Univerza v Mariboru
Ekonomsko-poslovna fakulteta

Letnik: 67 | Številka: 4 | 2021
Volume: | Number:

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NAŠE GOSPODARSTVO

Revija za aktualna ekonomska in poslovna vprašanja

OUR ECONOMY

Journal of Contemporary Issues in Economics and Business

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Letnik 67, št. 4, 2021

Izdajatelj:
Ekonomsko-poslovna fakulteta Maribor (EPF)

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

Revija je uvrščena v bibliografske baze podatkov EconLit, European Reference Index for the Humanities and the Social Sciences (ERIH PLUS), Directory of Open Access Journals (DOAJ), ProQuest, EBSCO, Ulrich's Periodicals Directory in številne druge.

OUR ECONOMY

Journal of Contemporary Issues in Economics and Business

Vol. 67, No. 4, 2021

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

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

E-mail:
our.economy@um.si

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

The journal is indexed/abstracted in EconLit, European Reference Index for the Humanities and the Social Sciences (ERIH PLUS), Directory of Open Access Journals (DOAJ), ProQuest, EBSCO, Ulrich's Periodicals Directory and numerous of other bibliographic databases.

Lektoriranje: Taia Translation Services

Dtp: Univerzitetna založba Maribor

Letno izidejo 4 (štiri) številke. Letna naročnina: za pravne in fizične osebe 44,10 €, za tujino 54,60 €.

ISSN 0547-3101

Revijo sofinancira Javna agencija za raziskovalno dejavnost Republike Slovenije.

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Is There Asymmetry in the Relationship Between Government Consumption Dynamics and Economic Activity? Evidence From G7 Economies

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ORIGINAL SCIENTIFIC PAPER

RECEIVED: NOVEMBER 2021

REVISED: NOVEMBER 2021

ACCEPTED: NOVEMBER 2021

DOI: 10.2478/ngoe-2021-0018

UDK: 336.145:330.34

JEL: C22, E60, E62

Citation: Senekovič, M. (2021). Is there Asymmetry in the Relationship between Government Consumption Dynamics and Economic Activity? Evidence from G7 Economies. *Naše gospodarstvo/Our Economy, 67*(4), 1-12. DOI: 10.2478/ngoe-2021-0018.

Abstract

In this paper, based on a quarterly dataset of G7 countries with the application of a nonlinear ARDL model we test for the presence of a short-run and long-term asymmetry in the relationship between government spending and economic activity. The main aim of this study is to analyze the relationship between government spending and economic activity in two separate scenarios, first, in periods when government spending increases and, second, in periods when government spending decreases. Our key findings are, first, the linear model that produces a positive relationship between government consumption and economic activity. Second, in the nonlinear model, more than half of the short-run and long-run coefficients are statistically significant. Third, short-run and long-run asymmetry are detected in four out of seven cases with recognized short-run asymmetry also in the remaining three cases based on graphical analysis. Finally, a negatively inclined short-run asymmetry is detected. The results thus imply a stronger output effect in periods of declining dynamics in government consumption. Future research should be focused on broadening the sample countries and model by adding additional variables.

Keywords: fiscal policy, nonlinear ARDL model, G7 countries

Introduction

Over the last 15 years, the development of the economic conditions on a global scale led to many changes in the perception and understanding of the functioning of economies at the macroeconomic level. From the great recession and the debt crisis-related deflationary pressures accompanied by the economics of depression to the later revival of economic activity mainly at the expense of extremely accommodative monetary policy measures, in the last two years, we found ourselves in the grip of covid economics. An attempt to cope with simultaneous supply and demand shocks was necessary and, therefore, also addressed by central banks and governments across the world. However, as the global epidemic has not yet been resolved and economic policy stimulus still ongoing, the main concern is how to properly manage inflationary pressures without

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jeopardizing future economic growth and high levels of employment. We seem to have become accustomed to a state of persistent crisis which requires constant efforts by the authorities to maintain economic development on the right course and where certain measures are already in use for many years.

Logically, questions are raised about the effectiveness of economic policy by managing the business cycle in changing and evolving macroeconomic conditions, especially in the desire to overcome this turbulent epidemic period with as much as possible low direct and indirect costs. If over the last decade, a mild consensus has been established about reduced efficiency of monetary policy in periods of zero lower bound (Di Bucchianico, 2021; Bernanke, 2020), simultaneously, fiscal policy has gradually gained in importance at both scientific (Buchner, 2020) and political (Gaspar et al., 2021; Schnabel, 2021) levels. Moreover, it was the epidemic period that demonstrated the true potency of fiscal transfer policy to stimulate aggregate demand in real-time.

For this reason, in the last decade, the turn to a more comprehensive and in-depth study of the effectiveness of fiscal policy in managing the business cycle was understandable. A hot topic has become a comprehensive understanding of the functioning of the fiscal multiplier mechanism, which, however, remains unexplored with too many empirical specificities, at least in some parts. The factors that influence the effectiveness of fiscal policy by promoting economic growth are particularly interesting. One of these peculiarities is the presence of nonlinear processes in the relationship between fiscal spending and economic activity (Horwath et al., 2020; Alqaralleh, 2020).

The main aim of this study is, therefore, to analyze the relationship between government consumption and economic activity in two separate scenarios, first, in periods when government spending increases and, second, in periods when government spending decreases. According to economic theory, a positive connection is assumed. Therefore, both variables should be moving in the same direction. On the other hand, the question is whether this output response is symmetric or asymmetric in its magnitude. The nature of the relationship between those two variables is estimated based on the new dataset for the sample of G7 countries with applying an asymmetric ARDL methodological framework.

This paper is structured as follows. In chapter 2, we provide an empirical literature review from the field of modeling and examining the role of fiscal policy actions by stimulating aggregate economic activity. In chapter 3, the methodological framework used in this paper is presented. In chapter 4, we briefly describe our data sample. Results are documented and explained in chapter 5 while chapter 6 concludes.

Empirical Literature Review

According to recent development in the field of understanding the efficient functioning of fiscal policy measures, more comprehensive knowledge is yet to emerge gradually. In this chapter, we outline key findings of the relevant empirical literature concentrating on examining the relationship between fiscal spending and output dynamics with all its known specialties. Through empirical literature review, we provide some estimates of fiscal multipliers with focusing on papers that analyze specific characteristics which might affect the effectiveness of fiscal policy actions and address nonlinearities in the aforementioned fiscal mechanism.

Perotti (2002) and Blanchard and Perotti (1999) set out foundations for the development of the study of fiscal policy and its impact on the gross domestic product and the other key macroeconomic variables based on the vector autoregression methodology. Blanchard and Perotti (1999) find positive government spending multipliers and negative tax multipliers in the United States while Perotti (2002) points out the reduced effect of fiscal stimuli in the years after 1980 in five developed countries. Studies that follow in that direction, e.g. Giordano et al. (2007) and Burriel et al. (2019), provide additional support of the significant output effect of discretionary fiscal policy in developed economies. Moreover, House et al. (2020) based on the analysis of 29 advanced economies found out that eliminating austerity measures in the period after great recession would have substantially reduced output losses.

Further research showed that it is reasonable to distinguish between different phases of the business cycle by estimating the output effect of fiscal stimuli. Auerbach and Gorodnichenko (2010, 2011, 2014) assessed fiscal multipliers in separate studies for the United States, OECD economies, and Japan. The common conclusion of these studies was that the estimated values of fiscal multipliers differed between recession and expansion with values increasing at the time of recession. Batini et al. (2012) also corroborated the premise of higher spending multipliers in recession periods. On the other hand, the results of Ramey and Zubairy (2014) for the United States did not indicate a statistically significant difference between the values of the multipliers relative to the phase of the business cycle. In addition to this, Qazizada and Stockhammer (2015) estimated higher spending multipliers during contractions, while results do not indicate a difference in the impact of government spending during zero lower bound periods.

Some researchers concentrate on the structural characteristics of countries and show that these factors contribute to the dynamic of output effect of government spending. Ilzetzki et al. (2013), for example, found that the output effect of fiscal stimuli is greater in more developed countries, the size of fiscal multipliers is smaller in more open economies compared with the reference figures in closed economies, and that fiscal multipliers are smaller or even negative in countries with high public debt. On the sample of 48 emerging and advanced economies, Hory (2016) gauged a considerably lower size of spending multiplier in the case of emerging market economies than in the case of advanced economies. Moreover, the spending multiplier is negatively correlated with imports, public debt, and savings. On the other hand, however, it is positively correlated with unemployment level and financial development. In addition to this, Wierzbowska and Shibamoto (2018) figured out that capital flows, especially foreign direct investment, play an important role in determining the sizes of fiscal multipliers. Koh (2017) confirms the findings of other studies and implies that fiscal multipliers are larger during periods of low public debt, in periods of the financial crisis and economic downturn, and more developed countries. Contrary to the findings in Ilzetzki et al. (2013), Koh (2017) reports that fiscal multipliers are not necessarily smaller in the economies with high trade and financial openness. He also argues that the size of fiscal multipliers does not necessarily depend on the type of exchange-rate regime. Borsi (2018) estimated larger fiscal multipliers in times of a credit crunch.

The great recession with a prolonged period of sluggish growth suggests that the scope for countercyclical monetary policy remains limited. Auerbach and Gorodnichenko (2017) found that constraint on monetary policy coincides with a resurgence in activist fiscal policy which has moved from a focus on automatic stabilizers to strong reliance on discretionary measures reflecting not only a necessity but also growing evidence of the effectiveness of such policy to fight recessions. This development of recognizing fiscal policy as at least equally if not more efficient than monetary policy in times of long and deep recessions surfaced to mainstream thinking during a covid-19 slump when governments of major capitalistic countries urged, together with its independent central banks, for a massive fiscal expansion (Gaspar et al., 2021; Schnabel, 2021).

Some studies scrutinize output response to fiscal policy actions also based on autoregressive distributed lag approach. For example, Alexiu and Nellis (2017) find for the Greek economy over the period 1960-2014 that the size of the fiscal multiplier does not differ substantially over the phases of the business cycle. In addition to this, their results indicate that irrespective of the scale of inflation, government spending positively affects output growth. At the same time, however, results do not clearly support the notion about the role of exceptionally low-interest rates in determining the relationship between government spending and economic activity. Furthermore, Sharma and Mittal (2019) provide some evidence about the presence of an asymmetric association between fiscal deficit and gross domestic product in the short and long run based on the nonlinear ARDL model for India where, according to their findings, fiscal deficit harms gross domestic product. Asandului et al. (2020) on a sample of twelve post-communist economies and asymmetric ARDL approach estimate that cumulative impact of fiscal policy generates inflationary output effect for countries in their sample.

In recent years, more and more studies have emerged in the field of examining the role of fiscal policy actions with results implying gradual convergence in understanding the functioning of the transmission mechanism of fiscal policy. However, the empirical literature is still far from a unanimous conclusion about the size dependence of fiscal multipliers to country-specific structural and dynamic factors. Moreover, the nature of the transmission mechanism of fiscal measures is only partially explained, with new determinants still to be tested and thoroughly analyzed. In this paper, we apply the aforementioned nonlinear ARDL approach to a sample of G7 countries which are all characterized as large, open, and developed economies.

Methodology

The relationship between government consumption and economic activity is estimated via the autoregressive distributed lag model following Pesaran et al. (2001) which is noted as a linear or symmetric ARDL model from here on. The model is presented in equation 1.

$$\Delta logY_t = \alpha_0 + \sum_{i=1}^{n_1} \alpha_{1i} y_t \Delta logY_{t-1} + \sum_{i=0}^{n_2} \alpha_{2i} \Delta \log G_{t-i} + \\ + \alpha_3 \Delta \log Y_{t-1} + \alpha_4 \Delta \log G_{t-1} + \varepsilon_t \quad (1)$$

Where the coefficients α_{2i} represent short-run effects of government consumption (measured in first differences) on economic activity and the coefficient α_4 represents long-run effect estimated based on the lagged variable of government consumption. Notations are as follows. G stands for government consumption and Y stands for aggregate output.

Shin et al. (2014) upgrade the linear ARDL model by introducing some nonlinearities into it. To detect asymmetries in the relationship between independent and dependent variables Shin et al. (2014) decompose fluctuations in the

independent variable, in our case in government consumption, into its positive and negative partial sums, which is represented in equation 2 and equation 3.

$$logG_t^+ = \sum_{j=0}^{t} \Delta logG_j^+ = \sum_{i=1}^{t} max(\Delta logG_{j,0}) \quad (2)$$

$$logG_t^- = \sum_{j=0}^{t} \Delta logG_j^- = \sum_{i=1}^{t} max(\Delta logG_{j,0}) \quad (3)$$

Then Shin et al. (2014) construct a nonlinear model by replacing independent variables, in our case government consumption, with partial sum components defined in equations 1 and 2. The Nonlinear (asymmetric) ARDL approach is then defined in equation 4 as follows.

$$\Delta logY_t = \beta_0 + \sum_{i=1}^{n_1} \beta_{1i} y_t \Delta logY_{t-1} + \sum_{i=0}^{n_2} \beta_{2i} \Delta logG_{t-i}^+ + \sum_{i=0}^{n_3} \beta_{3i} \Delta logG_{t-i}^- + \beta_4 logY_{t-1} + \beta_5 logG_{t-1}^+ + \beta_6 logG_{t-1}^- + \mu_t \quad (4)$$

Where coefficients β_{2i} represent the short-run effect of government spending on economic activity in case of positive dynamics of government consumption, and coefficients β_{3i} represent the effect of government spending on economic activity in case of negative dynamics in government consumption. The long-run output effect of government spending for the case of positive and negative dynamics in government spending is represented by the coefficients β_5 and β_6, respectively. Aforementioned methodological approach was also used for example in Husein and Kara (2020).

Data

In our empirical study we use quarterly data for seven G7 economies. For consistency, we obtained data from the OECD database (2021a; 2021b) for all countries except for the United States. In the estimation process, we used the governmental final consumption component for government consumption, as defined in the expenditure structure of the gross domestic product. We used the gross domestic product as a proxy for economic activity. In the case of the United States, we use data from the BEA database (2021) for government consumption and gross domestic product. In this case, as in the other six countries, we use the government final consumption as defined in the expenditure structure of the gross domestic product. The variables of government consumption and gross domestic product were obtained for all seven countries in the form of absolute values expressed in domestic currencies. Variables were also seasonally adjusted by both databases.

For model estimation, we designed time series that vary in length from country to country. For the United States, we used a data sample from 1947q1 to 2018q4, for Canada from 1981q1 to 2018q4, for Japan from 1994q1 to 2018q4, for the United Kingdom from 1955q1 to 2018q4, for France from 1960q1 to 2018q4, for Germany from 1991q1 to 2018q4, and for Italy from 1995q1 to 2018q4. For each of the seven countries, we converted nominal government consumption and nominal gross domestic product into real values using the consumer price index with a base in 2010. We then transform real government consumption and real gross domestic product into a logarithmic form.

Results

In this section, we present the estimates for each country separately, for both the symmetric and asymmetric models. In the case of the asymmetric model, the results are also shown in a graphical form where a short-dashed line represents the output response in the case of a positive change in real government spending while a long-dashed line indicates the response of real output in the case of negative change in real government consumption. The solid line represents the perceived asymmetry. The shaded area represents the 90% confidence interval in detecting output response asymmetry between the aforementioned two scenarios. Graphical representations of the results of the nonlinear model are plotted on a 20 quarters horizon.

In the case of the United States (Table 1), the linear model shows a positive and statistically significant relationship between government consumption and output, both in the short and long run, with a greater long-run effect. Within the asymmetric model, a statistically significant relationship between the two aforementioned variables can be detected in the case of positive changes in government consumption while in the case of negative changes, both coefficients, short- and long-run, are statistically insignificant. The estimates also show that there is no statistically significant asymmetry in the response of output concerning the initial positive or negative change in government consumption (Figure 1).

Table 2 shows that in the case of the linear model for the United Kingdom, the relationship between government consumption and output is positive in both the short and long run, but statistically significant only in the short term. Through the prism of magnitude, the long-term effect of

Table 1. Results for the United States

Linear (symmetric) ARDL model				
	Coefficient	Estimates	t-statistic	Prob. level
Constant	α_0	0.045	2.53	0.012
Short-run	α_2	0.078	2.27	0.024
Long-run	α_4	0.800	12.8	0.000
Nonlinear (asymmetric) ARDL model				
	Coefficient	Estimates	t-statistic	Prob. level
Constant	β_0	0.163	2.40	0.017
Short-run positive	β_2	0.017	2.07	0.040
Short-run negative	β_3	0.009	0.55	0.585
Long-run positive	β_5	0.798	86.5	0.000
Long-run negative	β_6	-0.462	0.34	0.559
Asymmetry testing				
		F-statistic		Prob. level
Short-run asymmetry		1.314		0.253
Long-run asymmetry		0.219		0.640

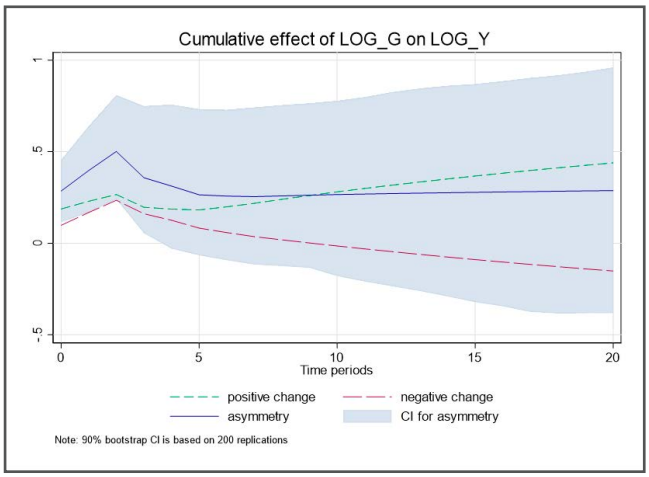
Table 2. Results for the United Kingdom

Linear (symmetric) ARDL model				
	Coefficient	Estimates	t-statistic	Prob. level
Constant	α_0	0.026	0.73	0.465
Short-run	α_2	0.311	7.17	0.000
Long-run	α_4	1.803	0.49	0.621
Nonlinear (asymmetric) ARDL model				
	Coefficient	Estimates	t-statistic	Prob. level
Constant	β_0	0.506	2.52	0.012
Short-run positive	β_2	0.016	1.20	0.233
Short-run negative	β_3	-0.021	-1.16	0.248
Long-run positive	β_5	0.374	3.66	0.057
Long-run negative	β_6	0.501	0.94	0.331
Asymmetry testing				
		F-statistic		Prob. level
Short-run asymmetry		5.966		0.015
Long-run asymmetry		7.390		0.007

government consumption on output is stronger. In the case of the nonlinear model, only the long-term coefficient is statistically significant within a 10% probability level in the case of positive dynamics in government consumption. On the other hand, the results show a statistically significant presence of asymmetry in the output response to the initial positive or negative change in government consumption. Asymmetry is perceived and significant in both the short and long run. It is also depicted from Figure 2 that in the case of negative dynamics in government consumption, the

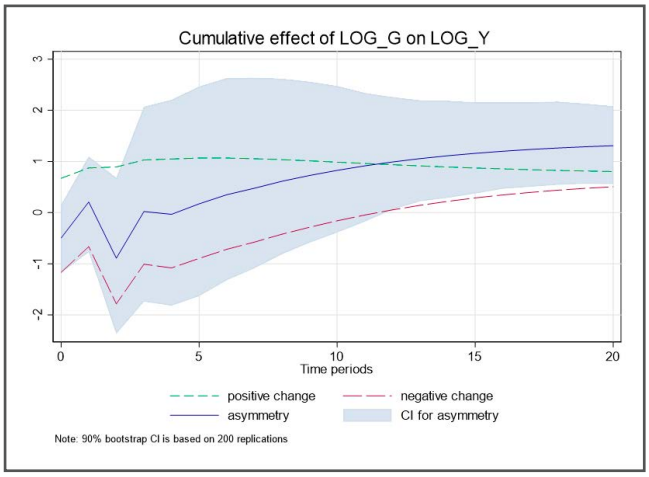
output response is greater in absolute terms in the short run than in the case of positive dynamics in government consumption, but then gradually diminishes.

