highlights self-efficacy and gender as potential moderators in the relationship between self-esteem and perceived job insecurity (see Figure 1).

Figure 1. Conceptual Framework
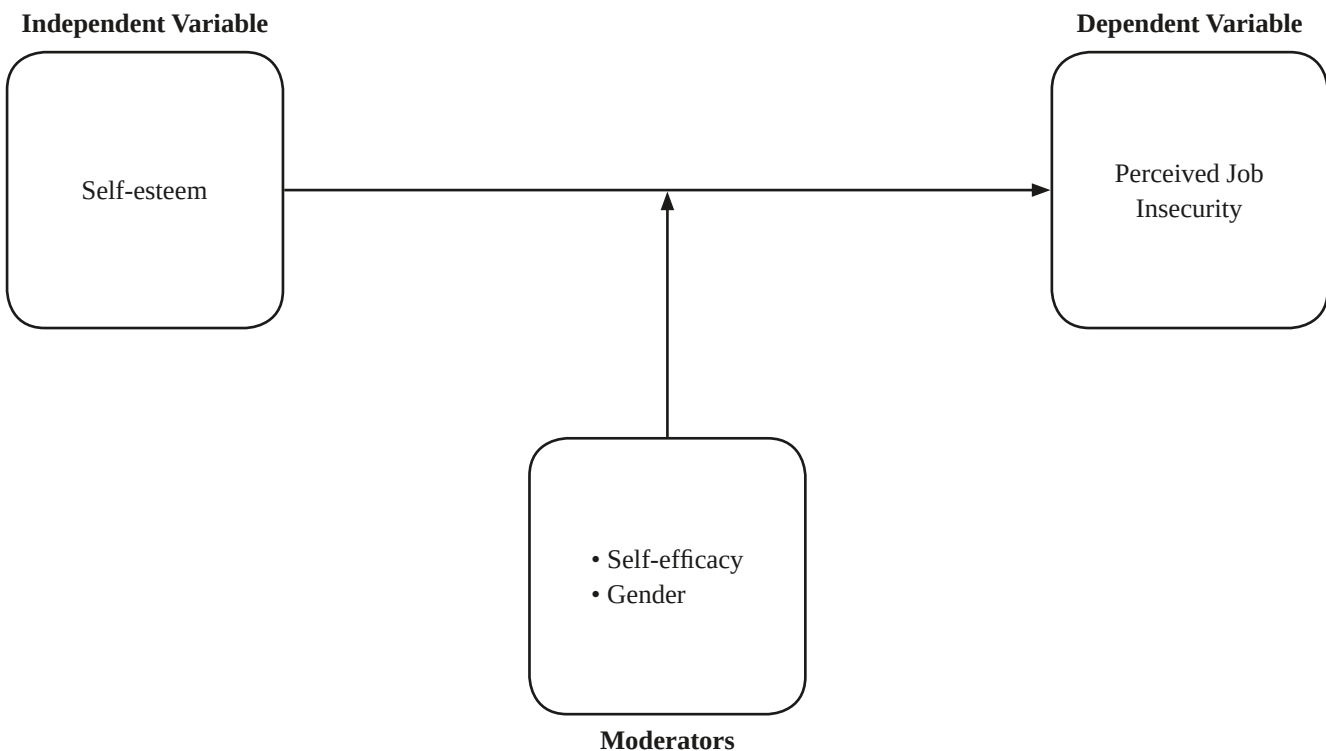
Methods

Design and Participants

This cross sectional study consists of employees of four Nigerian commercial Banks (Zenith Bank, Skye Bank, Guaranty Trust Bank, and United Bank for Africa) presently operating within the Kano metropolis, and randomly selected from a list of a total of 20 banks that are within the Nigerian Banking industry. As of July 2017, the total population of employees in this regard is (509), and it's adopted as the population of the study. From the total number of usable responses which is 153, descriptive statistics shows that 64.7% are males while 35.3% are females, and range in age from 20 to 44 and above. Also, they have various academic qualifications that cut across the senior secondary certificate, national diploma, first degree and post-graduate qualification. Regarding their occupational status, some are junior staff, some are middle-level staff and senior staff, while some others occupies different forms of managerial positions. Items were administered on the employees of selected banks in the banking premises during their working hours. Each employee was encouraged to make a request for clarification on any of the items presented, which may seem not clear to their understanding.

Sampling Approach

The multistage sampling technique was considered most appropriate in this study based on the recommendation by Asika (1991), as it assured precision and thoroughness. At the first stage, the four randomly selected commercial banks were divided into four strata. At the second stage, the proportionate sample technique was employed to determine the total number of employees that will be picked from each stratum while the selection of primary sampling unit was achieved by utilizing the simple random sampling technique to pick these units from a comprehensive list of staff obtained from the management of each Bank. All in all, the sample size total 217 (Zenith Bank = 46, Skye Bank=38, Guaranty Trust Bank = 30, United Bank for Africa [UBA] = 103 md was arrived at by following the recommendation of Krejcie and Morgan (1970).

The Measures

Here, the instruments that were utilized in the measurement of the main variables in addition to their respective psychometric properties are presented.

Perceived job insecurity. This consist of nine items based on Hellgreen *et al.* (1999) and Kurhnet and Vance, 1992) items on job insecurity. In a previous study by these authors, a Cronbach Alpha internal consistency value of .705 was obtained for the items. Sample items include "I believe that I can keep my present job as long as I want", "I always feel the danger of joblessness while working in this organization" etc.

Self-esteem. For the measurement of self-esteem, 10 items were adapted from the original 25 items from Coopersmith (1967). Based on the fact that these items focused more on the measurement of the generalized self-esteem, and as self-esteem exists at different levels of specificity: general--, and task or situation-specific self-esteem (Simpson & Boyle, 1975). The items were re-modified to be in line with the work and organizational settings, which are the focus of this study. These items ask questions like "Things usually don't bother me in this organization", "I can make up in this organization without too much trouble", and "It is pretty tough to be myself in this organization".

Self-efficacy. Self-efficacy was made up of nine items adopted from Sherer *et al.*'s (1982) Self-efficacy Scale (SES), which was primarily developed for clinical and personality research and later adopted in organizational settings (Imam, 2007). From the results obtained through samples of University Students and managers, Chen, Greene, and Crick (1998) reported internal consistencies of .88 to .91 in a test-retest reliability study. However, as work related self-efficacy measures are better suited to the context under investigation and tend to have a stronger predictive value than general self-efficacy measures (Earley & Lituchy, 1991). These items were modified to suit the requirements of the organizational setting in focus. Sample items include "When I make work related plans in this organization, I am certain I can make them work", ''I avoid trying to learn new things when they look too difficult for me", and "In this organization, if I can't do a job the first time I keep trying until I can".

Nonetheless, as a result of minor modifications that were effected on the original version of these items, it was considered appropriate to seek the opinion of some experts who are well versed in the subject areas under focus. Thus, in line with their suggestions, some minor changes were made, before undertaking a pilot study involving a total of 30 employees drawn from a similar commercial bank to the four banks, from where the main research respondents were drawn. By and large, after ensuring that all items are well understood by these employees, they were consequently adopted. All items were presented in a form through which respondents are expected to respond by showing their level of agreement or disagreement on a 5-point Likert scale. The

Likert scale is designed to examine how strongly subjects agree or disagree with statements on a scale, ranging from 3 to 7 points (Sekaran, 2008). However, the reason behind this choice of a 5- point scale is because of its ability to yield positive, negative, or neutral responses while also allowing for simplicity and easy understanding (Sekaran, 2008).

Data Analysis

The Pearson moment correlation was utilized in determining the nature of the relationship if any between self esteem and perceived job insecurity. This is as a result of the need to satisfy the key assumption underlying any regression analysis (Baron & Kenny, 1986). to identify the outcome variable: perceived job insecurity as a function of self-esteem, self-efficacy and gender, the three-steps hierarchical moderated regression analysis was utilized as recommended by Cohen, Cohen, West, and Aiken (2003). To do this, the centering procedure was utilized by subtracting the mean value of the variables from scores across variables. Thus, it is assumed that the effect of self-esteem *(X)* on perceived job insecurity *(Y)* would be changed by the proposed moderators *(Z)* in a linear way. According to Baron and Kenny (1986), this linearity represents a gradual, steady change in the effect of *X* on *Y* as the moderator changes. For instance when the effect of the product of self-esteem and self-efficacy or self-esteem and gender (interaction terms) is significant while job insecurity, and these variables are controlled, thus the moderation hypothesis is supported.

0.710, 0.706, and 0.801 was obtained for self-esteem, self-efficacy, and perceived job insecurity respectively. Variance inflated factor is 1.237 for both self efficacy and self esteem while a tolerance value of 0.808 was also obtained for the two constructs. Additionally, the Durbin-Watson statistic is 1.828 which is within the acceptable range of 1.5 and 2.5 (Norusis, 2004).

The correlation statistics for these variables are displayed in Table 1. As shown in the table, none of the paired variables have correlation values that are up to ($r > 0.9$) which is an indication that there is no serious multicollinearity issues in the model.

Table 1. Bivariate Correlation of Variables

	1	2	3	4
1 Self-efficacy	1			
N	153			
	0.438**	1		
2 Self-esteem	0.000			
N	153	153		
	-0.126	-0.295**	1	
3 PJI	0.121	0.000		
N	153	153	153	
4 Gender	-0.068	-0.063	0.056	1
	0.404	0.441	0.492	
N	153	153	153	153

Note: *$p < 0.05$; **$p < 0.01$.

Results

Before embarking on the moderation analysis highlighted above, it was first, ascertained that all variables are normally distributed, posses an acceptable range of internal consistency, and that the assumptions of both heteroscedasticity and multicollinearity are satisfied. A Cronbach alpha value of

Hypotheses Testing

A hierarchical moderated regression analysis, which attempts to determine perceived job insecurity as a function of self-esteem and self-efficacy on one side, and self-esteem and gender on the other side was carried out. The output from the analysis is displayed in Tables 2 and 3 below.

Table 2. Hierarchical Regression Showing Perceived Job Insecurity as a Function of Self-esteem and Self-efficacy

Variables Beta	S-Error	R^2	Change in R^2	F-stat	F-change	Sig
Model 1		0.087		14.396		0.000
Self-esteem	-0.295	0.085				
Model 2		0.087	0.000	7.152	0.002	0.961
Self-efficacy	0.004	0 .113				
Model 3						
Self-esteem						
.X	0.0120	0 .0910	0.0039	7.6442	0.6176	0.4332
Self-efficacy						

Table 3. Hierarchical Regression Showing Perceived Job Insecurity as a Function of Self-Esteem and Gender

Variables Beta	S-Error	R^2	Change in R^2	F-stat	F-change	Sig
Model 1		0 .087		14.396		0.000
Self-esteem	-0.323	0.085				
Model 2		0.088	0 .001	7.278	0 .232	0.631
Gender	0.038	1.052				
Model 3						
Self-esteem						
X	0.2931	0.1053	0.0168	5.1376	2.5456	0.1127
Gender						

The three-step hierarchical regression analyses are displayed in Tables 2 and 3. The main effect of self-esteem on perceived job insecurity was tested by entering the variable in the first step. Hence, considering the fact that the basic assumption for testing moderation effect was met due to a significant relationship $b = -0.295$, $p = 0.00$, $p < 0.05$ which was uncovered between the predictor and criterion variable (Holmbeck, 1997), it was considered imperative to proceed to the second step of the analysis. In the second step, self-efficacy was entered to observe its interaction effect in the model. Remarkably, it was observed that the interaction effect of this third variable failed to account for any significant proportion of the variance in perceived job insecurity, R^2 change = 0.000, $p = 0.961$, $p > 0.05$, (see Table 2). Nevertheless, in order to take care of any potential benefit of doubt, we embarked on a moderation analysis by adding the interaction/product terms of self-esteem and self-efficacy in line with the recommendation by Baron and Kenny (1986). Both the predictor and moderating variables were centred (Aiken & West, 1991). In line with our expectation, the change in the proportion explained variance of perceived job insecurity after adding the production term of self-esteem and self-efficacy is not significant in that only 3.9% more was explained, $B = 0.0120$, $p = 0.4332$, $p > 0.05$ which is suffice to say that self efficacy is not a moderator in the relationship between self-esteem and perceived job insecurity. Also, the proportion explained variance of the outcome variable after adding the production terms of self esteem and gender is 1.68%, while the standardized beta weight associated with this model is 0.2931, $p = 0.1127$, $p > 0.05$ meaning that gender is also not a significant moderator in the relationship between self-esteem and perceived job insecurity.

Discussion

The goal of this study was to examine the relationship between self-esteem and perceived job insecurity and to advance self-efficacy and gender as a possible moderator in this relationship. The findings suggest that increase in

employee's self-esteem will tend to lead to a significant decrease in the perception of job insecurity, thereby leading to the acceptance of Hypothesis 1. These finding provide a robust empirical background for the conservation of resource theory by Hobfoll (1989), where personality traits such as self-esteem have been identified as a resource which can act to reduce the perception of job insecurity in addition to its negative outcomes. It is also in line with the transactional stress model of Lazarus and Folkman (1984), where this type of cognitive resource is identified as being capable to act as a coping strategy to manage the demands that may arise from situations such as the threat of job loss. It also laid credence to the argument by Lasdat (2010), Judge, Erez, Bono, and Thoresen (2003) that individuals will tend to perceive and interpret job insecurity in different ways as a result of the overbearing influence of their personal characteristics. This study has demonstrated that self-esteem can be useful as a personal resource to cope successfully with stressful situations that may affect the perception of a work situation. Thus, when threatened by perceived job uncertainty, individuals with high self- esteem are likely to see such situation as a challenge and may engage in active coping strategies such as improving work performance to prove self-worth within an organization or increasing organizational citizenship behavior, while those with low self-esteem would see it as a threat and engage in avoidance coping strategies such as absenteeism, intention to quit, lowering organizational commitment and intrinsic motivation (Hui & Lee, 2000).

In order to identify if there is a boundary through which self-esteem may exercise an effect on perceived job insecurity, we highlighted two individually based characteristics, which may be classified as having close relations with self-esteem and perceived job insecurity:- (i.e self- efficacy and gender) and present them as potential moderators. It was discovered, contrary to our prediction that the product term of self-esteem and self-efficacy is not statistically significant. Thus, as the effect of self-esteem on perceived job insecurity does not exhibit any significant change as a result of the interaction of the former and self-efficacy, we do not accept Hypothesis 2.

The implication of this is that, regardless of high or low level of self efficacy, the relationship between these two variables remains constant. This is, however contrary to the earlier assumption that in the face of organizational job insecurity, people with high self-esteem would tend to assess the degree of their employability both within the internal and external labor market in deciding on how to react to this insecurity (Van Hootegem, De Witte, De Cuyper, & Vander Elst, 2018). Similarly, it was discovered that the product term of gender and self-esteem is of no significance. Thus, as the effect of self-esteem on perceived job insecurity does not exhibit any significant change with the introduction of the gender variable, we also do not accept Hypothesis 3, which predicted that gender would exercise a moderating effect in the relationship between self-esteem and perceived job insecurity. The implication of this is that being male or female would not make any significant contribution in these incidences, where self-esteem is expected to act as a predictor of perceived job insecurity. This finding thus fails to provide support for researchers (e.g. Gaunt & Benjamin, 2007; Bleidorn *et al.*, 2015; Lewis, 2001), which stresses the need to focus on gender differences in order to have a better understanding of how different individuals may react to events in the labor market. While it was expected that self-efficacy and gender would exercise a moderating influence in our research model, a possible explanation for this contradictory outcome may be due to the influence of some other unknown competing moderating variables which may cancel out their effect.

Limitations and Future Research

Despite the fact that it has been theoretically argued that personal characteristics (Lazarus & Folkman, 1984) have the potential to reduce reactions to the perception of job insecurity, part of our findings in this study contradicts this assumption. While it was discovered that the perception of job insecurity among employees in this study would tend to reduce in the face of increasing self-esteem, it was also revealed that gender and self-efficacy do not excise any buffering effect in this relationship. Due to the fact that (1) self-efficacy has been identified as a contextual variable whose effect varies across situations and occupation (Judge, Shaw, Jackson, & Rich, 2007) and that (2) gender affiliation may fail to make any significant difference in attitude, behavior, and reactions due to social constructions arising from cultural orientation (see Korman, 1976; Hofstede, 1980). We invite prospective researchers to further investigate by replicating this research model either in another occupational setting or cultural environment.

Second, as the generality of our finding is limited due to the cross-sectional survey design employed, which has the tendency to attract various forms of respondent bias, it is advised for caution to be utilized in interpreting our findings.

In this regard, a longitudinally designed study which has the capacity to determine the actual effect of both the predictor and moderating variables over time should be employed.

Lastly, because it was assumed at the beginning of this study that the inconsistency in findings regarding the relationship between self-esteem and perceived job insecurity would be better understood by focusing on the proposed moderators, and, as our findings have failed to lend any support for this argument, it is recommended that future researchers should examine the influence of other potential moderators: emotional intelligence, marital status, and locus of control.

Implications for Theory and Practice

This study makes many theoretical contributions. First, we investigate the influence of self- esteem on perceived job insecurity, and also investigate the moderating influence of both self- efficacy and gender in this relationship. This research model has not been investigated by any previous researcher to the knowledge of this researcher. Though, few researchers have investigated the influence of self-esteem on perceived job insecurity, the results from these investigations have been mixed and inconsistent, thereby calling a need for investigating the influence of yet unknown moderators. Hence, this study makes a contribution by introducing self-efficacy and gender as probable moderators while also examining their moderating influence. It also gives an impetus to future researchers to investigate other unknown competing moderators, which may have contributed to the unexpected results uncovered in this study. All in all, the study also contributed towards advancing the behavioral plasticity theory (Brockner, 1988) by showing the usefulness of perceived self-evaluation in confronting those cues that may have arisen as a result of the unpredictable and uncontrollable nature of the modern day societal issues.

In regard to practice, as organization continues to face turbulent times in addition to the change mantra that characterizes these times, a higher level of self valuation may help employees in these organizations to cope with the resultant high levels of job insecurity, which have been brought about by cost-cutting, downsizing, and various mergers. Hence, while carrying out any intervention program focused on boasting self-esteem with the aim of using this to mitigate the perception of workplace insecurity, managers and practitioners are encouraged to channel their resources on improving higher-order needs such as acknowledgment of efforts and achievements from employees, positive feedback, decision making involvement, promotion, and delegation of duties. Also, it should be noted that the effectiveness of these self-esteem enhancement strategies, is not contingent on the enhancement of self-perceived job efficacy or the consideration of gender differences.

Conflict of Interest

No conflict of interest is declared in this article.

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Učinek samospoštovanja na zaznano negotovost zaposlitve: vloga moderiranja samoučinkovitosti in spola

Izvleček

Visoka stopnja izgube delovnih mest v večini držav, ki so odvisne od surove nafte, kar je mogoče pripisati nedavnemu padcu cen tega blaga na mednarodnih trgih, je okrepilo zaznavanje grožnje, povezane z morebitno izgubo delovnih mest med zaposlenimi. Zato lahko zaznano negotovost zaposlitve in s tem povezane posledice ter blaženje le-teh pojmujemo kot globalni fenomen, ki zahteva pozornost vodilnih delavcev in strokovnjakov v praksi. V tem delu smo gradili na Hobfallovi teoriji ohranjanja virov, da bi predstavili raziskovalni model, ki povezuje samoučinkovitost zaposlenih in spol s prednostmi in slabostmi odnosa med samospoštovanjem in zaznano negotovostjo zaposlitve. V raziskavi so sodelovali uslužbenci nigerijske banke, in sicer 153 od 217 naključno izbranih v populaciji 509 uslužbencev. Na podlagi rezultatov ustrezne statistične analize smo ugotovili, da čeprav bi povečanje samozavesti lahko privedlo do znatnega zmanjšanja zaznane negotovosti zaposlitve, tako pomembno zmanjšanje ni povezano s samoučinkovitostjo in spolom. To pomeni, da te spremenljivke niso moderatorji odnosa med samospoštovanjem in zaznano negotovostjo zaposlitve. V skladu s temi rezultati zaključimo s priporočilom, naj se vodstvo osredotoči na razvoj intervencijskih strategij, katerih namen je izboljšati samospoštovanje zaposlenih, da bi zmanjšali zaznano negotovost zaposlitve. Poleg tega so bila opredeljena tudi pomembna področja nadaljnjih raziskav.

Ključne besede: samospoštovanje, zaznana negotovost zaposlitve, samoučinkovitost, spol, moderator

Conceptual Research Model for Studying Students' Entrepreneurial Competencies

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Abstract

The literature review shows a lack of research on the impact of entrepreneurship education on entrepreneurial competencies in relation to entrepreneurial intentions. Further development of the field is needed, but, because of the shortage of suitable research models or because they only partially cover the complex area of entrepreneurial competencies, the purpose of this article is the formulation of a new, updated research model (based on the existing models). Thus, theoretical research of entrepreneurial competencies based on the competence study has been performed. Through in-depth analysis of existing entrepreneurial competencies research models, a congregated hybrid research model is proposed. A new conceptual research model for studying the impact of entrepreneurship education on entrepreneurial competencies in relation to entrepreneurial intentions has been developed. The model will serve for empirical testing of investigated phenomena. The original contribution is in the formulation of a unique research model and the construction of a customized measuring instrument for studying the phenomena of entrepreneurship education impact on entrepreneurial competencies and entrepreneurial intentions.

Keywords: competency theory, entrepreneurial competencies, entrepreneurial intentions, entrepreneurial behaviour, higher education, entrepreneurship education

Introduction

The belief has spread that entrepreneurial motivation can be "embedded" and nurtured in the process of socialization and education. In this context, entrepreneurial competencies[1] necessary for entrepreneurship can, thus, be taught (Schøtt *et al.,* 2015, p. 9). Lackéus (2015, p. 14) is convinced that the main goal of entrepreneurship education is, in most cases, exactly the acquisition of entrepreneurial competencies. With this in mind, the OECD/EU (2017, p. 58; 2015, p. 57) data shows that most young people in European countries feel that they do not have

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[1] For the term "entrepreneurial competencies," synonyms appear in the literature, e.g., entrepreneurial skills, entrepreneurial abilities.

enough knowledge and competence in order to start their own business. The most frequently quoted reasons why graduates are not engaged in entrepreneurship immediately after graduation is lack of adequate knowledge and self-confidence. Entrepreneurship education is therefore of extreme importance for promotion of entrepreneurship (European Commission, 2008, p. 23). Schøtt *et al.* (2015, p. 9) summarized Kvedaraite (2014), claiming that entrepreneurship is a method by which young people can improve their life opportunities and lifestyles; eventually, entrepreneurship contributes to reducing youth unemployment in general and overall stability.

Many researchers emphasize the need to raise entrepreneurial intentions among students (Verheul *et al.*, 2001; Heinonen & Poikkijoki, 2006; Rae *et al.*, 2011; Kyndt & Baert, 2015; Schøtt *et al.*, 2015). They also recognized the importance of governmental intervention into educational systems through which cultural norms that stimulate entrepreneurship could be encouraged. Verheul *et al.* (2001, p. 26, 34) are convinced that the greater the investment of a country in higher education, the higher is the level of newly established companies. Moreover, the already high level of general education can contribute to a higher level of entrepreneurship; thus, specific entrepreneurial education has an even greater impact (Schøtt *et al.*, 2015; Lackéus, 2015).

The European Commission's awareness of the importance of maintaining a knowledge-based society resulted in the adoption of the recommendation on key competences for lifelong learning in 2018. The main thread is the promotion of entrepreneurial and innovation-oriented thinking and related competencies. The idea is to help people acquire the basic competencies needed for work and life in the 21st century. One of the recommended eight key competencies is *entrepreneurship competence* (European Commission, 2018).

To the best of our knowledge, there are not many empirical researches of entrepreneurial competencies. Authors (Kyndt & Baert, 2015, p. 22; Sánchez, 2013, p. 448) draw attention to the need of empirical research, which studies the impact of entrepreneurship education on entrepreneurial competencies in connection with entrepreneurial intentions. Mitchelmore and Rowley (2010) are convinced that further development of the field is needed, both the theory of entrepreneurial competencies and research work with practical studies and development of measuring instruments. This is precisely the goal of this article, i.e., to contribute to the treasury of such research.

The current paper represents the continuation of the previous published article (Zdolšek & Širec, 2014), which addresses the topic of entrepreneurship education's impact on entrepreneurial intentions of students and is structured as a review of

empirical research. The objective of the previous article was the development of conceptual research model for studying the impact of entrepreneurship education on entrepreneurial intentions and entrepreneurial competencies. The current paper focuses on the entrepreneurial competencies and is structured as follows. After the introduction, we present the theoretical approaches to the competence study. Next, a theoretical overview of entrepreneurial competencies is presented. Based on our findings, we structured an updated conceptual research model for studying the impact of entrepreneurial education on the entrepreneurial competencies and entrepreneurial intentions. Additionally, we briefly present the measuring instrument of the proposed model.

Theoretical Approaches to the Competence Study

The competency theory is based on the study of successful leaders. It reveals their behaviours, attitudes, and skills and presents them in the form of measurable characteristics. It explores ways to combine these units to create individuals who prove superior performance (Mitchelmore & Rowley, 2010, p. 97). Some authors use several terms as synonyms, i.e., competencies, skills, expertise, abilities, etc. In general, competencies are divided into the competencies of individuals and into competencies of organizations. We are interested in the competencies of individuals.

The theory of studying entrepreneurial behaviour is often divided into focusing on personality traits (McClelland, 1987) or on the competence of individuals through the competency approach (Boyatzis, 1982). While studying personality traits addresses profiling successful individuals, the competency approach identifies the competencies of individuals, which is the point of our interest. The competency approach is often used in management performance research and has been in use since Boyatzis (1982) published a study of American managers and their competencies (1982) (Man *et al.*, 2002, p. 126). McClelland (1973) says that competencies are crucial to the success or failure of an individual—not formal education, which is most often mentioned. Boyatzis (1982) links competencies with emotional, social, and cognitive intelligence and claims these are the basic characteristics of a person, which result in effective performance or career efficiency. Boyatzis adds that competencies are reflected in an individual's behaviour.

The literature review shows that, for competencies, there is no universal definition. Man *et al.* (2002) used the competency approach by examining the capabilities of key actors in organizations. Brophy and Kiely (2002, p. 165) point out that possessing competencies does not necessarily mean that an

individual is also capable. The authors continue that competencies can be displayed or proven only through the behaviour and actions of the individual (Man *et al.*, 2002, p. 133).

In the literature, we note that some authors associate competencies with personal characteristics of the individual (Bratton & Gold, 2003), some with knowledge (Bohlander & Snell, 2004; McClelland, 1998), and others equate competencies with behaviours (Aragon & Johnson, 2002). Bacigalupo *et al.* (2016, p. 20) and Man *et al.* (2002) defined competencies as a set of knowledge, skills, and relations. Bird (1995) defined competencies as behavioural and observable characteristics. On the other hand, the authors are united in that an individual is not born with competencies but acquires and develops them over time. Competencies are therefore variable and learnable, which allows intervention in terms of choice and teaching (Man *et al.*, 2002, p. 133; Mitchelmore & Rowley, 2010, p. 96).

An Overview of Entrepreneurial Competencies

The basis of entrepreneurial competencies is presented from the theory of managerial competencies (Mitchelmore & Rowley, 2010, p. 99). Boyatzis (1982) pointed out the connection between entrepreneurial competencies and managerial competencies. Various authors began to research managerial competencies in the 1960s and 1970s, continuing in the 1980s (McClelland, 1961, 1973; Boyatzis, 1982), while research on entrepreneurial competencies appeared later, in the 1980s and 1990s. Since then, we have witnessed research that compares managerial and entrepreneurial competencies (Chandler & Hanks, 1994). Most authors, who are doing research on entrepreneurial competencies, build their work on the competency approach.