Figure 1. United States – asymmetry testing



(Table 3). The coefficients in the linear model are also comparable in magnitude. On the other hand, the coefficients in the nonlinear model are statistically significant in the case of a positive change in government consumption both in the short and long run while in the case of negative dynamics in government consumption, the coefficients are statistically insignificant in both periods. No short-run asymmetry is observed for the French economy. Nevertheless, Figure 3 shows a stronger output response in the

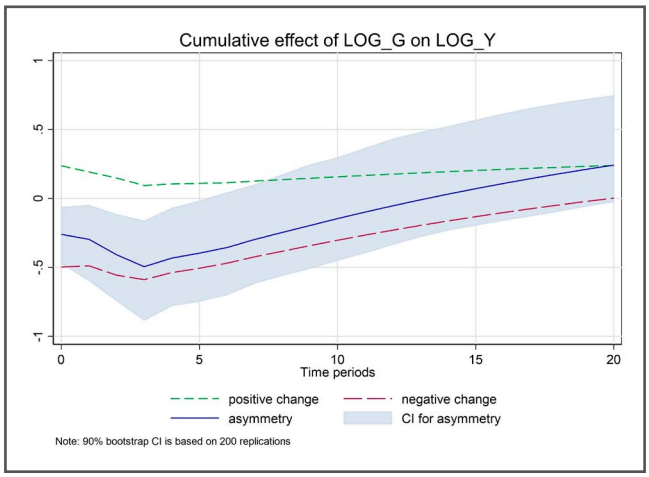
Figure 3. France – asymmetry testing



government consumption and economic activity in both the short and long run with a stronger impact of government consumption being seen over the long run. In the asymmetric model, all coefficients are statistically significant while according to statistical criteria, there is no statistically

The link between government consumption and economic activity is positive in the case of France in the short and long run and, at the same time, statistically significant

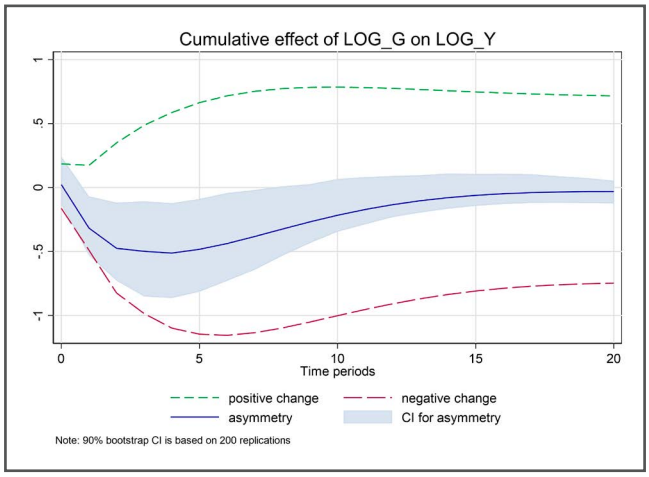
Figure 2. United Kingdom – asymmetry testing



case of negative dynamics in government consumption. However, a statistically significant long-term asymmetry is detected where the negative response of economic activity gradually diminishes in the scenario of negative dynamics in government consumption. It then turns into a positive area around 13 quarter.

Table 4 presents results for Italy where the linear model shows a statistically significant relationship between

Figure 4. Italy – asymmetry testing



significant asymmetry in the response of economic activity. Nevertheless, the detection of short-run asymmetry just barely missed the 10% probability level. Figure 4 shows a stronger output response to the negative dynamics in government consumption. In the long run, however, an almost

completely symmetrical output response to shock in government consumption is detected, regardless of whether it initially decreases or increases. As a result, test statistics do not support long-term asymmetry.

Table 3. Results for France

Linear (symmetric) ARDL model				
	Coefficient	Estimates	t-statistic	Prob. level
Constant	α_0	0.168	2.31	0.022
Short-run	α_2	0.734	8.51	0.000
Long-run	α_4	0.809	20.6	0.000
Nonlinear (asymmetric) ARDL model				
	Coefficient	Estimates	t-statistic	Prob. level
Constant	β_0	0.739	3.23	0.001
Short-run positive	β_2	0.047	3.19	0.002
Short-run negative	β_3	-0.042	-0.97	0.335
Long-run positive	β_5	0.744	381	0.000
Long-run negative	β_6	0.660	0.91	0.341
Asymmetry testing				
	F-statistic		Prob. level	
Short-run asymmetry	0.051		0.821	
Long-run asymmetry	4.418		0.037	

Table 4. Results for Italy

Linear (symmetric) ARDL model				
	Coefficient	Estimates	t-statistic	Prob. level
Constant	α_0	0.693	2.61	0.011
Short-run	α_2	0.218	5.00	0.000
Long-run	α_4	0.534	5.61	0.000
Nonlinear (asymmetric) ARDL model				
	Coefficient	Estimates	t-statistic	Prob. level
Constant	β_0	1.217	2.26	0.024
Short-run positive	β_2	0.067	2.30	0.002
Short-run negative	β_3	0.072	2.26	0.027
Long-run positive	β_5	0.711	22.0	0.000
Long-run negative	β_6	-0.759	17.1	0.000
Asymmetry testing				
	F-statistic		Prob. level	
Short-run asymmetry	2.756		0.101	
Long-run asymmetry	0.873		0.353	

In the case of Germany (Table 5), the linear model assesses the positive and statistically significant effect of government consumption on economic activity with a more pronounced long-term effect. In the asymmetric model, estimated coefficients are also statistically significant. It can be seen from Figure 5 that initially, in the case of both positive and negative dynamics in government consumption, the output response is negative, with the difference that in the case of the latter, the output response is deeper. After the first year, in the case of positive dynamics in government consumption, the output response skips to the positive area and then rises to a level that corresponds to negative equivalents in the case of negative dynamics in government consumption more symmetrically in the long run. This is also confirmed by test statistics which show statistical significance according to the 5% probability level threshold only in the case of a short-run asymmetry.

For Canada (Table 6), estimates of the coefficients are statistically significant only in the nonlinear model and even in this model, only in the case of positive dynamics in government consumption. In the short run, the response of economic activity is statistically insignificant. Nevertheless, Figure 6 shows rather vague dynamics of the response

Table 5. Results for Germany

Linear (symmetric) ARDL model				
	Coefficient	Estimates	t-statistic	Prob. level
Constant	α_0	0.097	0.65	0.518
Short-run	α_2	0.254	3.88	0.000
Long-run	α_4	1.044	7.79	0.000
Nonlinear (asymmetric) ARDL model				
	Coefficient	Estimates	t-statistic	Prob. level
Constant	β_0	2.039	3.65	0.000
Short-run positive	β_2	0.107	3.59	0.001
Short-run negative	β_3	0.085	2.39	0.004
Long-run positive	β_5	0.701	54.2	0.000
Long-run negative	β_6	-0.553	12.4	0.000
Asymmetry testing				
	F-statistic		Prob. level	
Short-run asymmetry	6.143		0.015	
Long-run asymmetry	3.875		0.052	

Figure 5. Germany – asymmetry testing

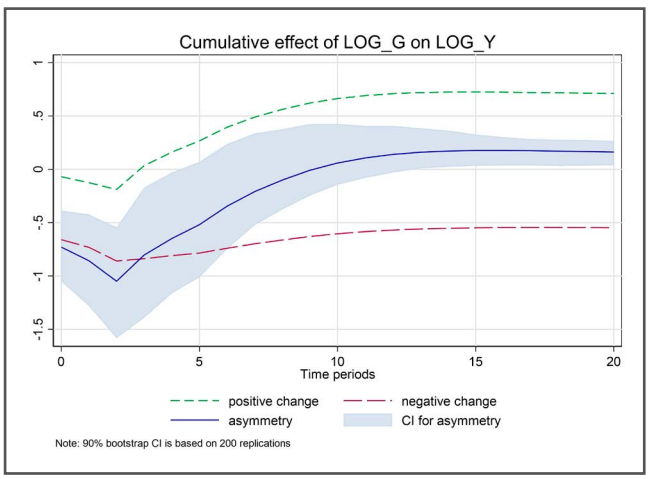
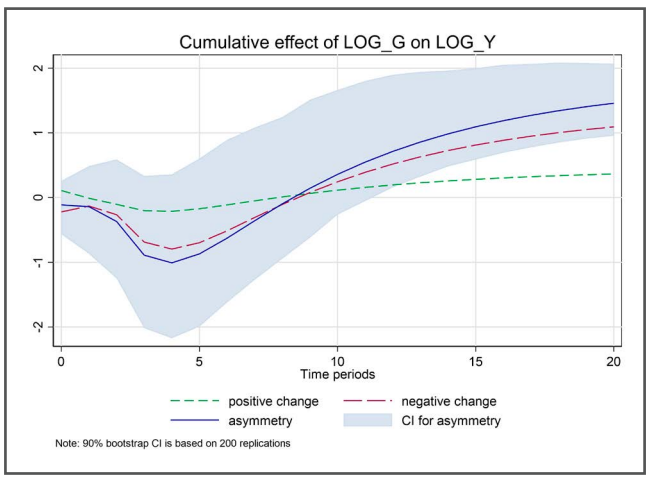


Figure 6. Canada – asymmetry testing



of economic activity in the case of positive dynamics in government consumption. At the end of the first year, the output response is even slightly negative. On the other hand, in the case of a negative change in government spending, the output response is relatively strongly negative at the beginning, but then markedly positive in the long run. Statistically significant short-run and long-run asymmetries were detected.

Table 6. Results for Canada

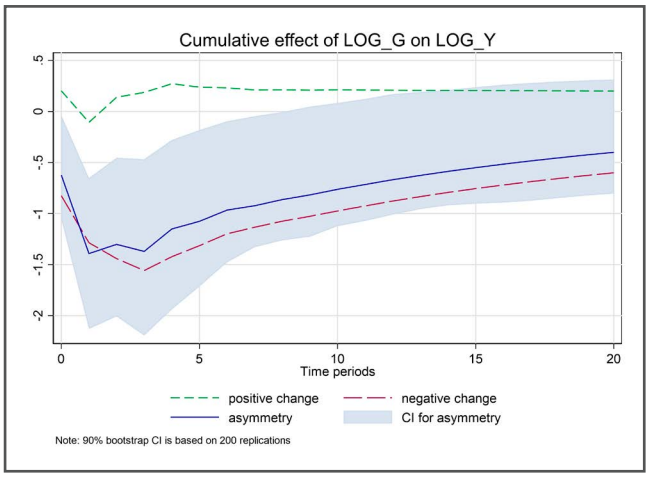
Linear (symmetric) ARDL model				
	Coefficient	Estimates	t-statistic	Prob. level
Constant	α_0	0.017	0.48	0.629
Short-run	α_2	0.094	1.24	0.216
Long-run	α_4	2.855	0.09	0.930
Nonlinear (asymmetric) ARDL model				
	Coefficient	Estimates	t-statistic	Prob. level
Constant	β_0	0.722	2.58	0.011
Short-run positive	β_2	0.026	1.49	0.139
Short-run negative	β_3	-0.080	-2.76	0.007
Long-run positive	β_5	0.445	7.78	0.006
Long-run negative	β_6	1.366	5.89	0.017
Asymmetry testing				
	F-statistic		Prob. level	
Short-run asymmetry	3.624		0.059	
Long-run asymmetry	19.40		0.000	

Table 7. Results for Japan

Linear (symmetric) ARDL model				
	Coefficient	Estimates	t-statistic	Prob. level
Constant	α_0	0.937	1.66	0.100
Short-run	α_2	0.524	4.71	0.000
Long-run	α_4	0.087	0.63	0.533
Nonlinear (asymmetric) ARDL model				
	Coefficient	Estimates	t-statistic	Prob. level
Constant	β_0	0.753	1.21	0.228
Short-run positive	β_2	0.012	0.48	0.634
Short-run negative	β_3	-0.14	0.24	0.812
Long-run positive	β_5	0.190	0.21	0.648
Long-run negative	β_6	-0.221	0.06	0.809
Asymmetry testing				
	F-statistic		Prob. level	
Short-run asymmetry	5.359		0.023	
Long-run asymmetry	0.003		0.955	

The coefficient estimates met the statistical standards worst in the case of Japan because only the short-run effect of government spending on economic activity proved to be statistically significant (Table 7). Nonetheless, Figure 7 offers us the perceived asymmetric short-run impact of government spending on economic activity. In the case of a negative shock or negative dynamics in government consumption, the response of economic activity is much stronger than in the case of a positive shock in government consumption. This also results in a statistically significant short-term asymmetry. In the long run, the output effect of the negative shock in government spending is waning gradually. There is also a weak positive output response noted to a positive shock in government consumption which stays low across the entire horizon.

Figure 7. Japan – asymmetry testing



To sum up, our empirical analysis via the linear ARDL model characterized six out of seven estimated short-run coefficients and four out of seven long-run coefficients as statistically significant. As expected, a positive relationship between government consumption and economic activity is confirmed based on results from the linear model. On the other hand, in the nonlinear ARDL model, in the short run, 50% of estimates satisfy the threshold for statistical significance while in the long run, nine out of fourteen coefficients are statistically significant. Furthermore, short-run asymmetry is detected through test statistics in four out of seven cases. Based on the graphical analysis, however, we may conclude that even in the remaining three cases short-run asymmetry can be detected. Interestingly, in six out of seven cases, we estimate negatively inclined short-run asymmetry, which indicates that there is expected stronger output response in periods of negative dynamics in government consumption. In the long run, we detect a statistically significant asymmetric relationship between the dynamics of government consumption and the output response in four out of seven cases.

The results thus show that there is more to a basic linear connection between government consumption and economic activity. Based on results, fiscal policy actions and their counter-cyclical function have an asymmetric effect on aggregate economic activity, which implies careful and tailored use of fiscal policy measures according to the different underlying macroeconomic conditions of the economy. This is especially important in times of recessions when a lot of countries apply austerity measures willingly or unwillingly and, therefore, gradually try to decrease government spending and consolidate public budgets. And if this is the case, the presence of negatively inclined asymmetry makes balancing the budget even more stressful and, ultimately, also inefficient because the inevitable connection between the pace of economic activity and tax revenues still persists and, therefore, disables to achieve the aforementioned goal of a balanced budget.

If we assume that government consumption frequently decreases during the recession periods, despite the differences in methodological approaches, our findings are in line with Auerbach and Gorodnichenko (2010, 2011, 2014), Batini et al. (2014), and Koh (2017) who all assessed larger fiscal multipliers in times of recession.

Conclusion

The role and functioning of fiscal policy in stabilizing the business cycle have received considerable research attention due to the specific economic conditions in the post-recession period. Above all, the main focus is to understand specificities in the multiplicative mechanism of fiscal actions on a macroeconomic scale, especially because the effectiveness of the stabilizing role of fiscal policy in different periods and conditions depends on many structural characteristics of individual economies as well as on built-in specific dynamic nonlinearities. In this paper, based on a quarterly dataset of G7 countries with an application of a nonlinear ARDL model we test for the presence of a short- and long-term asymmetry in the relationship between government spending and economic activity.

The key findings of our study are the following. First, the linear model produces a positive relationship between government consumption and economic activity. Second, in the nonlinear model, more than half of the short-run and long-run coefficients are statistically significant. Third, short-run and long-run asymmetry are detected in four out of seven cases. However, from the graphical analysis, the presence of a short-run asymmetry can be inferred in the remaining three cases. Finally, however, the main result of the present study is a detection of a negatively inclined short-run asymmetry

which implies a stronger output effect in periods of declining dynamics in government consumption.

In future research, it would be interesting to apply the existing methodological framework to countries that differ in fundamental economic characteristics from the countries included in this research, e.g. the use of a sample of smaller and less developed economies. In addition to this, expanding the model by including additional explanatory and control variables would help clarify the functioning of fiscal policy under different circumstances, especially to identify possible new asymmetric relationships between considered variables in the case of former or to increase the robustness of a model in the case of the latter.

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Ali obstaja asimetrija v razmerju med dinamiko državne potrošnje in ekonomsko aktivnostjo? Analiza na vzorcu držav skupine G7

Izvleček

V tem članku preverjamo prisotnost kratkoročne in dolgoročne asimetrije v razmerju med državno potrošnjo in ekonomsko aktivnostjo na osnovi četrtletnega podatkovnega niza za države iz skupine G7 z uporabo nelinearnega ARDL modela. Glavni namen te raziskave je analizirati razmerje med državno potrošnjo in ekonomsko aktivnostjo v dveh ločenih scenarijih, prvič, v obdobjih, ko se državna potrošnja povečuje, in drugič, v obdobjih, ko se državna potrošnja zmanjšuje. Naše ključne ugotovitve so, prvič, linearni model prepoznava pozitivno razmerje med državno potrošnjo in ekonomsko aktivnostjo, drugič, v nelinearnem modelu je več kot polovica kratkoročnih in dolgoročnih koeficientov statistično značilnih, tretjič, kratkoročna in dolgoročna asimetrija je bila ocenjena v štirih primerih od skupno sedmih, s tem da lahko na osnovi grafične analize sklepamo o prisotnosti kratkoročne asimetrije tudi v preostalih treh primerih. In nazadnje, ugotovljena je negativno usmerjena kratkoročna asimetrija. Rezultati tako kažejo na močnejši odziv outputa v obdobjih, ko vladna potrošnja upada. Nadaljnje raziskovanje je smiselno usmeriti na širitev vzorca držav vključenih v analizo in na razširitev modela z dodatnimi spremenljivkami.

Ključne besede: fiskalna politika, nelinearni ARDL model, države G7

Empirical Testing of Purchasing Power Parity Validity in Selected European Union Countries

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ORIGINAL SCIENTIFIC PAPER

RECEIVED: JUNE 2021

REVISED: OCTOBER 2021

ACCEPTED: NOVEMBER 2021

DOI: 10.2478/ngoe-2021-0019

UDK: 339.133.3:519.2

JEL: E32, E51, G21, G28

Citation: Plošinjak, J., & Festić, M. (2021). Empirical Testing of Purchasing Power Parity Validity in Selected European Union Countries. *Naše gospodarstvo/Our Economy, 67*(4), 13-32. DOI: 10.2478/ngoe-2021-0019.

Abstract

In this article, the authors carried out an empirical analysis of the validity of purchasing power parity (PPP) in Slovenia, Croatia, the Czech Republic, Slovakia and Austria. The results provide mixed support for PPP, which is typical for ex-transition economies. In the first phase of the empirical part of the research, the authors tested the stationarity of the real exchange rate in a logarithm, while in the second phase, the cointegration of nominal exchange rate, domestic and foreign price levels was tested.The Vector Error Correction Model (VECM) was used in the third phase to test if the signs of variables are in accordance with economics and econometrics theories, while in the final phase, restrictions were imposed for the symmetry and proportionality of coefficients. Slovenia is subject to limitations on the symmetry and proportionality of coefficients, which means the validity of both the absolute and relative versions of the PPP theory. Croatia is subject to a limitation on symmetry, but not to a limit on the proportionality of coefficients, which means the validity of the relative version of the PPP theory. In the case of the Czech Republic, Slovakia and Austria, restrictions on the symmetry and proportionality of the coefficients do not apply, which consequently constitutes an invalidity of both versions. However, to the authors' knowledge, and taking into account Liu (1992), who states that it is more important to check the presence of co-integration than to check the symmetry and proportionality of the coefficients, since there is a co-integratation between the nominal exchange rate, foreign prices and domestic prices, the theory of PPP is valid for all the selected countries. The empirical results suggest that all the real exchange rate time series are stationary, additionally, cointegration exists among all the variables for all countries, and the signs of coefficients are statistically significant for all variables in all countries, however, the coefficient restrictions are only statistically significant in Slovenia and Croatia.