Chandler and Jansen (1992) asked which skills are essential for successful entrepreneurial action. They suggested that the core of entrepreneurial competencies represents the ability to identify entrepreneurial opportunities. Otherwise, the authors combined individual competencies with respect to three basic roles, which they believed are important for a successful entrepreneur to take on: entrepreneurial, managerial, and professional–technical roles.

Bird (1995) claimed that competencies are related to entrepreneurial behaviour and are learnable. Bird also claimed that the characteristics of an individual are fixed and defined as inaccessible, as we cannot learn them. Factors that can influence the development of entrepreneurial competencies and should therefore be taken into account are education, work experience, and entrepreneurial experience (Bird, 1995, p. 21).

Comparison of the necessary competencies of managers and entrepreneurs is not uniform. Busenitz and Barney (1997, p. 15, 23) compared managers and entrepreneurs in decision-making processes (more precisely, overconfidence). The authors further claimed that these two groups think differently.

Kiggundu (2002) purported that the necessary entrepreneurial competencies possessed the following attributes: relationships, values, beliefs, knowledge, skills, abilities, personality, wisdom, professionalism (social, technical, managerial), mentality, and behaviour. The listed qualities are also necessary for successful and sustainable entrepreneurship.

Some consider that entrepreneurial competencies are necessary for starting a business, while the development of a company requires managerial competencies. Others point out that entrepreneurship requires competencies in both areas. Entrepreneurial competencies are defined as the overall ability of an entrepreneur to perform work (Man *et al.*, 2002). On the other hand, the authors agreed that the entrepreneurial context is focused on the individual, while the managerial context focuses on the organization (Mitchelmore & Rowley, 2010, p. 97).

Entrepreneurial competencies based on Sánchez (2013, p. 450) represent specific personal characteristics: self-efficacy, proactivity, and risk-taking capability. Lans *et al.* (2014) drew attention to five generic competencies, which are often referred to as the basis of entrepreneurial competence: (1) opportunity competence, (2) social competence, (3) business competence, (4) industry-specific competence, (5) entrepreneurial self-efficacy. Lackéus (2015) defined entrepreneurial competencies as having the knowledge, skills, and attitudes that influence the willingness and ability of entrepreneurial engagement.

Kyndt and Baert (2015, p. 22) stated: "Entrepreneurship competencies predict future entrepreneurial activity." Preliminary research has shown that entrepreneurs and their competencies are central to the success of SMEs. It is important to identify entrepreneurial competencies because, only in such a way, can organizations, businesses, and higher education institutions influence their development (Kyndt & Baert, 2015, p. 13).

The older generation grew up in a time when experiences, especially the working experience in a company, was considered as a way of acquiring entrepreneurial competencies and subsequently served for entering the world of entrepreneurship. It was not typical that entrepreneurial competencies could be learned without practical work in a company. Today's young generation is growing up in the age of education philosophy, and, because entrepreneurial

competencies are learnable, education and training for entrepreneurship are proposed as a good way to acquire competencies. This is supposed to be the basis for entry into entrepreneurship. New and emerging entrepreneurs are therefore often younger than those of previous generations (Schøtt *et al.*, 2015, p. 10).

Theoretical Models Used

We have selected several models of entrepreneurial competencies, based on which we will build the conceptual research model. The first model is from Man (2001) and Man *et al.* (2002), the second from Kyndt and Baert (2015), and the third model is from Moberg *et al.* (2014).

Man *et al.* (2002, p. 124–126) defined entrepreneurial competencies as a collective ability of an entrepreneur to successfully perform his/her work. The authors claim these are higher-level features that include personality traits, skills, and knowledge. The model of entrepreneurial competencies by Man (2001) and Man *et al.* (2002) is composed from eight competence constructs (Table 1): (1) opportunity competencies, (2) relationship competencies, (3) conceptual competencies, (4) organizing competencies, (5) strategic competencies and (6) commitment competencies, (7) learning competencies and (8) personal strength competencies. The authors pointed out the need for an entrepreneur to find a balance between different competencies.

Kyndt and Baert (2015) cited 12 competence constructs (Table 2): (1) perseverance, (2) planning for the future, (3)

Table 1. Eight Competence Areas According to Man (2001) and Man *et al.* (2002)

Competence Area	Behavioural Focus	Literature Source
Opportunity competencies	Competencies related to recognizing and developing market opportunities through various means	Bartlett and Ghoshall (1997), Baum (1994), Chandler and Jansen (1992), Gasse (1997), McClelland (1987), Mitton (1989), Snell and Lau (1994).
Relationship competencies	Competencies related to person-to-person or individual-to-group-based interactions, e.g., building a context of cooperation and trust, using contacts and connections, persuasive ability, communication and interpersonal skill	Bartlett and Ghoshall (1997), Bird (1995), Chandler and Jansen (1992), Durkan *et al.* (1993), Gasse (1997), Lau *et al.* (1999), McClelland (1987), Mitton (1989).
Conceptual competencies	Competencies related to different conceptual abilities, which are reflected in the behaviours of the entrepreneur, e.g., decision skills, absorbing and understanding complex information, and risk-taking, and innovativeness	Bartlett and Ghoshall (1997), Baum (1994), Bird (1995), Chandler and Jansen (1992), Durkan *et al.* (1993), Gasse (1997), Hunt (1998), Lau *et al.* (1999), McClelland (1987), Mitton (1989), Snell and Lau (1994).
Organizing and leading competencies	Competencies related to the organization of different internal and external human, physical, financial and technological resources, including team-building, leading employees, training, and controlling	Adam and Chell (1993), Bartlett and Ghoshall (1997), Baum (1994), Chandler and Jansen (1992), Durkan *et al.* (1993), Gasse (1997), Hunt (1998), Lau *et al.* (1999), McClelland (1987), Mitton (1989), Snell and Lau (1994).
Strategic competencies	Competencies related to setting, evaluating and implementing the strategies of the firm	Adam and Chell (1993), Bartlett and Ghoshall (1997), Bird (1995), Durkan *et al.* (1993), Gasse (1997), Lau *et al.* (1999), McClelland (1987), Mitton (1989), Snell and Lau (1994).
Commitment competencies	Competencies that drive the entrepreneur to move ahead with the business	Bartlett and Ghoshall (1997), Chandler and Jansen (1992), Durkan *et al.* (1993), Hunt (1998), Lau *et al.* (1999), McClelland (1987), Mitton (1989).
Learning competencies	Competencies in connection with being in constant search for new information, openness to new information, ability to learn from different sources, proactive learning.	Man (2001), Snell and Lau (1994), Thompson *et al.* (1996), Deakins and Freel (1998)
Personal strength competencies	Competencies regarding the ability to maintain a high level of energy, self-motivating to maintain an optimal level of activeness, responding to constructive criticism, maintaining a positive attitude, scheduling tasks according to time management, identifying own strengths and weaknesses, and matching them with opportunities and threats.	Man (2001)

Sources: (Man, 2001, p. 304–305; Man *et al.*, 2002, p. 132)

insight into the market, (4) orientation toward learning, (5) seeing opportunities, (6) awareness of potential returns on investment, (7) decisiveness, (8) independence, (9) self-knowledge, (10) building networks, (11) ability to persuade, (12) social and environmentally conscious conduct.

Moberg *et al.* (2014) defined entrepreneurial competencies as entrepreneurial skills (creativity, planning, financial literacy, resource management, risk management and team work), entrepreneurial mindset (self-efficacy, control, self-esteem), entrepreneurial knowledge, connectedness to education and to career ambitions. We will take over only a part of the model from Moberg *et al.*, namely, the one that relates to entrepreneurial knowledge and creativity.

Proposed Conceptual Research Model

Presented theoretical models have been adopted completely (first model from Man (2001) and Man *et al.* (2002); the second model from Kyndt and Baert (2015)) and partially (third model from Moberg *et al.* (2014)). Here, it is necessary to add that the existing models had to be modified for the purpose of creating a model that studies the impact of entrepreneurship education on entrepreneurial competencies and entrepreneurial intentions of higher education students. Because some of the competence constructs completely or partially overlap with each other, we merged them and obtained the final 17 competence constructs (Table 3). The updated conceptual research model, which is the continuation that follows from the past article (Zdolšek

Table 2. Twelve Competence Areas According to Kyndt and Baert (2015)

Competence area	Behavioural Focus	Literature Source
Perseverance	Competencies related to the ability of risks handling and confronting with possible consequences, persistence to achieve goals.	Kyndt and Baert (2015), McClelland (1987), Markman and Baron (2003), Valtonen (2007), Rauch and Frese (2007)
Planning for the future	Competencies in relation to risk-reduction efforts when planning for the future. It includes a vision of medium and long-term goals. It is also about transforming the vision into real (work) planning.	Kyndt and Baert (2015), Brinckmann and drugi (2010), Chwolka and Raith (2012), Karlsson and Honig (2009)
Insight into the market	Knowing the market, giving the entrepreneur the basis for assessing potential risks, as well as identifying competition and analysing the own position on the market.	Chwolka and Raith (2012), De Clercq *et al.* (2012), Man *et al.* (2002), Wagener *et al.* (2010)
Orientation towards learning	Ability and desire for new challenges and getting to know novelties, such as technical and economic changes and innovations. It is about finding new knowledge and skills, in the desire for its own development.	Lans *et al.* (2005), (2008)
Seeing opportunities	Competencies for identifying and exploiting opportunities.	Gras and Mendoza-Abarca (2014), Man *et al.* (2002), Markman and Baron (2003), Philips and Tracey (2007), Rezaei-Zadeh *et al.* (2014), Tumasjan and Braun (2012)
Awareness of potential returns on investment	Awareness of potential returns, i.e., the ability to measure the strengths and weaknesses of financial decisions.	Man *et al.* (2002)
Decisiveness	Competencies in making clear decisions. It is often about making decisions that not everyone agrees with, and the result of this decisions is not completely predictable.	Man *et al.* (2002), Rezaei-Zadeh *et al.* (2014), Wagener *et al.* (2010)
Independence	Acting independently of others. The ability to decide about what to do.	Rauch and Frese (2007), Wagener *et al.* (2010)
Self-knowledge	Competencies of self-understanding or self-awareness and also about self-confidence.	Hayward *et al.* (2010)
Building networks	It is important for entrepreneurs to establish an appropriate (internal and external) network of contacts and to maintain this network.	Davidsson and Honig (2003), McClelland (1987), Baron and Markman (2003), Man *et al.* (2002), Markman and Baron (2003)
Ability to persuade	It allows entrepreneurs to convince others about their thinking, plans, or products.	Baron and Markman (2003), Brush (2008), Davidsson and Honig (2003), Markman and Baron (2003), McClelland (1987), Wagener *et al.* (2010)
Social and environmentally conscious conduct	Functioning in a socially responsible manner that regulates economic, social and environmental interests and the future consequences that humanity has on the world.	Lans *et al.* (2008)

Adapted from Kyndt and Baert (2015)

Table 3. Proposed Model of Competence Constructs

Competence Construct	Author
Competencies for strategic planning for the future	Man (2001), Man *et al.* (2002), Kyndt and Baert (2015)
Competencies of decisiveness and commitment	Man (2001), Man *et al.* (2002), Kyndt and Baert (2015)
Conceptual competencies	Man (2001), Man *et al.* (2002)
Organizing competencies	Man (2001), Man *et al.* (2002)
Personal strength competencies	Man (2001), Man *et al.* (2002)
Learning competencies	Man (2001), Man *et al.* (2002), Kyndt and Baert (2015)
Competencies of self-knowledge	Kyndt and Baert (2015)
Sustainable behaviour competencies	Kyndt and Baert (2015)
Competencies for market insight	Kyndt and Baert (2015)
Competencies of recognizing opportunities	Man (2001), Man *et al.* (2002), Kyndt and Baert (2015)
Competencies of building networks and relationships	Man (2001), Man *et al.* (2002), Kyndt and Baert (2015)
Ability to persuade	Kyndt and Baert (2015)
Independence	Kyndt and Baert (2015)
Awareness of potential returns on investments	Kyndt and Baert (2015)
Perseverance	Kyndt and Baert (2015)
Entrepreneurial knowledge	Moberg *et al.* (2014)
Creativity	Moberg *et al.* (2014)

Figure 1. Updated Conceptual Research Model for Studying the Impact of Entrepreneurship Education on Entrepreneurial Competencies and Entrepreneurial Intentions
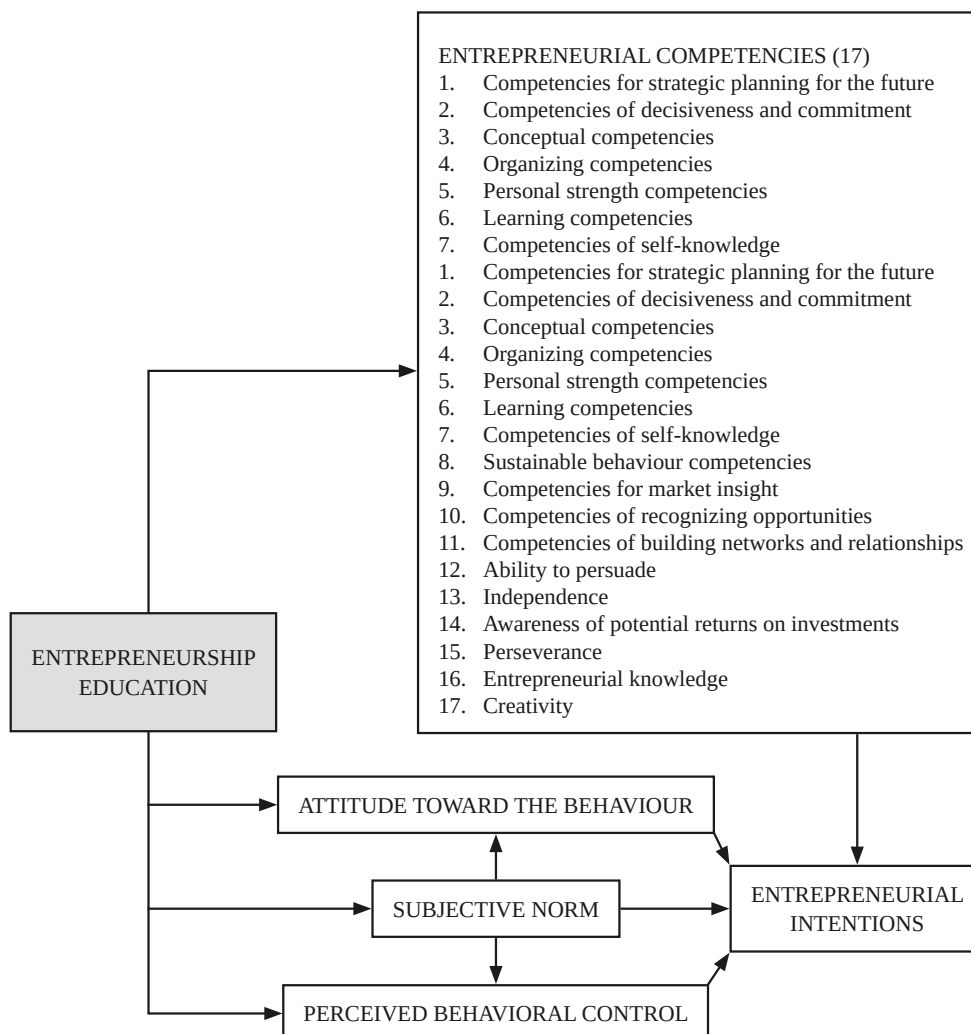
Adapted from Zdolšek and Širec (2014)

& Širec, 2014), is presented in Figure 1 and shows the entire model, which is derived from entrepreneurship education through entrepreneurial competencies to entrepreneurial intentions. Compared with the first model (Zdolšek & Širec, 2014), the updated and final version clearly presents the measurement instrument for the analysis of entrepreneurial competencies through defined competence constructs.

Measurement of entrepreneurial competencies is done through behaviour measurement, which is specific to a certain competence. The basis of the measurement instrument's present claims is designed as behavioural indicators and asks individuals how often they carry out certain behaviours (Kyndt & Baert, 2015, p. 15; Chandler & Jansen, 1992). Behavioural indicators are used because competencies can be shown only with the individual's behaviour and actions (Man et al., 2002, p. 133). It is also necessary to point out the possibility of overestimation from individuals. Table 4 represents a short overview of the prepared measuring instrument for the proposed model.[2]

Table 4. Overview of the Measuring Instrument by Components

Measuring Instruments	Number of Items (questions or claims)
Measuring instrument for TPB[3] constructs	24
Measuring instrument for entrepreneurial competencies	99
Demographic data	9
Total	132

Conclusion

The global trend is that more people are involved in higher education than ever before (Schøtt et al., 2015, p. 7). Issues arise because the labour market and the education system are not harmonized; therefore, many young graduates (at least in the short-term) remain unemployed. On the other hand, entrepreneurship is known for its impact on economic growth while accelerating the technological development and employment rate (Schøtt & Others, 2015, p. 17; Lackéus, 2015, p. 6). Therefore, entrepreneurship education represents a key solution for stabilization of negative labour market conditions. Looking deeper into the meaning of entrepreneurship education for students, it means the development of certain skills or qualities and is not necessarily directly linked to the

creation of new businesses (Lackéus, 2015, p. 6). The most important aspect from our perspective is that, through entrepreneurship education, students develop entrepreneurial competencies and change their attitude toward entrepreneurship (Schøtt et al., 2015, p. 9). A literature review has shown the importance of entrepreneurial competencies of students, as they can be the basis for their entrepreneurial intentions.

To summarize, we performed a theoretical research of entrepreneurial competencies based on the competence study. Through an in-depth analysis of existing entrepreneurial competencies research models of Man (2001) and Man et al. (2002), Kyndt and Baert (2015), and Moberg et al. (2014), we conducted a new, congregated hybrid research model with 17 competence constructs. This was done through modification of the existing models. The new conceptual research model for studying the impact of entrepreneurship education on entrepreneurial competencies in relation to entrepreneurial intentions of students will serve for empirical testing of investigated phenomena. The present conceptual research model is a continuation from Zdolšek and Širec's (2014) research and has updated and precisely designed the measurement instrument for analysis of entrepreneurial competencies through defined competence constructs. Consequently, the updated conceptual research model is ready for further use to study the impact of entrepreneurship education on entrepreneurial competencies in relation to entrepreneurial intentions. The original contribution is in the formulation of a unique research model and the construction of a customized measuring instrument.

Despite the importance of linking *entrepreneurship education–entrepreneurial competencies–entrepreneurial intentions*, the scientific literature dealing with all three variables is scarce (Zdolšek & Širec, 2014). The only author dealing with all three variables, to the best of our knowledge, is Sánchez (2011, 2013); thus, we further emphasize the need for scientific research in this area, which is also the most important message of the current paper. Finally, we agree with Mitchelmore and Rowley (2010) that further development in this field is needed, both in the sense of theory of entrepreneurial competencies as well as in research work with practical studies. The next step will therefore consist of empirical testing of the proposed conceptual research model, which studies the impact of entrepreneurship education on entrepreneurial competencies and entrepreneurial intentions of students in higher education.

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[2] The entire measuring instrument is available uppon request by the authors

[3] Stands for theory of planned behaviour (Ajzen, 1991) and was used to study the entrepreneurial intentions. More in detail presented in the article Zdolšek and Širec (2014).

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Konceptualni raziskovalni model za raziskovanje podjetniških kompetenc študentov

Izvleček

Pregled literature kaže, da primanjkuje raziskav, ki bi preučevale vpliv podjetniškega izobraževanja na podjetniške kompetence v povezavi s podjetniškimi namerami. Potreben je nadaljnji razvoj tega področja, vendar obstaja težava, saj smo priča pomanjkanju raziskovalnih modelov glede podjetniških kompetenc ali težavi, da obstoječi raziskovalni modeli le delno pokrivajo kompleksno raziskovalno področje podjetniških kompetenc. Namen članka je zato oblikovanje novega, posodobljenega raziskovalnega modela (ki temelji na sedanjih modelih). Izvedena je bila teoretična raziskava podjetniških kompetenc, ki temelji na teoriji kompetenčnega pristopa. S poglobljeno analizo sedanjih raziskovalnih modelov podjetniških kompetenc smo izvedli pripravo novega, združenega, hibridnega raziskovalnega modela. Razvit je bil nov konceptualni raziskovalni model za preučevanje vpliva podjetniškega izobraževanja na podjetniške kompetence in podjetniške namere študentov. Model bo služil za nadaljnje empirično raziskovanje tega področja. Izvirni prispevek je v oblikovanju edinstvenega

raziskovalnega modela in izdelava prilagojenega merilnega instrumenta za proučevanje vpliva podjetniškega izobraževanja na podjetniške kompetence in podjetniške namere.

Ključne besede: kompetenčna teorija, podjetniške kompetence, podjetniške namere, podjetniško vedenje, visokošolsko izobraževanje, podjetniško izobraževanje

Gaming for Introducing Social Challenges and Responsibility to Young People

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Abstract

Gaming has the potential to support the development of young people's capabilities in social responsibility (SR) and, at the same time, represents a threat of developing undesired behaviour patterns. Successful integration of gaming in the lives of young people requires a systemic approach, which, to the best of our knowledge, hasn't been provided in the literature. We provide insight into this issue. In this paper, multiple methods are used. To elaborate the backgrounds on the gaming's effects and social behaviour, the literature is analysed. To assess the state-of-the art of young people characteristics, their pressing social challenges and gaming evaluation reports are analysed. The synthesis is provided and placed in the context with social responsibility properties using system dynamics. Gaming concepts, appropriate for education for SR, and relationships between young people's challenges and the players in the gaming environment in SR terms are proposed. Currently, the loop of games development is negatively propelled by the short-term games demand. We propose effective feedback loops, linking young people and their social environment, using a SR tool set to provide demands to the game providers. The experience will support the games developers to design socially constructive games, aiming to develop the desired skills and competencies in social transformation processes of young people toward SR. The proposed model provides merely an overview model, designed by the literature review and state-of-the-art analysis. To fully understand the games' effects on young people, a more detailed analysis is required.

Keywords: young people, social challenges, gaming, learning, competence building, social responsibility

Introduction

Social responsibility is mainly used in the corporate context, and, according to Fisher (2004), it was clearly differentiated from the term ethics, which is focused on a personal level. Etheredge (1999) additionally claimed that social responsibility is in conflict with the profitability, which is a company's primary objective. Contrary to this limited viewpoint, the corporate social responsibility, operationalised in the

ISO 26000:2010 standard (ISO, 2010), is no longer limited to corporations/enterprises and connects:

– Responsibility, interdependence, and holistic approach of everybody to every life situation, and
– Seven principles of SR (ISO, 2010):
    1. Accountability;
    2. Transparency;
    3. Ethical behaviour;
    4. Respect for stakeholder interests;
    5. Respect for the rule of law;
    6. Respect for international norms of behaviour;
    7. Respect for human rights.

The SR-related limitations to the corporate environment are heavily disputed. The term "social responsibility" was expanded from corporate to all subjects in society (Mulej *et al.*, 2017). The evidence was presented that social responsibility, linking ecological, social, economic, and business viewpoints, is identified as the core factor for the long-term sustainability of an organisation (Knez-Riedl *et al.*, 2006) and society at large (Mulej, 2006; Mulej *et al.*, 2006), all the way to prevention of the Third World War (Mulej & Dyck, 2014, 2015).

The games-related research was primarily focused in evaluating the negative effects of games to the development of children and young adults (Anderson & Dill, 2000; Griffiths, 1999; McMurray *et al.*, 2000), ranging from aggressive behaviour to physical inactivity. Subsequently, new references address (Gilliam *et al.*, 2016; Hung *et al.*, 2018; Martinovic *et al.*, 2016) the learning potentials, games, i.e., video games offer for young people. It is an open question if games can be used to help young people learn that humankind current challenges require the replacement of the one-sided and short-term criteria of right and wrong and the systemic, i.e., requisitely holistic, ones (Lebe & Mulej, 2014; Mulej *et al.*, 2013, 2014).

In this report, the phenomena and characteristics of gaming, i.e., video games, and the challenges of including the young people in society and developing their social responsibility in understanding and behaviour are pointed out. We explore the possibility to use gaming to introduce social challenges—including social responsibility—to young individuals and, if so, which individual properties should we build upon, which issues can be introduced, and what kind of gaming could support the introduction.

The research is focused to elaborate on the capacity of the gaming environment to help in resolving young people challenges. In the process of resolving these challenges, young people can build on the experience of using the opportunities the environment provides for them, instead of building pathogenic behaviour patterns (Rios, 2010).

To affect behavioural patterns of young people, goals, focus points, and tools are to be identified. In this research, the improvement in social responsible behaviour patterns is targeted, the young people current state in EU is examined to detect focus points, relevant for the young people, and games are examined for the potential to provide a change. The change in the gaming environment is addressed using systems dynamics.

In the synthesis, we use social and system dynamics to elaborate on the relations between young people characteristics, social challenges, and gaming capacities. The results will apply to game providers to create socially constructive games properties, the policymakers and practitioners to appropriately include the video games in the communication channels addressing young people, and the young people use games to build skills and social competencies toward social responsibility as their human attribute.

In this paper, first the backgrounds on games, informal systemic behaviour, and social responsibility are expounded. In the next part, the reports on the current state in the young people in EU and the gaming are elaborated upon. Based on the analysis, a system dynamics model is proposed, elaborating on the players and feedback loops in the gaming environment. The paper concludes with a summary, focusing on implications for the participants, limitations, and future research challenges.

Background

The literature on using games to support social responsible behaviour is scarce. Thereby, research reports on games-related learning, social responsibility, and systemic behaviour are explored to provide the framework for the research provided in this report.

Games

The video games domain is reasonably well researched. The research ranges from purely technical to psychological findings. To better understand the effect video games have on people, we scan the research results reporting on video games effects on undesired behaviour, skills, social behaviour, and learning.

Undesired behaviour. There are multiple analyses addressing the negative effects of gamification. The most attention is focused in examining the relations between aggression in the video games and in the real life. Anderson and Bushman (2002) defined and put under the test the general

affective aggression model. Some authors argued against introducing first-person aggressive video games because of the risks of aggressive behaviour in real life; for instance, "The evidence strongly suggests that exposure to violent video games is a causal risk factor for increased aggressive behaviour, aggressive cognition, and aggressive affect and for decreased empathy and pro-social behaviour." Other authors confirmed the model (Gentile *et al.*, 2004) and provided mitigation strategies. But the newer research results downgrade the direct link between violent video games and violent behaviour (Kneer *et al.*, 2016). Arguments are posted that the effects are significant, especially for individuals already prone to violent behaviour.

Skills. Gopher *et al.* (1994) tested the transfer of skills from a complex video game to the flight performance and reported significantly better performance for pilots with gaming experience compared with the no-game group. Resultantly, video games were incorporated into the regular Air Force training programs. A study on information-processing skills examined the effects of playing domain-unrelated video games on the domain knowledge (Yuji, 1996). The author revealed no significant differences between gamers and no-gamer groups in correct responses; however, returns of players were significantly faster than those of nonplayers.

Adachi and Willoughby (2013) examined relationships among strategic video games, self-reported problem-solving skills, and academic grades. In their longitudinal study, they reported that more strategic video-game playing predicted higher self-reported problems in solving skills over time than less strategic video-game playing. In addition, the results provided support for an indirect association between strategic video-game playing and academic grades. Romero *et al.* (2015) compared the new skills, required in the 21st century, and serious video-game effects. The authors characterised the current need for 21st century skills and identified corresponding core skills. They further compared the skills with the most relevant video-game characteristics and suggested which functions should be upgraded. Building values, including social responsibility, was not tackled explicitly.

Social behaviour. The question of why people play video games arises. Hsu and Lu (2004) designed and tested a technology acceptance model for on-line video games. The authors concluded that approximately 80 percent of video game playing can be explained via social norms, attitude, and flow experience. Shin and Shin (2011) answered the same question for the social network games (SNG). They suggested that user acceptance of SNG model explains the players' behaviour well. Wang *et al.* (2012) researched reputation and cooperation in real life through social dilemma games. They explored the evolution of cooperation using the inferring reputation and presented a viable method of understanding the cooperative behaviour in nature.

Trepte *et al.* (2012) explored social bonding that goes beyond video games. Their results showed that online gaming may cause strong social ties if gamers engage in online activities that continue beyond the video game and extend these with offline activities. The authors further noticed a strong shift from direct human interactions to communication through devices. Indirectly, the human values, including social responsibility, are addressed by terms such as "social norms" or "attitudes."

Learning. de Freitas and Oliver (2006) explored the methods for evaluation of video games' impact on learning. The authors proposed a four-dimensional framework for helping tutors to test the potential of using video-games and simulation-based learning in their practice and to support more critical approaches to this form of games and simulations.

Tuzun *et al.* (2009) researched effects of video games on primary school students' achievement and motivation in geography learning. According to their study, students demonstrated a statistically significant higher intrinsic motivation and statistically significant lower extrinsic learning motivation. In addition, students decreased focus on getting grades and were more independent while participating in the video-game-based activities. The authors' results make us reconsider the true value of learning, i.e., gaining grades or building up combinations of competencies.

Some authors find little or no links between video games and learning scores; they question the relevancy of the current grading system. Liu and Chu (2010) analysed the effects of ubiquitous video games in an English listening and speaking course and discovered that incorporating ubiquitous video games into the learning could achieve better outcomes and motivation than using the nongaming method. Yang (2012) explored digital games for developing students' problem-solving and learning motivation. He reported that no statistically significant difference was found between the test groups and proposed the evaluation of other higher-order elements of the cognitive domain in terms of academic achievement outcomes and skills, such as critical and creative thinking.

Avouris and Yiannoutsou (2012) reviewed mobile location-based video games for learning across physical and virtual spaces. They concluded that these kinds of playful activities can have an impact on learning, especially outside the school, in the local environment, and visits in museums and other sites of cultural and historical value.

Mayer (2014) dealt with the dilemma that video games have the potential to improve motivation but may distract from learning. He proposed an evidence-based approach that is grounded in cognitive theory to balance video game features with instructional features. Kampf and Cuhadar (2015) elaborated on the effects video games have on learning about conflicts. The authors analysed the affinity toward active conflicts before and after playing conflict-related video games. For some participants, the reflections on conflicts in their environments changed, while all participants changed their attitudes on distant conflicts after playing video games along these scenarios.

Hamari *et al.* (2016) explored the effect of challenging video games on the learning results. They found that the challenge of playing a video game positively influences learning both directly and via the increased engagement. The authors suggested that the challenge of the video game should keep up with the learners' growing abilities.

Gee (2003) introduced 36 gaming principles, including active, critical learning, design appreciation, semiotics, meta-level thinking, risk decisions, committed learning, changing identity, self-knowledge, amplification of input, intrinsic achievement, incremental, repetitive and ongoing learning, limited resources management, self-discovery, hypothesis probing, multiple routes, text integration, material intelligence, knowledge transfer, intuitive knowledge, cultural models, affinity group cooperation, and a teacher principle. These principles, combined with the domain focus, have a potential to upgrade the individual understanding of the domain in a much deeper sense than by standard learning.

Social Responsibility: A Youth Perspective

Social responsibility is a human attribute that matters for individuals, organisations, and societies; young people should therefore internalise this value to comprehend the triangle of the essence of social responsibility in ISO 26000 (ISO, 2010): one's personal and organisational and societal responsibility for one's influences on society, i.e., humans and nature, ethics and practice of interdependence, and holistic approach. They are supported by the seven principles of social responsibility cited above. Social responsibility is becoming crucial for including young people in society and their will and capacity to face their current challenges; thus, without prevalence of social responsibility, humankind is in danger of instigating a Third World War (Mulej, Dyck, ed., 2014). EU supports application of ISO 26000, including economic reasons (EU, 2011).

Young people perceive social responsibility through two perspectives: how society is addressing their issues, and how to act to be socially acceptable. Hope (2016) examined relations among civic engagement, political efficacy, and social responsibility by young people. His finding pointed out that political efficacy is related to four domains of civic engagement: helping, community action, formal political action, and activism. The unresolved young people issues result in unemployment and disengagement with the social transformation. In EU, the most important social challenges are given by EU reports (European Commision, 2014, 2016a; European Commission, 2012, 2015). The reports on activities, focused in teaching young people in becoming active citizens and act socially responsible, were provided by multiple authors, among others (Mendiwelso-Bendek *et al.*, 2013; Rubio *et al.*, 2008). There is a gap in the literature on the potential of employing games to learn how to behave socially responsible.

Informal Systemic Behaviour

The expanded understanding of social responsibility is in line with the basic concepts of systems thinking as a way toward holism (Mulej & Potocan, 2007)SLO-2000 Maribor, Slovenia.Mulej, M (reprint author, explaining what the system is, what it does, and that it guarantees its place in the environment with its activities (Andrew, 1993; Ashby, 1964). This correlates with the structure of the recursive system, from which it is evident that the higher-level goals should be aligned with the goals at the lower levels in order for the system to survive (Espejo *et al.*, 1999). They lead to participatory approaches in co-designing products, services, and the internal processes by all stakeholders (Liegl *et al.*, 2016).

Even though we could argue that the limited perception of the organisational goals only reflect the limited ethics perception and social responsibility of the people involved with the organisation, the question: "How to raise the individual ethics perception and social responsibility of the individuals, to present an articulated force that can change the organisational behaviour?" should be answered.

System dynamics (Rios, 1995) provides a tool set, where feedback loops can explain the most important parameters of the complex behaviour patterns. By providing more activities, these can be positively affected (Nechansky, 2016). Some authors report on using system dynamics to support socially responsible behaviour (Bach *et al.*, 2014) and in the gaming environment (Gomez-Gardenes *et al.*, 2011), but we could not elaborate a report on applying systems dynamic to connect games and socially responsible behaviour.

Young People and Gaming Analysis

In this part, two sides of the youth gaming are analysed: young people in EU state-of-the art analysis and the gaming analysis. In the first part, the reports on demography, education, employment, current, and future work-related competences, open issues, health, engagement, culture, and ICT skills are analysed. Analysis of the gaming social implications is focused in discovering evidences of documented opportunities and threats of the video games for young people. Additionally, reports on methods or concepts of video game design that could be used in the learning process are involved.

Young People Current State

European young people (aged 19– 25) reflect the potentials delivered by society in their capabilities, activities, and issues. Their inclusion in society depends on society's capacity to present them with viable solutions using the channels and communication models they consider native.

Multiple recent studies address young people's current state of affairs in EU (European Commision, 2016a). To present a requisitely holistic picture, we create insights from multiple perspectives, to discover relevant topics in EU related to young people and their social responsibility.

Demography. On the January 1, 2014, almost 90 million young people aged between 15 and 29 years lived in the European Union. This presents around 18 percent of the total population but has suffered a 7 percent decrease over the earlier three years (European Commision, 2016b; Eurostat, 2014).

The steady decrease in the youth population living in the EU over the last decades has been subdued by the growth of immigration from non-EU countries. This phenomenon has occurred during the last two decades and has continued over most recent years (European Commision, 2016b; Eurostat, 2014).

Education. European children and young people, on average, spend over 17 years in formal education, and this period has been increasing in recent years. Young people are formally higher qualified than the older generations. In 2013 in the EU-28, 81.1 percent of young people aged 20–24 had completed at least the upper secondary education (European Commision, 2016b; Eurostat, 2014).

Despite this positive trend in educational attainment, a significant share of young Europeans still face difficulties in the education system and feel compelled to leave prematurely without having gained relevant qualifications or a school certificate.

Among communication skills, the most important, enabling mobility, is using foreign languages. The European member states show low proportions of young people learning at least two foreign languages, although in smaller EU member states (i.e., Czech Republic, Luxembourg, Romania, Slovenia, Slovakia, Finland, and Lichtenstein) the proportion is much higher, nearly 100 percent (EU, 2014).

Learning mobility (EU, 2014) is generally seen as a valid contribution to the development of a wide range of skills and competencies of young people. Most importantly, transversal skills such as language competencies, communication, problem-solving, and intercultural understanding are found to be improved by study periods abroad (EU, 2014). In the academic year 2012/13, 212,522 students participated in the Erasmus+ exchange programme (EU, 2014).

Employment. In 2014, over 8.5 million young people aged 15–29 were unemployed (European Commision, 2016b; Eurostat, 2014). The EU-28 unemployment rate among young people in 2014 was 26.3 percent for those aged 15–19, 20.6 percent for those aged 20–24, and 13.6 percent for the oldest age group (25–29). The high level of unemployment recorded for the 25–29 age group shows an increasing difficulty in entering the labour market for young people, who have completed their education.

As for the 25–29 age group, the unemployment rate exceeds 30 percent in only three countries, Greece (40.8 percent), Spain (30.3 percent), and the former Yugoslav Republic of Macedonia (39.3 percent). For 13 countries, this unemployment rate is below 10 percent (European Commision, 2016b; Eurostat, 2014). Especially worrying is the rise of the number of the unemployable young people (aged 25–29) who have completed tertiary education between 2011 and 2014 (+12.9 percent) (European Commision, 2016b).

Young people are likely to be employed on a temporary contract or on a part-time basis. In 2014, nearly one in three 15- to 24-year-olds in employment worked part-time. Part-time work of young people may imply apprenticeship either in the context of a vocational education programme or directly with an employer, combining work and studies, and to accommodate family needs. Most trainees (71 percent) were not offered an employment contract when they finished their most recent traineeship (one of the temporary contract forms) (European Commision, 2016b; Eurostat, 2014).

Work-related competencies and skills. In Table 1, the relation between skills acquired in youth work and the requirements of the labour market are presented. The skills

and capabilities acquired in youth work are often more appreciated than formal education qualifications.

The currently recognised skills are projected for the future, where the drivers, e.g., information overflow, visualised through multimedia, smart devices, new forms of organisations, and worldwide connectivity environment, promote and require development of new skills such as social intelligence, adaptive thinking, cross-cultural competencies, multimedia literacy, virtual collaboration, and others (Scott & Bansal, 2014).

The demographic, educational, and employment data on the current state of affairs implies that fully educated young people will better understand the relevance of social responsibility for their successful integration in the society.

Active citizenship-related competencies and skills. Active citizenship learning plays a significant role in engaging youth via the experiencing processes. Freire's approach to community education and experiential learning is a cornerstone in active citizenship learning international programs. Its approach is based on constant dialogical and dialectic reflection, along with observation and understanding of the power structures. It enables individuals and collectives to develop an understanding of their realities and contexts to develop strategies for social transformations (Freire, 1972). It is offering opportunities within the learning in processes that influence decision-making (Mendiwelso-Bendek, 2015).

According to the multiple aspects of active citizenship learning, personal identity, community relations, civil and civic participation, we can find diverse learning processes and citizenship outcomes (Mendiwelso-Bendek *et al.*, 2013).

In Table 2, the connections between citizen learning and the citizenship outcomes are presented. These skills and capabilities are essential for active involvement in EU environment.

Engagement. Volunteering activities are addressed in the core contents of social responsibility in ISO 26000 (ISO, 2010). Young people interests in politics amounted to 33 percent % (EuropeanSocialSurvey, 2012). They reported to be active in nongovernmental organisations and/or local organisations, which address local issues rather than in political parties (European Commision, 2015). Because young people use the Internet—especially mobile media as a communication media—well-prepared channels can support their active engagement, either to share their views or to influence their activities in the environment. Mobile and social media can reach and help engage even otherwise hard-to-reach young people.

Voluntary activities were reported by 25 percent of young people (FlashEurobarometer, 2014), especially if these are organised by families, schools, religious communities, or sporting or other local organisations, which provide them formal and informal recognition for their engagement (European Commision, 2015). The key drivers for young people to engage in a volunteer activity include understanding of the activity goals and one's role in their accomplishment, a group support to their activity, an invitation to join, the expectancy of a good organisation (also covering the expenses), and a recognition by people with reputation.

Table 1. Correspondence between Skills in Youth Work and the Labour Market

Overarching Skill Categories	Outcomes Identified in the Research Literature	Skills Identified by Employers
Personal (confidence and self-esteem)	• Increased confidence and self-esteem • Self-awareness (personal and social) • Readiness to take on new and more diverse experiences	• Adaptability and flexibility
Interpersonal (social and communication skills, teamwork, assertiveness)	• Improved teamwork • Increased communication • Improved pro-social behaviour • More open to people from diverse backgrounds • Positive peer relationships • Enhanced leadership	• Leadership • People management and teamwork • Influencing • Communication
Self-management skills (e.g., reliability)	• Motivation, commitment, resilience • Increased life skills	• Innovation and entrepreneurship
Competencies in initiative and delivery (planning, problem-solving, prioritising)	• Critical thinking skills • Planning, decision-making • Developed and focused career aspirations	• Change management • Project management • Decision-making • Time management

(Bamber & Group, 2012)

Table 2. Aspects of Active Citizenship

Aspects of Active Citizenship	Citizen Learning I feel able to … I know more about… I know how to …	Citizenship Outcomes Local, national, European and global dimensions
Personal	• Value my own skills, knowledge and confidence • Know where to go to get what I need • Communication skills, negotiation skills, lobbying skills • Feel able to have a voice	• People identity and articulate their issues and problems • People take leadership roles in their community • People have the power and will to make choices in their life • People voice their concerns
Community relations	• Recognise that social exclusion is the responsibility of everybody • Understand how their behaviour affects others • Know the basis of inequality and how power operates • Understand more about people, different from themselves • Feel more confident in asking	• Improved relations between diverse groups of people • Community projects are inclusive of people with different backgrounds • Increased points of contact between different communities • Increased networking between communities
Civil participation	• Understand how groups/networks work • Know how to encourage fair and democratic decision-making • Understand how to encourage support and develop volunteers • Know the importance of networking and delivering change • Chairing, meeting and facilitation skills • Negotiation and campaigning	• More civil society groups active in community-led service provision • Well-run democratic community groups • Increased informal community organising • Increased networking between community and voluntary groups • Effective representation in partnership and involvement with public bodies • Increased volunteering opportunities
Civic engagement	• Knowing how the external world operates • Understand my current democratic position and the opportunities for change • Understand the rules of engagement • Aware of the range of opportunities for civic participation • Understand role of the elected representatives and how to lobby them/ work with them • Know how public meetings work • Feel able to contribute and ask questions at a public forum • Recognise how to influence policy and practice at a European, national, regional or local level	• More people want to and feel able to have a responsible role in formal democratic structures • More people play an active role on a community/ neighbourhood level • Citizens work with public bodies to define and achieve common goals • Improved relations between citizens and statutory agencies • More people take part in dialogue with decision-makers • People lobby for change in the way forums and other structures operate • People campaign and petition

(Mendiwelso-Bendek *et al.*, 2013)

Culture. The engagement in traditional cultural activities, such as visiting museums, theatre, or movies is declining (FlashEurobarometer, 2014). Two reasons are given, i.e., the lack of financial resources and the lack of interest. The lack of interest could be better explained by a shift of interest where media devices have largely replaced on-site participation with content shifting from the traditional themes to instant entertainment.

ICT skills. The decrease in using desktop computers is compensated by mobile technologies, providing access to advanced Internet and cloud services. Mobile technologies are adapted by virtually the entire young population and are redefining the concepts of communication, information processing, education, and entertainment for all—not only for the young population. The accessibility of mobile devices and services enables connections to hard-to-reach individuals and provides a new means of equality.

Gaming

Video games are constantly changing, according to user feedbacks, trying to find new niches. Complexity of the gaming domain is growing exponentially in volume, the channels, and the games themselves. It is beyond the capacity of this paper to address the complexity of the gaming environment, though a few important perspectives are elaborated upon.

Addictive behaviour. According to World Health organisation, gaming disorder has been added in the classification of diseases (WHO, 2018). Gaming disorder is manifested by, first, impaired control over gaming (e.g., onset, frequency, intensity, duration, termination, context); second, increasing priority is given to gaming to the extent that gaming takes precedence over other life interests and daily activities; third, continuation or escalation of gaming despite the occurrence of negative consequences. The behaviour pattern

is sufficiently severe to result in significant impairment in personal, family, social, educational, occupational, or other important areas of functioning. The pattern of gaming behaviour may be continuous or episodic and recurrent (WHO, 2018).

In several reports, addictive games are reviewed. Green (2018) lists the "10 most addictive PC games that will destroy your social life." Among these, 40 percent of the games are first-person shooter games, sometimes equipped with strategy and team coordination elements; 30 percent are in the category of multiplayer online battle arena; and 10 percent are massively multiplayer games. These games are focused in using violence to overcome a computer simulated or real-life enemy. Interestingly, 20 percent represent simulation games, where you either focus on managing a system to dominate the environment or, as in the case of "The Sims," elaborating on your virtual environment (ibid). In the mobile environment, puzzle and arcade games are reported to be the most addictive (Google, 2018). Obviously, the main goal of games providers is to attract games to produce addiction; thereby, active feedback loops are established with the single goal: to support addictive behaviour. To mitigate the addiction, it is imperative to redesign feedback loop mechanisms, preventing addictive behaviour and directing the players to the real-world experiences. The redesigned feedback mechanisms should actively involve games providers, participants with supporting communities and regulators.

Skills and learning. The focus in educational games is directed to young children, building up their basic skills language, coordination, mathematical, and digital skills (Education.com, 2018). For students and adults, fewer games are available, focusing on building a limited number of capabilities.

By comparing the educative and commercial games, user-experienced differences can be identified. The vast majority of educational games do not systematically collect user feedback; further, they are not continually developed after publishing, resulting in the decline in user experience. A player gets the impression of not really being taken care of, although exceptions to the rule exist. Duolingo (2018), for instance, provides a personalised approach to support learning of foreign languages and constantly seeks feedback by the learners.

Social behaviour. Players learn by through active interaction with a game. Games providing social skills can be divided into two categories: simulations and multiplayer. Simulations provide an environment, resembling situations upon which the gamer should react. The variety of situations is limited by the game and player capacities. Simulation games usually focus in operating a device (plane, car) or

in developing and managing an organisation (a world, zoo, etc.). They mimic some properties related to the real world, but the properties are synthesised and therefore often lack the complexity to resemble social relations (CulturedVultures, 2018).

Multiplayer games provide challenges for players to interact with other players to overcome the challenges. The vast majority of these games is focused on using violence to overcome obstacles, with occasional contact with other players (OverpoweredMediaGroup, 2018). The complexity of the situations is still largely managed by the game scene play and not by the interactions with other players. To compensate for this, a large part of the communication is conducted via automated in-game characters. We can safely conclude that the game complexity is limited to the game screenplay, often limited to domination of the environment either by force or by management.

The 36 gaming principles, introduced by Gee (2003), are not yet used by the profit-driven gaming industry. Game complexity can be adequate to learn basic skills, and, with repetitive behaviour, these skills can be learned thoroughly. Respectfully, the games do lack the complexity required to learn complex sociological skills. Even by involving multiple players in the game, the interactions are limited; therefore, the social relations are only simulated superficially. To successfully learn complex skills, the games should significantly increase the situational variety or invoke real world situations, players, and relations among players (real world gamification).

Comparison

In this section, young-people-related issues are extrapolated and compared with the list of video games' social features. The lists of properties have distinct origins, while the complexity of relations among them exceed the table presentation capacity. The lists are presented side by side to present the reader to individually compare young people challenges with the video-games-related social figures.

The list of young-people-related topics ranges from the capacity to act as individuals, efficiently using the resources, provided by the digital media, through connecting in heterogenic teams—real or virtual—to actively reshape their environment. We can find that young people are facing constraints they are incapable of coping with.

Video games could be an efficient tool to develop individual skills, practise cooperation, and explain relations between the paradigms of the real world. By using simulations, the understanding of the processes and background information

Table 3. Young People Related Challenges and Games Social Features Lists

| Young people related challenges	Games related social features	Current emphasis
Decrease in native young population	Skills development	Yes
Immigration from non-EU countries	Hypothesis probing and multiple routes examinations	Yes
Highly qualified young people	Self-reported problem-solving skills	No
Temporary contracts	Ubiquitous cooperative behaviour	No
Foreign languages	Building social ties	No
Learning mobility	Cooperation in virtual teams	No
Local and regional unemployment	High intrinsic motivations	Yes
Premature absence from the education system	Reduced extrinsic motivations and impedes from standard learning	Yes
Inappropriate jobs	Building up combinations of competencies	No
Adaptability and flexibility	Disinterest in gaining high grades	Yes
People management and teamwork	Incremental, repetitive, committed and ongoing learning, active, critical learning	Yes
Innovation and entrepreneurship	Integration in the local environment	No
Change and project management	Video game design principles	Yes
Cross-cultural competencies	Risk decisions, Limited resources management	Yes
Mobile computers science	Meta-level, critical and creative thinking	No
Multimedia literacy	Self-discovery and role identification	No
Virtual collaboration	Fast adaptation	Yes
Policies engagement	Text integration and material intelligence	Yes
Voluntary activities	Knowledge transfer and intuitive knowledge	No
Recognition of achievement	Cultural models, design appreciation	No
Culture affinity	Affinity group cooperation	No
Civil participation	Teacher's role	No
Substance abuse	Video game addiction	Yes

and the capacity to act in certain situations can be quickly developed up to the point, where their knowledge can be used in the real world. Gamers could be trained to cooperate in teams, thus taking the lead or supportive role in virtual teams and support communication. On the other hand, the high acceptance rate of the virtual environment can lead to addiction and to ignorance of the challenges, as posted in the real world. Inappropriate world representation in the gaming environment can lead to misunderstandings of the real world environment, including the human values of social responsibility.

Although the lists in Table 3 do provide young people challenges and video games features, they do not provide relations amongst those; further, they are unstructured and do not include the agents capable of modifying the system. To offer insight into these, a system dynamic diagram is presented in Figure 1.

In Figure 1, an overview of the relations among socially responsible behaviour, video game providers, and young people is presented. Because the complexity of the system is high, competencies, social environment, and threats are used as integration points. The diagram presents a high-level overview, where multiple important entities and relations are disregarded to allow the reader to identify and assess the highlighted relations.

Digital environment posts multiple requirements to young people, ranging from being highly qualified for certain tasks, through multimedia literacy to virtual collaboration. Young people, on the other hand, seek instant recognition of their achievements. The social responsibility top parameters of accountability and transparency can have a positive impact on the young people's competencies development. Video games potentials are highly concentrated in supporting the building of young people's low-level competencies. The

Figure 1. Relations among Competencies, Social Environment, and Threats
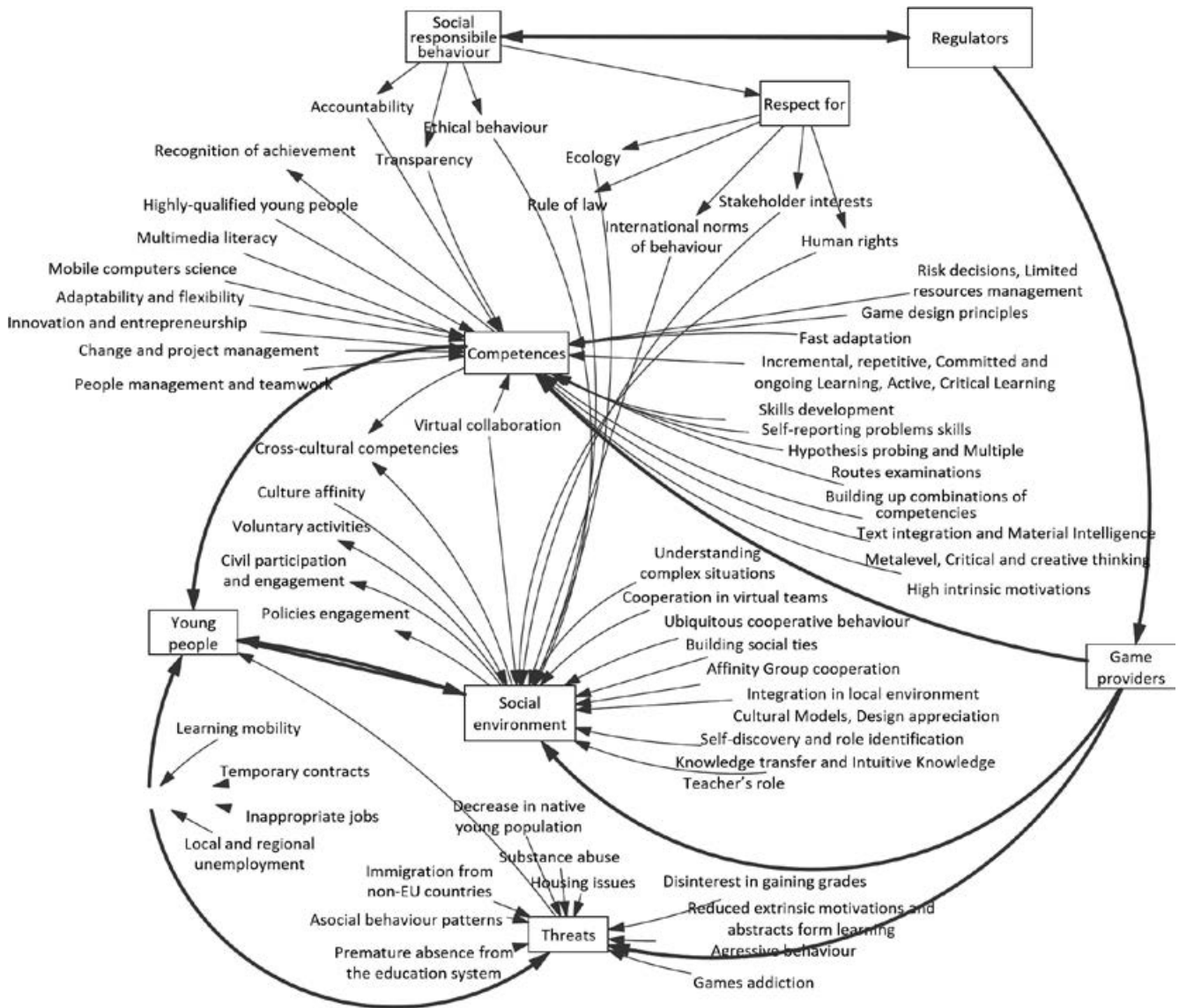
offered training includes the form of incremental, repetitive, committed, and ongoing learning, active, critical learning, taking risk decisions with limited resources, self-analysis, meta-level models and scenarios construction, and high intrinsic motivation.

Social environment emphasises cooperation over competition. To match these needs, young people combine a culture of affinity with cross-cultural competencies and virtual collaboration. They are expected to reshape society with voluntary activities, civil participation, and engagement with existing and future policies. The social responsibility parameters of ethical behaviour, respect for international norms of behaviour, ecology, rule of law, stakeholder interests, and human rights are in line with the desired concepts and support young people's active roles in the social environment. Video games provide supportive tools and techniques, ranging from understanding complex situations, cooperation

in virtual teams, building social ties, through self-discovery and role identification to taking the teacher's role in the knowledge transfer. However, values are less addressed than skills.

We can find the least coverage in the threats faced by young people. These range from housing and work-related issues, through a decrease in native young populations, partly compensated with immigrations, all the way to substances abuse, asocial behaviour patterns, and premature absence from the education system. Socially responsible behaviour is not directly addressed, while the gaming industry provides additional threats, mostly in supporting the development of undesired behavioural patterns, prohibiting successful integration of young people in the society.