Keywords: PPP, stationarity, cointegration, ADF test, Johansen test

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**NAŠE GOSPODARSTVO
OUR ECONOMY**

Vol. 67 No. 4 2021

pp. 13 – 32

Introduction

The importance of international trade has increased since the Second World War. During this period, economies have increasingly acted outwardly and merged into different forms of integration, which represents the onset of accelerated globalisation. A shift from closed to open economies has increased the global trade volume, resulting in more and more countries integrating into the world trading system, which has led to increased trade between countries. As countries mainly have their own national currencies, apart from the euro area countries, the exchange rate represents an important factor in foreign trade for each individual country.

Modern exchange rate theories include the monetary theory, the portfolio theory, and the balance of payment approach. The focus of this article is on the long-term exchange rate theory, i.e. purchasing power parity (PPP). The earliest records of the PPP theory date back to the 16th century and were written by scholars at Salamanca University. At that time, the development of the PPP theory was under the influence of three factors: the Salamanca University was then one of the leading educational institutions; the period called the Spanish Price Revolution, caused by the import of precious metals in Spain as the result of Spain expanding its territory to South America and leading to deterioration of the balance of payments; and prohibition by the Catholic church to charge interest. After this period, no significant progress in the field of the PPP theory was made until the First World War.

In 1918, during the First World War, the Swedish economist Gustav Cassel further developed the PPP theory (Taylor, 2002, 2006). In his work, he wrote about his attempt to develop a theory during the time of war, presuming that the trade rate between two countries is defined by a quotient ratio of the purchasing power of money in one country and the purchasing power in another. He reported that the inflation rate during wartime decreased the purchasing power in all countries to a different level, therefore the conversion rates would be expected to deviate from the old parities proportional to the inflation in an individual country. According to Cassel, the exchange rate could not deviate much from the PPP until a considerable trade between countries and free movement of goods existed. Even if a trade restriction had been applied, deviations from the PPP would not have occurred if they were the same for both parties. If trade restrictions had been more drastic for one party, larger deviations from the PPP would occur (Cassel, 1918).

After the Second World War, with the rise of Keynesian economics, the analysis of international economics was performed inside models with fixed prices, therefore no emphasis was placed on studying the PPP theory. The theory started gaining momentum among monetarists in the 1960s. Since then, the PPP theory – in different forms of strictness – has become one of the most important theories among economists dealing with international economics and finances (Taylor, 2006).

Modern studies conducted from the year 2000 onwards have presented mixed results in terms of the validity of the PPP theory for certain countries only, but not all the analysed countries; it especially depends on the countries selected, price indices and time period, thus meaning that the PPP theory in general has still not been completely empirically confirmed.

The objective of this article is to provide a detailed description of the PPP theory, including its shortcomings and limitations, as well as to provide the foundation for its empirical evaluation by using the econometrics stationarity test and cointegration test. The validity of the PPP theory will be studied for five countries – Slovenia, Croatia, the Czech Republic, Slovakia and Austria – all of which are EU member states.

Overview of Literature

The long-term theory of PPP is one of the most controversial topics in international economics. The validity of the PPP theory carries important implications for policy makers, central banks, multinational enterprises and players in foreign exchange markets. PPP is important for policy makers for two reasons. First, it can be used in predicting whether a currency is over or undervalued, which is especially important for less developed countries and those countries with significant differences in domestic and foreign inflation rates. Second, the PPP theory represents the foundation for many theories that aim at determining the exchange rate (Holmes 2002, 2001).

Sideris (2006) divided the studies on the PPP theory into four groups. The first group are early correlation studies, which were not reliable, and their results demonstrated weak or no support for the validity of the PPP theory. The second group are studies testing the presence of a unit root or stationarity of the real exchange rate. The third group of studies verifies cointegration between prices and the exchange rate. The results of early cointegration tests in relation to the validity of PPP theories vary and indicate a weak presence of the exchange rate returning to PPP during a transitional period towards flexible exchange rates (Taylor & McMahon, 1988; Mark, 1990), whereas for the period between the first and second world wars, as well as for those countries with a high inflation rate, the studies confirmed the return of the

exchange rate to the PPP level (Taylor & McMahon, 1988). The results of subsequent studies have demonstrated support for PPP for more countries, even during the transition towards flexible exchange rates (Kim, 1990; Kugler & Lenz, 1993), whereas for the transition countries, the studies using the cointegration tests do not demonstrate strong support for PPP theories (Sideris, 2006). Today, a combination of tests verifying the stationarity and cointegration is used, however, the time series are too short, and in order to deal with this issue, it is suggested that a longer time period should be used and the analysis should be performed on a larger number of countries by means of panel tests. Due to the weak statistical power of the initial tests, which provided mixed results on the validity of the PPP theory, it is recommended that the latest studies should use advanced econometric tests, including a unit root test with improved power, which can also allow for structural breaks. The second option is to use unit root panel tests and cointegration tests with improved power, while the third option is tests with the autoregression parameter allowing for non-linear adjustment of the real exchange rate (Sideris, 2006).

Generally, three important facts on the long-term PPP apply in terms of the results of cointegration studies: the support of the validity of PPP is greater in a fixed exchange rate than in a flexible exchange rate; the presence of cointegration is greater if the Wholesale Price Index (WPI) is used instead of the Consumer Price Index (CPI); and the evidence of PPP invalidity will, in principle, be greater if multivariate cointegration is employed instead of bivariate cointegration (Taylor, 2006; Froot & Rogoff, 1995).

Bahmani-Oskoee and Chang (2015) pointed out that the latest studies use a unit root test to check whether the real exchange rate is returning to its average rate. They also determined that standard unit root tests assumed that the adjustment of the real exchange rate was a linear process, whereas the latest studies have shown that this process can also be non-linear. The studies assuming the non-linear adjustment of the real exchange rate largely confirm the validity of the PPP theory. Foreign exchange market interventions, transaction costs, the different adjustment pace of the commodity prices following changes in the exchange rate, and structural breaks are among the main factors that cause non-linear exchange rate developments. The last option is the use of multivariate cointegration techniques, namely the Johansen test.

Kasman, Kasman and Ayhan (2010) reported that in the 1990s, the transition countries experienced drastic institutional and structural changes to create market-driven/oriented economies. Through economic transformation, these countries liberalised their markets, introduced trade reforms, created competition and privatisation, adopted new currency exchange regimes, established financial institutions and led an even more open economy to attract direct foreign investments. There are two characteristic facts for these countries; the first is the transition process which led to real production shocks and caused a permanent deviation from the PPP theory, while the second is that these countries faced massive monetary shocks as the result of inflation expectations, which caused temporary deviations from the PPP theory.

Sideris (2006) analysed the validity of the long-term PPP theory in 17 former transition countries and included four

Table 1. Review of existing/available studies

Author	Countries	Period	Base currency	Price index	Tests	Study results
Sideris (2006)	17 countries of Eastern and Central Europe, including Slovenia, Croatia, the Czech Republic, Slovakia	Slovenia: 1992 (M1) – 2004 (M1), Others: 1993 (M1) – 2004 (M1)	USD	CPI	Johansen and Larsson cointegration test	Weak support of the PPP theory
Cuestas and Regis (2009)	8 countries of Eastern and Central Europe, including Croatia, the Czech Republic, Slovakia	1993 (M12) – 2006 (M10)	EUR, USD, REER (currency basket of main trade partners)	CPI, HICP	Unit root test: Bierens test, Kapetanios test	PPP validity
Telatar and Husanov (2009)	12 countries of Eastern and Central Europe, including Slovenia, Croatia, the Czech Republic, Slovakia	Slovenia: 1993 (M7) – 2007 (M12) Croatia: 1992 (M1) – 2007 (M11) The Czech Republic, Slovakia: 1990 (M1) – 2008 (M3)	REER (currency basket of main trade partners)	CPI	ADF, KPSS, KSS, ST-TAR	Following the gradual structural changes and asymmetric adjustments of PPP applicable for all the selected countries.

Table 1. Review of existing/available studies (cont.)

Author	Countries	Period	Base currency	Price index	Tests	Study results
Christidou and Panagiotidis (2010)	15 EU member states, including Austria.	1973 (M1) – 2009 (M4)	USD	CPI	ADF, non-linear KSS, unit root panel test	No validity of PPP theory, except for Great Britain.
Giannellis and Papadopoulos (2010)	10 countries that joined the EU after 2004 and 12 countries that were already member states by the year 2004	1990 (M1) – 2006 (M7) Slovenija: 1992 (M1) – 2006 (M7), The Czech Republic, Slovakia 1993 (M1) – 2006 (M7)	EUR	CPI, TPI	ADF, SETAR	Confirmed convergence to a balanced real exchange rate.
Kasman, Kasman, Ayhan (2010)	11 countries of Eastern and Central Europe and Cyprus, Malta and Turkey	1990 (M1) – 2006 (M9) Slovenia: 1991 (M12) – 2006 (M9) Croatia: 1992 (M12) – 2006 (M9) The Czech Republic: 1994 (M1) – 2006 (M9) USD 1993 (M6) – 2006 (M9) DEM Slovakia: 1993 (M1) – 2006 (M9)	USD, DEM	CPI	Lagrange multiplier (LM) unit root test	Considering the structural breaks, weak support of PPP in case of the USD, support of PPP in 8 countries in the case of DEM.
Chang and Tzeng (2011)	9 countries of Eastern Europe.	1995 (M1) – 2008 (M12)	USD	CPI	Univariate unit root test (ADF, PP) KPSS), panel test and SURKSS	PPP validity in only two cases.
Su and Chang (2011)	7 countries of Eastern Europe, including the Czech Republic, Slovakia.	1993 (M1) – 2008 (M12)	USD	CPI	Breitung cointegration test	PPP validity
Boršič, Bekő and Baharumshah (2012)	12 countries of Eastern and Central Europe, including Slovenia, Croatia, the Czech Republic, Slovakia	1994 (M1)–2008 (M12)	USD, EUR	CPI	SURADF	PPP applicable in the case of EUR for Croatia, Poland, and Bulgaria; in the case of USD applicable for Bulgaria, Poland and Romania.
Bahmani – Oskooee and Chang (2015)	14 countries of Eastern and Central Europe, including Slovenia, Croatia, the Czech Republic, Slovakia anf Austria.	1994 (M1)–2012 (M6)	REER (currency basket of the main trade partners)	/	Caner and Hansen TAR unit root test, ADF, KPSS, PP	PPP validity in five countries, including Slovenia. Adjustment to PPP is non-linear.

ADF: Augmented Dickey Fuller Test, KPSS: Kwiatkowski–Phillips–Schmidt–Shin Test, KSS: Kapetanios, Shin and Shell Test, ST-TAR: Smooth Transition Threshold AutoRegressive test, PP: Phillips Perron Test, SURADF: Seemingly Unrelated Regressions Augmented Dickey–Fuller Test, SURKSS: The seemingly unrelated regressions Kapetanios, Shin, Snell test, SETAR; Self-Exciting Threshold AutoRegressive model, TAR: Caner and Hansen TAR unit root test, MW: Mann-Whitney Test, IPS Test: Im-Pesaran-Shin Test.
HICP: harmonised consumer price index, TPI: traded good price index, REER: real effective exchange rate, CPI: consumer price index, PPP: purchasing power parity.

countries in the sample that are important from the perspective of this analysis – Slovenia, Croatia, the Czech Republic and Slovakia. The time period ranged from January 1990 to January 2004, whereby this time period differed for certain countries in terms of the onset of transition reforms. Sideris chose the US dollar as the base currency and the CPI for the price index. The validity of the PPP theory was verified using the Johansen cointegration test and the Larsson panel cointegration test.

The results of the Johansen test provide support for the long-term PPP theory, however, the cointegration vectors violate the principle of symmetry and proportionality. For Slovenia and the Czech Republic, two of the countries analysed in this paper, the Johansen cointegration test rejected the null hypothesis at 5% risk and concluded that cointegration exists. In the case of Croatia and Slovakia, the test could not reject the null hypothesis and confirmed the existence of cointegration. In the Larsson test, the time period is uniform, specifically from January 1995 onwards. In six countries, which included Slovakia, the Larsson test could not reject the null hypothesis, showing there is no cointegration. In the study, the author concluded that the results are compliant with the studies relating to the validity of the PPP theory for transition countries. According to the author, the factors causing a deviation from long-term PPP are productivity shocks, managed exchange regimes requiring frequent interventions in foreign exchange markets, and the existence of non-exchangeable goods and services.

Cuestas (2009) analysed the validity of PPP theory in eight Eastern Europe countries, including Croatia and Slovakia. The analysis covered the period from December 1993 to October 2006. He used the CPI for the US dollar as the base currency and the Harmonised Index of Consumer Prices (HICP) for the euro as the base currency. He used the real effective exchange rate (REER). In his analysis, he pointed out that many previous studies did not consider the existence of non-linearity, therefore he included it. He provided three arguments to support his decision. First, if limitations in international trade exist and there is absence of arbitrage, this leads to non-linear exchange rate movement. Second, foreign exchange intervention operations can lead to non-linear movement of the real exchange rate. The third argument refers to the existence of structural changes leading to a non-linear deterministic trend. Due to the existence of non-linearity, he used two unit root tests, specifically the Bierens and Kapetanios tests.

Considering the non-linear deterministic trend, the results speaking in favour of PPP are more powerful because this trend encompasses structural changes during the transition period which strongly influenced the movement of exchange rates in these countries. For Slovakia, none of the tests confirmed the validity of PPP for any of the exchange rates. In the case of Croatia, the KSS test confirmed the validity of PPP in the REER and the real exchange rate with the euro as the base currency, whereas the Bierens test could not confirm the validity of the PPP theory for euro as the base currency. In the Czech Republic, the KSS test rejected the validity of the PPP theory regardless of the selected exchange rate and the Bierens test only confirmed the validity of PPP in the REER.

Telatar and Husanov (2009) examined the validity of the PPP theory based on 12 countries in Eastern and Central Europe including Slovenia, Croatia, the Czech Republic and Slovakia. They used a commercially balanced REER. The time period differed for individual countries, depending on the available data. Their analysis shows that major structural changes in selected countries occurring during the transition period could result in non-linear adjustment of the exchange rate, which is why they used the stationarity tests enabling non-linearity and moderate structural changes in addition to classic tests such as ADF and KPSS.

When the analysis did not include linearity and structural changes, the results of the ADF and KPSS tests only confirmed the PPP theory in five countries, including Slovenia, Croatia and the Czech Republic. Considering the data non-linearity, the KSS test confirmed the validity of PPP in seven countries, including Slovenia, Croatia, the Czech Republic and Slovakia. When taking into account the structural changes and asymmetric adjustment by applying the ST-TAR test, the PPP theory was confirmed in all the countries.

Giannellis and Papadopoulos (2010) analysed the validity of the long-term PPP theory for 10 countries that joined the EU in 2004, including Slovenia, the Czech Republic and Slovakia. In addition to these ten countries, they also analysed 12 member states that joined the EU prior to 2004, including Austria. They used the CPI and TPI, which represent the weighted average of import and export prices. The ADF test confirmed stationarity for the CPI in all ten countries that became an EU member state in 2004 and thereafter. Among the other 12 countries, the ADF test only confirmed stationarity for France at 10% risk and the Netherlands at 5% risk. The TPI was only used for those member states that joined the EU before 2004. The ADF test only confirmed stationarity for Germany, whereas for Austria, calculation of the TPI was not possible due to the lack of sufficient data. As only one case of stationarity was confirmed, the authors checked whether the TPI reflects a non-linear movement. They established that linearity was rejected for all 12 countries, therefore they used the SETAR model which confirmed stationarity in six of the eight countries with enough data to

calculate the TPI. They concluded that in most cases the real exchange rate converges to PPP.

Kasman, Kasman and Ayhan (2010) wrote in their study that, unlike other authors, they used the Lagrange multiplier unit root test, thus enabling no more than two endogenous structural breaks for testing the stationarity of currencies against the US dollar and the DEM. The CPI was used, while the time period differed among the countries due to different data availability – it starts after 1990 and lasts until September 2006 for all countries.

In an analysis not employing structural breaks, it is not possible to confirm the stationarity of the exchange rate in any of the countries except Romania and Slovakia. If the analysis considers one structural break, the stationarity of the exchange rate can be confirmed in Romania and Turkey for the US dollar as well as for the DEM. Exchange rate stationarity could only be confirmed for the DEM in Slovenia, Cyprus, Croatia, and Slovakia. In the analysis taking into account two structural breaks, exchange rate stationarity can only be confirmed in Romania and Turkey for both the USD and the DEM, whereas in Slovenia, Bulgaria, Croatia, Cyprus, Estonia and Slovakia, it can only be confirmed for the DEM.

Christidou and Panagiotidis (2010) studied the validity of the PPP theory for 15 EU member states between January 1974 and April 2009; all data were monthly and seasonally adjusted. The authors chose two breakpoints (December 1991 and December 1998) to establish whether the Maastricht Treaty had an impact on these relations. They used the USD as the base currency and the CPI. Their analysis included the ADF test, the KSS test and four panel tests, such as the IM test, Pesaran test, Hadri and Kurozumi test, and the Hadri test which, unlike the other three panel tests, does not apply the assumption on the heterogeneity of the parameters. The ADF test confirmed stationarity in Great Britain for the entire period and in Sweden only for the period following the Maastricht Treaty. The KSS test showed that PPP only applies for the entire period in Great Britain. In Sweden and Italy, the KSS test showed stationarity only for the period between 1973 and 1998 for the former state, and between 1992 and 2009 for the latter. As far as all the other countries are concerned, the PPP theory does not apply in any time period. However, the authors established that the half-life of the exchange rate following the introduction of the euro decreased only in Sweden. In all the countries except Austria, Greece and Ireland, the half-life decreased in the period following the Maastricht Treaty.

Panel unit root tests provided results confirming the validity of PPP for the entire period. The results of the IM test, taking into account the Maastricht Treaty in 1992, indicate the rejection of the PPP validity. The Pesaran test only confirmed the validity of the PPP theory after the introduction of the Maastricht Treaty when considering all fifteen countries and not just the twelve countries with the euro as their currency. After the introduction of the euro, none of the tests provide results confirming the PPP theory.

Su and Chang (2011) analysed the validity of the PPP theory for seven Central and Eastern Europe countries, including Slovakia and the Czech Republic. They used monthly data from 1993 to 2008, the CPI and the nominal exchange rate at the end of a monthly period, and the US dollar as the base currency. Using the Breitung nonparametric test, they first verified the existence of cointegration between variables and then determined the linearity of cointegration. Asymmetric price adjustment and non-proportional price and exchange rate movement were allowed in the long-term PPP. The result of the Breitung test showed the existence of cointegration between all countries included in the sample. The existence of bivariate linear cointegration was rejected in all cases except in Slovakia, and the existence of multivariate cointegration was rejected in the case of Slovakia and Russia. The study provided robust results confirming the PPP theory in the selected countries and indicated the existence of nonlinear cointegration.

Chang and Tzeng (2011) included nine East European countries in their analysis, including the Czech Republic. The period under observation was between January 1995 and December 2008. The year 2000 was chosen as the base year for the CPI. The US dollar was selected as the base currency. Prior to the analysis, they converted all data into natural algorithms. The choice of the US dollar as the base currency is justified by the fact that the internal exchange market is mainly dominated by the US dollar. Using the Jarque-Bera test, they determined that, with the exception of the Bulgarian Lev/USD exchange rate, the bilateral real exchanges rates are not normally distributed, and the graphic analysis demonstrated considerable upward and downward movements, showing non-linear adjustment of the real exchange rate.