The effects of video games on young people and the implication on their social responsibility in the processes are

supervised by regulators and driven by direct short-time feedback loops. Based on the assessment of the complexity of the underlying processes, we find the variety of the regulators inadequate to successfully direct the games industry to provide adequate support for the young people. A long-term feedback loop from the young people and their social environment, guided by the social responsibility concepts should be established, to drive the further development of the games industry in the right direction.

We find that some young-people-related issues, especially those connected with the undesired behavioural patterns, could be addressed using video games. To help people in learning how to deal with the real-life and develop socially responsible behaviour, the complexity and the variety of the games should increase significantly, i.e., a direct link with real-world situations might provide added value.

Summary

In the provided report, two independent analyses are executed and put in inter-relation: the young-people related challenges and the video games as social features. Because both analyses offer interesting results and provide an overview of the research fields, the lists are set one next to another.

A model, highlighting relations between the main players in the video games domain is proposed and commented. Young people competencies, social environment, and threats are used as integration points to reduce the complexity of the proposed model and to enable a visual elaboration by the reader. The young people competencies and social environment topics are aligned with the social responsibility parameters and video games potentials while the real life threats are not resolved. Quite opposite: the threats posted by the video games have the potential to multiply the negative effects of undesired behaviour.

In the elaborated model of the current state, the feedback loop, focused in supporting the young people challenges is supported mainly by regulators. We find this inadequate and propose to develop feedback loops, originating from the young people and their social environment, using social responsibility tool set as the articulation tool to give demands to the game providers.

The implications of designing games that support social responsible behaviour are substantial. Most importantly, players would experience the near real life environment, where they could test their activities and the environmental feedback. Game developers would get in touch with the community capable and be willing to give feedback and potentially co-develop the gaming environments. The regulators could support the positive feedback loops, focused in learning and practising active citizen skills. Researchers would benefit by the feedback loops embedded in a game's structure that allows them more detailed insight into the individual and group behaviour concepts.

In this report, an overview model, designed based on the literature review, is proposed. To fully understand the video games' effects on young people and to propose a set of feedback mechanisms, which could help to align the gaming industry maintain social responsible behaviour, more research efforts should be involved.

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Igre za predstavitev družbenih izzivov in odgovornosti mladim

Izvleček

Igre bi lahko pomagale razvijati sposobnosti mladih v smeri družbene odgovornosti (DO). Obenem lahko višajo tveganje razvoja nezaželenih vzorcev obnašanja. Uspešna integracija igranja v življenje mladih zahteva sistemski pristop, ki ga do sedaj v literaturi še nismo zasledili. Namen tega prispevka je raziskati to področje. V prispevku so uporabljene in povezane tri raziskovalne metode. Za pojasnitev trenutnega stanja razvoja raziskav na področju učinkov iger na družabno obnašanje smo raziskali trenutno relevantno literaturo. Da bi ugotovili, s katerimi izzivi se mladi soočajo in kakšno je stanje razvoja v industriji iger, smo analizirali poročila, ki ocenjujejo ti tematiki. V sintezi smo primerjave postavili v kontekst načel družbene odgovornosti in s sistemsko dinamiko orisali glavne povezave. Predlagamo spremembo konceptov in načina razvoja iger, usmerjenih v izobraževanje DO in redefinicijo razmerij med mladimi, industrijo iger, družbenim okoljem, ter ukrepe, ki bi lahko vodili k njim. Trenutno je povratna zanka razvoja iger usmerjena h kratkoročnim zahtevam do iger. Predlagamo povratne znake, ki povezujejo mlade in njihovo družbeno okolje, da bi ustvarili z DO povezane zahteve do industrije iger.

Z DO usklajena uporabniška izkušnja bo pomagala pri razvoju iger, ki so družbeno konstruktivne in usmerjene k razvoju želenih veščin in kompetenc v komunikaciji, in pri skupnem reševanju problemov skozi igro. Predlagamo zgolj pregledni model, oblikovan na osnovi trenutnega stanja v literaturi in splošnem pregledu. Da bi lahko podrobneje predlagali razvoj posameznih iger, bi potrebovali natančnejše mehanizme analize stanja.

Ključne besede: mladi, družbeni izzivi, igre, učenje, razvoj kompetenc, družbena odgovornost

Social Entrepreneurship and Corporate Social Responsibility in the Context of a Moral Economy: Dilemma for Developing Countries (Case of Georgia)

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Abstract

This research discusses the role of social entrepreneurship as an important feature of the moral economy, i.e., a socially responsible business practice. Developing countries, e.g., Georgia, a post-Soviet country, differ from those in the West in this aspect. The author aims to identify peculiarities of social entrepreneurship and corporate social responsibility of Georgian businesses. Desk research provides conceptual analysis of the existing quantitative and qualitative studies, based on prominent scientists' works in economics and entrepreneurship. A "moral economy" understands business activities as "social services." Social responsibility is a business's moral framework, suggesting a company's obligation to generate social benefit. Social entrepreneurship combines the best practices from the nonprofit and for-profit activities to tackle social needs poorly addressed by businesses and governments. Social entrepreneurship is a relatively new phenomenon in post-Soviet countries, where nongovernmental organizations help in solving many social problems, but their efforts are typically insufficient. Entrepreneurs must find a balance between a company's success, employees' needs, and environmental and social stability. These three priorities form the foundations of corporate social responsibility. Economic history provides many examples of moral standards driving the stability of a socio-economic system and profitability of companies with macroeconomic and microeconomic positive impacts. Companies operating in Georgia spend their funds on social projects and charity; moreover, such socially oriented activities are sometimes chaotic. Companies need to implement social responsibility projects as part of their business plans. Strengthening corporate social responsibility could thus support development of social entrepreneurship.

Keywords: entrepreneurship, social entrepreneurship, corporate social responsibility, post-Soviet Georgia, developing country

Introduction

This often reported research discusses the role of social entrepreneurship as an important feature of a moral economy. In the doctrine of moral economy, one can understand the business activity as "social service." Social responsibility of

business organizations plays an important role in the stable and progressive development of the company itself. Recognition of social responsibility, which is a moral framework for business organizations, suggests that a company has an obligation to act for the benefit of society in order to support sustainable development of the whole economy. Social entrepreneurship combines the best practices from nonprofit and for-profit activities to tackle social needs not properly addressed by businesses and governments. Social entrepreneurship belongs to the best development strategies. Promotion of social innovation and social entrepreneurship is among the top policy priorities. To achieve this goal, society should invest in education of future social entrepreneurs.

Social Entrepreneurship and CSR in Georgia as a Developing Post-Soviet Country

The social entrepreneurship created a dynamic rapidly growing market in European Union countries. Social entrepreneurship is a relatively new phenomenon in post-Soviet countries where for decades only the government provided social services. After the collapse of the Soviet Union, the lack of governmental support led to the emergence of the third sector, i.e., nongovernmental organizations, in these countries, which help to solve many social problems; however, due to the limited organizational capacity and low organizational maturity, their efforts have proven insufficient (Balarjishvili & Natsvlishvili, 2017).

Georgia suffered from the disintegration of the Soviet Union's economy and stagnated before 2005. During this period, Georgia went through a radical institutional reconstruction. The reforms after the Rose Revolution in 2003 contributed to Georgia's social, political, and economic development. Corruption was reduced to average European levels; quality of public services also was improved. These reforms made Georgia one of the leaders among developing nations (Jandieri, 2014).

Imperfections of civil society are visible in social, political, and economic characteristics:
- Submissive role of society in triad "state–business–civil society";
- Negligible amount of relational goods supply caused by concentration of civil society organizations in the capital city;
- Their closed, elite-corporate character;
- Low level of investment in social capital by citizens;
- Society dominated by participants and not by servants;
- Nonexistence of middle class, which represents a lifestyle rather than a social group;
- Free-rider problem;

- Elite character of institutional transformation and passive role of society, which caused transformation of institutions into club goods (Balarjishvili, 2017).

On the one hand, the recent situation of civil society development in Georgia is not satisfactory, and it is visible in economic indicators with social and political implications. Government considers civil society as a competitor, and the agreed-upon division of work between the government and civil society does not exist. On the other hand, entrepreneurs in Georgia should find balance between efficiency and equity, between making a rational choice in business activities and serving social interests. Entrepreneurs should be committed to finding a balance among a company's success, employees' needs, and environmental and social stability (Haupt, 2015).

These three priorities form the foundations of corporate social responsibility (CSR) (ISO 26000 by ISO, 2010). CSR faces a challenge in addressing the conflict between economic (short-term and limited to owners' profit) values and ethical values. CSR is a certain corporate policy that has to meet two basic requirements: efficient business performance that brings financial returns and moral principles such as honesty, fairness, and responsibility. Researchers highlight the fact that economic history and empirical facts offer many examples that support the empirical evidence that moral standards drive the stability of a socio-economic system and profitability of a company (Haupt, 2015, p. 189–190). Moral standards have positive macro- and microeconomic impacts. As several studies show, companies operating in Georgia spend significant funds on social projects and charity, although such socially oriented activities should not be chaotic. Companies should develop a system of social responsibility projects as part of their business plans. Some researchers (Chiladze, 2015) also suggest the use of a social responsibility index in order to describe the quality of social responsibility.

There are some discussions in regard to how CSR should be defined. Dahlsrud (2008) developed five dimensions of CSR through a content analysis of existing CSR definitions. The results of his research show that the existing definitions are, to a large degree, congruent. A conclusion was reached that the confusion is not so much about CSR definition, as about how CSR is socially constructed in a specific context (Dahlsrud, 2008).

A strong link exists between the most important phenomena of social and economic developments. Among these phenomena is the growing awareness of the need to develop a proper understanding of social responsibility as a major issue in regard to overcoming the economic crisis. Many social and international actors highlight this need (Mulej &

Dyck, 2014). From the above-mentioned discussion, it can be concluded that strengthening CSR could create the first steps toward development of social entrepreneurship.

A Company's Corporate Social Responsibility in the Georgian Context

In general, entrepreneurs might be inspired to be committed to find "a balance between the company's success, the workers' needs, and the environmental and social stability, i.e., a triangle of priorities, which we would call today "corporate social responsibility." In other words, CSR faces the challenge of overcoming the frequent conflict between business performance and moral principles. CSR is neither a social romanticism nor a nostalgic feeling but a strict corporate policy that has to meet these two basic issues: "business performance" and "moral principles" (Haupt, 2015).

The economic and business history provides empirical evidence (Haupt, 2015) of moral standards, thus driving the stability of a socio-economic system and the profitability of a company at the same time, having a positive impact on successful results at the macroeconomic as well as at microeconomic levels. Many investigations on ethics-based economic performance have taken place. Max Weber's theory (1905) has a great impact even nowadays. Recent studies also emphasize the economic impact of the Christian faith on societies such as:

- savings from health-related issues (less illness-based absenteeism at work);
- fiscal benefits (less shadow economy and less tax frauds); and
- he development of education and literacy, e.g., the commitment of Christian missions to implement alphabetization (Haupt, 2015).

Various Georgian scientists conducted different studies in regard to the CSR of Georgian business units. Georgian researchers (Chokheli & Narmania, 2015) aimed to evaluate the role of corporate social responsibility in companies operating in Georgia and to formulate activities for growth. In the framework of a qualitative study conducted in 2015, large business companies creating the economic background in Georgia were selected for the study purposes. In 2014, from a total of 118,108 business companies, 40,070 were large- or medium-size. From this number, only 70 large business companies with the highest annual profits were selected for the study, and only 38 of them responded and provided information (Chokheli, 2015).

According to the above-mentioned study, 89% of the responding companies consider themselves as having corporate social responsibility, while 8% do not, and 2% are not sure. Regarding the types of social responsibility activities conducted by the companies, the results are as follows:

- Protection of the rights of people and company's employees: 98% of respondents;
- Environmental protection: 56% of respondents;
- Caring about the societal/community needs: 89% of respondents;
- Consumers' rights protection and production responsibility: 87% of respondents;
- Relations with the suppliers and consumers: 67% of respondents;
- Corruption prevention: 80% of respondents;
- Transparency and reporting: 4%;
- All: 4%.

In terms of how much CSR was a part of the company's strategy, only 25% of the companies include CSR in their development strategy, and, accordingly, 75% of the companies have spontaneous CSR actions. The factors supporting CSR development in Georgia are classified as follows:

- Increasing social responsibility awareness: 75%;
- Introduction of the international standards of social reporting: 67%;
- Introduction of social indices: 35%;
- Stimulation: 95%;
- Including certain allowances by the government in respect of taxes, licenses, export, etc.: 97%;
- 95% of the companies think in terms of various methods, such as awards, societal awareness, and advertisement (Chokheli, 2015).

The fact that corporate social responsibility has a positive impact on business competitiveness is well known. CSR of Georgian companies does not reach the level of that in the developed world. A study conducted by Next Consulting, a consultancy research centre, reveals that corporate social responsibility is the highest in European companies, and, respectively, three-quarters of companies with CSR are European and one-fourth of companies with CSR are American (Chokheli & Narmania, 2015).

European Commission defines CSR as a "concept where the companies voluntarily consider social and environmental issues in their business operations and in their relations with stakeholders" (Corporate Social Responsibility in Georgia, 2013). Generally, in developing countries, including Georgia, social responsibility is still associated (in some companies) with charity. This fact has been confirmed (Chokheli & Narmania, 2015) by Georgian researchers using the survey method in the pharmaceutical sector. Results show that the majority of customers prefer the products of a company with the CSR. This, in turn, improves the image of a company and increases customer loyalty. In competition, reputation

is a company's most valuable asset (Chokheli, Narmania 2015).

In developed Western countries, various schemes of relief and incentives for companies with CSR are used for increasing the level of CSR, e.g., introducing social partnership practice, tax reliefs, priority in government procurement, etc. Many countries practice introduction of certain criteria for assessment of a company's social responsibility. In some Western countries (e.g., The Netherlands, United Kingdom), ethical and social indices have been introduced, which reflect social responsibility in terms of responsibility toward employees, protection of human rights, ensuring transparency, reporting on sustainable development, etc. The introduction of such indices will boost the interest of Georgian companies in raising their social responsibility (Chokheli & Narmania, 2015).

Companies in Georgia spend certain funds on social projects, but such socially oriented activities are chaotic. They are neither systemized nor related to the company's priorities and strategies. Companies lack a system of social responsibility projects, as part of their business plan. Some researchers also suggest the use of a social responsibility index in order to describe the quality of social responsibility. This index can be calculated as correlation of enterprise net profit and the volume of spending on social activities (Chiladze, 2015).

Corporate Social Responsibility and Entrepreneurial Attitudes in Georgia

Activities of CSR take place in societies where the individuals have certain entrepreneurial attitudes. According to the data from the "Global Entrepreneurship Monitor - 2014 Georgia Report," Georgians consider successful entrepreneurs to have a high status in society (75.9% of adult population), and 66% of adults think that entrepreneurship is a good career choice. Only 7.2% of Georgians are planning to open or are already running a new venture. Motivation to engage in entrepreneurial activities shows up almost equally between necessity-driven (48.6%) and opportunity-driven (50.6%) entrepreneurship.

Compared with efficiency-driven European Union (EU) and non-EU economies, early-stage entrepreneurship activities in Georgia are mainly necessity-driven rather than opportunity-driven. The motivational index, i.e., a ratio between improvement-driven opportunity and necessity-driven entrepreneurs, indicates the entrepreneurial capacity within a country. A high motivational index indicates a high share of improvement-driven entrepreneurs, which ensures more long-term

and ambitious expectations from the creation of a venture. The lowest motivation index is visible in non-EU countries, including Georgia. Moreover, Georgia has one of the lowest motivational indexes (0.6) among efficiency-driven European countries. Average score for European Union countries is 2.1 and average score for non-European Union countries is 1.4. The motivation index in the benchmark country (i.e., Estonia) is 2.7 (Lezhava, Brekashvili, & Melua, 2014).

Over the last years, based on successful reforms in Georgia, negative moods toward entrepreneurship are weak. Due to high unemployment, the desire of becoming self-employed is strong. As surveys show, positive attitudes of the respondents in Tbilisi toward entrepreneurship indicate their self-confidence, feelings of social and political stability, and expectations of success of market-oriented economic reforms. Subject of special interest is data about the current entrepreneurial activity of the surveyed people: 81.8% of respondents did not run their own businesses; 10.0% were self-employed; 6.1% were running small- or medium-size enterprises; and 1.4% were running large business. There are no data derived from 0.6% of respondents. It is noteworthy to say that, in the European Union, only 12% of respondents were engaged in entrepreneurial activity. In Japan, the same index was 15%, in the USA 21%, and 27% in China (Natsvlishvili, 2012).

Entrepreneurship is considered as a certain form of employability. Entrepreneurship is also a driving force of economic growth and a way to address poverty in developing countries. Despite the fact that most policymakers and academics agree that entrepreneurship is a catalyst for economic growth, the reality in post-soviet countries (and not only those) shows that not all groups in their societies have equal access to employability and entrepreneurial opportunities. Analysis of results, derived from several researches, shows that, in Georgia, the negative attitude toward entrepreneurship is weak. On the basis of high unemployment, the desire to be self-employed is quite high. Entrepreneurship is seen as a special form of employability. In Georgia, traditionally the share of self-employment among employed people is prevalent. Early-stage entrepreneurship activities in Georgia are mainly necessity-driven rather than opportunity-driven (Natsvlishvili, 2016). Not all groups in society have equal access to employability and entrepreneurial opportunities. The majority in Georgia formally shares the idea of gender equality. A certain percentage of the population is in favour of traditional distribution of the gender roles. The gender hierarchy is still a top issue in Georgian families, in political as well as in business space. Women's entrepreneurship is affected by existing stereotypes, as entrepreneurship is largely a product of the environment (Natsvlishvili, 2017). Thus, it can be concluded that the above-mentioned situation might be a basis of social entrepreneurship.

Social Entrepreneurship in Global Environment

According to Nicholls (2006), there has been an unprecedented wave of growth in social entrepreneurship globally over the last decades. There have also been several drivers behind the growth of social entrepreneurship. From the supply side, the world witnessed an increase in global per capita wealth, improved social mobility, extended productive lifetime, increase of number of democratic governments, increased power of multinational corporations, better education levels, improved communications. The demand-side drivers of growth of social entrepreneurship include rising crises in environment and health, rising economic inequality, government inefficiencies in public service delivery, retreat of government in the face of free market ideology, a more developed role of nongovernmental organizations (NGO), and resource competition (Nicholls, 2006).

According to Seelos and Mair (2005), social entrepreneurship stimulates ideas for more socially acceptable and sustainable business strategies and organizational forms. It contributes to sustainable development (SD) goals; further, social entrepreneurship may also encourage established corporations to take on greater social responsibility.

According to the scientific literature (Kuratko, 2014), social entrepreneurship (SE) is a form of entrepreneurship that exhibits characteristics of nonprofit, governments, and business, combining private-sector focus on innovation, risk-taking, and large-scale transformation with social problem-solving. The social entrepreneurship process begins with a perceived social opportunity translated into an enterprise concept; resources then become available to execute the enterprises' goals.

Definitions of SE have taken many forms; the one that resonates with many scholars and practitioners comes from researchers Mair and Marti who "view SE as a process of creating value by combining resources in new ways" (Kuratko, 2014). These resource combinations are intended primarily to explore and exploit opportunities to create social value by stimulating social change or meeting social needs. When viewed as a process, SE involves the offering of services and products, but it can also refer to the creation of new organizations. SE can occur equally well in a new organization or in an established organization, where it may be labeled "social intrapreneurship." As with intrapreneurship in the business sector, SE can refer to either new venture creation or entrepreneurial process innovation (Kuratko, 2014).

Important conclusions can result from the research conducted by the global entrepreneurship monitors (GEM) on social entrepreneurship activity. The research included interviews with 167,793 adults in 58 economies in 2015. The average prevalence rate of *broad* (BRD) social entrepreneurial activity (SEA) among nascent entrepreneurs in the start-up (SU) phase (SEA-SU-BRD); that is, individuals who are currently trying to start social entrepreneurial activity across all 58 GEM economies is 3.2% but ranges from 0.3% (South Korea) to 10.1% (Peru).

By comparison, the rate of start-up commercial entrepreneurship averages 7.6% in the world and ranges from 13.7% in Vietnam to a high level of 22.2% in Peru. The average prevalence rate of individuals, who are currently leading a broad operating (OP) social entrepreneurial activity (SEA-OP-BRD) across all 58 GEM economies is 3.7% but ranges from 0.4% in Iran to 14.0% in Senegal (Bosma, Schott, Terjesen, & Kew, 2016).

One of the emerging themes in social entrepreneurship is measuring social impact. About half of social entrepreneurs report placing substantial effort into measuring the social and environmental impact of their social venturing activities. Of the world's social entrepreneurs, an estimated 55% are male and 45% are female. Most of the world's social entrepreneurs use personal funds, and the average rate of one's own investment ranges widely across the world. Social entrepreneurs who start in Southern and Eastern Asia, and in the Middle East and North Africa commit the highest levels (estimated over 60%), while the share of one's own investment is the lowest in sub-Saharan Africa (roughly 30%). More than a third of the world's social entrepreneurial ventures rely on government funding, while family and banks are also important sources of funding for social entrepreneurs. Generally, the social entrepreneurs tend to be quite optimistic in terms of growth aspirations (Bosma, Schott, Terjesen, & Kew, 2016).

Social enterprise is an enterprise that has a social mission and functions based on the principles of business. It employs business approaches to address problems in society. Unlike an ordinary, profit-oriented enterprise, the social enterprise has a dual goal: economic and social. The social one is more important. The economic goal serves as a mean for accomplishing a further important goal, i.e., the social goal. Thus, profit of a social enterprise is not measured only by financial success. More important is its role in the process of solving the problem for which it was created. The difference between the social enterprise and business relies on voting right, which does not depend on capital ownership. In the social enterprise, each member has an equal voting right despite the difference between their shares in capital (The Centre for Strategic Research and Development of Georgia, 2010a).

The scale of social enterprises can vary from village market to big construction companies. Social entrepreneurs are those who take certain risks associated with entrepreneurial activities in favor of society. They aim to solve the most

difficult social problems via innovative approaches. Their characteristics include leadership skills and the ability to coordinate like-minded people around a single purpose. In this process, they use business approaches to obtain income and direct it toward social goals. On the one hand, they have a vision of a socially oriented person and, on the other hand, possess knowledge and skills of business operations. There is ethics, innovations, and courage in their ideas. Social entrepreneurs establish ethical standards in business and set new challenges by innovative business approaches for solving the problems that civil society faces (The Centre for Strategic Research and Development of Georgia, 2010a).

Social enterprise can exist in any allowed organizational–legal form. Nevertheless, it is worth mentioning that some countries have certain legal forms: community interest companies in the United Kingdom and social cooperatives in Poland and Italy (The Centre for Strategic Research and Development of Georgia, 2010a).

Interest of civil society organizations in entrepreneurial activities is contingent on several factors (The Centre for Strategic Research and Development of Georgia, 2010a):

- difficulties in finding necessary funds in the increasingly fierce competition;
- support to organizations in accomplishing their mission and long-term goals;
- earned revenue makes programs more flexible and serves as a source of investment in new programs without limits;
- it helps organizations stay mission-oriented and avoid continuous changes in directions according to donors' demands.

Social enterprise has several functions (The Centre for Strategic Research and Development of Georgia, 2010a). First, it contributes to a country's economic development. Its role is also important in employment growth, especially when a social enterprise employs the so-called fragile groups, who have serious difficulties in finding jobs under different conditions. As mentioned above, its role is also important in the sustainability of a civil society organization. Social enterprise holds the role of medium among three main sectors (government, civil society, and private sectors) and across all three sectors partially. From the civil sector, it borrows aspects of caring for society and community. From the private sector, it takes business approaches and performs functions that are obligations of the government but are not performed due to some reasons.

The concept of "social entrepreneurship" was established in the 1970s by civil society organizations. As mentioned above, a social enterprise can exist in several forms, and

different practices show up in different countries (The Centre for Strategic Research and Development of Georgia, 2010a) (as follows).

Department of Trade and Industry (United Kingdom): "A social enterprise is a business with primarily social objectives whose surpluses are principally reinvested for that purpose in the business or in the community, rather than being driven by the need to maximize profit for shareholders and owners."

NESST (Nonprofit Entrepreneurial and Self-financing Team): "Social entrepreneurship – entrepreneurial and self-financing methods, that are used by noncommercial organizations for generating financial returns that are used to further their social purpose."

Social Enterprise Alliance (USA): "A social enterprise is an organization or initiative that marries the social mission of a nonprofit or government program with the market-driven approach of a business."

In many countries, there is no definition of social enterprise. In such cases, attribution of organizations to social enterprise occurs on a base of criteria coming from the concept. As mentioned, social enterprise is private, independent, and entrepreneurial organization that uses business approaches to solve social and environmental problems effectively. It can belong to and enjoy management by a group of citizens with minimum financial interest on the part of capital investors.

In the recent years, social entrepreneurship has attracted growing interest in many countries, as it combines the strive toward social mission and business-type activities. Today, social entrepreneurship runs differently in different countries; thus, it has different definitions. All these definitions have one common attribute: This is a business approach to social goals. In countries around the world, social entrepreneurship has been developing in different ways. Different practices and experiences are accumulated. The concept "social entrepreneurship" is associated with economic activities made by civil society organizations that aim to get financial returns. Profit they obtain serves for accomplishing positive social changes associated with their mission and goals. Despite the fact that nonprofit organizations in the USA and Europe have conducted such activities for a long time, the concept of social entrepreneurship takes its origins from the 1970s. Its particular dynamic development started in the 1990s (The Centre for Strategic Research and Development of Georgia, 2013).

The third sector in Europe includes various types of organizations such as cooperatives, associations, funds, etc. This group of organizations often has the label "social economy."

For the social enterprise development, the first impulse in Europe came from Italy's cooperative movement. In 1991, the Italian parliament adopted the law that introduced the new special form "social cooperative." From this point on, social entrepreneurship has been developing in Europe at a fast pace. In many countries, it receives important support from government agencies. In the USA, noncommercial organizations have been undertaking such activities from the end of the nineteenth century. The year 1993 is considered as a point of change in social entrepreneurship when Harvard Business School started "social entrepreneurship initiative" (The Centre for Strategic Research and Development of Georgia, 2013).

In the United States, two approaches to the development of social entrepreneurship are prevalent (The Centre for Strategic Research and Development of Georgia, 2013):

1.) Social enterprise acting on the market principles. According to this approach, social enterprises should be primarily focused on implementing strategies that can bring revenues. According to the Social Enterprise Alliance of USA, a social enterprise is "organization or enterprise that achieves social mission with entrepreneurial, income generating strategies." Muhammad Yunus (2006 Nobel Prize laureate) provides a wider approach to the issue. He describes social entrepreneurship as a "business approach driven by mission," which is managed based on the "without profit and dividends" principle and aims to achieve a social goal (The Centre for Strategic Research and Development of Georgia, 2013). The main purpose of companies working with such models is to provide goods and services to very poor groups. This is a new market segment in developing countries. The aim of such social business is to cover its costs. Its owner, e.g., an investment company, does not take profit; further, in the case of its existence, it is totally reinvested in production. Yunus calls such enterprise the "social business."

2.) Followers of social innovation school pay special attention to the social entrepreneur. Social entrepreneurs are "change agents," who take an innovative approach to social problem-solving: using new products, services, market segments, organization, and other innovative initiatives.

Many funds support development of social innovations. Some of them defined the social entrepreneurship and social entrepreneur; thus, "Social entrepreneurs are those who possess innovative approaches towards solving the most painful social problems. They are ambitious and obstinate persons, trying actively to find solution for social issues and provide new ideas for wide scale changes" (Ashoka, www.ashoka.org). Social enterprise is an organization that achieves large-scale, systemic, and sustainable social changes through

better use of new inventions, different approaches, existing technologies and strategies, or new combinations. Social entrepreneurs are leaders, change drivers, ardent, innovative, risky persons with high standards, and those who believe in people (www.schwabfound.org). "Social enterprise is a business aim, which has social characteristics and which reinvests in community and business in order to achieve social goals. It is not motivated by the increase in profit for shareholders and owners" (United Kingdom, Department of Trade and Industry) (The Centre for Strategic Research and Development of Georgia, 2013).

The concept of social entrepreneurship first appeared in Europe in the 1990s; it was widely popularized in many European countries. In some of these countries, law defined the legal form of social enterprise. In France, Portugal, Spain, and Greece, social enterprises have the form of cooperatives. In other countries, for example, Belgium, United Kingdom, and Italy have more open models of social enterprises that reach beyond traditions of cooperatives. Particularly prevalent are those social enterprises whose purpose is integration by employment (Work Integration Social Enterprise [WISE]), and the main function of these enterprises is a working integration of such groups of population, who are especially uncompetitive in the labor market. In 1996, the European Research Network (EMES) was formed. It aims to grow theoretical and practical knowledge about social enterprise. EMES defines social enterprise as an "Organization that is initiated by the group of citizens, having a clear purpose of benefiting community and in which financial interests of capital investors are limited. For these organizations their independence and economic risks associated with socio-economic activities have especially big importance" (The Centre for Strategic Research and Development of Georgia, 2013).

EMES draws certain criteria that social enterprises must satisfy. These criteria include three groups: economic, social, and co-participation in management. It is not necessary for social enterprise to satisfy all nine criteria. These are characteristics of an "ideal social enterprise" and serves as an instrument for their self-assessment.

- The economic criteria include 1) continuous manufacturing/supply of goods and services; 2) a certain degree of economic risk; 3) attitude to paid job.
- The social criteria are 4) clear goal that is focused on the wealth of society; 5) initiative comes from certain group of citizens or civil society organization; 6) limited distribution of profit.
- Criteria of the management in social enterprise are 7) high degree of independence; 8) decision-making is not based on capital ownership; 9) community that promotes high involvement of interested parties (The Centre for Strategic Research and Development of Georgia, 2013).

Peculiarities of Social Entrepreneurship and Social Enterprises in Georgia

In countries where social entrepreneurship is developed, it significantly contributes to social and economic development. Social enterprise creates possibilities to solve existing problems with the new approaches. For individuals, a social enterprise can become a new mechanism in the process of social inclusion, which will help them to get free from the condition of dependence and gives an actual chance of getting independence. For the organizations, social enterprise is an effective mechanism for generating the necessary financial resources that help them to overcome dependence on other institutions and consider only members and founders' opinions while operating in the sector. For the community, a social enterprise presents an independent development strategy that uses only one's own resources and brings true self-regulation and common wealth. For the government, social enterprises present the actual way to get free from the "social care trap." The spectrum of social goals of social enterprises is as diverse as working areas of civil society organizations. These organizations achieve social changes in the environment through various means and play diverse roles in society (The Centre for Strategic Research and Development of Georgia, 2013).

Social enterprises can be
- employers or contributors to the employment of fragile, marginal, or low-income persons (such types of enterprises can be seen in Georgia, too);
- service providers for marginal population;
- sellers of the products/services produced by groups in unfavorable conditions (good examples of such organizations are fair trade organizations);
- businesses oriented on social goals (environmental, cultural, educational, etc.).

From the 1990s, certain civil society organizations in Georgia have conducted revenue-generating activities to diversify their funding sources, but the number of new economic activities significantly increased from 2005 on. For the majority of organisations, the main reason for starting economic activity is to achieve financial stability. Incentives for the majority of civil society organizations are often visible in the program; thus, achieving goals effectively becomes priority because often the particular program goals aren't included in donors' priorities, and it is difficult to obtain funding from this source. Usually, successful business organizations act based on market demands, i.e., they focus on consumer satisfaction. For civil society organizations, it is important to use approaches that are analogous to business. Expectation and demand regarding them are increasing continuously in order to obtain better results (The Centre for Strategic Research and Development of Georgia, 2013).

Social entrepreneurship gives possibilities to solve problems in different ways and with higher effectiveness; in the increasing competition for funds, social enterprises create resources for sustainable development; economic income creates sense of stability for organization; in the case of suspension of financing, it provides organizations with the possibility to cover expenses. Often, according to the donors' demands, it is necessary to gain co-financing in order to obtain necessary financial resources from them. Income from economic activities provides an organization with this possibility; it supports organisations in accomplishing their missions and setting and achieving long-term goals; the generated income makes programs more flexible and presents a source for investing in the new programs without the limits. It provides an organization with the possibility to finance its own initiatives that are not included in donors' priorities; it also helps organizations in staying more mission-oriented and does not change directions continuously according to donor demands. Often, these activities largely contribute to organizational performance (The Centre for Strategic Research and Development of Georgia, 2013).

Goals of a social enterprise reflect the expected results that can occur in a certain period of time, due to the successful performance of the enterprise. Social enterprise must have clearly defined social and business goals that contribute to accomplishing the enterprise's mission. Social missions are related to accomplishing the mission of an enterprise (create social benefit) and are differentiated according to the field and mission of organizations. Examples of social goals include creation of economic opportunities for the poor, employment of disabled persons, protecting the environment, education, etc. Business goals are oriented toward financial stability of an enterprise and are different for each one of them. In business companies, the financial goals are associated with their profits. Financial goals of a social enterprise can be different, based on financial needs and business model. Social enterprise is explained by a business's social goals. Social enterprises always have to maintain a balance between social and financial (business) goals. They might have different strategies for this (The Centre for Strategic Research and Development of Georgia, 2013).

Practice of integration of commercial and social goals has existed in organizations for many years. Examples of this are:
- charitable and civil society organizations, using commercial and financial indicators for measuring social consequences;
- growing number of business companies, which care about development of social responsibility in their organizations.

This issue finds increasing support in government policy. In many countries' process of public procurement, preference

belongs to the social benefit that will result from certain activities and is one of the criteria in the procurement process. Integration of social and economic results can be a big challenge for social enterprises. These challenges can be factors that make the manufacturing process more expensive than in ordinary business companies, e.g., existing practice of procurement in fair trade and in selecting employees, e.g., companies employing marginal groups, where the main criteria during selection is social status. These companies have to plan

- additional (more than in usual business companies) training and support programs;
- price that is set by social enterprises on the product, e.g., more expensive than market price or relatively low price to make product and/or service affordable;
- location of business is an important factor in decision-making that can stimulate business profitability;
- principles for using profit (The Centre for Strategic Research and Development of Georgia, 2013).

Georgia's legislation does not define the concept of social entrepreneurship; hence, there are no special norms for Georgia's social enterprises. Starting a business and related procedures are liberal endeavors in Georgia in that there is little time for the registration of a "firm." According to Georgia's legislation, there is no need to register a new firm each time one desires to start a new type of business. Instead, the already-registered firm may conduct a new type of business operation. Entrepreneurial activities, including social entrepreneurship, can take different legal forms. Legal status of civil society organizations in Georgia is a nonentrepreneurial (noncommercial) legal entity (NNLE). Despite the fact that NNLE exists for the purpose of noncommercial activities, Georgia's legislation allows it to conduct entrepreneurial activities of supportive characteristics. On the level of normative acts in Georgia, there are two main concepts: entrepreneurial activities, which the law of Georgia on entrepreneurs has defined; economic activities, which the tax code has defined and presents the basis of tax calculation. Entrepreneurial activity shall be a legitimate and repeated activity carried out independently and in an organised manner to gain profit (The Centre for Strategic Research and Development of Georgia, 2013).

According to the Georgia civil code, a nonentrepreneurial (i.e., noncommercial) legal entity has the right to be involved in supportive entrepreneurial activities; profit obtained from them must serve in accomplishing the goals of their nonentrepreneurial (noncommercial) legal entity. Profit distribution among founders, members, contributors, managers, and other representatives of NNLE is impossible. NNLE has the right to conduct commercial activities, but they must not be its main activities. This concept is quite obscure and is not specified in the legislation. Civil society organizations

as nonentrepreneurial legal entities interested in social entrepreneurship have the right to conduct supportive activities on the base of their organization. They can also establish an enterprise in the form of a legal entity to conduct supportive economic activities. Civil society organizations in Georgia conduct economic activities mainly within their organizations (76%); 24% of them established a separate enterprise. Most of the organizations (72.7%) that established a separate enterprise have chosen to take the form of a limited liability company (LLC). Except for an LLC, one can also find general partnerships and cooperatives, while registering separate enterprise (The Centre for Strategic Research and Development of Georgia, 2010b).

Conclusion

Social responsibility of a business organization plays an important role in the stable and progressive development of a company itself. Recognition of social responsibility, which is a moral framework for business organizations, suggests that a company has an obligation to act for the benefit of society in order to support sustainable development of the whole economy. Entrepreneurs in Georgia should find balance between efficiency and equity, between making a rational choice in business activities and serving social interests. Entrepreneurs should be committed to finding a balance among a company's success, employees' needs, and environmental and social stability. These three priorities form the foundations of corporate social responsibility.

The practice of integration of commercial and social goals has existed in organizations for many years. Examples of this are

- charitable and civil society organization, using commercial and financial indicators for measuring social consequences;
- growing number of business companies, who care about development of social responsibility in their organizations.

This issue finds increasing support in government policy. In many countries' processes of public procurement, preference belongs to the social benefit that will result from certain activities and is one of the criteria in the procurement process.

Corporate social responsibility has a positive impact on business competitiveness. The CSR of Georgian companies does not reach the level of the developed world. Generally, in developing countries, including Georgia, social responsibility is still associated with charity. Companies in Georgia spend certain funds on social projects, but such socially oriented activities are chaotic. They do not constitute a system and have

no link to the company's priorities and strategies. Companies typically lack a system of implementing social responsibility projects as part of their business plan.

From the 1990s, certain civil society organizations in Georgia have conducted revenue-generating activities to diversify their funding sources, but the number of new economic activities significantly increased from 2005. For the majority of organizations, the main reason for starting an economic activity is to achieve financial stability, while the incentives for the majority of civil society organizations are visible in their programs; thus, achieving the goals effectively becomes priority because often the particular program goals are not included in donors' priorities, and it is difficult to obtain funding from this source.

Georgia's legislation does not define the concept of social entrepreneurship; hence, there are no special norms for Georgia's social enterprises. Starting a business and accompanied procedures are liberal endeavors in Georgia; that is, they are visible in little time for the registration of a "firm." Entrepreneurial activities, including social entrepreneurship, can take place in various legal forms. Georgia's legislation does not define the concept "social entrepreneurship"; hence, in the process of discussing legal issues, the concept of entrepreneurship must be used. Legal status of civil society organizations in Georgia is nonentrepreneurial (noncommercial) legal entity (NNLE). Despite the fact that NNLE exists for the purpose of noncommercial activities, Georgia's legislation allows it to conduct entrepreneurial activities of supportive characteristics.

Nongovernmental organizations in developing countries help to solve many social problems, but, due to the limited organizational capacity and low organizational maturity, their efforts are not always sufficient. On the one hand, the recent situation of civil society development in Georgia is not satisfactory, which is reflected in economic indicators via social and political implications. The government considers the civil society as a competitor, and the agreed division of labor between the government and civil society does not exist.

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Socialno podjetništvo in družbena odgovornost podjetij v kontekstu moralne ekonomije – dilema držav v razvoju (primer Gruzije)

Izvleček

V raziskavi, o kateri poročamo, razpravljamo o vlogi socialnega podjetništva kot pomembni značilnosti moralne ekonomije, kot družbenoodgovorni poslovni praksi. Države v razvoju, kot je postsovjetska Gruzija, se v tem razlikujejo od zahodnih držav. Namen prispevka je opredeliti posebnosti socialnega podjetništva in družbene odgovornosti podjetij v gruzijskih podjetjih. Teoretična raziskava vključuje konceptualno analizo obstoječih kvantitativnih in kvalitativnih študij, ki temeljijo na delih uglednih znanstvenikov na področju ekonomije in podjetništva. Moralna ekonomija obravnava poslovne dejavnosti kot družbene storitve. Družbena odgovornost je v podjetjih moralni okvir, ki kaže na obveznost podjetja, da ustvari družbeno korist. Socialno podjetništvo združuje dobre prakse neprofitnih in profitnih dejavnosti za spopadanje z družbenimi potrebami, ki jih vlade in podjetja slabo zadovoljujejo. Socialno podjetništvo je relativno nov fenomen v postsovjetskih državah, kjer nevladne organizacije pomagajo pri reševanju mnogih socialnih problemov, vendar njihova prizadevanja ne zadostujejo. Podjetja morajo najti ravnotežje med prioritetami, ki tvorijo temelje družbene odgovornosti podjetij: poslovnim uspehom, potrebami zaposlenih in okoljsko ter socialno stabilnostjo. V zgodovini ekonomske misli najdemo številne primere, da moralni standardi pospešujejo doseganje stabilnosti družbenoekonomskega sistema na eni, kot tudi dobičkonosnosti podjetij na drugi strani, z makroekonomskimi in mikroekonomskimi pozitivnimi vplivi. Podjetja, ki delujejo v Gruziji, namenjajo sredstva za socialne projekte in dobrodelnost, vendar so tovrstne dejavnosti kaotične. Družbenoodgovorne projekte je treba vključiti v poslovne načrte podjetij. Krepitev družbene odgovornosti podjetij lahko pripomore k razvoju socialnega podjetništva.

Ključne besede: podjetništvo, socialno podjetništvo, družbena odgovornost podjetij, postsovjetska Gruzija, države v razvoju

Exchange Rate Pass-Through into Import Prices of Croatia

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Abstract

The main goal of this paper is to examine the influence of macro factors and the degree of the exchange rate pass-through (ERPT) on aggregate and disaggregate import prices of the industrial sectors in the short- and long-run. The study is based on a model used by Campa and Goldberg (2002) and Campa *et al.* (2005). The ERPT is determined by applying the single equation and the cointegration approach (autoregressive distributed lag model [ARDL]), vector decomposition, and data over the period from 2002Q1 to 2016Q4. In the long-run, the ERPT is complete for the aggregate import and for the industrial sector beverages and tobacco. In the short-run, the ERPT is incomplete for the aggregate import and for majority of industrial sectors. Further, we have discovered that the degree of the ERPT is higher with heterogeneous products than with homogeneous products. Due to the inaccessibility of data for micro factors, we were not able to determine their effect on import prices. The results of our research can help economic policymakers to create adequate measures in the field of economic policies that will improve the competitiveness of the economy. Finally, this paper identified the effect of the volatility degree of the ERPT on the disaggregate import prices of industrial sectors that has not been sufficiently explored so far.

Keywords: exchange rate, industrial sectors, import prices, ARDL approach

Introduction

In the last few decades, in the international economy and macroeconomics, the correlation between fluctuations in exchange rates and import prices remains critical (Lopez-Villavicencio & Mignon, 2017). Pass-through is defined as the

percentage change in the import prices caused by a change of import prices resulting from a 1% change in the exchange rate, which is better known as the first-stage pass-through (Barhoumi, 2006; Aron *et al.*, 2014).

Earlier studies focused on the microeconomic approach, while the latter research focused on the macroeconomic approach. In microeconomic factors, we included industrial organizational models, substitution between import and domestic products, the determination of the pricing strategy of monopolistic companies at the industrial and product degree (Dornbusch, 1987; Goldberg & Knetter, 1997; Kurtović *et al.*, 2018), while macroeconomic factors included exchange rate variability, inflation, market openness, monopolistic competition, etc. (Menon, 1995; Taylor, 2000; Devereux *et al.*, 2004; María-Dolores, 2010). The degree of exchange rate pass-through (ERPT) depends on economic shocks, nominal exchange rate volatility, the importing country's shifts in demand, market structure, economic openness, market segmentation, and aggregate imports (Kurtović *et al.*, 2018). The import price ERPT elasticity ranges from 0% to 100%, depending on the exporter's pricing strategy (Brun-Aguerre *et al.*, 2012). The ERPT degree depends on the price strategy of the exporter. The ERPT will be incomplete and low, and changes in currency exchange rate will not have an impact on international prices when the prices are expressed in the local currency (LCP). On the other hand, the ERPT will be complete, and the floating currency exchange rate will have a powerful effect on macroeconomic adjustment when prices are expressed in the currency of the exporter (producer currency pricing [PCP]) (Dabusinskas, 2003).

The problem of pass-through is especially important for small open economies that are import-dependent in international exchange. In that sense, Croatia is ranked among the transition countries that have traditionally had a negative trade balance and are import-dependent. Being faced with a trade imbalance, the Croatian economy lacks competitiveness. Therefore, it is exceptionally important to measure the effect of ERPT into import prices. A low ERPT leads to low inflation. On the other hand, a low ERPT could also cause a trade imbalance when there is a requirement to change the import or export composition and impair competitiveness in the international trade exchange. A high ERPT works in the opposite direction. Finally, the evaluation of ERPT is important for restraining inflation pressures and trade imbalance caused by currency fluctuations.

The main objectives of our research are the assessment of the influence of macro factors and the degree of the ERPT on aggregate and disaggregated import prices of industrial sectors in the short- and long-run, i.e., to examine how the degree of the ERPT affects the import prices and the composition of imports by industry and whether the degree of the ERPT is higher with homogeneous products or heterogeneous

products. Nevertheless, our research differs, compared with previous empirical research related to Croatia, because they mainly focus on the estimation of the exchange rate regime to degree of ERPT (Darvas, 2001; Billmeier & Bonato, 2002; Tica & Posedel, 2014).

The research is based on a model used by Campa and Coldberg (2002) and Campa *et al.* (2005), i.e., the autoregressive distributed lag model (ARDL), and variance decomposition and quarterly data over the period from 2002 to 2016. The econometric techniques we used have enabled us to measure the effects of ERPT on aggregate import prices in the short- and long-run. The majority of existing research has used Johansen's cointegration techniques and the vector autoregressive model (VAR) (Kurtović *et al.*, 2018). However, the disadvantages of these econometric techniques are explained in Methodology and Data.

In our research, due to the unavailability of data, we were not able to examine the effect of micro factors on the disaggregate import prices of the industrial sectors.

The structure of the paper is organized as follows: the next section provides an overview of the literature; then the model, econometric techniques, and used databases are presented; the last but one section presents the results of our findings; the last section provides the conclusions of this research.

Literature Review

Investigating the currency depreciation effect on US trade balance, Magee (1973) first introduced the concept of exchange-rate pass-through (ERPT). This term was originally used to estimate the effect of devaluation of domestic currency on the trade balance and the price of trade products. Later it was used to assess the relevance of the law of one price, e.g., to explain certain deviations from the law of one price and to confirm the presence of incomplete pass-through. In addition, it was used to estimate theory of purchasing-power parity and the effect of appreciation and depreciation on the (Goldberg & Knetter, 1997; Feenstra & Kendall, 1997).

Below, we further discuss the research that influenced our work. Taylor (2000), Gagnon and Ihrig (2004), and Bailli and Fuji (2004) estimated the effects of inflation and exchange rate volatility on the pass-through rate. They used yearly and quarterly data and auto-regression, panel cointegration, and dynamic panel-data models. They showed that low inflation rates and low exchange-rate volatility lead to a pass-through decline. Campa and Goldberg (2002) and Campa *et al.* (2005) estimated the transmission rate of the ERPT

to the import prices of euro-zone countries. The author's used annual data and panel cointegration and VECM. In the short-run, the ERPT is higher and incomplete and differs from country to country and from industry to industry. The ERPT is higher in homogeneous than in heterogeneous industries. Marazzi *et al.* (2007) estimated the rate of the ERPT on aggregate import prices and prices of industrial products in the United States. They used data from 1970 to 1980 and panel cointegration. The degree of the ERPT has declined with aggregate import prices but has, on the other hand, increased with certain industrial products imported from Asian countries. Mumtaz *et al.* (2006) estimated the degree of the ERPT on the import prices of industrial sectors in the United Kingdom. The authors used quarterly data over the period from 1984 to 2004 and panel cointegration. They revealed a high degree of the ERPT for the food industry and the manufacturing sector, but, in spite of this, the ERPT's degree has declined over the last few years. De Bandt *et al.* (2008) and Ben Cheikh and Rault (2016, 2017) have estimated a degree of the ERPT on import prices in the euro zone. They used quarterly data and panel cointegration, GMM and GLS. The degree of the ERPT has been declined more for homogeneous products than for heterogeneous products.

Barhoumi (2006), Byrne *et al.* (2010), and Brun-Aguerre *et al.* (2012) estimated the degree of the ERPT rate at the import prices of emerging economies and developing countries. The authors used quarterly data and a nonstationary panel, a pooled mean group estimation, and error-correction models. Emerging economies and developing countries have a higher pass-through compared with that of developed countries. María-Dolores (2010) and Velickovski and Pugh (2011) estimated the ERPT's degree of import and consumer prices for new EU members, developed countries, and transition economies. The authors used cointegration analysis and error-correction terms. In most countries, a complete pass-through has not been recorded, and the pass-through degree is higher for consumer prices than import prices. Beckmann *et al.* (2014) estimated the degree of the ERPT to import prices in Germany. They found that macroeconomic factors, such as inflation and exchange rate variability, had an impact on the degree of pass-through. The short- and long-run pass-through was incomplete because of the product heterogeneousness.

Methodology and Data

Theoretical framework

Over the last three decades, a significant increase in the openness of a global economy has been recorded as well as a growing fluctuation in nominal exchange rates, which demands a better understanding of transmission of exchange rates into import prices. The effect of exchange rate variations on import prices depends on the following circumstances: a) basic economic shocks cause exchange rate variations; b) the mechanism of the model establishes a correlation among basic shocks, exchange rates and import prices; and c) time frame is important for understanding the relationship between the variables (Campa & Goldberg, 2005; Campa *et al.*, 2005).

Pioneer research was based on the partial equilibrium model. Researchers were primarily focused on the exporters/importers issue and the organisation of a single industry (Dombush, 1987; Campa *et al.*, 2005). This approach was rejected, as it failed to take into account the fact that exchange rates are affected by endogenous and exogenous variables influencing the equilibrium prices in a given industry. Accordingly, the nominal exchange rate alters the price of imported goods interacting with industrial subjects on an oligopolistic market. In our model, we use the micro assessment of exporters' behaviour as a starting point in the analysis of the effects of exchange rate variations on import prices (Campa & Goldberg, 2005; Campa *et al.*, 2005).

For the assessment of the degree of ERPT into import prices, we used the standard model initially used by Goldberg and Kantter (1997), Campa and Goldberg (2002), and Bailliu and Fujii (2004). This model enables the assessment of ERPT into import prices on the grounds of nominal effective exchange rate variation. In that sense, it is important that the model provides the necessary isolation of the effect of the nominal effective exchange rate from the effects of other variables such as changes of costs incurred by the exporter and domestic demand. Additionally, our starting point is the imperfect market, whereby the exporter is faced with the competition on the domestic market. Finally, our model enables us to assess the exporter's behaviour on the grounds of the first-stage pass-through effect. The ERPT is the linear equation

$$p_{it}^m = \alpha_0 + \alpha_1 mc_{it}^x + \alpha_2 e_{it} + \alpha_3 y_{it}^m + \varepsilon_t, \text{ (1)}$$

where p_{it}^m is import prices in the local currency and is a function of $\alpha_2 e_{it}$, which is the nominal effective exchange rate, mc_{it}^x is marginal foreign costs, y_{it}^m is the domestic demand, ε_t is the error disturbance term, and β_0 is a constant.

In the estimation of the ERPT on import prices, macroeconomic factors have a special impact. Therefore, in our research, we will try to assess the impact of macroeconomic factors, such as rate of inflation, trade openness, at import prices. The empirical assessment of the ERPT is based on the linear equation

$$p_{it}^m = \alpha_0 + \alpha_1 mc_{it}^x + \alpha_2 e_{it} + \alpha_3 y_{it}^m +$$
$$+ \alpha_4 inf_{it}^x + \alpha_5 open_{it}^x + \varepsilon_t \quad, \tag{2}$$

where inf_{it}^x is the rate of inflation, $open_{it}^x$ is market openness.

The next step in our analysis is related to the assessment of macroeconomic factors on the import prices of sectoral industries. In that sense, we will use Eq. (2):

$$lnp_t^m; \; lnp_{jt}^m = \alpha_j + \alpha_{1,j} lnmc_{it}^x + \alpha_{2,j} lne_{it} + \alpha_{3,j} lny_{it}^m +$$
$$+ \alpha_{4,j} lninf_{it}^x + \alpha_{5,j} open_{it}^x + \varepsilon_t x \quad, \tag{3}$$

where lnp_t^m is aggregate import price, and lnp_{jt}^m is disaggregate import price of industrial sectors in the local currency.

We shall now reflect on some of the econometric techniques we will be using in our research model. First, we will use the ADF, PP, and the KPSS tests to examine whether the variables are stationary or nonstationary. Consequently, we shall apply the cointegration approach (the ARDL model) and the EC(-1).

The ARDL model or bounds testing is used to examine whether there is a long-term relationship between the variables. Additionally, the ARDL model enables us to avoid potential endogenous problems and the inability to test our hypothesis on the grounds of assessment of variables in the long-run, characteristic of the Engle–Granger (1987) method. Moreover, the ARDL model ensures the assessment of variables in the long- and short-run (Kurtović *et al.*, 2017). It has an essential advantage over Johansen's cointegration technique, which does not assess the long-run relationship between the variables within the vector autoregressive model (VAR). As opposed to the ARDL model, the Johansen test requires that all variables are integrated of the same order and the need to define lag numbers, choose various models, and endogenous/exogenous variables and then obtain different test results from various choices (Hong & Zhang, 2016).

The ARDL model requires the following two steps (Pesaran *et al.*, 1999; Pesaran *et al.*, 2001): the first step relates to the process of determining any significant long-run relationship between the variables using the Fisher statistics; the second step relates to the long-run relationship variables and determining their value and assessment of the short-run elasticity of variables showing the error correction representation of the ARDL model. Based on Eq. (3), we will use multiple regressions and disaggregated import prices for different industrial sectors:

$$\Delta mp_t^m; \; \Delta mp_{jt}^m = \alpha_0 + \sum_{i=1}^{l} \alpha_{1,i} \Delta mp_{jt-1}^m + \sum_{i=0}^{l} \alpha_{2,i} \Delta e_{t,i} +$$
$$+ \sum_{i=0}^{l} \alpha_{3,i} \Delta mc_{it}^x + \sum_{i=0}^{l} \alpha_{4,i} \Delta y_{it}^m + \sum_{i=0}^{l} \alpha_{5,i} \Delta inf_{it}^x +$$
$$+ \sum_{i=0}^{l} \alpha_{6,i} \Delta open_{it}^x + \beta_{1,i} mp_{jt,i}^m + \beta_{2,i} e_{it,i} + \beta_{3,1} mc_{t-1}^{x,j} +$$
$$+ \beta_{4,1} y_{t,i}^{x,j} + \beta_{5,i} inf_{it}^x + \beta_{6,i} open_{it}^x + \varepsilon_t \qquad . \tag{4}$$

For the industrial sectors, we used quarterly disaggregated import prices data at the degree of the one-digit number of standard trade classification (SITC Revision 3) for eight industrial sectors: 0) food and live animals, chiefly for food (Standard International Trade Classification, SITC 0); 1) beverages and tobacco (SITC 1); 2) crude materials, inedible, except fuels (SITC 2); 3) mineral fuels, lubricants, and related materials (SITC 3); 4) animal and vegetable oils, fats, and waxes (SITC 4); 5) chemicals and related products (SITC 5); 6) manufactured goods classified chiefly by material (SITC 6); 7) machines and transport equipment (SITC 7); 8) miscellaneous manufactured goods (SITC 8).