The authors first performed the ADF, PP and KPSS tests confirming the stationarity of a time series only after using them on the first differentiation of the time series. The Im-Pesaran-Shin, Hadri, MW, Choi and Chang panel tests showed the same results as the unit root test, which is non-stationarity of time series of the real exchange rate. The SURKSS panel test, which is a combination of the SURADF and KSS tests, can identify how many and which time series are stationary. The SURKSS test confirmed the validity of PPP in two countries, the Czech Republic not being one of them. They concluded that the support for PPP validity is low in

transition countries, which is why PPP validity remains a questionable and inconclusive issue.

Boršič, Baharumshah and Bekő (2012) analysed the validity of the PPP theory in twelve Eastern and Central European countries. The real exchange rates used in the study were monthly-based, the base currency was the US dollar in the first case and the euro in the second. The time period extended from January 1994 to December 2008. When verifying the validity of PPP, they used the SURADF panel unit root test, which, unlike the Levin, IM, Fisher ADF and Fisher SURADF PP tests, enables the identification of how many and which countries from the panel include the unit root. The test is specific as it contains non-standard distributions, therefore critical values are to be calculated by means of the Monte Carlo simulation. In addition to this test, they also used the aforementioned tests. In the case of the US dollar as the base currency, only the Levin test rejected the null hypothesis of non-stationarity, by considering the constant and trend. When the euro is selected as the base currency, all the listed tests rejected the null hypothesis of non-stationarity.

The results of the SURADF test showed that the validity of the PPP theory can be confirmed for certain countries in the panel, however, the validity depends on the base currency. The validity of the PPP theory with the US dollar as the base currency could be confirmed for seven countries, whereby Slovenia, Croatia, the Czech Republic and Slovakia were not among them. When the euro was used as the base currency, the validity of the PPP theory was confirmed for five countries, including Croatia and Slovenia. The first study finding was that the validity of PPP cannot be generalised for a group of countries but can be applied only for individual countries. The second finding refers to the validity of PPP and its dependence on the selected base currency.

Bahmani-Oskooee et al. (2014, 2015) analysed the PPP and real exchange rate in Central and Eastern European countries and verified the validity of PPP theory for fourteen transition countries, including all the five countries that are the subject of this analysis. They used monthly data for the REER for the period from 1994 to mid-2012. The validity was verified by using the Caner-Hansen TAR test examining non-stationarity and non-linearity. The authors wanted to demonstrate the difference between the Carner and Hansen test and the standard ADF, KPSS and PP unit root tests. The standard unit root tests showed weak support for the PPP theory. The KPSS test showed that no time series is stationary, which is similar to the results of the ADF test establishing a stationary time series for three countries, including Slovenia. The PP test displayed a stationary time series for four countries, including Slovenia. When the authors used the first time series differentiation, all the tests provided the same results, i.e. that the time series is stationary. The KPSS test was an exception showing a non-linear time series for three countries.

They further performed the Caner and Hansen test consisting of two steps. The first step is verifying linearity by means of the Wald test WT and bootstrap p-value. Once they merged the results, the results rejected the null hypothesis verifying linearity and concluded that a simple linear model is inappropriate. In the second step, they studied the characteristics of the threshold unit root of the real exchange rate. They rejected the unit root hypothesis at a 10% risk level in five countries, including Slovenia, but could not reject the null hypothesis for the remaining nine countries.

Koukouritakis (2009) examined the validity of PPP between the twelve new EU countries vis-à-vis the Eurozone by using the Johansen cointegration methodology. The evidence also suggests that the PPP vector enters the cointegration space for Bulgaria, Cyprus, Romania and Slovenia, which means that the long-run PPP vis-à-vis the Eurozone was only verified for these countries. The study of Boršič et al. (2011) found support for the validity of PPP in some reforming European economies, and special attention was devoted to individual country-specific factors that cause PPP deviations. Yang-Cheng et al. (2012) applied the newly developed Autoregressive Distributed Lag (ADL) test for threshold cointegration to test the validity of long-run PPP for a sample of transition countries (i.e. Bulgaria, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania and Russia) over the period from January 1995 to December 2008. The empirical results indicate that PPP only holds true for five of these transition countries. The Cuestas and Regis (2013) study points to the fact that the PPP theory holds true in a greater number of countries. Together with Chang (2013), they proved that PPP holds true for most of the transition countries studied.

Arize et al. (2015) explored the symmetry and proportionality conditions in the PPP and the results of a long-run cointegration analysis and short-run dynamics, all of which provide evidence for long-run PPP. Huang and Yang (2015) analysed the PPP by applying the Pesaran panel unit root test to real exchange rate data of eleven euro countries for the sample period of January 1957 to May 2013. They proved that the evidence for the mean-reverting in real exchange rates is much weaker in the post-1998 euro period than in the pre-euro period, and that for the four countries not using the euro – Norway, Sweden, Switzerland and the UK – the evidence for the mean-reverting in real exchange rates is strong in both the pre- and post-euro (post-1998) periods.

Chun et al. (2016) applied in their a non-linear threshold unit-root test to test the validity of PPP to assess the non-stationary properties of the convergence of RERs based on the

Taylor rules for the ten Central Eastern European countries. In the Su et al. (2014) article, the Monte Carlo simulation was used with the wildbootstrapped KSS test for the period from 1994 to 2012, which included a number of crises, such as the Asian financial crisis, the Russian crisis, and global financial crises, therefore, the study provided strong evidence against PPP.

Nazlioglu et al. (2021) proved that PPP is valid for Greece, Italy, Ireland, Portugal and Spain, considering that structural breaks in the non-linear framework play a crucial role. Bekő and Kavkler (2019) analysed the PPP theory for a class of ten Central Eastern European economies covering the period from January 2001 to December 2016. The results of the unit root tests imply that the null hypothesis of non-stationarity of real exchange rates cannot be rejected for the whole period. The weak evidence on PPP found in this study suggests that the process of real integration of Central and Eastern European economies, as well as the subsequent price convergence among European markets, remains incomplete.

Bahmani-Oskooee (2017) analysed the PPP in 27 emerging markets by using the new Fourier non-linear quantile unit root test. Conventional unit root tests support PPP in half of the countries at most. The Fourier non-linear quantile unit root test reinforces PPP in 26 out of 27 countries in the case of emerging markets. Mladenović and Bodor (2020) analysed the sustainability of PPP within the quantile autoregression model in the economies of the Czech Republic, Hungary, Poland, Romania, Serbia and Turkey. To some extent, the empirical results support the PPP theory for the euro and US dollar-based real exchange rate in Romania, Serbia and Turkey. The euro-based real exchange rate in Hungary and Poland is also identified to confirm the PPP theory. The dynamics of the real exchange rate in the Czech Republic cannot be associated with validity of the PPP. The persistence of the euro-based real exchange rate is estimated to be more prominent after the depreciation shocks.

Pažický (2020) proved the existence of the long-run relationship by the vector error correction model (VECM); no cointegrating vector in the case of the Slovak Republic and the Czech Republic was proved, which rejects the existence of a persistent long-run equilibrium between the exchange rate, domestic prices (i.e. in the Slovak Republic) and foreign prices (i.e. in the Czech Republic). Yoon and Jei (2020) proved that, by applying a time-varying cointegration model, the PPP varies over time for the United States, Canada and Mexico. The PPP elasticity based on the CPI is particiularly more volatile than the PPI.

Seshaiah and Tripathy (2018) proved the co-integration of a positive relationship between GDP PPP per capita and the real exchange rate, real interest rate, and money supply, and a negative relationship between GDP, PPP and CPI in Brazil, Russia, India, China, and South Africa. Prabheesh and Garg (2020) used a structural break unit root test and structural break cointegration technique to test the presence of economic relationships between nominal exchange rates and each of the price and interest rate differentials in Brazil, Russia, India, China and South Africa. The study examines the validity of two cointegrating vectors representing PPP conditions.

General conclusions of the literature on PPP

Among the ten studies analysed in Table 1 in detail, the stationarity test is used, while the cointegration and panel tests were used additionally. The conclusions of the studies showed relatively mixed results. Only three studies showed the validity of the long-term PPP theory for all or most of the analysed countries, with one considering the structural breaks. In addition to these three studies, one demonstrated convergence with the real exchange rate. The other studies only showed support for the PPP theory for certain countries.

The selected studies are among the more recent ones, therefore six of them use tests for non-linear adjustment of the real exchange rate. The results of the studies taking into account the existence of non-linearity – Cuestas (2009), Telatar and Husanov (2009), Giannellis and Papadopoulos (2010), Christidou and Panagiotidis (2010), Su and Chang (2011), and Bahmani-Oskooee and Chang (2015) – show strong evidence of validity of the PPP theory, or, in other words, the validity of the PPP theory was proved for a larger number of the analysed countries than in studies that have used linear adjustment of the real exchange rate.

The most frequently used currency in the analysis is the USD (in seven studies), while the EUR is used in three instances, the REER in two, and the DEM in one. From the perspective of international trade, the use of the USD and EUR is compliant with the theory relating to international trade, as those countries using the USD and EUR are the largest external trading partners among the analysed countries. Bahmani-Oskooee and Chang (2015), as well as Telatar and Husanov (2009), established in their studies that it is better to consider the REER rather than the bilateral exchange rates when analysing the validity of the PPP theory. The REER was used because the rate movement is the key for international trade flows. Bahmani-Oskooee and Chang (2015) argue that the PPP theory is not only valid for a bilateral trading partner but also for the majority of their trading partners if the REER is stationary.

All the studies used the CPI as the price deflator. The HICP was only used in one study by Cuestas (2009).

Giannellis and Papadopoulos (2010) point out that many studies state that the choice of the price index, in addition to the inadequate econometric test, are the reason for the rejection of the PPP theory. The analyses of the validity of the PPP theory have shown that the evidence speaking in favour of validity of the PPP theory is stronger if the PPI is used instead of the CPI, as it includes proportionally more exchange goods than the CPI, which is why the authors used the TPI in their analysis. They also highlighted the results of previous studies which concluded that the real exchange rate returns to its average level faster if the PPI is used instead of the CPI.

Review of the Periods Important for the Development of Macroeconomic Conditions in Selected Countries

During the last thirty years there has been intensive transformation of the former transition economies from the 1990s, which have reintegrated into the global economy and, in most of these countries, the standard of living has improved considerably. The transformation towards a market economy was difficult and long-lasting. Liberalisation of trade and prices was implemented very rapidly, while the institutional changes in the field of governing, competition, the labour market, privatisation and restructuring often faced opposition from different interests. In terms of macroeconomic policies, the period of the countries' transformation process can be further categorised into four different subperiods (IMF, 2014).

Four of the selected countries belong to this group, whereas Austria belongs to the developed economies and therefore the same characteristics do not apply. When the four countries faced transformation of their economy, Austria had positive economic growth, low inflation, a low unemployment rate and stable public debt. It was not until after 2009 that a similar movement of macroeconomic indicators was noticeable, as in the other analysed countries (IMF, 2019).

Initial programs of stabilisation and reform

This covers the period from 1990 to 1993 and the common features of this period are a drastic decline in GDP in all countries included in this study, interruption of trade links and high inflation rates. Those countries with better initial conditions and a more aggressive approach towards reforms stabilised their economies faster (IMF, 2014). The cumulative GDP decline during this period was 21% in Slovenia, 35% in Croatia, 18% in the Czech Republic, and 22% in Slovakia (Havrylyshyn, Izvorski, & van Rooden, 1998).

The surveyed countries adopted two approaches during their reforms, one being the 'shock therapy' and the other the 'gradual change' approach. The former was adopted in Poland and later also in the then Czechoslovakia, whereas the latter was adopted in the then Yugoslavia, of which Slovenia and Croatia were a part. This process officially started in Yugoslavia in 1989 and included the elimination of social ownership of enterprises and liberalisation of exchange rate regimes and imports. The objective was to correct the economic, structural and institutional shortcomings in terms of fixed exchange rates. The initial results of the gradual approach brought a significant decline in inflation with a relatively low shortfall in BDP, however, it ended with the secession of individual Yugoslavian states (IMF, 2014).

Market reforms

From 1994 to 1996 the regional economic changes continued despite political uncertainties and different paces of macroeconomic stabilisation. Globally, this was a period of integration, in 1994 the NAFTA agreement came into force, and in 1995 the World Trade Organization was established. Market reform in Central and Eastern European countries enabled integration into the global economy and the increase of market and capital flows; during this period, the surveyed countries began to record economic growth and disinflation and achieve fiscal stability. There were five main objectives of the reforms in this period – macroeconomic stability, liberalisation of prices and convertibility of currencies, reforms relating to enterprises (privatisation), establishing and strengthening of social security, and the development of institutional and legal frameworks. It was also important to improve the labour market which had a common characteristic in all Central and Eastern European countries: a high employment rate, but with rather unproductive work (IMF, 2014).

Economic shocks and recovery

Major crises were globally present from 1997 and 2001 in the developing countries, for example, the crisis in Mexico from 1994 to 1995, the Asian crisis in 1997, and the crisis in Argentina in 2001. The developing countries in Europe were highly vulnerable under these conditions as they had not yet achieved complete macroeconomic stability, market institutions were in the process of being developed and financial systems were still fragile. Many countries that had not established a robust market-oriented framework were the first to succumb to internal crises and afterwards also the Russian crisis in 1998, which resulted from the Asian crisis and most affected the former Soviet Union States. At first, the Russian crisis spread to the developing countries in Latin America and then back to Asia, and even to Europe. Recovery took

place in 1999 when regional GDP increased by 4% and in 2000 when it increased by 7%. By the year 2001, most countries in the region had their current account balance, budget deficits and inflation under control (IMF, 2014).

Economic boom

The period between 2002 and 2007 was characterised by fast regional economic growth, encouraged by favourable global conditions and increasing trust in the process of converging towards the European Union. Economic growth in the region was on average 6% on an annual basis, meaning that GDP would double every twelve years. However, the main driver of economic growth was external borrowing for consumption and construction. With the highly increased domestic demand and credit boom generating increased consumption and investments in construction and real estate, external imbalances started to occur, and production capacities could not keep up with demand, which was not sustainable and led to overheating tendencies in the economy. The entire region faced increased deficits in their current account balance and increased credit-to-GDP ratio. There was also no proper feedback from the fiscal and monetary policies to decrease the overheating economies, partially due to the assessment of the output gap at the time, indicating an inflation gap of between 1% and 2%, however, subsequent revised data have shown that the output gaps for Slovenia, the Czech Republic and Slovakia were significantly higher, i.e. between 5% and 7% (IMF, 2014).

Global crisis

The onset of the global financial crisis in the developed economies was recorded in the summer of 2007 and spread to former transition countries with a delay. During this period of delay, economic growth, credit growth and foreign capital inflow was still present in these countries, therefore it was argued that the developments in these countries are separate from those in the developed economies. The economic boom ended in 2008 and the former transition economies were very vulnerable due to imbalances stemming from this period. The combination of accumulated imbalances and external shocks, such as the collapse of Lehman Brothers in 2008 and the euro crisis between 2010 and 2012, led to the worst consequences for the former transition countries. The effects manifested themselves in economic growth, which was below the potential level, high unemployment rates and fragile financial markets, and this also hindered accession to the EU. Due to decreased capital inflows, these countries faced a deep recession. It was not until 2010 that weak economic growth returned, however, during the years of the euro crisis, an economic downturn was recorded once again (IMF, 2014).

The period after 2015

In Table 2, the observations stating that economic growth began after 2014 are confirmed. All the surveyed countries recorded strong economic growth; the lowest economic growth was in Austria, which may be attributed to the fact that the global crisis and the euro crisis did not have such a great impact in Austria as in the other four countries. This may be the reason why Austria recorded somewhat slower economic growth. In the other four countries, the global crisis and the euro crisis left their mark, hence these countries recorded high economic growth rates when economic recovery took place. Differences were noted during the time when the selected countries reached the level of GDP they were at prior to the global crisis in 2008. Austria reached this level of GDP in 2011, Slovakia in 2010, the Czech Republic in 2014, Slovenia in 2017, and Croatia not until after 2019. The economies in some of the surveyed countries have somewhat transformed, and imports started taking on much greater importance.

Slovenia has shifted towards an export-oriented economy and has been recording a positive current account balance since 2010. As seen in Table 2, the current account balance has been marked by a high percentage of GDP since 2015, which continued to rise until 2019. A similar situation can be seen also in Croatia, which started to record a positive current account balance in 2014. The Czech Republic also started to focus on exports, however, the current account recorded since 2015 shows negative and positive results, and the percentage of the current account balance in this period was between -0.4% and 0.4% of GDP. Since 2015, Slovakia has recorded a negative current account balance and consequently also a negative percentage of the current account balance ranging between -2% and -3% of GDP. Austria has recorded a positive current account balance since 2000.

The Purchasing Power Theory and Empirical Analysis

Law of one price

The law of one price provides that in competitive markets, in the absence of transport costs and official barriers to trade, identical goods sold in different countries must be sold for the same price if their prices are expressed in the same currency (Krugman, Obstfeld, & Melitz, 2012). This is written using the equation:

$$P_i = E \times P_i^* \quad (1)$$

Table 2. Selected macroeconomic conditions after 2014

		Slovenia	Croatia	The Czech Republic	Slovakia	Austria
2015	GDP (growth in %)	2.2	2.4	5.3	4.8	1.0
	CA (% of GDP)	3.8	3.3	0.3	-2.1	1.7
2016	GDP (growth in %)	3.1	3.5	2.5	2.1	2.1
	CA (% of GDP)	4.8	2.1	-0.3	-2.7	2.7
2017	GDP (growth in %)	4.8	3.1	4.4	3.0	2.5
	CA (% of GDP)	6.2	3.4	0.1	-1.9	1.5
2018	GDP (growth in %)	4.1	2.7	2.8	4.0	2.4
	CA (% of GDP)	6.1	1.9	0.4	-2.6	2.3
2019	GDP (growth in %)	2.4	2.9	2.4	2.3	1.6
		6.6		-0.4	-2.9	2.6

CA: current account, GDP: gross domestic product
Sources: Eurostat, 2020 a, b; BS, 2020a, b; HNB, 2020, a, b; ČNB, 2020, a, b; NBS, 2020 a, b, OeNB, 2020, a, b.

where P_i is the price of an i good in the country of origin and P_i^* is the price of an i good abroad, and E is the nominal exchange rate (Taylor & Sarno, 2002). The basic argument for why the law of one price is generally true is arbitration, which means buying something in countries where the price is low and selling in countries where the price is high, thus eliminating the price differences in the medium run (Lan, 2001). The assumptions on which the law of one price is based are (Krugman, Obstfeld, & Melitz, 2012):

- absence of transport costs
- economic operators have complete information on the prices of goods and services at home and abroad
- there are no barriers to international trade and international financial markets
- the quality of the same goods is the same everywhere and the basket of goods is universal

If the law of one price is not the case for a particular commodity, some economists argue that prices and exchange rates should not deviate too much from the ratio envisaged by the PPP theory. When goods and services become temporarily more expensive in one country than in another, demand for the currency and its products declines in the country where products and services are more expensive, causing the exchange rate and home prices to return to PPP (Krugman, Obstfeld, & Melitz, 2012).

Absolute purchasing power parity

The absolute parity of purchasing power states that the exchange rate between two currencies is equal to the price ratio between the two countries (Krugman, Obstfeld, & Melitz, 2012,). This is written using the equation:

$$E_t = \frac{P_t}{P_t^*} \tag{2}$$

where P_t is the price of a good in the country of origin and P_t^* is the price of a good abroad and E is the nominal exchange rate.

Relative purchasing power parity

The relative parity of purchasing power states that the percentage change in the exchange rate between two currencies over any time period is equal to the difference in percentage changes between the price levels of two countries (Krugman, Obstfeld, & Melitz, 2012. This is written using the equation:

$$\frac{E_t - E_{t-1}}{E_{t-1}} = \pi_t - \pi_t^* \tag{3}$$

where E is the nominal exchange rate, the π in the country of origin and π^* is the price index in a foreign country.

The relative version of PPP is also important because it may also apply when the absolute version of PPP does not apply. If the factors that lead to deviations from the absolute version of PPP are stable over time, the percentage changes in relative prices may roughly illustrate those in the exchange rates (Krugman, Obstfeld, & Melitz, 2012).

As can be seen in equation 3, if the expected rate of domestic price inflation (π) is higher than foreign prices (π^*), the foreign currency will appreciate against the domestic currency and the domestic currency will depreciate against the foreign currency. If the nominal foreign exchange rate of the in the country of origin depreciates exactly enough to compensate for the difference in inflation, the real exchange rate in the country of origin will remain unchanged.

Purchasing Power Parity Limitations

There are many problems with the validity of the theory of PPP, as there are many economic and specific factors in reality that cause deviations from PPP. These factors include the existence of transport costs, tariffs and non-tariff restrictions, price discrimination, various consumables, government consumption, cumulative current account deficit, and Dutch disease. There are also specific restrictions in the case of transition countries – the initial undervaluation of exchange rates, trend appreciation, the Balassa-Samuelson hypothesis, and the Bhagwati-Kravis-Lipsey theory (more in Krugman, Obstfeld & Melitz, 2012).

Definition of the real exchange rate

The real exchange rate is the nominal rate between the currencies of two countries, taking into account the price developments in the two countries. The equation by which the real exchange rate is calculated is:

$$RE_t = NE \times \frac{P^*}{P} \tag{4}$$

where RE_t is the real exchange rate, NE is the nominal exchange rate, P^* represents the price index in a foreign country, and P represents the price index in the country of origin.

If the value of the real exchange rate increases, this refers to real depreciation and improving a country's international competitiveness, however, if the value of the real exchange rate decreases, this refers to real appreciation that exacerbates a country's international competitiveness.

Models for testing purchasing power parity

The model for testing the absolute version of PPP can be recorded in the form (Cheung & Lai, 1993):

$$e_t = \alpha_0 + \alpha_1 p_t + \alpha_2 p_t^* + \xi_t \tag{5}$$

All the variables are in the logarithmic form, with et the nominal exchange rate, pt the prices of domestic goods and p_t^* the prices of foreign goods, and it shows deviations from PPP. In the strictest form of the absolute version of PPP, $\alpha_0 = 0$, $\alpha_1 = 1$ and $\alpha_2 = -1$ is assumed. The proportionality assumption ($\alpha_1 = \alpha_2$) and symmetry($\alpha_1 = -\alpha_2$) of the coefficients must be met (Froot & Rogoff, 1995).

Since the studies that checked the validity of the PPP theory were rejected in the short term, econometric techniques began to be developed to verify whether the nominal exchange rate and relative prices stabilised at PPP levels. In the long term, the validity of PPP can be checked through the characteristics of the real exchange rate, because regardless of the level at which the real exchange rate stabilises, it must return to its average (Taylor, 2006). The real exchange rate (ret) is recorded using the formula:

$$re_t = ne_t - p_t + p_t^* \tag{6}$$

where all the variables are in logarithms, net represents the nominal exchange rate, pt the domestic price level and p_t^* the foreign price level. Under the assumption of PPP, the real exchange rate should be 0, i.e. the real exchange rate movement is equal to the deviation from PPP (Taylor, 2006).

In the first phase, the stationarity of the real exchange rate was checked. A stochastic process is stationary, when the average value and variance are constant over time, and the covariance between two time periods depends only on the distance between two time periods and not the actual time during which the covariance is calculated. Such a time series will tend to average, and the fluctuations around this average will mainly have a constant amplitude (Davidson & MacKinnon, 2003).

To check the stationarity of the real exchange rate time series, the Augmented Dickey-Fuller test (ADF) derived from the Dickey-Fuller test, was used, which assumes the unreliability of the ut errors. In order to allow the correlation of the ut errors, the ADF test also includes deferred variables of the dependent variable ΔY_t. The ADF was carried out on the basis of an evaluation of the regression formula of the form (Gujarati & Porter, 2009):

$$\Delta Y_t = \beta_1 + \beta_2 t + \delta Y_{t-1} + \alpha_i \sum_{i=1}^{m} \Delta Y_{t-1} + \varepsilon_t \tag{7}$$

where ε_t is error, $\Delta Y_{t-1} = (Y_{t-1} - Y_{t-2})$, $\Delta Y_{t-2} = (Y_{t-2} - Y_{t-3})$ and m is the number of deferrals determined in such a way that ε_t is not correlated.

The zero and alternative ADF test hypothesis are as follows:

H0: the time series contains a unit root; (H0: $\delta = 0$)

H1: the time series is stationary; (H1: $\delta < 0$)

When validating or rejecting a zero hypothesis instead of classical t statistics, τ statistics were used. The ADF test for rejecting the null hypothesis requires that τ statistics must take up greater negative values than usual (Gujarati & Porter, 2009).

In the second phase, the authors looked for a stationary linear combination of three variables. The problem arises if the time series of variables are integrated into different orders, but MacDonald (1993) argues that even if time series are integrated into different orders, the volatility of variables can lead to a stationary linear combination between them. To check co-synthesisation, the Johansen co-integration test was used, which is based on vector authored aggression (VAR) and is written in a shorter form (Johansen, 1991):

$$Y_t = A_1 Y_{t-1} + \cdots + A_m Y_{t-m} + BX_t + \eta_t \tag{8}$$

where A_1, A_m and B are arrays, Y_t is a vector to non-stationary variables I(1), X_t is a vector of deterministic variables and η_t vector of innovation. The equation (10) can also be recorded as:

$$\Delta Y_t = \Pi Y_{t-1} + \sum_{i=1}^{m-1} \Gamma_i \Delta Y_{t-1} + BX_t + \eta_t \tag{9}$$

where:

$$\Pi = \sum_{i=1}^{m} A_i + I \qquad \Gamma = -\sum_{J=i+1}^{m} A_j \tag{10}$$

Matrix Π contains information on long-term changes to the time series. Granger's representative theorem states that matrix Π can be divided into two, $t_o \times r$ matrix ρ and α of order r $(r \leq k_{-1})$ so that $\Pi = \rho\text{-}\alpha$, if matrix Π also has the reduced order $r < k$. The α contains r linear co-integrative vectors, and the ρ array represents the adjustment parameters in the 'vector error correction' (VEC) model (Boršič & Bekő, 2007).

The number of integrated vectors is checked using two statistics: 'Trace Statistics' (LR_{tr}) and 'The Maximum Eigen Value Statistic' (LR_{max}).

The null hypothesis and the alternative hypothesis in Trace Statistics are:

H0: the number of co-integrated vectors is less than or equal to r

H1: the number of co-integrated vectors is the same as k, where the number of endogenous variables for r = 0, 1, ... k-1

'Trace Statistics' are written in the form:

$$LR_{tr}(r \mid k) = -T \sum_{i=r+1}^{k} \log(1 + \lambda_i) \tag{11}$$

where λ_i is the maximum own value of the A_i matrix in the equation (12).

The null hypothesis and the alternative hypothesis in 'The Maximum Eigen Value Statistic' (LRmax) are:

H0: the number of co-integrated vectors equals r

H1: the number of co-integrated vectors is $r+1$

'The Maximum Eigen Value Statistic' (LRmax) can be calculated by equation (12):

$$\begin{aligned} &LR_{\max}(r \mid r+1) = -Tlog(1 - \lambda_{r+1}) \\ &= LR_{tr}(r \mid k) - LR_{tr}(r+1 \mid k) \\ &r = 0,1,\cdots,k-1 \end{aligned} \tag{12}$$

where the markings are the same as in the equation 10 and 11.

The Johansen test also allows the limits to be checked, thus two limits were checked for the purposes of this study, namely the symmetry of the coefficients, $\beta = (1, -\beta_1, \beta_1)$, which confirms the validity of the relative version of the PPP theory and the second limit of the proportionality of the coefficients, $\beta = (1, -1, 1)$, which confirms the absolute version of the PPP theory (Sideris, 2006). The first place in brackets is the nominal exchange rate, the second is the domestic price level and the third is the foreign price level. Liu (1992) states in his study that it is more important to check the presence of co-integration between the nominal exchange rate and the level of domestic and foreign prices than to check the symmetry and proportionality of the coefficients, therefore,

if there is co-integration between these three variables, the theory of PPP holds true.

Empirical Analysis

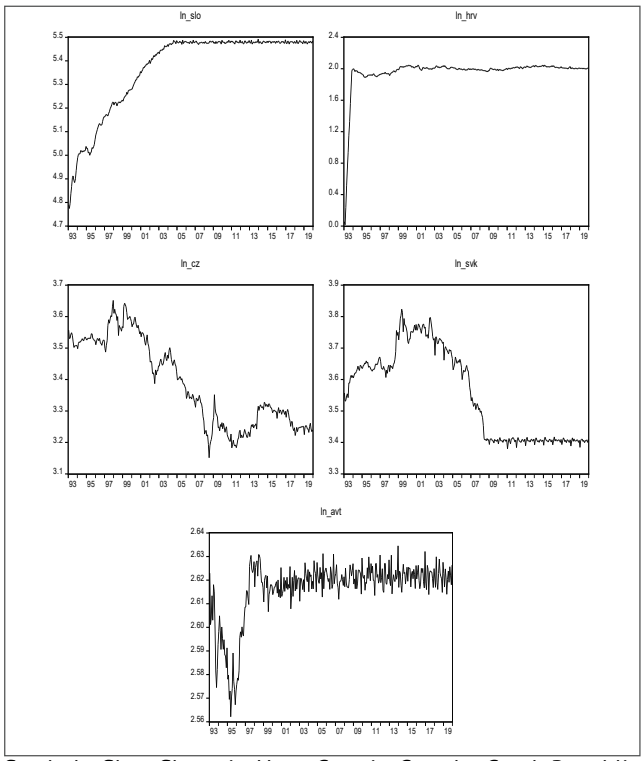
Data on the bilateral nominal exchange rate and the CPI were obtained from the databases of the Institute for Economic Diagnosis and Prognosis of the Faculty of Economics and Business of the University of Maribor, while for Austria the CPI data were obtained from OECD databases and the exchange rate was obtained from the Eurostat database. The period considered is from January 1993 to December 2019.

The stationarity verification of real exchange rates was carried out graphically as well as using the ADF test. Figure 1, which shows the dynamics of the logarithms of the real exchange rates of all the selected countries in the period from 1993 to the end of 2019, provides some characteristics that apply in four countries, with the exception of Austria. The real exchange rate of the Austrian shilling was in a trend of appreciation until April 1995, and a trend of depreciation until 1999. Austria adopted the euro in January 1999 and since then the real exchange rate movement with the base currency of the euro has only depended on a change in the price level in Austria and the European Union. It is evident that the real exchange rate has stabilised at a constant level, which may be an indicator of the stationarity stability of the real exchange rate, which is a precondition of the validity of PPP in the long term.

While the other observed countries, which were still transition countries at the beginning of the observed period, are subject to characteristics different from those applicable to Austria, overall, the dynamics of all the four real exchange rates of these countries showed significant depreciation. The real exchange rate of the Slovenian tolar depreciated from the beginning of the observed period up to its entry into the ERM II in 2004. The depreciation of the real exchange rate of the Croatian kuna was rapid, with the exchange rate depreciating from a ratio of one Croatian kuna to one euro to a ratio of around seven kunas to one euro within just 10 months. While the Czech koruna depreciated until 1997, the Czech Republic chose a managed flexible exchange rate regime as a result of the currency crisis that has led to speculative attacks on the Czech crown, and since 1997 the Czech koruna has been appreciating towards the euro, other than during the economic crisis after 2008 and the European debt crisis in 2013 when it depreciated against the euro. In terms of speculative attacks, the same applies to the Slovak crown, which depreciated until 2000, and then appreciated until the introduction of the euro in 2009. Figure 1 illustrates that the real exchange rates of the Slovenian tolar and the Croatian kuna moved similarly and stabilised at a constant level, which may indicate the stationarity of the real exchange rate, which is a prerequisite for the long-term validity of the PPP theory. The Czech koruna and Slovak crown demonstrated a similar real exchange rate trend until Slovakia adopted the euro, and the dynamics of the movements of these two currencies may indicate the non-stationarity of the real exchange rate time series, which in turn constitutes weak support for PPP or even its invalidity.

Existing literature explains this pattern of real exchange rate developments as being the result of various factors, including the inherited macroeconomic instability of the transition countries, the mixed success of the performance of selected exchange rate regimes, monetary problems that originate from rising capital inflows, inflationary wage pressures and price adjustments, and real appreciation as a result of the catching-up process of developed countries (Halpern & Wyplosz, 1997; Brada, 1998).

Figure 1. Evolution of the logarithms of real exchange rates of countries for the period 1993-2019



Symbols: Slo = Slovenia, Hrv = Croatia, Cz = the Czech Republic, Svk = Slovakia, Avt = Austria
Source: 2020. The Institute for Economic Diagnosis and Prognosis; calculation of the real exchange rate and the figures in Eviews 10.

On the basis of the results presented in Table 3, it is evident that the ADF test rejected the zero hypothesis for Slovenia and Croatia at 1% risk, taking into account both the constant and the trend and constant. In the case of Austria, however,

the zero hypothesis was rejected at 5% risk, taking into account both the constant and the constant and the trend. For these three countries, the ADF test provided results showing the stationarity of the real exchange rates of these three countries, which is a precondition for the validity of the PPP theory in the long term.

While for the Czech Republic and Slovakia, the ADF could not reject the zero hypothesis either by taking into account the constant or the constant and trend at any level of risk. The ADF test result for these countries indicates that the real exchange rates of these two countries proved non-stationarity, which may indicate the invalidity of the PPP theory in the long term.

Bekő and Kavkler (2019) analysed the PPP theory for a class of ten Central Eastern European economies and the unit root tests imply that the null hypothesis of the non-stationarity of the real exchange rates cannot be rejected for the whole period. The weak evidence on PPP found in this study suggests that the process of the real integration of Central and Eastern European economies and the subsequent price convergence among European markets remains incomplete.

Due to the difficulties of rejecting the zero hypothesis of the ADF test, and consequently non-stationarity of the real exchange rates of the Czech Republic and Slovakia, the authors of this study also decided to carry out the ADF test at the levels of the first differentiation of the real exchange rate of each country. When introducing the first real exchange rate differentials, the results of the ADF test in Table 4 reject the zero hypothesis in all countries, taking into account both the constant and the trend at a 1% risk. By introducing the first differentiation, all the time series of the real exchange rates become stationarity, which is a prerequisite for the validity of the PPP theory in the long term. The authors also found that by introducing the first differentials, the time series of the real exchange rate of the Czech Republic and Slovakia were integrated to the order of 1.

Bahmani-Oskooee (2017) analysed the PPP in 27 emerging markets by using the new Fourier non-linear quantile unit root test. Conventional unit root tests support PPP in half of the countries at most. The Fourier non-linear quantile unit root test reinforces PPP in 26 out of 27 countries in the case of emerging markets.

To check the co-integration between the nominal exchange rate and foreign and domestic price levels, the Johansen test was used to assess the long-term equilibrium ratio between the nominal exchange rate and the foreign and domestic price levels. A two-step verification of the presence of co-integration was carried out, which included first checking whether co-integration exists and what is the rank of cointegration.

Table 3. Results of the ADF test for logarithm of the real exchange rate

Country	Constant	Constant and trend	Confirmation and rejection of the hypothesis H_0
Slovenia	-7,6023*** (1) (0,0000)	-4,8049*** (1) (0,0005)	-***
Croatia	-13,2948*** (2) (0,0000)	-13,5662*** (2) (0,0000)	-***
The Czech Republic	-1,1472 (0) (0,6978)	-2,0582 (0) (0,5666)	+
Slovakia	-0,4733 (1) (0,8930)	-2,4386 (1) (0,3589)	+
Austria	-2,9868** (12) (0,0372)	-3,6224** (14) (0,0295)	-**

Notes: *** shows the statistical significance of the test at a 1% significance level, ** shows the statistical significance of the test at a 5% significance level, and * shows the statistical significance of the test at a 10% significance level.
The numbers in smaller brackets represent the number of deferrals (time-lags), while, the larger numbers in brackets represent the p-value of the test. The critical values for the constant are: -3.4505 (1%), -2.8703 (5%) and -2.5715 (10%). The critical values for the constant and the trend are: -3.9868 (1%), -3.4238 (5%) and -3.1349 (10%). The minus sign shows the H0 rejection, plus indicates its confirmation.
Source: 2020. The Institute for Economic Diagnosis and Prognosis; calculation of the real exchange rate and analysis in Eviews 10.

Table 4. Results of the ADF test for the first difference of the real exchange rate

Country	Constant	Constant and trend	Confirmation and rejection of the hypothesis H_0
Slovenia	-10.5951*** (1) (0.0000)	-12.0007*** (1) (0.0000)	-***
Croatia	-5.9205*** (1) (0.0000)	-5.8436*** (1) (0.0000)	-***
The Czech Republic	-19.3963*** (0) (0.0000)	-19.3656*** (0) (0.0000)	-***
Slovakia	-20.7351*** (0) (0.0000)	-20.7919*** (0) (0.0000)	-***
Austria	-14.6668*** (2) (0.0000)	-14,64339** (2) (0.0000)	-***

Notes: *** shows the statistical significance of the test at a 1% significance level, ** shows the statistical significance of the test at a 5% significance level, and * shows the statistical significance of the test at a 10% significance level.
The numbers in smaller brackets represent the number of deferrals (time-lags), while the larger numbers in brackets represent the p-value of the test. The critical values for the constant are: -3.4505 (1%), -2.8703 (5%) and -2.5715 (10%). The critical values for the constant and the trend are: -3.9868 (1 %), -3.4238 (5 %) and -3.1349 (10%). The minus sign shows the H0 rejection, plus indicates its confirmation.
Data source: 2020. The Institute for Economic Diagnosis and Prognosis; calculation of the real exchange rate and the analysis in Eviews 10.

The Johansen test for co-integration rank is summarised in Table 5. The first step in the analysis is the assessment of the estimated five VARs of the third order in equation 9; the time period is the same for all the estimated VARs and all the systems of the deterministic variable Xt contain a constant; the number of deferrals (time-lags) was selected on the basis of the Akaike Information Criterion.

The results of the 'Maximal Eigenvalue' and 'Trace Statistics' (Table 5) reject both zero hypotheses at 5% risk and indicate the existence of three co-integrated vectors in all the selected countries.

In the second step, by using the vector error correction model (VEC), a check of whether the nominal exchange rate coefficients and foreign and domestic price levels have the appropriate signs, was carried out, and also whether they are statistically significant. From equation 6, it is evident that the sign of the nominal exchange rate coefficient and the sign of the foreign price coefficient must be positive and that of the domestic price coefficient must be negative. The results in Table 6 indicate that all the coefficients in all countries have signs according to the econometric and economic theory, as are t – statistics of all coefficients are statistically significant.