Testing of a long-term relationship between the variables is done by means of bounds testing. The steps in the bounds process are based on the *F* or Wald statistics and represent the first phase of the ARDL method. The second phase relates to the *F* test of the null hypothesis of long-term variables with a time lag whose aggregate value equals zero, while in the case of the alternative hypothesis, at least one long-term variable does not equal zero (Kurtović *et al.*, 2017). This relationship is represented by the following relation: Null hypothesis or $H_0 : \alpha_1 = \alpha_2 = \alpha_3 = 0$ and $H_0^{'} : \beta_1 = \beta_2 = \beta_3 = 0$, i.e., the long-term relationship does not exist. Alternative hypothesis or $H_0 : \alpha_1 \neq \alpha_2 \neq \alpha_3 \neq 0$ and $H_0 : \beta_1 \neq \beta_2 \neq \beta_3$, i.e., the long-term relationship exists (Kurtović *et al.*, 2017).

Pesaran *et al.* (2001) calculated two levels of critical value, i.e., either all variables are I(0), or all the variables are I(1). Proof of a long-term relationship between the variables is obtained if the *F*-statistic exceeds the upper critical value. In the case of a value between the critical bounds, the test is inconclusive; if it falls below the lower critical value, there is no evidence of cointegration (Belke *et al.*, 2013). The length of lags is chosen based on the Akaike information criterion (AIC) (Kurtović *et al.*, 2017).

Data

For Croatia, we used quarterly data over the period from 2002 to 2016. Our dependent variable in the model is the import price or the import unit value index (2010 = 100) - expressed in the local currency and taken from the Eurostat database (https://ec.europa.eu/eurostat/tgm/table.do?tab=table&init=1&language=en&pcode=teiet310&plugin=1). Import unit value index measures average changes of the value of imported goods (homogeneous and heterogeneous products). Heterogeneous products refer to manufactured goods, machinery and transport equipment, food products, beverages, tobacco products, etc., while the homogeneous products are related to mineral fuels, lubricants, raw

materials, etc. The marginal costs, mc_{it}, were obtained on the basis of the calculation model Campa *et al.* (2005). Marginal foreign costs of production are calculated by eliminating the nominal effective exchange rate and labour wages or the producer price index from the relative effective exchange rate: $MC_{it}^* = REER_{it} \; x \; W_{it} \; NEER_{it}$, where the $NEER_{it}$ is nominal effective exchange rate, $REER_{it}$ is real effective exchange rate, and W_{it} is the domestic unit labor cost (real labour productivity per person). The nominal effective exchange rate (2010 = 100) is the weighted average of the bilateral nominal exchange rate of the euro against the basket of 37 currencies of the main trading partners; the real effective exchange rate (REER) measures the value of a particular currency against the average basket of trading currency of the leading trading partners.

Data for $REER_{it}$, $NEER_{it}$, and W_{it} were taken from the Eurostat database (https://ec.europa.eu/eurostat/web/exchange-and-interest-rates/data/main-tables; https://ec.europa.eu/eurostat/web/labour-market/labour-costs/main-tables). For inflation, we used harmonized indices of consumer prices, which measure changes in consumer prices and services needed by the household. Data for HCPI or inflation were taken from the Eurostat database (https://ec.europa.eu/eurostat/web/hicp/data/database). Openness index or trade (percentage of GDP) represents the share of exports and imports in GDP and tells us how many countries are open in international trade. This index is obtained by dividing total exports and imports into GDP. Data on the openness index or trade (percentage of GDP) were taken from the World Bank Database (World Data Indicator). Import unit value index or import prices for the sectors correspond to the one-digit-level Standard International Trade Classification (SITC 3). Data on import prices of industrial sectors were taken from the Eurostat–Comext database (http://epp.eurostat.ec.europa.eu/newxtweb/setupdimselection.do). In the end, in the absence of data on output gap, we used real GDP (gross domestic product 2010 = 100) as a domestic demand that determines the margin; thus, we took data from the Eurostat database (https://ec.europa.eu/eurostat/web/national-accounts/data/database).

Results and Discussion

Table 1 shows the correlation between our key variables over the period from 2002Q1– 2016Q4. The correlation matrix provides information about the expected signs with estimated variables. In line with expectations, a positive correlation between all variables was estimated. Namely, the correlation between aggregate import prices (MP) and the nominal effective exchange rate (NEER) is particularly important for this study. The correlation between these two variables is quite strong at 0.44%. The correlation results do not allude to any correlation with the results of the degree of the ERPT. More about degree of the ERPT to import prices will be given below.

Table 1. Correlation

	MP	NEER	Inf	Y	MC	Open
MP	1.00	0.44	0.95	0.39	0.02	0.27
NEER	0.44	1.00	0.60	0.74	0.11	0.08
Inf	0.95	0.60	1.00	0.40	0.01	0.26
Y	0.39	0.74	0.40	1.00	0.28	0.03
MC	0.02	0.11	0.01	0.28	1.00	0.04
Open	0.27	0.08	0.26	0.03	0.04	1.00

Source: Authors' calculations

Table 2. Descriptive Summary Statistics

	MP	NEER	Inf	Y	MC	Open
Mean	100.01	98.05	89.26	111.08	116.66	84.96
Median	99.15	98.15	91.15	111.94	101.65	84.95
Maximum	117.90	103.50	101.00	124.47	1041.00	96.40
Minimum	75.40	89.80	73.50	93.82	90.30	71.50
Std. Dev.	12.20	3.00	9.31	67.52	12.47	6.02
Obs.	60	60	60	60	60	60

Source: Authors' calculations

Finally, Table 2 shows a summary of statistics indicating whether the variables are mutually comparable. The variation value is satisfactory; thus, we can expect significant correlation of variables.

Table 3 presents the results for ADF, PP, and KPSS unit root tests. Most variables have unit roots, but, after the first difference is introduced, all variables become stationary at 1% or 5% of statistical significance. Consequently, we emphasize that the data series integrated at level I (0) and I (1), meaning that we can continue to use the ARDL approach.

Table 4 shows the results of *F*-statistics. The optimum number of lags was received only on the basis of Akaike information criterion (AIC) values. The optimal length is between four to five lags. The optimal length for aggregate import prices (MP) and for most industrial sectors is above the upper bounds of statistics. The optimal lag length for aggregate import prices (MP): 4, for food and live animals, chiefly for food (SITC 0); 5, beverages and tobacco (SITC 1); 5, crude materials, inedible, except fuels (SITC 2); 4, mineral fuels, lubricants, and related materials (SITC 3); 4, animal and vegetable oils, fats, and waxes (SITC 4); 5, manufactured goods classified chiefly by material (SITC 6); 4, machines and transport equipment (SITC 7); 4, miscellaneous manufactured goods (SITC 8); 4, accordingly, we reject the null hypothesis that there is no cointegration (cointegration) between variables. However, only in the case of chemicals and related products (SITC 5)

Table 3. Unit Root Test

Variable		*lnMP*	*lnNEER*	*lnMC*	*lnInf*	*lnOpen*	*lnSITC0*	*lnSITC1*
ADF	c	-2.20(0.20)	-2.64 (0.09)	-7.34(0.00)*	-1.76(0.39)	-1.42 (0.56)	-0.82(0.80)	-0.69 (0.83)
	c, t	-1.85 (0.66)	-2.58(0.28)	-7.27(0.00)*	-0.58 (0.97)	-1.76 (0.70)	-2.98(0.14)	-2.39(0.37)
	First Diff.	-5.87(0.00)* -5.87(0.00)*	-7.31(0.00)* -7.27(0.00)*		-11.06(0.00)* -6.90(0.00)*	-3.87(0.00)* -3.92(0.01)**	-7.80(0.00)* -7.74(0.00)*	-3.12(0.03)** -3.05 (0.12)
PP	c	-2.20(0.20)	-2.64(0.09)	-7.34(0.00)*	-2.02(0.27)		-0.82 (0.80)	-0.58 (0.86)
	c, t	-5.87 0.00)*	-2.61(0.27)	-7.27(0.00)*	0.11(0.99)	-1.25 (0.89)	-1.75 (0.71)	-1.34 (0.40)
	First Diff.	-5.77(0.00)* -5.74(0.00)*	-7.31(0.00)* -7.27(0.00)*		-6.37(0.00)* -6.77(0.00)*	-3.97(0.00)* -3.94 (0.01)**	-7.80(0.00)* -7.74(0.00)*	-8.75 (0.00)* -8.70(0.00)*
KPSS	c	0.53(0.46)**	0.34 (0.34)	0.32(0.34)	0.59(0.46)*	0.22(0.34)	0.91(0.71)*	0.86(0.73)*
	c, t	0.15(0.14)**	010. (0.11)	0.15(0.14)*	0.15(0.14)**	0.13(011)	0.11(0.11)	0.12(0.11)
	First Diff.		0.20(0.34) 0.20 (0.14)**	0.50 (0.46)**		0.50 (0.46)** 0.46(0.21)*	0.14(0.14)**	0.36(0.21)*

Variable		*lnSITC2*	*ln SITC3*	*ln SITC4*	*ln SITC6*	*ln SITC7*	*ln SITC8*
ADF	c	-0.62 (0.85)	-2.97 (0.04)**	-2.37 (0.15)	-2.15 (0.22)	0.06 (0.96)	-0.53 (0.87)
	c, t	-2.01 (0.58)	-3.14 (0.10)	-3.64 (0.03)**	-2.57 (0. 29)	-3.37 (0.06)	-2.35 (0.39)
	First Diff.	-3.26(0.02)** -3.22(0.09)	-5.57(0.00) *	-4.05(0.00)*	-5.11(0.00)* -5.26(0.00)*	-3.61 (0.00)* -3.62 (0.03)**	-8.62 (0.00)* -8.73 (0.00)*
PP	c	-0.61 (0.85)	-3.40(0.01)**	-2.23 (0.19)	1.78 (0.38)	0.10 (0.96)	-0.04 (0.95)
	c, t	-3.16 (0.10)	-3.43(0.05)	-2.44(0.35)	-1.62 (0.77)	-6.40 (0.00)*	-2.17 (0.49)
	First Diff.	-8.94(0.00)* -8.84 (0.00)*	-6.83 (0.00)* -7.15 (0.00)*	-3.73 (0.00)* -3.60 (0.03)**	-4.79(0.00)* -4.95(0.00)*	-22.19 (0.00)*	-9.29 (0.00)* -16.63 (0.00)*
KPSS	c	0.89(0.73)*	0.93(0.73)*	0.58(0.46)*	0.84(0.73)*	0.94(0.73)*	0.82(0.83)*
	c, t	0.11(0.11)	0.11(0.11)	0.14(0.14)**	0.20(0.14)**	0.13(0.11)	0.22(0.21)*
	First Diff.	0.19(0.14)**	0.50 (0.21)*			0.16(0.14)**	

*, **, and *** show significance degrees at 1%, 5%, and 10%, respectively.

Note: c-intercept includes constant and ct-constant with trend.

Source: Authors' calculations

F-statistics are below the bounds of statistics, which means we cannot reject the null hypothesis and exclude this variable from further analysis.

Table 4. F-Test or Bounds Statistics

Variable	Lag Length	AIC	F-Statistics
SITC 0	5	-33.81, -34.68*	3.94*
SITC 1	5	-32.27, -33.29*	5.90*
SITC 2	4	-31.79, -32.69*	5.29*
SITC 3	5	-32.35, -32.51*	10.64*
SITC 4	4	-31.72, -32.23*	7.17*
SITC 5	4	-32.21, -32.89*	2.52
SITC 6	4	-32.20, -32.82*	4.33*
SITC 7	4	-32.00, -32.88*	4.27*
SITC 8	4	-33.17, -33.39*	3.74*
Total MP	4	-34.34, -36.21*	6.89*

Source: Authors' compilation

Table 5 presents the results of the ERPT degree estimates on the import prices of the industrial sectors in the short-run, which are in line with the expected sign. Short-run represents the effect of an independent variable on the dependent variable, e.g., for each independent variable, the lag is introduced for at least one or two quarters. Evaluation results show that, in the short-run, the degree of ERPT is incomplete -0.95% and negatively significant for aggregate import prices. The ERPT is incomplete and negatively significant for food and live animals, chiefly for food (SITC 0) in the amount of -0.29%, in the fifth lag. For beverages and tobacco (SITC 1), the ERPT degree ranges from -0.48% to 0.86% in the first and third lags. Also, for raw materials, the

inedible, except crude materials, and inedible, except fuels (SITC 2) ERPT degree is 0.62%, in the first lag, mineral fuels, lubricants, and related materials (SITC 3) is 0.69%, at first lag, manufactured (SITC 8) is 0.35%, in the first lag and in machines and transport equipment (SITC 7), the ERPT degree ranges from -0.95% to -0.76%, in the first and fourth lags (Appendix, Figure 3).

Considering the significant values for all of the above industrial sectors, we reject the null hypothesis and complete pass-through, while the hypothesis about LCP cannot be discarded. Based on the results of the assessment, we can conclude that the ERPT degree is the highest in the short-term for beverages and tobacco of 0.86% and machines and transport equipment, which is close to one or -0.95%. In addition, the ECM (-1) has a negative significant value in all industrial sectors and the aggregate import prices. Based on the different degrees of ECM(-1) per sector, we have different correction rates in establishing long-term equilibrium after the shocks of import prices.

Table 5 also presents the results of diagnostic tests that indicate the stability and justification of the applicability of our model. The result of the Wald test shows, on the basis of *F*-statistics, that the value of the upper bounds is to confirm that there is cointegration between the variables. All other tests show that there are no functional constraints and that there is complete stability of our model. Finally, we emphasize that we have researched the heterogeneity of the exchange-rate transmission, that is, that ERPT heterogeneity exists among the industrial sectors. In addition, we conclude that the ERPT degree in the long-run is higher than in the short-run and that, in most industrial sectors, there was incomplete ERPT registered. The ERPT is higher in the case of heterogeneous products than homogeneous products. In

Table 5. Short-Run Coefficient Estimates ERPT and ECM(-1)

Variable	SITC0	SITC1	SITC2	SITC3	SITC4	SITC6	SITC7	SITC8	Total MP
D(lnMC)	0.03(5.26) 0.00*	0.01(1.06) 0.29	0.02(4.21) 0.00*	0.02(4.41) 0.00*	0.02(1.58) 0.12	0.01(1.84) 0.07	0.01(1.56) 0.12	-0.01(-0.32) 0.74	-0.01(0.30) 0.76
D(lnMC(-1))	0.06(5.57) 0.00*			-0.02(-3.92) 0.00*	0.17(6.62) 0.00*	0.01(1.53) 0.13	0.10(6.36)0.00*	0.05(5.18) 0.00*	0.06(6.95) 0.00*
D(lnMC(-2))	0.06(5.89) 0.00*				0.15(6.47) 0.00*	0.03(3.25) 0.00*	0.09(6.25)0.00*	0.05(4.74) 0.00*	0.06(7.39) 0.00*
D(lnMC(-3))	0.05(5.17) 0.00*				0.09(4.47) 0.00*	0.02(2.47) 0.01**	0.06(5.08)0.00*	0.02(3.42) 0.00*	0.03(4.39) 0.00*
D(lnMC(-4))	0.03(4.12) 0.00*					0.01(1.92) 0.06	0.04(5.40)0.00*	0.02(3.22) 0.00*	
D(lnMC(-5))	0.02(3.84) 0.00*								
D(lnY)	-0.58(-2.93) 0.00*	0.61(2.04) 0.05**	-1.35(-5.15) 0.00*	-1.17(-5.18) 0.00*	-2.38(-5.03) 0.00*	0.24(1.28) 0.20	-0.65(-3.22) 0.00*	-0.52(-2.68) 0.01**	-0.47(-2.11) *0.04
D(lnY(-1))	0.06(0.34) 0.73	0.59(1.72) 0.09	0.63(2.36) 0.02**					-0.51(-2.60) 0.01**	-0.75(-3.57) 0.00*

Table 5. Short-Run Coefficient Estimates ERPT and ECM(-1) – continuation

Variable	SITC0	SITC1	SITC2	SITC3	SITC4	SITC6	SITC7	SITC8	Total MP
D(lnY(-2))	0.08(0.47) 0.63	1.69(4.88) 0.00*						-0.43(-2.23) 0.03**	-0.63(-2.96) 0.00*
D(lnY(-3))	0.34(2.01) 0.06	1.27(3.61) 0.00*							
D(lnY(-4))	-0.58(-2.86) 0.00*	1.84(5.65) 0.00*							
D(lnY (-5))	0.84(3.30) 0.00*								
D(lnInf)	0.56(2.47) 0.02**	-0.22(-0.82) 0.41	-0.40(-1.4) 0.15	-0.76(-2.49) 0.01**	0.90(1.95) 0.06	-0.29(-1.27) 0.21	-0.85(-3.49) 0.00*	0.46(-2.53) 0.01**	0.41(2.10) 0.04**
D(lnInf(-1))	-0.88(-3.92) 0.00*		-0.42(-1.49) 0.14	-0.94(-3.71) 0.00*		-0.60(-2.32) 0.02*	0.45(1.69) 0.10		0.51(2.50) 0.01**
D(lnInf(-2))			-0.91(-3.13) 0.00*	-1.16(-3.89) 0.00*					0.33(1.48) 0.14
D(lnInf(-3))			0.68(2.47) 0.01**						
D(lnInf(-4))									
D(lnNEER)	-0.23(-1.77) 0.091	0.27(1.24) 0.22	-0.37(-1.80) 0.08	-0.61(-2.91) 0.00*	0.15(0.41) 0.68	0.64(-3.57) 0.00*	-0.60(-3.76) 0.00*	-0.48(-3.42) 0.00*	-0.95(-5.96) 0.00*
D(lnNEER(-1))	-0.17(-1.01) 0.32	-0.48(-2.08) 0.04**	-0.62(-2.95) 0.00*	-0.69(-3.36) 0.00*			-0.95(-5.08) 0.00*	-0.35(-2.34) 0.02**	
D(lnNEER(-2))	0.31(1.75) 0.09	0.44(2.03) 0.05**					-0.02(-0.14) 0.88		
D(lnNEER(-3))	0.17(1.01) 0.32	0.86(3.88) 0.00*					-0.28(-1.56) 0.12		
D(lnNEER(-4))	0.19(1.32) 0.19						-0.76(-5.22) 0.00*		
D(lnNEER(-5))	-0.29(-2.39) 0.02**								
D(lnOpen)	-0.42(-1.93) 0.06	-0.18(-0.75) 0.45	0.91(4.71) 0.00*	0.82(4.69) 0.00*	-0.54(-1.31) 0.19	-0.10(-0.71) 0.48	-0.18(-0.85) 0.40	0.17(1.03) 0.30	0.05(0.34) 0.72
D(lnOpen(-1))	0.51(2.13) 0.04**	0.08(0.37) 0.70	-0.30(-1.72) 0.09	0.19(1.09) 0.28	-0.13(-0.38) 0.70		-1.20(-5.12) 0.00*	-0.50(-2.48) 0.01**	0.32(2.09) 0.04*
D(lnOpen(-2))	-0.73(-3.78) 0.00*	-0.87(-4.68) 0.00*	0.21(1.41) 0.16	0.16(1.05) 0.30	0.80(2.89) 0.00*		0.26(2.04) 0.05**	0.30(2.76) 0.00*	0.45(3.56) 0.00*
D(lnOpen(-3))	0.27(2.17) 0.04**	0.11(0.55) 0.58	-0.31(-1.88) 0.06	-0.29(-1.85) 0.07			0.388(3.40) 0.00*		
D(lnOpen(-4))	0.16(1.15) 0.26	0.01(0.01) 0.98	0.69(3.91) 0.00*	0.50(2.95) 0.00*					
D(lnOpen(-5))	0.31(2.44) 0.02**	0.68(3.92) 0.00*		0.47(2.64) 0.01**					
C	1.25(5.48) 0.00*	3.51(6.50) 0.00*	0.83(6.09) 0.00*	0.74(8.73) 0.00	-1.48(-6.87) 0.00*	-0.49(-5.19) 0.00*	-1.27(-5.41) 0.00*	0.24(5.20) 0.00*	-1.30(-7.64) 0.00*
ECM(-1)	-0.71(-5.44) 0.00*	-0.38(-6.49) 0.00*	-0.45(-6.08) 0.00*	-0.57(-8.67) 0.00*	-0.19(-6.87) 0.00*	-0.57(-5.27) 0.00*	-0.48(-5.49) 0.00*	-0.40(-5.07) 0.00*	-0.40(-7.65) 0.00*
Wald test	4.05 0.00*	2.25 0.00*	2.44 0.00*	7.60 0.00*	2.85 0.00*	3.66 0.00*	2.83 0.00*	3.13 0.00*	230.81 0.00*
Norm.	0.18	0.55	0.38	0.35	0.46	0.23	0.80	0.88	0.56
CUSUM	Unstable	Stable	Stable	Stable	Stable	Stable	Stable	Stable	Stable
CUSUMSQ	Unstable	Stable	Stable	Stable	Stable	Unstable	Stable	Stable	Stable
Adjusted R.	0.91	0.92	0.88	0.82	0.83	0.91	0.78	0.95	0.87
DW	2.07	1.86	2.04	1.72	2.00	2.023	1.61	1.90	2.03

*, **, and *** show significance degrees at 1%, 5%, and 10%, respectively. *Note*: numbers outside brackets are the standard errors and numbers in brackets are the *p*-value. *Source*: Author's compilation.

Source: Authors' compilation.

addition, we have investigated that a higher share of imports leads to a lower degree of the ERPT; in our case, it is evident for manufactured goods classified chiefly by material and machines and transport equipment.

Table 6 presents the results of the degree of the ERPT estimates in the long-run on the import prices of the industrial sectors, which are in line with the expected remark. The long-term effect is the sum of the coefficients of several variables. The estimation results show that, in the long-run, there is a complete ERPT for aggregate import prices -1.02% and for beverages and tobacco (SITC 1) 1.58%. In this way, we reject the null hypothesis and incomplete pass-through, while the PCP hypothesis cannot be discarded. Complete pass-through is equal to or higher than 1 or $H_0: \alpha_1 \geq 1$, while incomplete pass-through is less than 1 or $H_0: \alpha_1 \leq 1$. NEER's depreciation has led to an increase in import prices (Appendix, Figure 1). Foreign exporters use a PCP strategy that leads to complete ERPT, i.e., the prices are expressed in the manufacturer's currency. The ERPT will be complete, and the floating currency exchange rate will have a powerful effect on macroeconomic adjustment when prices are expressed in the currency of the exporter (producer currency pricing [PCP]) (Dabusinskas, 2003).

In other industrial sectors, we have revealed that a significant and incomplete ERPT, i.e., minerals, lubricants, and related materials (SITC 3), is -0.70%, Manufactured goods are classified primarily by material (SITC 6) -0.64% and machines and transport equipment (SITC 7) 0.93% lags (Appendix, Figure 2). Thus, we reject the null hypothesis and complete pass-through, while the hypothesis about local currency pricing (LCP) cannot be discarded. The ERPT will be uncomplete and low, and changes in currency exchange rate will not have an impact on international prices when the prices are expressed in the local currency (LCP) (Dabusinskas, 2003). In these industries, the Croatian economy is not competitive and not elastic enough in terms of import. In addition, foreign exporters use the LCP price strategy that affects ERPT to be low, and currency changes have no strong impact on price changes. Finally, for food and live animals, primarily for food (SITC 0), crude materials, inedible, except fuels (SITC 2), animal and vegetable oils, fats and waxes (SITC 4), and miscellaneous manufactured goods, no significant ERPT was found; therefore, we reject the null hypothesis, incomplete and complete pass-through.

Table 7 presents the results of estimating variance decomposition of the aggregate import prices (MP) to shocks in the nominal effective exchange rate (NEER) after 6.12% and 24 months. The variation of the nominal effective currency

Table 6. Long-Run Coefficient Estimates ERPT of Industrial Sectors

Variable	D (lnMC)	D (lnY)	D (lnNEER)	D (lnInf)	D (lnOpen)
SITC0	-0.05 (-1.10) 0.28	-0.07(-0.45) 0.65	-0.39(-1.83) 0.08	1.33(9.65) 0.00*	-0.07(-0.48) 0.63
SITC1	0.06(1.73) 0.09	-1.56(-3.78) 0.00*	1.58(3.36) 0.00*	2.06(3.90) 0.00*	-1.55(-2.11) 0.04**
SITC2	0.09(2.17) 0.03**	-0.19(-0.79) 0.43	-0.27(-0.64) 0.52	1.07(7.11) 0.00*	0.13(0.67) 0.50
SITC3	0.13(3.07) 0.00*	0.10(0.49) 0.62	-0.70(-2.30) 0.02**	1.07(10.84) 0.00*	0.04(0.41) 0.68
SITC4	-0.78(-1.74) 0.08	1.21(1.22) 0.22	0.34(0.23) 0.81	0.67(0.23) 0.17	-0.02(-0.06) 0.95
SITC6	0.02(0.90) 0.36	0.47(3.78) 0.00*	-0.64(-2.75) 0.00*	0.93(21.09) 0.00*	-0.07(-1.30) 0.20
SITC7	-0.18(-2.94) 0.00*	-0.23(-1.67) 0.10	0.93(3.07) 0.00*	0.95(11.26) 0.00*	0.39(3.13) 0.00*
SITC8	-0.13(-2.19) 0.03**	0.08(0.47) 0.63	0.09(0.37) 0.71	0.15(1.33) 0.19	0.61(4.32) 0.00*
Total MP	-0.16(-2.32) 0.02**	0.80(4.13) 0.00*	-1.02(-3.21) 0.00**	0.85(5.80) 0.00*	0.30(2.16) 0.03*

*, **, and *** show significance levels at 1%, 5%, and 10%, respectively.

Note: Numbers inside brackets are the standard errors; numbers in outside brackets are the coefficients and the *p*-value.

Source: Authors' compilation

exchange rate variation is growing in the short-term from 8.15% to 9.19%, which means that NEER explains shocks in import prices at 9.19% in the short-term.

Table 7. Variance Decomposition of Import Prices

Period	lnMP	ln NEER	lnY	lnMC	lnInf	lnOpen
6	71.02	8.15	8.01	5.93	6.35	0.51
12	68.89	9.19	8.37	5.03	7.31	1.18
24	63.09	8.84	13.44	5.04	7.60	1.96

Source: Authors' compilation

In the long-run (24 months), the variation of the nominal effective exchange-rate decomposition varies to 8.84%. On the other hand, the variation of domestic demand decomposition grows in short- and long-run. In the long-run, the decomposition variant amounts to 13.44% and mostly explains shocks at import prices. Finally, the variation of inflation decomposition in the long run or in 24 months at 7.60% explains shocks at import prices (Appendix, Figure 4).

Conclusion

This paper examines the influence of macro factors and the degree of the exchange-rate pass-through (ERPT) on aggregate and disaggregated import prices of industrial sectors, in the short- and long-run, in Croatia over the period from 2002 to 2016.

We have estimated the degree of the ERPT to aggregate and disaggregated import prices of the industrial sectors. In a short-run, the degree of the ERPT is incomplete at -0.95% and negatively significant for aggregate import prices and for food and live animals, chiefly for food mineral fuels, lubricants, and related materials, manufactured goods classified chiefly by material, machines and transport equipment, and miscellaneous manufactured goods. On the other hand, in the long-run, degree of ERPT is a complete for aggregate import prices at -1.02% and beverages and tobacco at 1.58%, while mineral fuels, lubricantsm, and related materials, chemicals and related products, and machines and transport

equipment have incomplete pass-through. Therefore, we have examined that, in the long-term, foreign exporters use the PCP price-setting strategy, while using an LPC short-run pricing strategy. The latter strategy has little impact on changing prices in the international market.