When checking the hypotheses about the symmetry and proportionality of the coefficients, test statistics were used, which are asymptotically distributed by $\chi 2$ – distribution by degrees of freedom equal to the number of limits. The results in Table 6 show that, in the case of Slovenia, they adhere to the limits on the symmetry and proportionality of the coefficients, which means that both the absolute and the relative version of the PPP theory are considered and proved. A limitation on the symmetry of coefficients applies only to Croatia, indicating the validity of the relative version of the PPP theory, while for the Czech Republic, Slovakia and Austria, both hypotheses were rejected, which means that, consequently, no version of the PPP theory is valid for these countries. However, as previously stated, Liu (1992) states that it is more important to check the presence of co-integration than to check the symmetry and proportionality of coefficients, therefore if there is a correlation between the variables, and the PPP theory is valid, in so far as this conclusion is taken into account, the PPP theory holds true for all the selected countries.

Mladenović and Bodor (2020) analysed the sustainability of PPP within the quantile autoregression model in the economies of the Czech Republic, Hungary, Poland, Romania, Serbia and Turkey. The empirical results support to some extent the PPP theory for the euro and US dollar-based real exchange rate in Romania, Serbia and Turkey. The euro-based real exchange rate in Hungary and Poland is also identified to confirm the PPP theory. The dynamics of the real exchange rate in the Czech Republic cannot be associated with the validity of the PPP. The persistence of the

Table 5. The Johansen test and the cointegration rank

	Maximal Eigenvalue			Trace Statistics		
Country	r = 0	r = 1	r = 2	r = 0	r = 1	r = 2
Slovenia (6)	62.28*	47.14*	15.97*	125.39*	63.11*	15.98*
Croatia (7)	139.33*	59.96*	51.32*	250.63*	111.29*	51.32*
The Czech Republic (8)	53.78*	40.41*	11.81*	106.01*	52.23*	11.82*
Slovakia (4)	141.61*	57.68*	33.59*	232.89*	91.28*	33.59*
Austria (4)	112.98*	75.99*	17.23*	206.41*	93.42*	17.43*
Critical values at 95% significance level	21.13	14.26	3.84	29.79	15.49	3.84

Note: * indicates the rejection of the zero hypothesis at 5% risk

Table 6. The Johansen test – testing of limitations

		Estimated vectors		H_1 ($\beta_1 = -\beta_2$)	H_2 ($\beta_1 = -1, \beta_2 = 1$)
Country	S	p	p*	χ^2 (1 level of freedom)	χ^2 (2 levels of freedom)
Slovenia	1	-0.84 (-9.4638)	1.12 (3.5267)	0.5112 (0.4746)	4.0446 (0.1323)
Croatia	1	-0.75 (-39.9072)	1.57 (3.6512)	1.4377 (0.2305)	25.9118*** (0.0000)
The Czech Republic	1	-0.99 (-2.7079)	8.00 (7.8874)	22.4360*** (0.0000)	24.9000*** (0.0000)
Slovakia	1	-3.69 (-5.4754)	25.03 (14.8063)	86.4549*** (0.0000)	88.6886*** (0.0000)
Austria	1	-1.33 (-3.2673)	13.81 (12.4442)	64.0013*** (0.0000)	132.3929*** (0.0000)

Notes: *** indicates the rejection of hypotheses at 1% risk, x^2_c at 1 degree of freedom and $\alpha = 0.05$ equals 3.8415, at $\alpha = 0.01$ equals 6.6349, x^2_c at 2 degrees of freedom and $\alpha = 0.05$ equals 5.9975, at $\alpha = 0.01$ equals 9.2703.

euro-based real exchange rate is estimated to be more prominent following depreciation shocks.

Conclusion

The results of the empirical studies, which checked the validity of PPP in selected countries, indicated invalidity or weak support for the PPP theory. Only taking into account structural breaks and non-linear exchange rate adjustments improved the results in terms of the validity of PPP.

It can therefore be concluded that adherence to a linear deterministic trend generates results that indicate the existence of co-integration, which is a prerequisite for the validity of PPP. 'VECM' also provided statistically significant coefficients with corresponding signs for all selected countries, while testing the hypotheses relating to limitations on symmetry and proportionality gives mixed results. Slovenia is subject to limitations on the symmetry and proportionality of coefficients, which means the validity of both the absolute and relative versions of the PPP theory. Croatia is subject to a limitation on symmetry, but not to a limit on the proportionality of coefficients, which means the validity of the relative version of the PPP theory, while in the case of the Czech Republic, Slovakia and Austria, restrictions on the symmetry and proportionality of the coefficients do not apply, this consequently constitutes an invalidity of both versions. However, by taking into account Liu (1992), who states that it is more important to check the presence of co-integration than to check the symmetry and proportionality of the coefficients – since there is co-integratation between the nominal exchange rate, foreign prices and domestic prices – the PPP theory is true for all the selected countries.

In this analysis, the validity of PPP was checked in five countries – Slovenia, Croatia, the Czech Republic, Slovakia and Austria. Austria was already one of the developed economies at that time, while the remaining four countries were

going through the process of transition of their economies. Therefore, the macroeconomic picture among the four former transition countries is the same and differs from the macroeconomic picture in Austria; a similar macroeconomic picture was shared by these five countries after the onset of the global financial and economic crisis. By focusing on the selected countries, which have undergone many changes in a short period of time, five important periods can be highlighted, namely the period of initial stabilisation and reform during which exchange rate regimes were selected, which these countries also changed several times, and they recorded high falls in GDP and high inflation rates. In the following period, countries began implementing market reforms that underpinned convergence towards developed European countries. A period of economic turmoil following economic crises in certain countries around the world followed, but there was also a rapid recovery of economies; this period was followed by a period of economic boom, which was on a shaky base, as economies were overheating, and even during the global financial and economic crises, these countries recorded sharp falls in GDP, and many systemic problems were revealed, which subsequently became apparent in the debt crisis.

In the verification itself, there are dilemmas in the use of econometric tests, namely the problem of the statistical strength of tests, difficulties in the results of panel studies, the enormity of short-term volatility of exchange rates, non-linear adjustment of exchange rates and compliance with a sufficiently long time period, which could be the subject of further research.

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Empirično preverjanje veljavnosti paritete kupne moči v izbranih državah Evropske unije

Izvleček

V tem članku empirično analiziramo veljavnost paritete kupne moči v Sloveniji, na Hrvaškem, Češkem, Slovaškem in v Avstriji. Rezultati kažejo mešano podporo paritete kupne moči, kar je značilno za nekdanje tranzicijske države. V prvem koraku empiričnega dela smo preverili stacionarnost realnega deviznega tečaja v logaritmu, v drugem koraku smo preizkusili kointegracijo med nominalnim deviznim tečajem in domačo ter tujo ravnjo cen, v tretjem koraku pa smo uporabili model za vektorsko popravljanje napak (VECM), da bi preverili, ali so predznaki spremenljivk v skladu z ekonomsko in ekonometrično teorijo. V zadnjem koraku smo uvedli omejitve simetričnosti in sorazmernosti koeficientov. Za Slovenijo veljajo omejitve simetričnosti in sorazmernosti koeficientov, kar pomeni veljavnost tako absolutne kot relativne različice teorije paritete kupne moči. Za Hrvaško velja omejitev simetričnosti, ne pa tudi omejitev sorazmernosti koeficientov, kar pomeni veljavnost relativne različice teorije paritete kupne moči. V primeru Češke, Slovaške in Avstrije pa omejitve simetričnosti in sorazmernosti koeficientov ne veljajo, kar posledično pomeni, da sta obe različici neveljavni. Če upoštevamo Liuja (1992), pa ta navaja, da je pomembneje preveriti prisotnost kointegracije kot simetričnost in sorazmernost koeficientov, saj obstaja kointegracija med nominalnim deviznim tečajem in tujimi ter domačimi cenami, torej teorija paritete kupne moči velja za vse izbrane države. Empirični rezultati kažejo, da so vse časovne vrste realnih deviznih tečajev stacionarne, poleg tega obstaja kointegracija med vsemi spremenljivkami za vse države, znaki koeficientov so statistično pomembni za vse spremenljivke v vseh državah, omejitve koeficientov pa so statistično pomembne le v Sloveniji in na Hrvaškem.

Ključne besede: pariteta kupne moči, stacionarnost, kointegracija, test ADF, Johansenov test

Exploring Emerging Markets' Demographic and Macroeconomic Dynamics and the Middle Class Growth: The Case of China and India

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ORIGINAL SCIENTIFIC PAPER

RECEIVED: OCTOBER 2021

REVISED: NOVEMBER 2021

ACCEPTED: NOVEMBER 2021

DOI: 10.2478/ngoe-2021-0020

UDK: 339.5:330.101.541(510)(540)

JEL: F23, F62, J11, N35

Citation: Korez Vide, R., Zavrl, I., & Hunjet, A. (2021). Exploring Emerging Markets' Demographic and Macroeconomic Dynamics and the Middle Class Growth: The Case of China and India. *Naše gospodarstvo/Our Economy, 67*(4), 33-55. DOI: 10.2478/ngoe-2021-0020.

Abstract

Emerging markets' political, economic, and social transition processes led to altered demographic trends and new macroeconomic dynamics in these economies. These changes triggered the growth of the middle class that became an essential factor of emerging markets' attractiveness for sales and production activities of foreign firms. The purpose of this article is to analyze the demographic and macroeconomic trends of China and India in the decades before the COVID-19 crisis, aimed at estimating their role in the growth of the middle class and the consequent attractiveness of these two important emerging markets for foreign firms. We formulate our research findings on the extensive theoretical foundations and empirical analysis of selected demographic and macroeconomic indicators related to the growth of the middle class. We established that India fell behind China considerably concerning demographic transition and macroeconomic dynamics in the observed periods. China enforced a radical demographic transition. The comparative analysis of macroeconomic dynamics showed a solid leadership of China in economic growth, international trade and investment openness, technological advancement, employment, the structure of the output, domestic investment, urbanization, and salaried workers. Consequently, we estimated the lower growth of the Indian middle class and its lower importance in foreign firms' decisions to enter the Indian market. The findings brought some implications for international managers at segmenting and selecting target foreign markets.

Keywords: emerging market, middle class, demographic transition, macroeconomic dynamics, international business, China, India

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OE

**NAŠE GOSPODARSTVO
OUR ECONOMY**

Vol. 67 No. 4 2021

pp. 33 – 55

Introduction

Firms that would like to internationalize their business must consider many factors before selecting foreign markets. By an in-depth analysis, they should systematically evaluate foreign markets' potentials. In the process of markets' evaluation, among others, the human resources and customers' aspects should be explored. Identified characteristics of human resources/customers enable firms to better respond in international business. If they successfully analyze and select foreign markets' segments, they can react quickly and appropriately to potential markets' changes and adjust/redistribute resources effectively.

Research on the middle class, economic growth, and development goes far back into history. Economic historians (e.g., Adelman & Morris, 1967; Landes, 1998) aligned the 19th-century industrial revolution with relatively large middle classes in European countries. Lately, empirical evidence exists on the middle class's impacts on economic growth (e.g., Brueckner et al., 2018; Easterly, 2001; Liu & Hu, 2013; Ozturk, 2016). It is assumed that the higher consumption potentials and higher education levels of the middle class and the high share of these people in the total population impact economies' growth.

While the research findings show decreasing middle class in developed countries (e.g., Cavusgil et al., 2018; Daugherty, 2021; Schettino & Khan, 2020; Pew Research Center, 2016), for emerging markets, the topic of "new middle class" has opened the floor for discussions. Recent studies (e.g., Fengler & Kharas, 2017; Kharas, 2010, 2017; Roy, 2018) indicate that the "new middle class" has become a significant source of possible human resources and consumption and herewith an essential driver of emerging economies' growth and development. In emerging market economies, a new middle class has grown in the period of their political, economic, technological, and social transition that started several decades ago. Members of the new middle class can invest in education, health care, and consumption of various expensive goods and services. Research (see Boussie & Kersley, 2018, 13) on the shares of middle classes' final consumption in the GDP of G6 countries and the GDP of selected emerging markets shows that for the former, this share has fallen from 66% to 50% since 2000, while for the latter it has more than doubled over the same period. Therefore, the sizes and characteristics of middle classes at emerging markets represented a substantial market opportunity for foreign firms. The internationalization of their operations into emerging markets brought cost savings and a large pool of consumers. However, it offered new jobs, new sources of taxes, and investment to the target host emerging markets. These were the basis for economies' development, which increased the attractiveness of emerging markets for foreign firms.

A certain level of dynamics is a constant in emerging markets and reflects various changes in the socio-economic environment, including consumer thinking and habits (Kersley & Bhatti, 2018, 5). A new middle class, representing the driving force of consumption in emerging markets, is described as the young or middle-aged urban population with its own, steady middle-level income. They are educated, connected to the global media, and have the desire and the ability to choose various products, especially those originating from the Western world (Cavusgil et al., 2018, 103). They are also willing to exceed their budget to purchase non-essential goods and choose credit for the form of repayment. A significant trend in investing time and money in this segment is also in leisure and modern lifestyle (Klerk & Irwin, 2018, 32). However, middle classes at various markets have heterogeneous characteristics and contribute differently to the economy's dynamics (Brandi & Büge, 2014). Thus, the new middle class could be the starting point for a more advanced society if it could become a progressive driver of reforms that could benefit the majority.

At the beginning of the 21st century, some Asian countries have taken advantage of their demographic transition, export-oriented policies, and openness to foreign direct investment (FDI). As Eastern and Southern Asian largest emerging markets, China and India have shown favorable socio-economic development paths, pulling numerous people out of poverty, improving their health conditions, educational and working opportunities, and increasing their income and consumption (see Bloom et al., 2010; Choundry & Elhorst, 2010; Colmenares et al., 2021; Curtis, Lugauer, & Mark, 2017; Goley & Tyers, 2013; Gradin & Wu, 2020; Schettino, Gabriele, & Khan, 2021; Woetzel et al., 2017). We did not come across comparative analyses of China's and India's long-term demographic and macroeconomic trends and their possible connections with the middle class phenomenon in both markets. Our research question aims to estimate how demographic transitions and macroeconomic dynamics of both economies in the decades before COVID-19 were related to the growth of their middle classes as factors of attractiveness for foreign firms' sales and investment activities.

The rest of this paper is structured as follows. In the theoretical part of the research, we examine the existent findings on the importance of demographic trends for countries' development, critical factors of emerging markets' dynamics, market dynamics in China and India, middle class income levels differences and the emerging markets' new middle class as a factor of market attractiveness. In the third section, we present methodology and data and perform empirical analysis. Herein we first analyze the demographic trends

and second, the macroeconomic trends of China and India in the decades before the COVID-19 crisis. In the fourth section, we discuss the results and test the hypothesis. The fifth section concludes with implications for foreign firms and proposals for further research.

Theoretical Background

Demographic trends and countries' development

Demographic trends and countries' development enable each other. The population growth and characteristics influence economic conditions, particularly labor availability. In addition to the availability of labour, long-term economic growth also requires growth in the economy's structural efficiency, namely how efficiently the economy can balance the sources of labor and capital to reap the highest and best possible returns. The aging of the population can harm the economy's structural efficiency. Demographic trends also affect consumption, labor, savings, investment, and tax policy.

Along with the changed age structure, the financing of health care and pensions also changes (Mester, 2017, 4-7). Demographic indicators also influence decisions regarding infrastructure development and financing. A more critical factor in this is the number of population and households. The second factor is the age of the population, impacting the need for an education system, employment services, or services for the elderly, such as the health care system and homes for the elderly. Developed health and education infrastructure impact lower birth rates and the higher age of the population.

Critical factors of emerging markets' dynamics

Liberalization of international trade and investment and reforms of the business environment

With the liberalization of international trade and investment and the technological progress in the last decades, the importance and value of foreign direct investment (FDI) and the global value chains were growing (Baccini, 2018, 2-3; Casson & Wadeson, 2018, 1152; Chenaf Nicet & Rougier, 2016, 84–85). FDI brought an abundance of tangible and intangible resources to the target markets and thus contributed to the higher economic growth of the host economy (Ketteni & Kottaridi, 2019, 415). Reforms of the emerging markets' business environment had a stimulating effect on the growth of FDI in these markets. Particularly important for FDI flows to these markets was changed labor market regulation. The less rigid and inflexible the labor market was, the more attractive it was to the activities of foreign firms and their FDI (Gross & Ryan, 2008, 590). The growing flow of FDI from developed to emerging markets was also highly affected by the recession in developed markets after the financial crisis in 2008 (Chenaf Nicet & Rougier, 2016, 67–70).

Transfer of knowledge and technology, low production costs, and modernization

Knowledge and technology have spread to emerging markets through various contract forms of international business (e. g. licensing), strategic non-capital alliances, FDI, and location of a particular link in the supply chain to these markets. In emerging markets, local companies were engaged in export activities, most often part of a global supply chain by producing semi-finished products and selling them to foreign companies in developed markets. In this way, local companies gained new knowledge and experience from the global markets' customers and competitors and thus improved their productivity (Nuruzzaman, Singh, & Pattnaik, 2019, 3). Local companies in emerging markets also acquired knowledge from the foreign, stronger competition through imitative innovation, as they usually did not have enough capacity to develop their innovative solutions. In this way, they followed leading companies, used similar technologies, production processes, marketing activities, produced similar products, and thus ensured their existence in the market (ibid., 2019, 2). Emerging markets had to fulfill several other conditions to adopt new technologies successfully: a particular share of domestic financial resources, knowledge, and skills of employees, compliance with rules and regulations, basic infrastructure, working conditions, and culture (Casson & Wadeson, 2018, 1152). If these factors did not work synchronously in the market, the effects of the new technologies were also significantly smaller (Carillo Hermosilla & Martinez Chafla, 2003, 2-3). An excellent combination of factors, such as low production costs in the market and high customs restrictions on imports, attracted contractors and foreign investors to emerging markets and gave these markets a considerable cost advantage over firms from developed markets (Casson & Wadeson, 2018, 1155). Based on this, the modernization of emerging markets intensified.

Urbanization

Emerging markets have industrialized quickly and become critical links in the global value chains. Urban areas became interesting for locating the activities of international firms due to the proximity of resources, access to capital, skilled labor, institutional support, shorter and cheaper distribution routes, and connection to FDI resources. Increasingly expanding and advancing markets have accelerated

urbanization (Estrin, Nielsen, & Nielsen, 2017, 328–329). People sought better education, employment, and living standards in cities. Urbanization with a combination of skills, talents, and resources in one place helped firms to achieve economies of scale, reduce operating costs, increase productivity and international competitiveness. To survive in the market, they must make the best use of their resources and competitive advantages. The struggle for survival and market share led to new ideas and innovations, new value-added, and higher productivity. Urbanization is also one of the most critical levers of consumption. However, it is not necessarily the best indicator of the level of development in the country (see Shome, 2013). A large proportion of the urban population could be like or even poorer than some rural areas. Thus, even residents of rural areas can reach the standard of the middle social class without having to move to the city (Mishra, 2018).

Favorable demographic environment

In emerging markets, the share of the working-age population has been increasing over time due to still growing but lower natural population increase, progress in education, and improved health care. A larger labor force pool was the basis for poverty reduction and economic growth (Cruz & Ahmed, 2018, 95). Investments in human and physical capital increased labor productivity. Parallelly, the shares of middle-income social classes have increased, leading to higher consumption with its impacts on emerging markets' economic growth. Higher numbers of working-age population and consumers led to various international business opportunities for foreign firms at these markets.

Ownership of natural resources

Industries that have enabled the economic growth of emerging markets have required natural resources. Emerging markets' ownership of raw materials enabled rapid industrialization and attracted FDI inflows (Naglič, 2011, 39–40). Arable land in the regions of emerging markets has become increasingly valuable as they cultivated it to supply the whole world.

Market dynamics in China and India

China

In the late 1970s, China introduced a one-child policy to balance the demographic situation and revitalize the economy, discouraging a higher proportion of the young population. After 1990, when the government embarked on economic reforms, several factors allowed China's economic expansion. One of them was a transition to state capitalism, where, apart from the state, the market regulates prices, and state-owned companies also compete. The second one was a labor market transition with the abolition of the life guaranteed job security with steady income and benefits (so-called Iron rice bowl (see Wang & Xi, 2015)). Agricultural reforms and investment in infrastructure were the subsequent reforms that also triggered higher urbanization. Investment in the population's education for more demanding and higher-paid jobs has also been crucial. The next factor was the openness for FDI and their promotion in the domestic economy (Silverstein et al., 2012, 5-6). Because of China's economic progress, a large proportion of the population moved into the middle class, and their standard of living and purchasing power rose. China became slowly uncompetitive for FDI in manufacturing as labor costs increased (Davies, 2013, 7). Therefore, the FDI in the Chinese service sector rose considerably.

The strengthening of China and the whole East Asian region in the global economy can also be related to more than 21 concluded free trade agreements (FTA) of China with countries in the region (Ministry of Commerce, People's Republic of China, 2021). The last concluded FTA is Regional Comprehensive Economic Partnership (RCEP) between China and 14 Asian Pacific countries. It comprised about 30% of the world's population (2.2 billion people) and 30% of global GDP ($26.2 trillion) as of 2020 (Asian Development Bank, 2020). According to the forecasts, the RCEP will eliminate about 90% of the tariffs on imports between its signatories within 20 years of coming into force and establish standard rules for e-commerce, trade, and intellectual property, which will help facilitate international supply chains and reduce export costs throughout the bloc (European Parliament, 2021). So far, China's advantage was the network of regional free trade zones (FTZ) across the country, which eased and facilitated international trade and FDI with underdeveloped Chinese provinces. Eighteen FTZ (as per 2021 data, six new pilots FTZ were established in 2019 (see Wong, 2021)) offer preferential policies for the import, handling, manufacturing, and exporting of goods, as well as through tax incentives, free flow, and exchange of capital, and fast-tracked procedures for investment. The FTZ Network helped China face the challenge of too centralized FDI. These focused mainly on major urban Chinese cities and the high-tech sector (manufacturing electronic and medical devices and communication equipment) (Yu, 2018, 6). The decision to establish more FTZ was also a response to the consequences of the trade war between the USA and China that started in 2018 and postponed, halted, or caused relocations of investment in China to other Southeast Asian countries (Bray, 2018). To mitigate the adverse effects of this trade dispute, China also released its financial and fiscal policies by lowering the level of required reserves and taxes and increasing the export tax refund. Government

authorities further introduced lower tariffs on imports into China to promote the business environment. Domestic solid demand still contributed to positive economic figures despite the fall in economic growth due to reduced exports (The World Bank Group, 2019, 57 -58). Therefore, China kept the largest share in world GDP in 2017, the largest share in world exports of goods, and the second-largest share in world imports (Glawe & Wagner, 2020).

India

One of the significant reforms of the Indian economy was the abolition of "License Raj", a state-regulated system of licenses, regulations, and accompanying red tape that hindered the setup and running of businesses in India between 1947 and 1990. The following two reforms promoted international trade by reducing import costs and encouraging FDI. India has facilitated the economy's liberalization by privatizing state-owned enterprises (Silverstein et al., 2012, 6-7). Thus, after 1991, India began to pursue an open market policy and economic liberalization to achieve economic growth and development. Stimulating macroeconomic environment - attempts to lower inflation, energy reforms, tax reforms, and a stable balance of payments - has fuelled India's economic growth. Private consumption and investment increased (The World Bank Group, 2018). Over the last 50 years, the share of value-added in industry and services in India's GDP has gradually increased. However, the primary income of more than half of the population is still from agriculture (Mitra & Kadam, 2018, 60). Overall factor productivity and human resource productivity improved. With the demonetization of some banknotes and a new tax on goods and services, India intended to lower the grey economy (Mitra, Chen, & Klerk, 2018, 49-50; The World Bank Group, 2018). Despite efforts to reduce unregistered production, employment, and income in India, the World Bank two years ago still recorded 90% of the grey economy in this market (The World Bank Group, 2019a, 19). India was recording GDP growth, but the link between GDP growth and employment was weak. The higher productivity and value achieved at work was reflected more quickly in GDP growth than in the employment indicator. A substantial share of unemployed was among young, highly educated staff, as the market did not create enough jobs for this population (Centre for sustainable employment, 2018). Basole and co-authors (2018, 142-143) pointed out the challenge of the highly educated Indian population without practical skills and vice versa - the population with practical skills but without formal education. Previous studies (see DaVanzo, Dogo, & Grammich, 2011, 24-26) show that India invested less into the education system than China and achieved lower education participation and literacy levels.

Middle class income levels differences

The income levels of individuals to be classified as members of the middle class differ across the research community. Researchers define yearly/monthly/daily income boundaries (see Bhalla, 2007; Center for Strategic and International Studies, 2021; Fengler & Kharas, 2017; Ravallion, 2010; The World Bank, 2007) or divide middle class into income subgroups (see Banerjee & Duflo, 2007; Pew Research Center, 2009). According to Wheary (2010) and Kharas (2010), the middle class comprises all those who have enough income to be able to afford essential goods and a few secondary, with a lower income limit of 10 $ and upper of 100 $ per person daily, considering the PPP in the observed period. Due to income dynamics, defined middle-income class can be only short-term and valid for a particular country.

The emerging markets' new middle class as a factor of market attractiveness

While the middle class stagnates in developed markets, it grows in emerging markets. The growth of the population with middle income in emerging markets is critical for selecting these markets for international business activities. There is a strong link between the size of the new middle class in emerging markets and the presence of foreign firms in these markets in the form of FDI (Guercini & Runfola, 2016, 693). The more middle class members in the market, the more actively the company is present. Emerging markets are attractive for firms' international business due to the growing purchasing power of a large pool of potential new middle social consumers (Cavusgil et al., 2018, 95) and a new number of better educated and skilled working-age people.

There are essential differences in the new middle classes across emerging countries, even at comparable levels of economic development (Brandi & Büge, 2014). It is possible to distinguish among countries with a larger middle class than predicted when looking at their GDP per capita and the countries with the opposite situation. The first has a more affluent middle social class. In their study, Brandi and Büge (2014) studied correlations among middle social class sizes (measured as a share of the total population with a certain level of daily consumption, following the definition of Kharas, 2010) and GDP per capita in PPP in 2012. According to selected criteria for defining middle class, almost 160 million people in China were middle-class in 2010. In India, however, 60 million. The Kharas (2010) projection has shown that both nations will be the middle-class superpowers by 2020, with more than an estimated 590 million (China) and 280 million (India) middle class consumers.

Brandi and Büge (2014) found that the level of economic development, measured only by GDP per capita, is not a good predictor of the middle class's share in the total population, measured by its consumption capacities. GDP per capita explained only 71% of the variability in the sizes of the middle-classes across countries. Countries at the same levels of economic development can show very different patterns of middle class consumption capacities. According to the data from 2012, China had a 19% lower size of the consumption capacity of its middle class (16%) than predicted by its average GDP per capita (35%). These findings imply that countries at the same level of development, measured by GDP per capita, can show very different middle class levels, measured by their consumption capacities. According to this finding, the authors formulated a new typology, classifying China's middle class size as small with its consumption level as poor (below 90% of what is predicted by GDP per capita levels). In contrast, India's middle social class was classified as small; however, its consumption level was higher than China's and characterized not as poor but as an average. The Indian middle class was found as more affluent than the Chinese in 2012.

The emerging markets' new middle class consumers

There are differences in the consumer habits of the middle class of emerging markets and the middle class of developed countries. The former can afford the first car, the first mobile phone, or the first computer for the extra money they save, while the latter have owned these goods for a long time and then always buy the latest versions of cars, mobile phones, and computers. (Cavusgil et al., 2018, 103). When an individual or the household crosses the income threshold of the middle social class, this person initially spends most of the money on better quality food, clothing, and household necessities. Later, however, such individual also begins to spend money on the first car, cosmetics, entertainment, travel, education (Silverstein et al., 2012, 37). Kardes (2016, 703-704) argues that in a large country, middle class consumers' habits and preferences for products differentiate across the country due to different ethnic groups, values, beliefs, language, shopping patterns, and infrastructure.

Silverstein and co-authors (2012, 31-32) described the average member of the middle class in China as an individual with one or two children, living in a second- or third-order city in a medium-sized apartment. This individual devoted his time and money to education in looking for the best job opportunities, further increasing his income. The average middle class member in India was described as a person born into a poor or lower middle class, who managed to move into the middle class with hard work and two parallel jobs, and was the only employee in the family. This individual sought more opportunities to accomplish life goals and displayed entrepreneurial motivations (Javalgi & Grossman, 2016).

Empirical Research

Methodology and data

This paper is a descriptive macroeconomic dynamic research based on the broad theoretical background and analysis of selected demographic and macroeconomic indicators' dynamics for China and India in the decades before COVID-19. We also compared China and India with the USA and the EU to depict the divide between the largest emerging markets and developed economies. The World Bank's and the United Nation's statistical databases were data sources for our analysis. The periods of indicators' observation vary according to all selected countries' data availability.

Hypothesis development

Apart from developed countries, emerging markets evidenced the changes in their demographic environments in the decades of globalization. While the population in these markets was still increasing, mortality decreased, and the age structure changed. Part of the population moved from the poor to the middle-income social class. More working-age and middle-income individuals than the poor and rich social class represented emerging markets' prospective labor and consumers. Firms that searched for new international expansion opportunities could find Chinese and Indian middle classes as their target human resources and customers. These were younger, middle-aged, and middle-income individuals that could afford more than just the necessities needed to survive. The hypothesis is the following:

H: Demographic and macroeconomic dynamics in China and India established conditions for substantial growth of middle classes in both countries in the decades before the COVID-19 crisis.

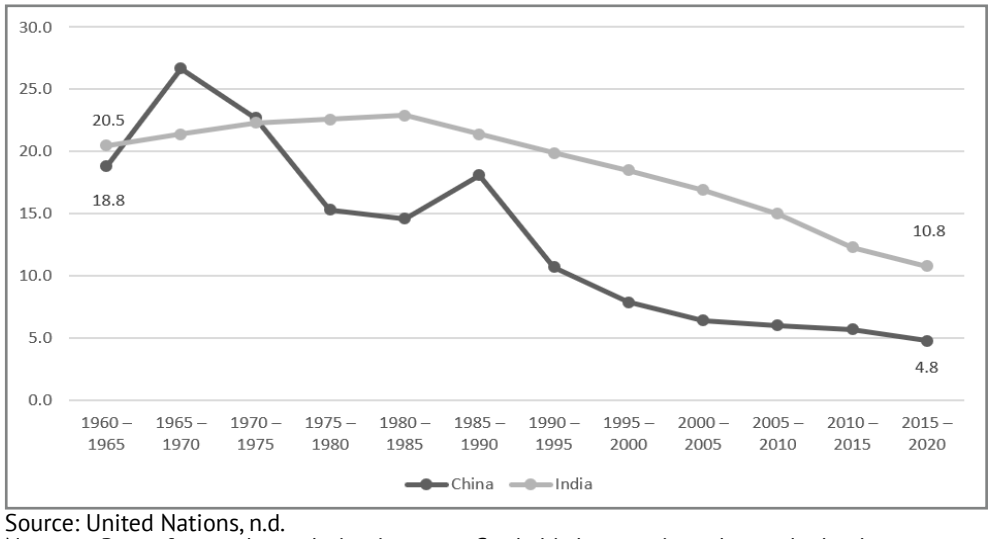
The hypothesis was tested by comparing the relevant indicators' trends for both countries in the observed period and formulating our conclusions based on the synthesis of previous research and findings of our empirical analysis.

Demographic trends in China and India

Population growth affects many phenomena, such as the age structure of a country's population, the size of a country's

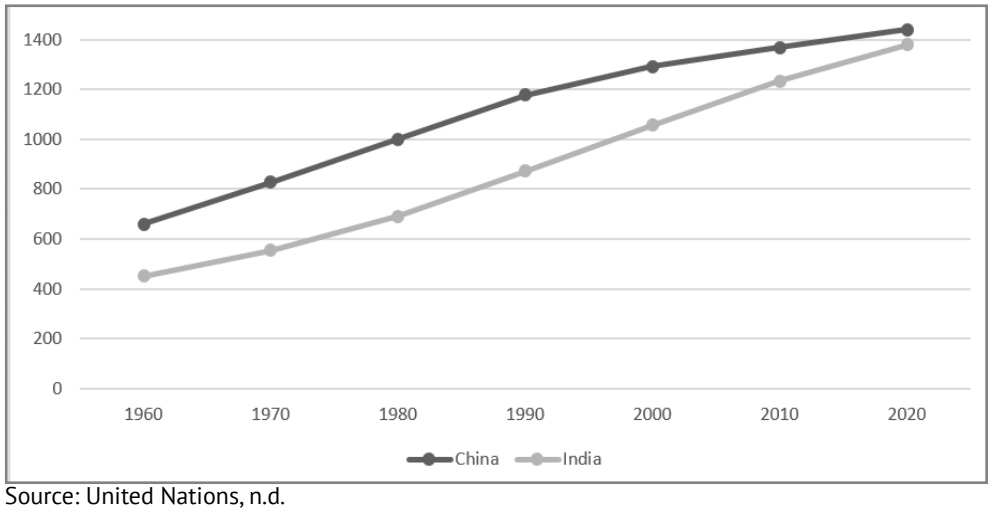
workforce, international migration, and economic inequality. These factors both affect and are affected by overall economic growth. High population growth in low-income countries may slow their development, while low population growth in high-income countries may create social and economic problems (Peterson, 2017). Figure 1 shows that in the observed period, the natural population increase of China was significantly lower than in India, except for the period 1965-1970. We can ascribe such a trend to the effects of the Chinese one-child demographic policy.

Figure 1. Rate of natural population increase in China and India between 1960 and 2020 (per 1000 population annually, estimates)



Source: United Nations, n.d.
Notes: Rate of natural population increase: Crude birth rate minus the crude death rate.
The rate represents the portion of population growth (or decline) determined by births and deaths. It is expressed per 1000 population annually.

Figure 2. Total population of China and India between 1960 and 2020 (in millions)



Source: United Nations, n.d.

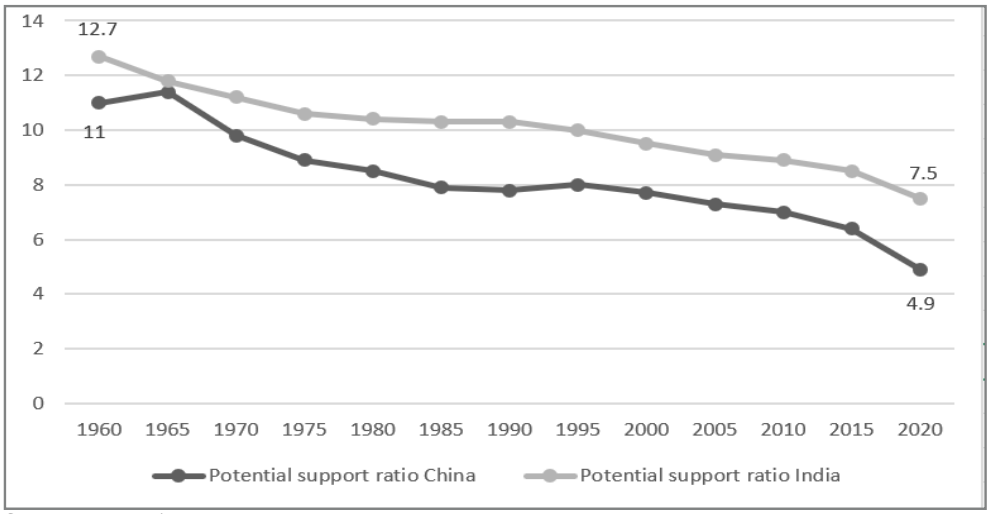
The significantly faster cut of the Chinese rate of natural population increase compared to India could indicate China's higher short- and medium-term development opportunities. However, when a country is approaching high-income levels in the long term, such a low population increase could decrease its economic and social prosperity.

The size of the country, measured by the population, can be an essential indicator of the possibility of achieving economy of scale and market potential and an indicator of the availability of production factors. However, both possibilities are influenced by several other macroeconomic and microeconomic factors and a given country's geographical,

historical, and political characteristics. Among others, we would have to be acquainted with the population's structure (e.g., the share of the working-age population, the share of the employed population, achieved levels of education, average levels of income, etc.) and its subsequent economic potentials. Figure 2 shows that the population of China was 2.2-times larger in 2020 than 60 years ago. For India, this number was 3-times. However, in 2020, the largest population still had China, but the size of the Indian population was much more like the size of the Chinese population in 2020 than 60 years ago.

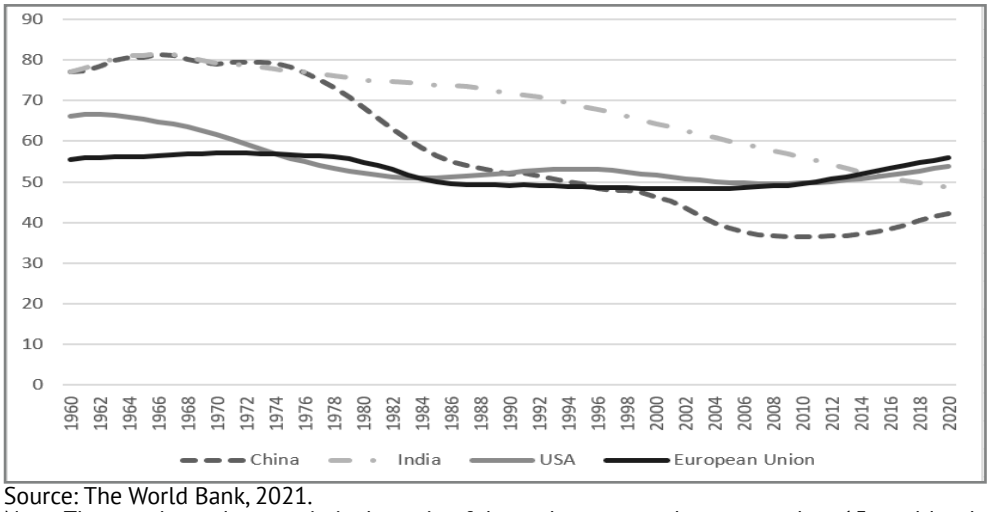
From Figure 3, we can see that 60 years ago, the potential support ratio was almost the same in China and India. In 2020 this ratio was 2.3-times lower for China and 1.7-times lower for India. These discrepancies indicate the differences in the socio-economic development paths between the observed two countries and their future long-term economic perspective due to a more favourable potential support ratio in India than China. The large share of the younger, working-age, educated, and employed population might support the country's economic development and growth with consequent tax inflows that lower the pressure of the older population on public finance.

Figure 3. Potential support ratio in China and India between 1960 and 2020



Source: United Nations, n.d.
Notes: Potential support ratio: population 25-64 per population 65+.