The estimation results show ERPT heterogeneity, which is the result of the heterogeneity transmission of the exchange rate. The ERPT degree is higher in the long- than in the short-run for the majority of the industrial sectors. The ERPT is higher in the case of heterogeneous products than homogeneous products. In addition, we have investigated that a higher share of imports leads to a lower degree of the ERPT; in our case, it is evident for manufactured goods classified chiefly by material and machines and transport equipment. On the other hand, we have succeeded in confirming the conventional statement that product imports composition will change, meaning that product imports from sectors with lower ERPT will increase, and that imports of products from the sectors with higher pass-through will decrease. In our case, imports of raw materials and chemical and related products were increased, while imports of machinery and transport equipment decreased.

Finally, the results of the research emphasize the importance of macroeconomic factors, such as currency exchange rate and inflation, and degree of the ERPT, i.e., to import prices. Also, the industrial compositions of trade influence the degree of the ERPT, i.e., at the import prices of the industrial sectors. In this respect, the results of our research can be helpful to economic policymakers.

In our research, due to unavailability of data, we were not able to examine the effect of micro factors on the disaggregated import prices of industrial sectors. In addition, due to the limited scope of work, we were not able to present results of the structural breakpoint and robustness checks.

Our future research will focus on comparison of a degree of the ERPT to the import, consumer, and producer prices in Croatia. Accordingly, we will include additional micro- and macroeconomic factors in our analysis.

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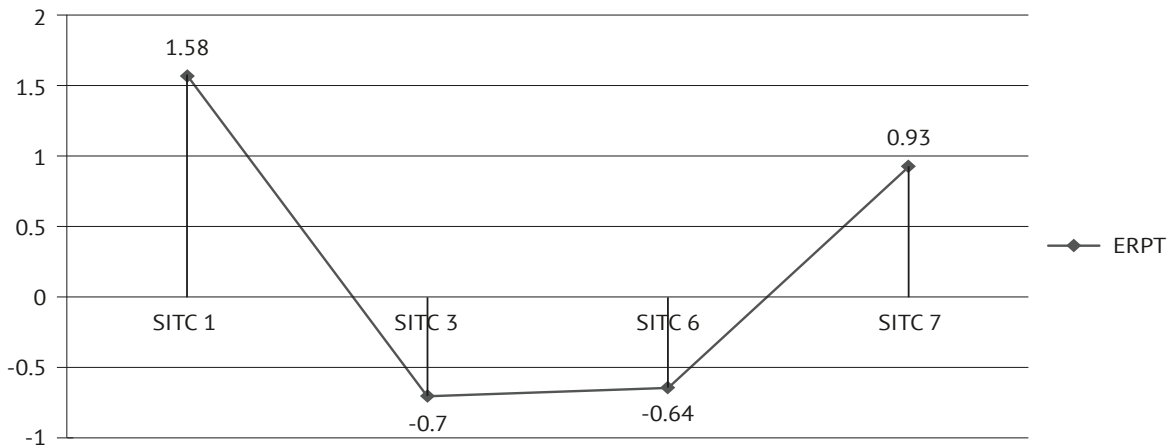
Appendix

**Figure 1.** Movement of NEER, Inflation, and Import Prices for Croatia, from 2002 to 2016
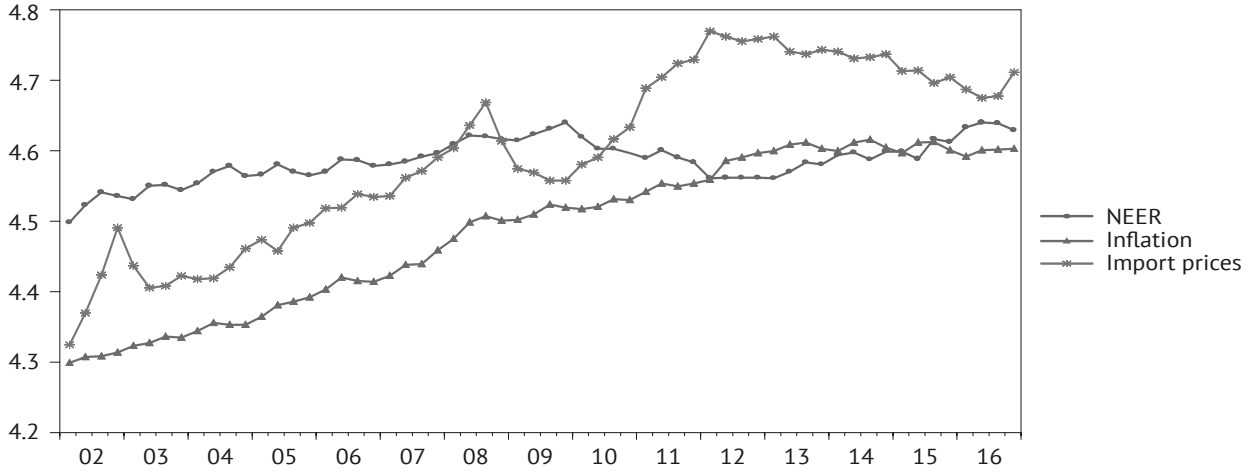
Notes: Figure 1 is based on the Eurostat database
Source: Authors' compilation

Figure 2. Complete and Partial ERTP in the Long-Term, Significant by Sectors
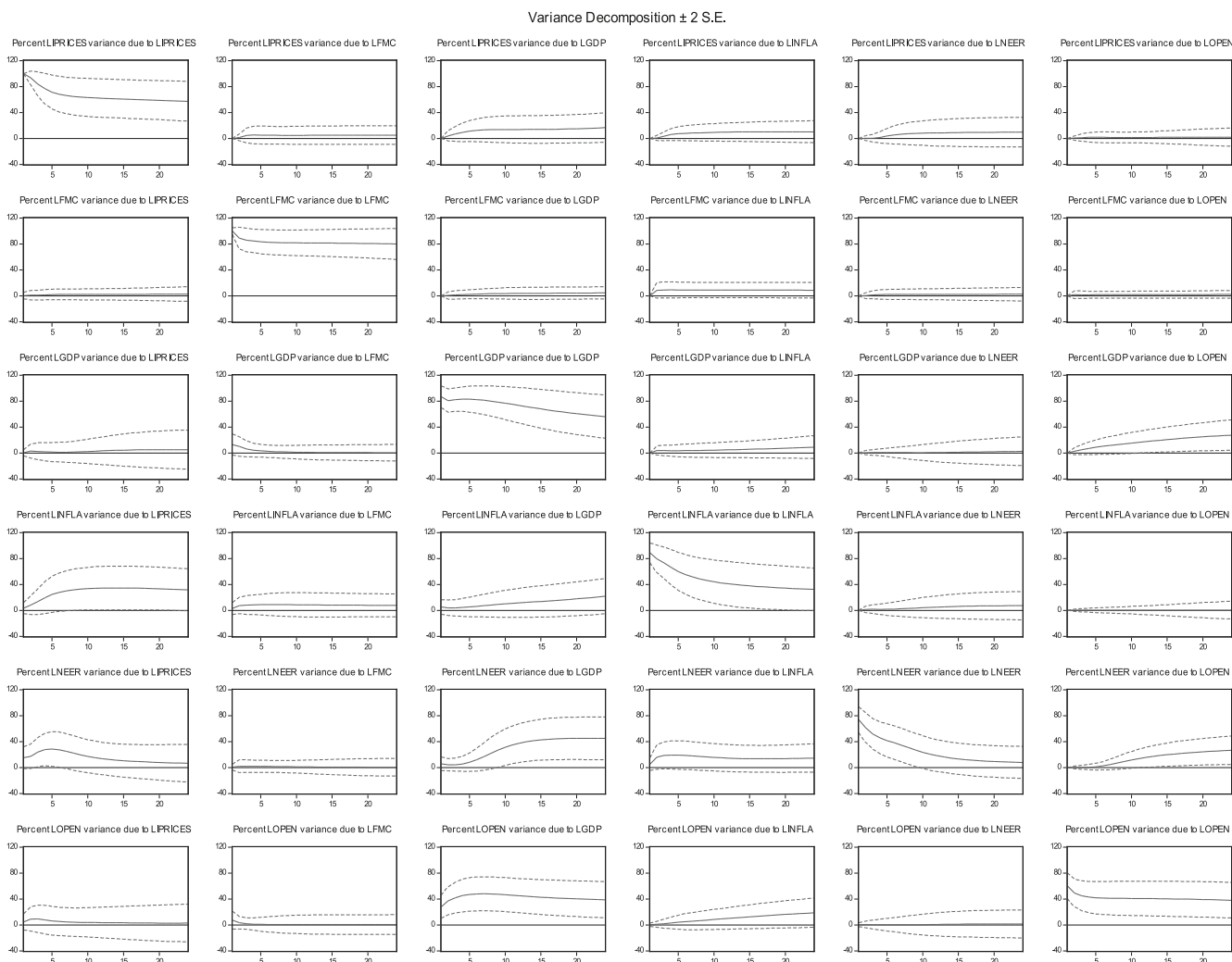

Notes: Figure 2 is based on results
Source: Authors' compilation

Figure 3. Complete and Partial ERTP in a Short-Term, Significant by Sectors
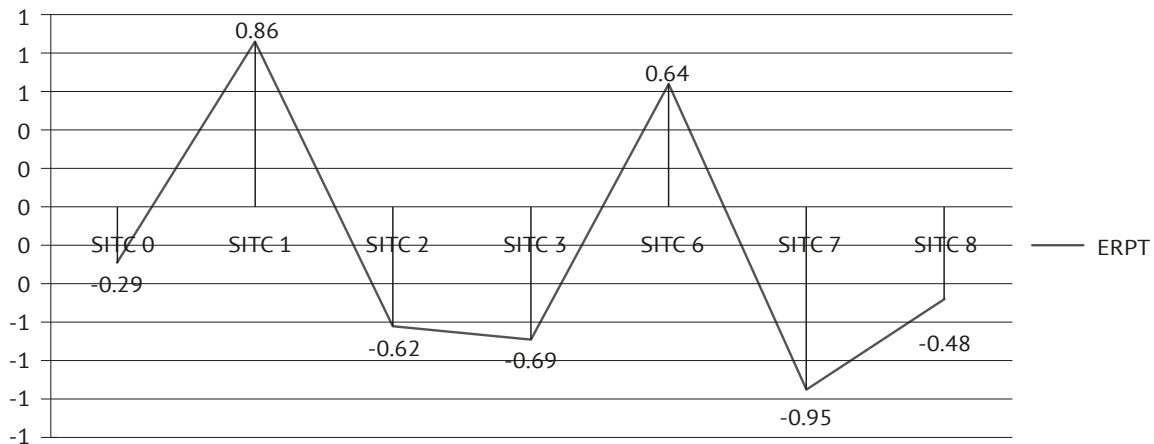
Notes: Figure 3 is based on results
Source: Authors' compilation

Figure 4. Variance Decomposition of Import Price for 24 months

Variance Decomposition ± 2 S.E.

Source: Author's compilation

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Učinek prehajanja deviznega tečaja v hrvaške uvozne cene

Izvleček

Ključni cilj tega članka je testirati kratkoročni in dolgoročni vpliv makro dejavnikov in stopnjo učinka prehajanja deviznega tečaja (ERPT) v agregatne in neagregatne uvozne cene industrijskih sektorjev. Študija temelji na modelu Campe in Goldberga (2002) ter Campe in drugih (2005). Učinek prehajanja deviznega tečaja smo določili z uporabo ene enačbe in kointegracijskega pristopa (ARDL), vektorske razčlenitve ter podatkov iz obdobja od 2002Q1 do 2016Q4. Dolgoročno je ERPT popoln za agregatni uvoz in industrijski sektor pijač in tobaka. Kratkoročno je ERPT nepopoln za agregatni uvoz in večino industrijskih sektorjev. Nadalje smo ugotovili, da je stopnja ERPT-ja višja pri heterogenih proizvodih kot pri homogenih proizvodih. Zaradi nedostopnosti podatkov za mikro dejavnike nismo mogli določiti njihovega učinka na uvozne cene. Rezultati naše raziskave lahko pripomorejo k oblikovanju primernih ukrepov ekonomskih politik, ki bodo izboljšali konkurenčnost gospodarstva. Nazadnje je članek identificiral vpliv stopnje volatilnosti ERPT-ja na neagregatne uvozne cene industrijskih sektorjev, ki do zdaj še ni bil zadosti raziskan.

Ključne besede: devizni tečaj, industrijski sektorji, uvozne cene, pristop ARDL

Testing the Purchasing Power Parity Hypothesis: Case of ASEAN Economies

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Abstract

We examine the purchasing power parity (PPP) hypothesis of 10 members of ASEAN. A battery of panel unit root tests is employed on data series from January 1995 to January 2018 in order to search for validity of PPP in the period before the Great Recession and in the post-crisis period. All the calculations are based on four numeraire currencies: Chinese yuan (CNY), Japanese yen (JPY), US dollar (USD), and the euro (EUR). First, following the outcome of the present study for ASEAN countries, the PPP holds mostly with respect to CNY rates. Second, for the post-financial crisis period, our research proves conclusively that the PPP supposition is predominantly valid between the currencies of ASEAN countries and EUR rates. The sample of countries in the study is limited to the ASEAN group of economies. Based on the evaluated parity conditions, the emergence of global economic crisis brought about significant currency shifts in the ASEAN. The selection and testing of a broader range of numeraire currencies is vital to provide empirical underpinning for PPP notion.

Keywords: purchasing power parity, panel unit root tests, ASEAN countries, currency markets

Introduction

The concept of purchasing power parity (PPP) encapsulates the basic idea of competitive open markets and represents an essential part of international macroeconomics. The relative version of PPP implies that variations in the exchange rates correspond to the changes in the ratio of price levels of the observed countries. Shifts in relative prices are, therefore, in the long run, the main driving force behind the development of exchange rates. Due to numerous market frictions, obstacles in cross-border trade, and nonlinearities in the adjustment of exchange rates, deviations from PPP can be substantial (Taylor & Taylor, 2004). Although the empirical literature on PPP for developed market economies is enormous and is continuing to expand with the introduction of new methodological approaches and estimation techniques, the interest of experts is progressively turning toward the emerging Asian economies. Their growing importance in international trade and in global supply chains as well as their increasing participation in international financial flows makes Asian countries particularly interesting candidates for PPP testing.

Our paper scrutinizes the PPP hypothesis on the members of the Association of Southeast Asian Nations (ASEAN): Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand, and Vietnam. The economic footprint of the ASEAN camp is important also on a global scale. When taken as a single economy, ASEAN's GDP is the fifth largest in the world, and it has the third largest population. Especially in terms of trade and foreign direct investment inflows, the group cultivates firm ties with EU, China, Japan, and the USA (Feng, 2018). The novelty of this paper is twofold. First, we use a battery of panel unit root tests on extended data series from January 1995 to January 2018 in order to search for validity of PPP in the period before the Great Recession and in the post-crisis period. Second, we run the unit root tests concurrently for Chinese yuan (CNY), Japanese yen (JPY), US dollar (USD), and euro (EUR) rates.

The paper is organized as follows. The next chapter offers a short overview of the literature, while the basic theory of PPP, the data, and the econometric methodology are described in the following chapter. Thereafter, the empirical results are discussed. The main findings of our work are delineated in the concluding part of the paper.

Concise Review of Literature

The study of Bec and Zeng (2013) operates with data set covering the early years of the Association of Southeast Asian Nations. The researchers examine real exchange rates of five charter members of the Association (Indonesia, Malaysia, the Philippines, Singapore, and Thailand) over the period from 1970–2010. Estimating nonlinear models, they reject the null of a unit root for all the five exchange rates with respect to the USD and thus confirm the nonlinear mean-reverting supposition for the group of ASEAN-5. The stationarity of real exchange rates on the USD is also proven in seven out of eight Asian economies in the paper of Zhou and Kutan (2011). Further, Arize *et al.* (2015) inspected the cointegration characteristics of exchange rates and prices of 27 Asian economies against the USD and found support for PPP in a significant number of countries. Lau *et al.* (2012) also confirmed PPP in the period from 1997–2009 for four ASEAN countries when China is used as a base country. Findings on the PPP in Lau *et al.* (2012) at least indirectly point to the importance of cooperation in trade and finance and economic policy coordination among economies in the Asian region.

The remaining studies on our list provide more mixed evidence on PPP or at least some reservations about the empirical validity of this exchange rate concept. Chang *et al.* (2010) rejected the unit root hypothesis for merely four countries' real exchange rates among eight ASEAN members

only after the panel's seemingly unrelated regression of the Kapetanios–Shin–Snell (SURKSS) tests are applied with respect to the USD and the JPY. Based on nonlinear unit root tests employing the USD as the numeraire, Chang *et al.* (2012) also reported that PPP is relevant only for three among eight of the ASEAN economies. The PPP proposition has been carefully examined by Munir and Kok (2015) as well, namely, for the class of ASEAN-5 with a wide range of advanced panel unit root tests and cointegration analysis. The evidence on stationarity attributes of real exchange rates toward the USD is, in this study, fragmentary; thus, considerably more support for the theory is reported from the application of panel cointegration test. According to Munir and Kok (2015), an important piece of empirical evidence on PPP could be obtained by elaborating on the different numeraire currencies in future studies. Additionally, we emphasize the work of Choji and Sek (2017) who analysed five ASEAN members via threshold cointegration tests but detected long-run PPP in only two cases.

Recently, Dang and Yang (2017) tested the law of one price on the sample of local retail prices for 78 goods and services in ASEAN-8 countries. The main conclusion from the quoted study is that, under the nonlinear ESTAR regime, in the period from 1990–2013, the convergence to the law of one price can be observed only in approximately 20%–23% of the analysed traded and nontraded prices.

Methodology and Data

Froot and Rogoff (1995) have formally stated the purchasing power parity (PPP) as

$$e_t = \alpha_0 + \alpha_1 p_t + \alpha_2 p_t{}^* + \xi_t , \qquad (1)$$

where e_t stands for the nominal exchange rates defined as the price of foreign currency in the units of domestic currency, p_t presents domestic price index, and $p_t{}^*$ foreign price index. The error term ξ_t indicates deviations from PPP. All the variables are expressed in logarithms.

The empirical investigation is based on monthly data spanning from January 1995 to January 2018 for ASEAN economies, including Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand, and Vietnam. The consumer price indices (CPI, 2010=100) and the monthly averages of nominal exchange rates with reference currencies of EUR and USD were assembled from IMF (2018). For the purpose of this empirical investigation, exchange rates of CNY and JPY were calculated as cross rates among the USD rates of observed ASEAN economies and USD rates of CNY and JPY, respectively. Due to the

limited availability of CPI data for Euroarea, the analysis of EUR reference rates starts in January 1996.

The empirical study was conducted in three parts, considering the whole observed period: (1) the pre-economic crisis period; (2) spanning from January 1995 to December 2007; and the post-economic crisis period; (3) ranging from July 2009 to January 2018. NBER (2012) methodology for defining the US business cycles was applied in determination of the subperiods.

In this paper, we estimate the peculiarities of real exchange rates in accordance to the strict version of PPP in Equation 1, where $\alpha_0=0$, $\alpha_1=1$, and $\alpha_2= -1$. The nominal exchange rates should adjust in such a way to eliminate the changes in relative prices. Therefore, the real exchange rates should be constant over the long-run, and their time series are expected to be stationary, with no unit roots (Parikh & Wakerley, 2000).

In search for evidence in favour of PPP, this paper applies panel unit root tests. As described in Boršič and Bekő (2018), the model takes into account the following autoregressive [AR(1)] process for panel data:

$$y_{i,t} = \rho_i y_{i,t-1} + X_{i,t}\delta_i + \varepsilon_{i,t} , \qquad (2)$$

where i represents N cross-section units observed over periods $t=1, 2, ..., T_i$, $X_{i,t}$ are exogenous variables in the model (any fixed effects or individual trends), ρ_i are autoregressive coefficients, while errors ($\varepsilon_{i,t}$) are assumed as mutually independent idiosyncratic disturbance. When the absolute value of ρ_i is less than 1, y_i is weakly stationary. When the absolute value of ρ_i is 1, y_i contains a unit root. The panel unit root tests in our analysis differ in two assumptions about the ρ_i in panel unit root tests. Levin, Lin, and Chu (2002) and Breitung (2000) approaches consider common unit root processes, with common autoregressive coefficients across cross-sections ($\rho_i=\rho$) for all i. On the other hand, Im, Pesaran, and Shin (2003), Fisher ADF and Fisher PP (Maddala & Wu, 1999; Choi, 2001) procedures deal with individual unit root processes, where ρ_i varies across cross-sections. According to Boršič and Bekő (2018), the precending subchapters denote the specific characteristics of panel unit tests applied in this study.

Characteristics of Levin, Lin, and Chu test and Breitung test

The Levin, Lin, and Chu (2002) test takes into account the following augmented Dickey–Fuller (ADF) specification

$$\Delta y_{i,t} = \alpha y_{i,t-1} + \sum_{j=1}^{p_i} \beta_{i,j}\Delta y_{i,t-j} + X'_{i,t}\, \delta + \varepsilon_{i,t} , \qquad (3)$$

where a common $\alpha = \rho$-1 is assumed, while the lag order for difference terms (p_i) varies across cross-sections. The null hypothesis (H_0: $\alpha = 0$) implies that there is a unit root. While the alternative hypothesis (H_1: $\alpha < 0$) implies stationarity. In the Levin, Lin, and Chu (2002) approach, the first step requires an assessment of auxiliary regressions of $\Delta y_{i,t}$ and $y_{i,t}$ on lagged terms $\Delta y_{i,t-j}$ and on exogenous variables $X_{i,t}$. Residuals (denoted by ~) are used as proxies for $\Delta y_{i,t}$ and $y_{i,t}$. In the next step, an estimate of α ($\hat{\alpha}$) is calculated from the pooled equation

$$\Delta \widetilde{y}_{i,t} = \alpha\widetilde{y}_{i,t-1} + \eta_{i,t} , \qquad (4)$$

where $\eta_{i,t}$ denotes the error process. Levin, Lin, and Chu (2002) derive the modified t statistics [t^* in Eq. (5)] for the resulting $\hat{\alpha}$ and show that it is asymptotically normally distributed:

$$t^* = \frac{1}{\sigma^*}\left(t - NT \cdot \hat{S}_N \hat{\sigma}^{-2}\hat{\sigma}_\alpha \mu^*\right), \qquad (5)$$

where μ^* and σ^* are adjustment terms for the mean and standard deviation calculated by Levin, Lin, and Chu (2002), $\hat{\sigma}_\alpha$ is the standard error of $\hat{\alpha}$, $\hat{\sigma}^2$ is the estimated variance of the residuals from Eq. (4), and $\hat{S}_N$ denotes the average of individual ratios of long- to short-run standard deviations. $\hat{S}_N$ is estimated with kernel-based techniques. In accordance with Levin, Lin, and Chu (2002) and Hurlin (2010), we applied the Bartlett kernel, Parzen kernel, and quadratic spectral kernel. In order to check the robustness of the results, we also considered the regression in Eq. (3) augmented with individual linear deterministic trends. The number of lags in each cross-section ADF regression (p_i) was selected by the Schwarz information criterion.

The Breitung test is similar to the Lin, Levin, and Chu test. It estimates auxiliary regressions of $\Delta y_{i,t}$ and $y_{i,t}$ on lagged terms $\Delta y_{i,t-j}$ only, while proxies are transformed and detrended ($\Delta y_{i,t}*$). Panel proxy equation is used to estimate the persistence parameter α:

$$\Delta y_{i,t}* = \alpha\, y_{i,t-1}* + v_{i,t}. \qquad (6)$$

According to Breitung (2000), under the null hypothesis, the estimate of the persistence parameter α is asymptotically normally distributed.

Characteristics of Im, Pesaran, and Shin test

Im, Pesaran, and Shin (2003) take into account individual unit root processes and calculate individual ADF regression for each cross-section:

$$\Delta y_{i,t} = \alpha y_{i,t-1} + \sum_{j=1}^{p_i} \beta_{i,j}\Delta y_{i,t-j} + X'_{i,t}\, \delta + \varepsilon_{i,t} , \qquad (7)$$

where the null hypothesis is

$$H_0 : \alpha_i = 0, \quad \text{for all } i, \tag{8}$$

while the alternative hypothesis is defined as

$$H_1 : \begin{cases} \alpha_i = 0 & \text{for} \quad i = 1, 2, \dots, N_1 \\ \alpha_i < 0 & \text{for} \quad i = N_1 + 1, \dots, N \end{cases}, \tag{9}$$

$\bar{t}$ stands for the average of the t-statistics for α_i from individual ADF regressions:

$$\bar{t} = \frac{1}{N} \sum_{i=1}^{N} t_i . \tag{10}$$

Im, Pesaran, Shin (2003) standardize the $\bar{t}$-statistic and prove that the new statistic W is asymptotically normally distributed.

Characteristics of Fisher ADF and Fisher PP Tests

Considering the results of Fischer (1932), Maddala and Wu (1999) and Choi (2001) developed tests that integrate the individual p-values. π_i denotes the p-value from individual unit root test for cross-section i. According to Hurlin (2010), the corresponding p-values are uniform [0, 1] variables. Maddala and Wu (1999) define their statistic as

$$\chi^2 = -2 \sum_{i=1}^{N} \log(\pi_i) \tag{11}$$

and prove that it has an asymptotic χ^2-distribution with $2N$ degrees of freedom. Choi (2001) defines a similar Z statistic:

$$Z = -\frac{\sum_{i=1}^{N} \log(\pi_i) + N}{\sqrt{N}} . \tag{12}$$

The null and alternative hypotheses are the same as for the Im, Pesaran, and Shin test above [Eqs. (8) and (9)]. Under the null hypothesis, Z-statistic is normally distributed.

Presentation of Results

Results of the Levin, Lin, and Chu panel unit root test are presented in Table 1. For the whole period under investigation (January 1995–January 2018), the null of a unit root is strictly rejected in all variations of the test for CNY and EUR as base currencies, while it is rejected for USD base currency when individual effects and individual linear trends are included regardless of kernel specification. As for JPY base currency, the null is rejected only in one out of six variations of the test. Applying these empirical results to PPP theory, we can conclude that, for the whole observed period, there is very strong evidence for validity of PPP in the case of CNY and EUR, quite strong evidence in the case of USD, and very little evidence in the case of JPY as a reference currency.

The precrisis period (January 1995–December 2007) provides less evidence for the validity of PPP because the unit root is rejected only when individual effects are considered with a 10% level of significance for the CNY as reference currency. In the case of EUR, the null is rejected more firmly with a 1% significance level when individual effects are allowed for, while the unit root is not rejected for USD and JPY base currency in any variation of the Levin, Lin, and Chu test. Consequently, the PPP is proven for CNY and EUR as base currencies.

Regarding the post-crisis period (July 2009–January 2018), the null of a unit root is rejected strongly (1% significance level) for USD base currency in all variations of the test, while it is also strongly rejected when individual effects are considered for all kernel-based techniques in the case of EUR as base currency. However, the unit root is not rejected, and PPP not proven in the case of CNY and JPY as reference currencies. Thus, the PPP theory is confirmed in the case of USD and EUR as reference currencies.

Table 1. Results of Levin, Lin, and Chu Test

Sample	Base currency	Bartlett Kernel		Parzen Kernel		Quadratic Spectral Kernel	
		Individual effects	Individual effects and individual linear trends	Individual effects	Individual effects and individual linear trends	Individual effects	Individual effects and individual linear trends
		t^* (p-value)	t^* (p-value)	t^* (p-value)	t^* (p-value)	t^* (p-value)	t^* (p-value)
1995M1–2018M1	CNY	-2.84467*** (0.0022)	-3.62520*** (0.0001)	-2.75534*** (0.0029)	-3.39716*** (0.0003)	-2.71046*** (0.0034)	-3.29122*** (0.0005)
	JPY	0.20157 (0.5799)	-1.34766* (0.0889)	0.35966 (0.6404)	-1.03958 (0.1493)	0.30566 (0.6201)	-1.07637 (0.1409)
	USD	-0.03777 (0.4849)	-2.75271*** (0.0030)	0.02757 (0.5110)	-2.61838*** (0.0044)	0.00323 (0.5013)	-2.64823*** (0.0040)
	EUR	-2.19054** (0.0142)	-1.81003** (0.0351)	-2.15267** (0.0157)	-1.77429** (0.0380)	-2.19212** (0.0142)	-1.76768** (0.0386)

Table 1. Results of Levin, Lin, and Chu Test – continuation

1995M1-2007M12	CNY	1.59711* (0.0551	-1.02347 (0.1530)	-1.57767* (0.0573)	-1.20267 (0.1146)	-1.58037* (0.0570)	-1.15362 (0.1243)
	JPY	0.36711 (0.6432)	1.69213 (0.9547)	0.35278 (0.379)	1.72024 (0.9573)	0.33934 (0.6328)	1.69327 (0.9548)
	USD	-0.68964 (0.2452)	3.61977 (0.9999)	-0.66254 (0.2538)	3.57239 (0.9998)	-0.67525 (0.2498)	3.61217 (0.9998)
	EUR	-2.84479*** (0.0022)	-1.27696 (0.1008)	-2.76144*** (0.0029)	-1.08868 (0.1381)	-2.78141*** (0.0027)	-1.09787 (0.1361)
2009M7-2018M1	CNY	-0.34785 (0.3640)	-1.05809 (0.1450)	-0.22398 (0.4114)	-0.75396 (0.2254)	-0.18528 (0.4265)	-0.56833 (0.2849)
	JPY	-0.34558 (0.3648)	1.45723 (0.9275)	-0.23131 (0.4085)	1.69499 (0.9550)	-0.25693 (0.3986)	1.61862 (0.9472)
	USD	-2.73269*** (0.0031)	-3.11251*** (0.0009)	-2.65208*** (0.0040)	-2.98523*** (0.0014)	-2.69401*** (0.0035)	-2.90644*** (0.0018)
	EUR	-3.44511*** (0.0003)	0.69641 (0.7569)	-3.29210*** (0.0005)	0.98820 (0.8385)	-3.30661*** (0.0005)	1.05484 (0.8543)

Notes: (1) The number of lags used in each cross-section ADF regression (p_i) was defined by the Schwarz information criterion. Computation was conducted with Newey–West bandwidth selection. (2) *** denotes the significance level of 1%, ** significance level of 5% and * significance level of 10%. (3) The whole period and the precrisis period for EUR reference rates starts with January 1996.

Table 2 displays results of the Breitung panel unit root test. It can be observed that the null of a unit root is firmly rejected in the case of JPY and CNY as base currencies in the whole observed period for all alternative specifications, while the null cannot be rejected for USD and EUR reference currencies. When the presence of the Great Recession is taken into consideration, the null cannot be rejected for either the reference currencies or for time-period specifications. Along with results of the Breitung test, PPP can be confirmed only for the whole period when JPY and CNY are applied as base currencies.

Results of the Im, Pesaran, and Shin test are introduced in Table 3. For the whole observed period, the null of a unit root can be strongly rejected in the case of CNY reference currency for all test specifications. If JPY is considered, the null is rejected with 10% significance level when individual effects and individual linear trends are included and lag selection is determined by Schwarz and Hannan–Quinn information criteria, while the null cannot be rejected in the case of EUR and USD reference currencies. Thus, there is strong evidence for validity of PPP in the case of CNY and

Table 2. Results of Breitung Test

Sample	Base currency	Akaike Information Criterion	Schwarz Information Criterion	Hannan–Quinn Information Criterion
		Individual effects and individual linear trends	Individual effects and individual linear trends	Individual effects and individual linear trends
		t-stat (*p*-value)	*t*-stat (*p*-value)	*t*-stat (*p*-value)
1995M1-2018M1	CNY	-1.59019* (0.0559)	-2.15920** (0.0154)	-1.73752** (0.0411)
	JPY	-3.65533*** (0.0001)	-4.08082*** (0.0000)	-4.08082*** (0.0000)
	USD	0.37221 (0.6451)	-0.13866 (0.4449)	0.02514 (0.5100)
	EUR	-0.51106 (0.3047)	-0.31344 (0.3770)	-0.34121 (0.3665)
1995M1-2007M12	CNY	0.41781 (0.6620)	-0.10945 (0.4564)	-0.04845 (0.4807)
	JPY	-0.73655 (0.2307)	-1.15655 (0.1237)	-1.35898* (0.0871)
	USD	1.45084 (0.9266)	1.77285 (0.9619)	1.77285 (0.9619)
	EUR	-0.69291 (0.2442)	-0.25792 (0.3982)	-0.26064 (0.3972)

Table 2. Results of Breitung Test – continuation

2009M7-2018M1	CNY	-0.20769 (0.4177)	-0.18410 (0.4270)	-0.25420 (0.3997)
	JPY	-1.24490 (0.1066)	-0.76801 (0.2212)	-0.94437 (0.1725)
	USD	1.28435 (0.9005)	1.38266 (0.9166)	1.33883 (0.9097)
	EUR	0.41605 (0.6613)	0.87160 (0.8083)	0.73559 (0.7690)

Notes: (1) *** denotes the significance level of 1%, ** significance level of 5% and * significance level of 10%. (2) The whole period and the precrisis period for EUR reference rates starts with January 1996.

some evidence in favour of PPP in the case of JPY as base currency.

For the precrisis period, the results show the rejection of the null for CNY as reference currency when individual effects are included for all three lag selection criteria. The null can also be rejected when EUR is taken into account in the case of lag selection by Akaike information criteria regardless for both deterministic specifications, while for JPY and USD the null of a unit root cannot be rejected. Consequently, these results show evidence for the validity of PPP in the case of CNY and EUR as reference currencies. As for the post-crisis period, one cannot reject the unit root when CNY, JPY, and USD are considered as reference currencies

regardless of test specification. In the case of EUR rates, the null can be rejected when individual effects are included in the specification with all three lag selection criteria. Hence, there is evidence for validity of PPP when EUR is the reference currency.

Maddala and Wu χ^2 statistics, as the results of Fisher ADF panel unit root tests, are stated in Table 4. Considering the whole time period, the null of a unit root cannot be rejected for JPY and USD no matter what the specification of the test is, while the unit root is strongly rejected (1% significance level) in the case of CNY and rejected by 5% and 10% significance level in the case of EUR. Along with these results, one can confirm the validity of PPP in the

Table 3. Results of Im, Pesaran, and Shin Test

Sample	Base currency	Schwarz Information Criterion		Akaike Information Criterion		Hannan–Quinn Information Criterion	
		Individual effects	Individual effects and individual linear trends	Individual effects	Individual effects and individual linear trends	Individual effects	Individual effects and individual linear trends
		W-stat (p-value)	W-stat (p-value)	W-stat (p-value)	W-stat (p-value)	W-stat (p-value)	W-stat (p-value)
1995M1-2018M1	CNY	-3.32945*** (0.0004)	-2.99199*** (0.0014)	-3.19978*** (0.0007)	-2.97777*** (0.0015)	-3.11683*** (0.0009)	-2.94016*** (0.0016)
	JPY	0.06908 (0.5275)	-1.44953* (0.0736)	0.48948 (0.6877)	-1.25101 (0.1055)	0.20671 (0.5819)	-1.44953* (0.0736)
	USD	0.31929 (0.6252)	0.57846 (0.7185)	0.41518 (0.6610)	-0.20441 (0.4190)	0.40498 (0.6573)	0.45398 (0.6751)
	EUR	-1.21038 (0.1131)	-0.14190 (0.4439)	-1.11461 (0.1325)	-1.08613 (0.1387)	-1.21038 (0.1131)	-0.73303 (0.2318)
1995M1-2007M12	CNY	-2.28701** (0.0111)	0.27314 (0.6076)	-2.81715*** (0.0024)	-053008 (0.2980)	-2.27783** (0.0114)	0.40716 (0.6581)
	JPY	0.20472 (0.5811)	1.65316 (0.9509)	-0.38098 (0.3516)	0.40852 (0.6586)	-0.34869 (0.3637)	1.02405 (0.8471)
	USD	-0.14988 (0.4404)	4.86334 (1.0000)	-0.81643 (0.2071)	4.53882 (1.0000)	-0.13955 (0.4445)	4.86334 (1.0000)
	EUR	-0.96414 (0.1682)	-0.50872 (0.3055)	-1.44758* (0.0739)	-1.32083* (0.0933)	-0.96141 (0.1682)	-0.50537 (0.3066)

Table 3. Results of Im, Pesaran, and Shin Test – continuation

2009M7-2018M1	CNY	0.01376 (0.5055)	-1.19389 (0.1163)	0.26061 (0.6028)	-1.08572 (0.1388)	0.11609 (0.5462)	-1.06584 (0.1432)
	JPY	0.08081 (0.5322)	1.59587 (0.9447)	0.12700 (0.5505)	0.80247 (0.7889)	-0.10073 (0.4599)	0.80247 (0.7889)
	USD	-0.58358 (0.2798)	-0.45074 (0.3261)	-0.71958 (0.2359)	0.25144 (0.5993)	-0.59358 (0.2764)	-0.18332 (0.4273)
	EUR	-2.42068*** (0.0077)	0.22655 (0.5896)	-2.68312*** (0.0036)	-0.78884 (0.2151)	-2.54072*** (0.0055)	-0.19460 (0.4229)

Notes: (1) *** denotes the significance level of 1%, ** significance level of 5% and * significance level of 10%. (2) The whole period and the precrisis period for EUR reference rates starts with January 1996.

whole period when CNY and EUR are considered as reference currencies.

The evidence for PPP is similar, yet less strong, when the precrisis period is examined. There is no affirmation of PPP in the case of JPY and USD, while PPP can be confirmed when CNY and EUR are base currencies. The null

is rejected when individual effects are considered for all three lag selection criteria in the case of CNY. The evidence for PPP is not as strong in the case of EUR, when the null can be rejected only when individual effects are included and Akaike information criterion is used for lag selection. Dealing with the post-crisis period results demonstrate that the null cannot be rejected in the case of CNY, JPY, and USD

Table 4. Results of Fisher ADF Tests (Maddala and Wu χ^2 Statistic)

Sample	Base currency	Schwarz information criterion		Akaike information criterion		Hannan–Quinn information criterion	
		Individual effects	Individual effects and individual linear trends	Individual effects	Individual effects and individual linear trends	Individual effects	Individual effects and individual linear trends
		χ^2 (*p*-value)	χ^2 (*p*-value)	χ^2 (*p*-value)	χ^2 (*p*-value)	χ^2 (*p*-value)	χ^2 (*p*-value)
1995M1-2018M1	CNY	47.8525*** (0.0004)	40.2466*** (0.0046)	45.9678*** (0.0008)	39.3257*** (0.0061)	46.2142*** (0.0008)	39.5045*** (0.0058)
	JPY	16.4218 (0.6901)	26.3424 (0.1548)	15.5364 (0.7449)	23.6678 (0.2572)	16.1829 (0.7052)	26.3424 (0.1548)
	USD	18.0275 (0.5856)	13.9025 (0.8354)	16.9385 (0.6570)	18.0340 (0.5852)	18.7442 (0.5385)	15.0365 (0.7743)
	EUR	28.9691* (0.0884)	21.0815 (0.3923)	28.8146* (0.0915)	35.9699** (0.0155)	28.9691* (0.0884)	31.2629* (0.0518)
1995M1-2007M12	CNY	34.5334** (0.0227)	13.7195 (0.8444)	41.9868*** (0.0028)	21.5022 (0.3681)	34.4452** (0.0233)	13.6889 (0.8459)
	JPY	14.0657 (0.8272)	8.15253 (0.9908)	17.9265 (0.5923)	16.1911 (0.7047)	17.6815 (0.6084)	10.3226 (0.9619)
	USD	18.2235 (0.5727)	4.72183 (0.9998)	22.8137 (0.2980)	5.95651 (0.9990)	18.1499 (0.5775)	4.72183 (0.9998)
	EUR	27.3593 (0.1255)	21.0813 (0.3924)	34.0973** (0.0255)	27.2264 (0.1290)	27.3593 (0.1255)	21.0047 (0.3969)
2009M7-2018M1	CNY	24.1550 (0.2357)	22.6554 (0.3060)	22.7721 (0.3001)	22.8452 (0.2965)	25.2461 (0.1922)	23.8583 (0.2486)
	JPY	11.1853 (0.9413)	19.9705 (0.4598)	12.4129 (0.9011)	23.9718 (0.2436)	11.1853 (0.9413)	20.5449 (0.4243)
	USD	20.8592 (0.4055)	20.0991 (0.4517)	21.9432 (0.3436)	15.3765 (0.7545)	20.8950 (0.4033)	18.6685 (0.5435)
	EUR	35.1598** (0.0193)	14.8457 (0.7852)	37.5138** (0.0101)	22.1255 (0.3337)	36.2600** (0.0143)	17.6592 (0.6098)

Notes: (1) *** denotes the significance level of 1%, ** significance level of 5% and * significance level of 10%. (2) The whole period and the precrisis period for EUR reference rates starts with January 1996.

as reference currencies, showing no support for PPP theory. However, the null can be rejected when EUR is considered as reference currency and individual effects are included for all three lag selection criteria.

Choi Z statistics resulting from Fisher ADF panel unit root test is presented in Table 5. In the whole period, there is again strong rejection of the unit root when CNY is the base currency. If individual effects and individual linear trends are included and either Schwarz or Hannan–Quinn lag selection criterion is applied the null can be rejected also in the case of JPY. While the unit root cannot be rejected in the case of USD and EUR. Thus, there is strong evidence for PPP in the case of CNY and some evidence for PPP in the case of JPY.

For the precrisis period, the results are practically the same as in the case of Maddala and Wu χ^2 statistics (Table 4). The results support the PPP theory in the case of CNY when individual effects are included, regardless of lag selection criterion and in the case of EUR rates when individual effects are included and Akaike information criterion is applied. As for the post-crisis period, the null cannot be rejected when JPY and USD are reference currencies, providing no support for PPP. The unit root can be rejected at a 10% significance level if CNY is the reference currency when Schwarz information criterion defines the lag with individual effects and Hannan–Quinn information criterion defines the lag regardless of deterministic specification. While in the case of EUR, the null can be rejected when individual effects are included, regardless of lag selection

Table 5. Results of Fisher ADF Tests (Choi Z-Statistic)

Sample	Reference currency	Schwarz Information Criterion		Akaike Information Criterion		Hannan–Quinn Information Criterion	
		Individual effects	Individual effects and individual linear trends	Individual effects	Individual effects and individual linear trends	Individual effects	Individual effects and individual linear trends
		Z (p-value)	Z (p-value)	Z (p-value)	Z (p-value)	Z (p-value)	Z (p-value)
1995M1-2018M1	CNY	-3.47810*** (0.0003)	-3.08320*** (0.0010)	-3.29225*** (0.0005)	-3.01163*** (0.0013)	-3.20748*** (0.0007)	-2.97789*** (0.0015)
	JPY	0.15187 (0.5604)	-1.51149* (0.0653)	0.58926 (0.7222)	-1.19860 (0.1153)	0.28753 (0.6131)	-1.51149* (0.0653)
	USD	0.32240 (0.6264)	064219 (0.7396)	0.54587 (0.7074)	-0.01755 (0.4930)	0.42446 (0.6644)	0.56074 (0.7125)
	EUR	-1.17573 (0.1199)	-0.05621 (0.4776)	-1.00647 (0.1571)	-0.80504 (0.2104)	-1.17573 (0.1199)	-0.54456 (0.2930)
1995M1-2007M12	CNY	-2.42300*** (0.0077)	0.29064 (0.6143)	-2.91573*** (0.0018)	-0.42342 (0.3360)	-2.41405*** (0.0079)	0.42343 (0.6640)
	JPY	0.28270 (0.6113)	1.74641 (0.9596)	-0.29206 (0.3851)	0.59682 (0.7247)	-0.31085 (0.3780)	1.09831 (0.8640)
	USD	-0.14421 (0.4427)	4.68820 (1.0000)	-0.81917 (0.2063)	4.55611 (1.0000)	-0.13207 (0.4475)	4.68820 (1.0000)
	EUR	-0.95286 (0.1703)	-0.49809 (0.3092)	-1.39073* (0.0822)	-1.22500 (0.1103)	-0.95285 (0.1703)	-0.48724 (0.3130)
2009M7-2018M1	CNY	-1.27747* (0.1007)	-1.09983 (0.1357)	-1.09093 (0.1377)	-1.15650 (0.1237)	-1.39959** (0.0808)	-1.33317* (0.0912)
	JPY	1.02932 (0.8483)	-0.43337 (0.3324)	0.80733 (0.7903)	-1.09548 (0.1367)	1.02932 (0.8483)	-0.56753 (0.2852)
	USD	-0.52297 (0.3005)	-0.45599 (0.3242)	-0.60951 (0.2711)	0.34336 (0.6343)	-0.50040 (0.3084)	-0.17718 (0.4297)
	EUR	-2.48687*** (0.0064)	0.23943 (0.5946)	-2.70204*** (0.0034)	-0.65594 (0.2559)	-2.61343*** (0.0045)	-0.17040 (0.4323)

Notes: (1) *** denotes the significance level of 1%, ** significance level of 5% and * significance level of 10%. (2) The whole period and the precrisis period for EUR reference rates starts with January 1996.

Table 6. Results of Fisher PP Tests (Maddala and Wu Χ² Statistic)

Sample	Reference currency	Bartlett Kernel		Parzen Kernel		Quadratic Spectral Kernel	
		Individual effects	Individual effects and individual linear trends	Individual effects	Individual effects and individual linear trends	Individual effects	Individual effects and individual linear trends
		χ^2 (p-value)	χ^2 (p-value)	χ^2 (p-value)	χ^2 (p-value)	χ^2 (p-value)	χ^2 (p-value)
1995M1-2018M1	CNY	42.0686*** (0.0027)	30.2595* (0.0658)	42.3277*** (0.0025)	30.3690* (0.0641)	41.4027*** (0.0033)	30.4296* (0.0632)
	JPY	12.7235 (0.8889)	19.4272 (0.4942)	14.0402 (0.8285)	21.0033 (0.3969)	13.8234 (0.8393)	20.6993 (0.4150)
	USD	16.0456 (0.7138)	11.1287 (0.9428)	16.0847 (0.7114)	11.4545 (0.9336)	15.8214 (0.7276)	11.3596 (0.9364)
	EUR	26.1754 (0.1601)	15.5690 (0.7430)	26.0181 (0.1652)	15.5066 (0.7467)	25.4429 (0.1850)	15.4561 (0.7497)
1995M1-2007M12	CNY	31.2623* (0.0518)	9.84858 (0.9708)	31.7101** (0.0465)	10.1218 (0.9659)	31.6013** (0.0477)	10.0988 (0.9663)
	JPY	13.8624 (0.8374)	7.88401 (0.9926)	13.7552 (0.8427)	7.76052 (0.9933)	13.6580 (0.8474)	7.50054 (0.9947)
	USD	15.8313 (0.7270)	3.60539 (1.0000)	16.1608 (0.7066)	3.82255 (1.0000)	16.1123 (0.7096)	3.69291 (1.0000)
	EUR	21.4926 (0.3687)	13.6643 (0.8471)	21.5861 (0.3664)	13.7937 (0.8408)	21.6758 (0.3584)	13.0942 (0.8733)
2009M7-2018M1	CNY	10.0722 (0.9668)	16.4080 (0.6910)	11.2290 (0.9401)	18.4308 (0.5591)	11.0747 (0.9443)	18.4781 (0.5559)
	JPY	9.25082 (0.9798)	9.99858 (0.9682)	9.62227 (0.9745)	10.6361 (0.9551)	9.57215 (0.9753)	10.6975 (0.9537)
	USD	20.5745 (0.4225)	15.6444 (0.7384)	20.8082 (0.4085)	17.1958 (0.6402)	20.7510 (0.4119)	17.3307 (0.6314)
	EUR	32.9738** (0.0340)	12.5791 (0.8947)	33.3416** (0.0309)	13.5735 (0.8514)	33.2907** (0.0313)	13.7189 (0.8445)

Notes: (1) *** denotes the significance level of 1%, ** significance level of 5% and * significance level of 10%. (2) The whole period and the precrisis period for EUR reference rates starts with January 1996.

Table 7. Results of Fisher PP Tests (Choi Z-Statistic)

Sample	Reference currency	Bartlett Kernel		Parzen Kernel		Quadratic Spectral Kernel	
		Individual effects	Individual effects and individual linear trends	Individual effects	Individual effects and individual linear trends	Individual effects	Individual effects and individual linear trends
		Z (p-value)	Z (p-value)	Z (p-value)	Z (p-value)	Z (p-value)	Z (p-value)
1995M1-2018M1	CNY	-2.96619*** (0.0015)	-2.14210** (0.0161)	-3.02963*** (0.0012)	-2.15065** (0.0158)	-2.97089*** (0.0015)	-2.15214** (0.0157)
	JPY	1.03533 (0.8497)	-0.58582 (0.2790)	0.75582 (0.7751)	-0.82958 (0.2034)	0.80799 (0.7905)	-0.79004 (0.2148)
	USD	0.57305 (0.7167)	1.09831 (0.8640)	0.54544 (0.7073)	1.02490 (0.8473)	0.59219 (0.7231)	1.04195 (0.8513)
	EUR	-0.71081 (0.2386)	0.69794 (0.7574)	-0.70344 (0.2409)	0.70402 (0.7593)	-0.66069 (0.2544)	0.70939 (0.7610)
1995M1-2007M12	CNY	-2.10412** (0.0177)	1.23757 (0.8921)	-2.15175** (0.0157)	1.19491 (0.8839)	-2.13704** (0.0163)	1.19362 (0.8837)
	JPY	0.25249 (0.5997)	1.68428 (0.9539)	0.27271 (0.6075)	1.70822 (0.9562)	0.29550 (0.6162)	1.79508 (0.9637)
	USD	0.12679 0.5504	5.39800 1.0000	0.06458 0.5257	5.49808 1.0000	0.07517 0.5300	5.50966 1.0000
	EUR	-0.27488 0.3917	0.64680 0.7411	-0.32068 0.3742	0.53602 0.7040	-0.31023 0.3782	0.65297 0.7431

Table 7. Results of Fisher PP Tests (Choi Z-Statistic) – continuation

2009M7–2018M1	CNY	1.11900 (0.8684)	-0.14094 (0.4440)	0.94840 (0.8285)	-0.50810 (0.3057)	0.99374 (0.8398)	-0.48647 (0.3133)
	JPY	1.37486 (0.9154)	1.54759 (0.9391)	1.29086 (0.9016)	1.37642 (0.9157)	1.30454 (0.9040)	1.41224 (0.9211)
	USD	-0.34027 (0.3668)	0.32645 (0.6280)	-0.40966 (0.3410)	0.06521 (0.5260)	-0.37440 (0.3541)	0.05901 (0.5235)
	EUR	-2.26363** (0.0118)	0.62513 (0.7341)	-2.29837** (0.0108)	0.40582 (0.6576)	-2.29732** (0.0108)	0.37612 (0.6466)

Notes: (1) *** denotes the significance level of 1%, ** significance level of 5% and * significance level of 10%. (2) The whole period and the precrisis period for EUR reference rates starts with January 1996.

criteria applied. Hence, there is evidence in support of PPP when CNY and EUR are considered as reference currencies.

The results of Fisher PP tests are manifested in Table 6 (Maddala and Wu χ^2 statistics) and Table 7 (Choi Z-statistics). Examining the whole observed period, the unit root cannot be rejected; consequently, there is no evidence in favour of PPP when JPY, USD, or EUR are reference currencies, regardless of kernel techniques or deterministic specification applied. However, the null can be strongly rejected if CNY is reference currency for all possible test specifications, providing evidence in support of PPP validity.

Considering the precrisis period, the results are similar to the whole period outcomes. There is no evidence what so ever for PPP when JPY, USD, or EUR are reference currencies. As for CNY, the results support the validity of PPP when individual effects are included for all three kernel specifications. In the post-crisis period, the null of a unit root cannot be rejected when CNY, JPY, or USD are considered as base currencies disregarding test specifications. When EUR rates are used, the null can be rejected when individual effects and any of the three kernel techniques are applied. Thus, there is support for PPP theory only in the case of EUR as the reference currency.

Conclusion

The paper formally examines the stationary properties of real exchange rates for ASEAN countries using data series from the beginning of 1995. We found important evidence for the mean reversion of real exchange rates toward PPP in the data sample, although the results reveal some heterogeneity. When we take the whole observed period, the PPP is supported for ASEAN-10 by all the panel unit root tests in the case of CNY values. With respect to the remaining three reference currencies, the relevance of the

PPP hypothesis is not unequivocal, but the exchange rate theory is for all base currencies confirmed under at least one panel unit root test. Testing the data sample until the end of 2007 for JPY, USD, and EUR rates produced rather mixed results. In the same period, the PPP proposition holds for the ASEAN group, when China's currency acts as the base for real exchange rates. For the period after the outbreak of the global economic crisis, the results clearly corroborate the PPP proposition for real exchange rates of ASEAN markets when the calculations are performed on euro data. The evidence on PPP-based adjustment of real exchange rates is in the observed Asian economies for the remaining numeraire currencies in the post-crisis time span fairly weak.

The empirical exercise, presented in this paper, brings two important insights. First, the selection and testing of a broader range of numeraire currencies are vital to provide an empirical underpinning for PPP notion. Following the outcome of the present study for ASEAN countries, the PPP holds mostly with respect to CNY rates. Second, when it comes to the parity conditions, the emergence of global economic crisis brought about significant currency shifts in the ASEAN. For the post-financial crisis period, our research proves conclusively that the PPP supposition is predominantly valid between the currencies of the ASEAN countries and the EUR rates.

The evidence on PPP is, in this paper, limited to the ASEAN group. The extension of the presented work can be planned in two directions. First, new empirical findings could be generated by increasing the number of countries that are evaluated for PPP. Second, the application of nonlinear unit root test would further enrich our knowledge about the validity of this exchange rate theory.

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Testiranje hipoteze paritete kupne moči: primer gospodarstev ASEAN

Izvleček

Preverjamo hipotezo paritete kupne moči (PKM) na desetih državah skupine ASEAN. Uporabljen je cel niz panelnih testov enotskega korena na podatkih od januarja 1995 do januarja 2018. Vsi izračuni temeljijo na štirih referenčnih valutah, in sicer CNY, JPY, USD in EUR. Prvič, izhajajoč iz izidov pričujoče študije, PKM pretežno velja, če se kot referenčna valuta pojavlja CNY. Drugič, za pokrizno obdobje naša raziskava prepričljivo pokaže, da je PKM pretežno veljavna za razmerja med valutami držav ASEAN in evrom. Vzorec držav je v raziskavi omejen na skupino ASEAN. Upoštevajoč preučevane paritetne pogoje je nastanek globalne gospodarske krize sprožil pomembne valutne premike v skupini ASEAN. Zajem in testiranje širšega nabora referenčnih valut sta nujno potrebna za empirično podkrepitev ideje o PKM.

Ključne besede: pariteta kupne moči, panelni testi enotskega korena, države ASEAN, devizni trgi

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