Figure 4. Age dependency ratio in China, India, USA, and the EU between 1960 and 2020 (% of working-age population)

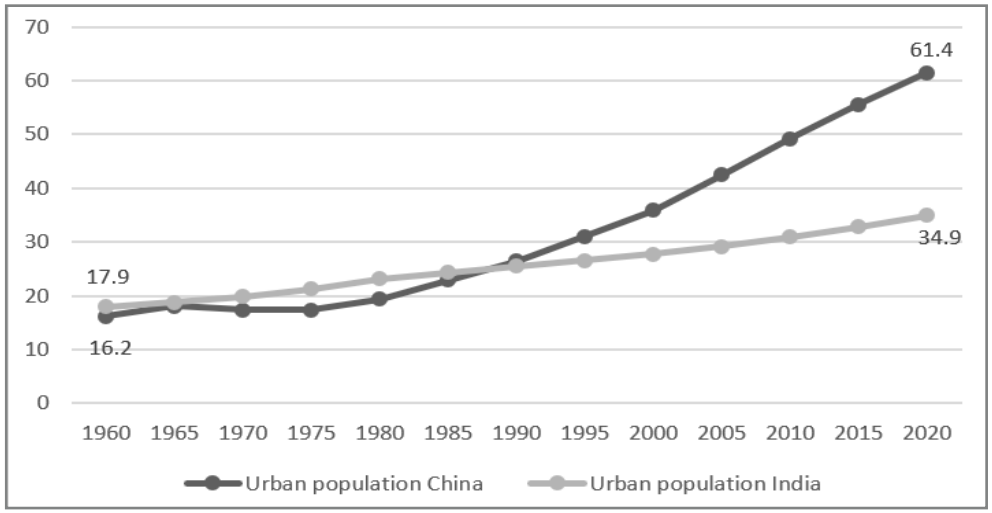


Source: The World Bank, 2021.
Note: The age dependency ratio is the ratio of dependents – people younger than 15 or older than 64 – to the working-age population – those ages 15-64. Data are shown as the proportion of dependents per 100 working-age population.

Figure 4 shows the considerable decrease of the Chinese age dependency ratio compared to India, the USA, and the EU, indicating the increase of the Chinese middle-aged working population, particularly from the late 1990s. This demographic characteristic gave China significant short- and medium-term socio-economic advantage and development potential over India, its largest emerging market competitor, and the USA and the EU, its largest developed markets competitors. However, we can see that the Indian age dependency ratio was also falling in the last decades due to decreased share of the population under 15 age, larger shares of young and middle- age population, and still low share of 70+ population in the total population. On the other hand, the Chinese age dependency ratio increased in the last decade due to the rising share of the older population in the total working-age population. In contrast, the Indian age dependency ratio decreased in the same period. These differences between China and India indicate that China started to lose the positive economic impact of the former one-child policy in the long term.

Figure 5 shows that the size of the urban population, as an indirect indicator of society's transition to industrial and service economy, was almost the same in 1960 for China and India. However, in 2020 China recorded a 26.5 percentage points higher share than India. This data indicates that China has created employment opportunities in urban areas, bringing higher value-added. In India, on the other hand, these opportunities have grown very slowly, which could indicate a slower economy's restructuring and still existent reliance on the primary economic activities. However, to be sure about the benefits of rapid urbanization on Chinese development, it would be requisite to explore the income differences of the newly urbanized population. Based on these

Figure 5. Urban population in China and India between 1960 and 2020 (% of the total population)



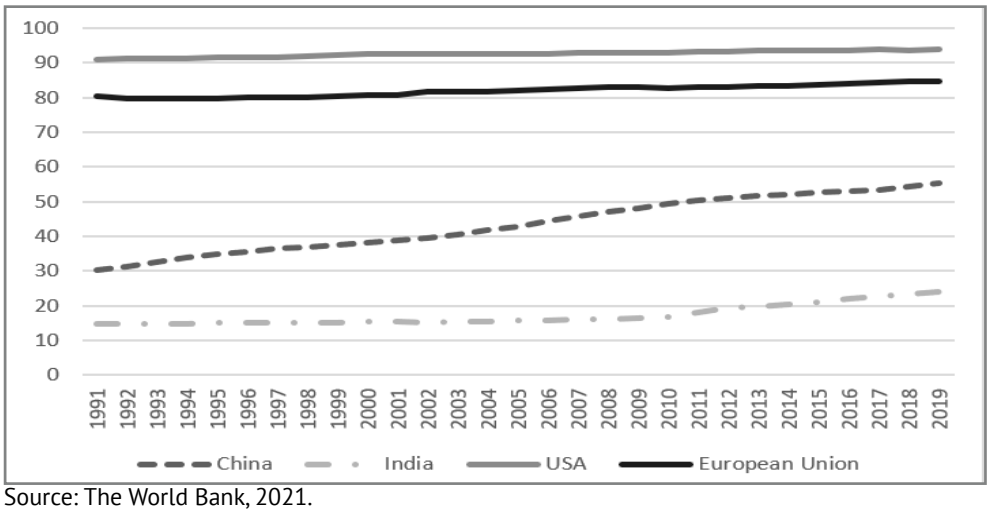
Sources: United Nations, n.d.a.
Note: Urban population: percentage of the population at mid-year residing in urban areas.

findings, we could establish potential impacts of urbanization on the share of the middle class population. Similarly, we could explore the development of rural regions in both countries and its impacts on rural population income.

We can see from Figure 6 that in China, approx. 57% of workers received salaries upon contracted employment in 2019. In India, this share was only approx. 24 % in the same period. In both countries, the share of salaried workers in total employment has increased in the observed period. However, the growth was much higher in China than in India. This data could indicate faster poverty reduction in China and a higher share of stable jobs, supporting the country's socio-economic development leading towards a larger middle class. However, low shares of salaried workers in both countries could indicate high levels of grey economy and many casual jobs that do not bring a stable long-term standard of living and decrease development opportunities.

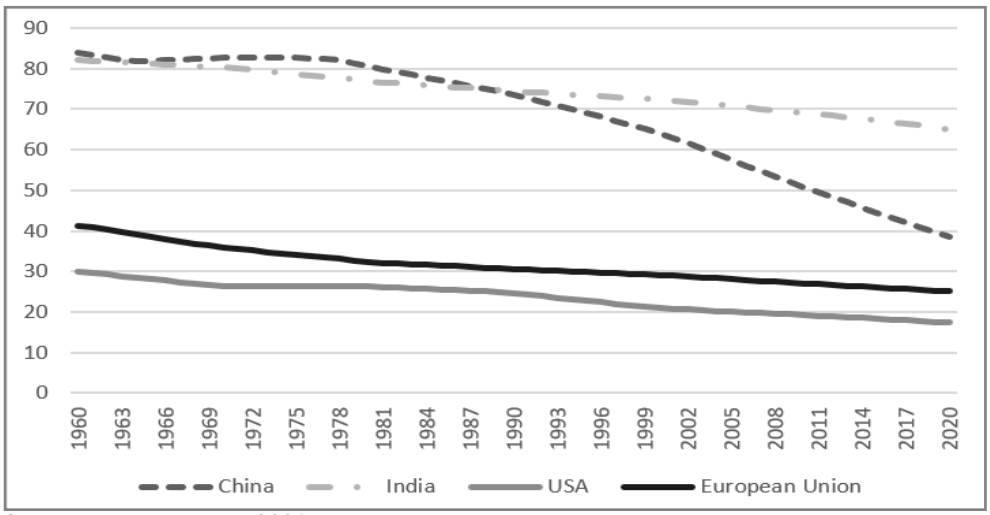
From Figure 7, it is evident that in China, the rural population has been significantly lowered, particularly from 1980 on, which could indicate the transition in the creation of GDP value-added. On the other hand, we can see that the Indian population was still predominantly rural in 2020 (approx. 65% of the total population). However, to establish the impact of urbanization on economies' development, it would be required to analyze the newly urbanized population's income levels. On the other hand, the investment into agricultural development could change the income levels of the rural population. The impacts on the middle class growth

Figure 6. Salaried workers in China, India, USA, and the EU between 1991 and 2019 (% of total employment)



Source: The World Bank, 2021.

Figure 7. Rural population in China, India, USA, and the EU between 1960 and 2020 (% of the total population)



Source: The World Bank, 2021.

could be established only after analyzing the income levels of both types of population.

Figure 8 shows the changed age structure and life expectancy in China and India between 1960 and 2020. China drastically lowered the share of children in the whole population and increased the share of the middle-aged population. The life expectancy also increased. The highest shares of the Chinese population in 2020 represented 30-34- and 45-54-years old individuals. The share of the Chinese working-age population (25-65 years old) in 2020 was much higher than in 1960 and higher than in India.

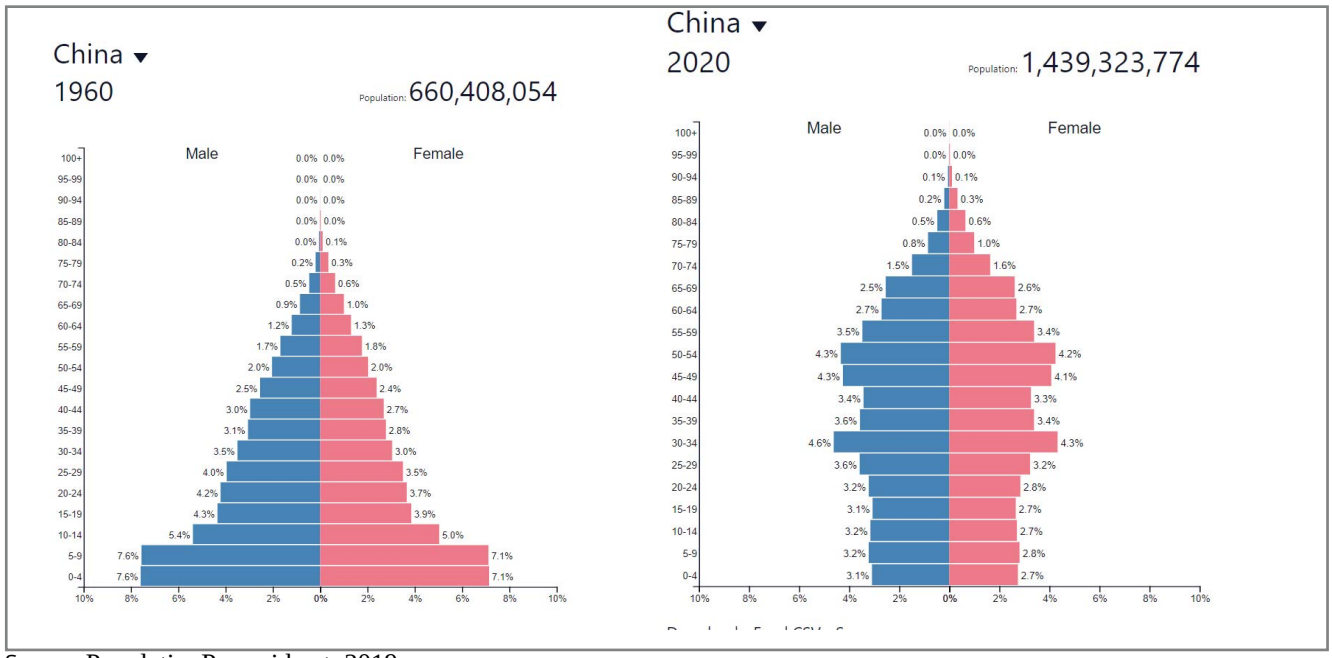
On the other hand, the share of the 65+ population in China was much higher than in India. India also lowered the share of children in the whole population, although much less than China. The shares of the Indian middle-aged and older populations did not significantly increase and were lower than in China. Indian life expectancy slightly increased but was lower than in China. The highest shares of the Indian population represented 10-40 years old individuals.

Based on these findings, we can conclude that the demographic transition of China was extensive. In the case of India, however, it was modest.

From Figure 9, it is evident that in comparison to China and India, Europe and particularly the USA, have lower shares of the working-age population and at the same time a much lower number of the total population and higher shares of population 65+ with longer life expectancy.

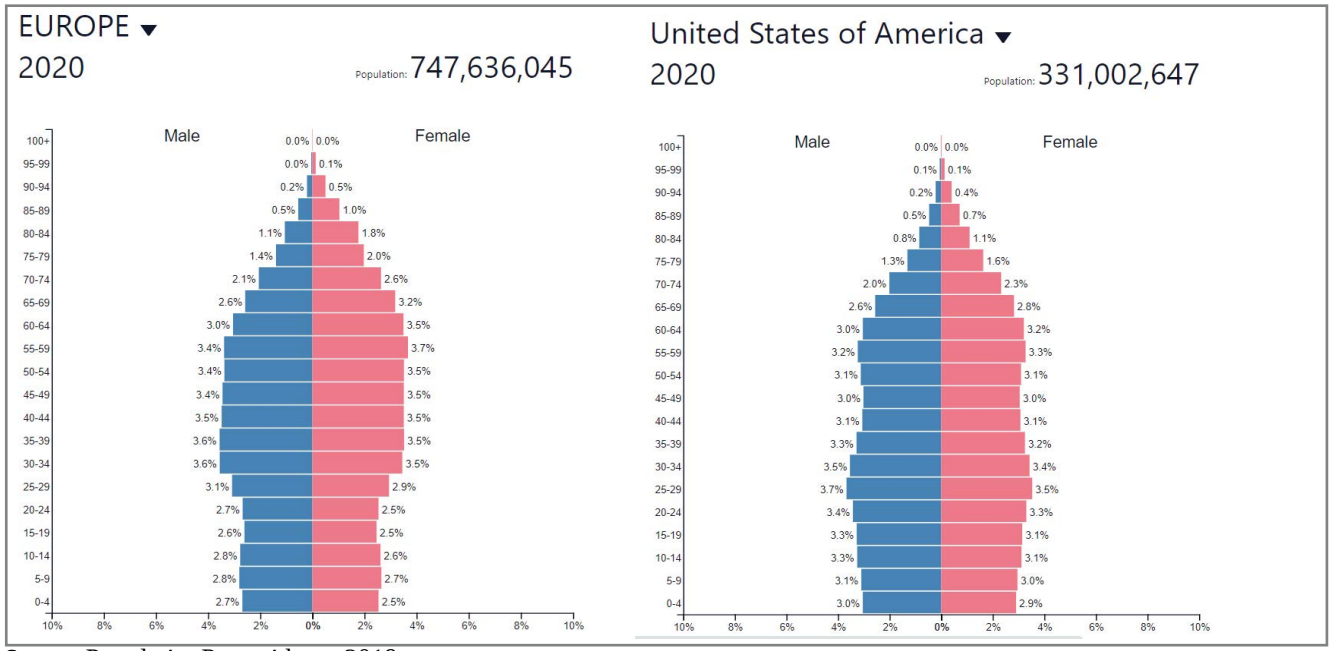
If we assume that the middle class could grow based on the share of the working-age population and if the age 65 is the

Figure 8. Population pyramids of Chinese and Indian population in 1960 and 2020



Source: PopulationPyramid.net, 2019.

Figure 9. Population pyramids in Europe and USA in 2020



Source: PopulationPyramid.net, 2019.
Note: There is no EU population pyramid in the same data source.

age of retirement, then the labor and consumption potentials of the Chinese middle class are much higher compared to Europe and the USA.

In further research, we explore the possible congruities between the Chinese and Indian demographic trends and the macroeconomic dynamics of their economies.

Key macroeconomic trends of China and India

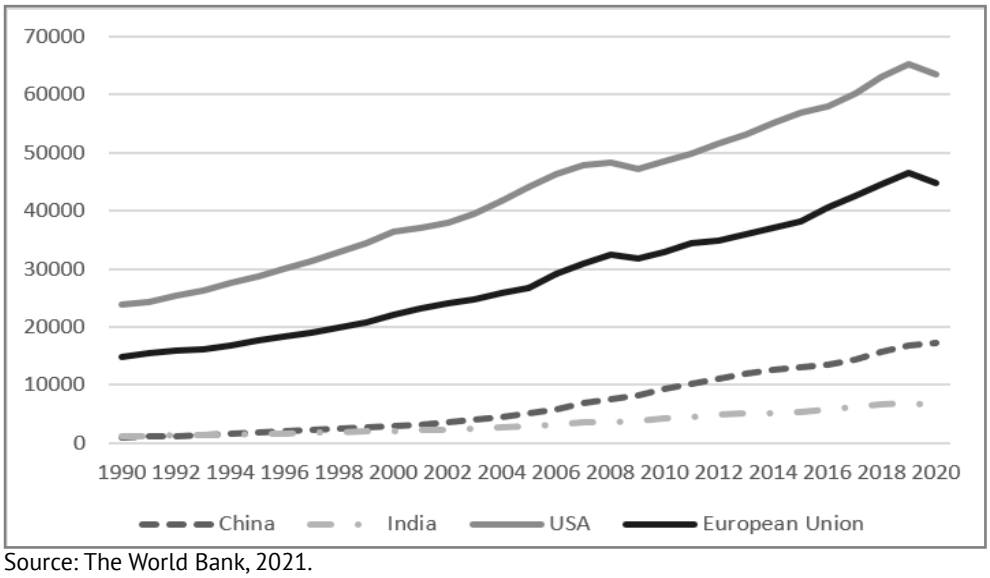
Gross domestic product (GDP) per capita measures a country's economic output per person and analyzes prosperity and national wealth. As shown in Figure 10, in the observed period, there was a significant difference among GDPs per capita of highly developed markets, like the USA and EU,

and China, as one of the most thriving emerging markets so far. Since the 1990s, the Chinese and Indian GDP per capita gap has risen. China's GDP per capita boosted in the last fifteen years, indicating the increasing income levels of the population and growth of the middle class. Compared to India, these expansions could be much higher.

Figure 11 shows that Chinese GDP per capita growth was much higher than the Indian in two periods: between the 1990s and 2000s and between 2000s and 2015 when it fell behind the Indian one. Chinese GDP per capita growth was much steadier than the Indian between the 1990s and 2015. Although the Chinese GDP per capita growth started to decrease from the 2008 economic crisis on, it was much higher than the Indian one in the period of fifteen years (2000-2015).

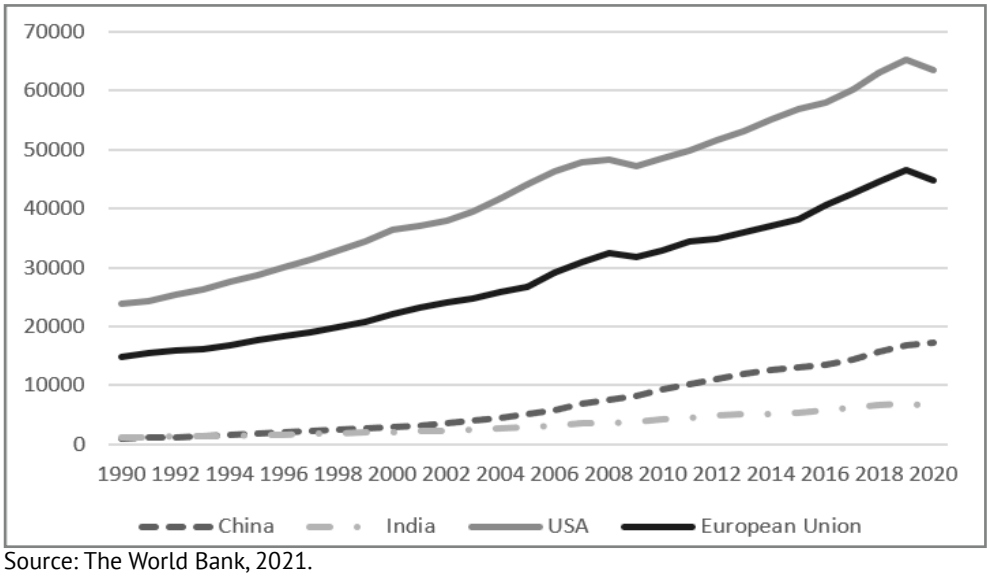
Figure 12 shows that China was quickly transitioning towards a service economy, and on this path, it overtook India in 2013. In 2019 China created almost 55% of services value-added, while India approx. 50%. To establish the impacts of this rapid Chinese economic restructuring on the population's income and possible growth of the middle class, we should explore the types of newly created services and the share of the population employed in these industries.

Figure 10. GDP per capita of China, India, USA, and the EU between 1990 and 2020 (PPP, current international $)



Source: The World Bank, 2021.

Figure 11. GDP per capita growth of China, India, USA, and the EU between 1971 and 2019 (annual %)

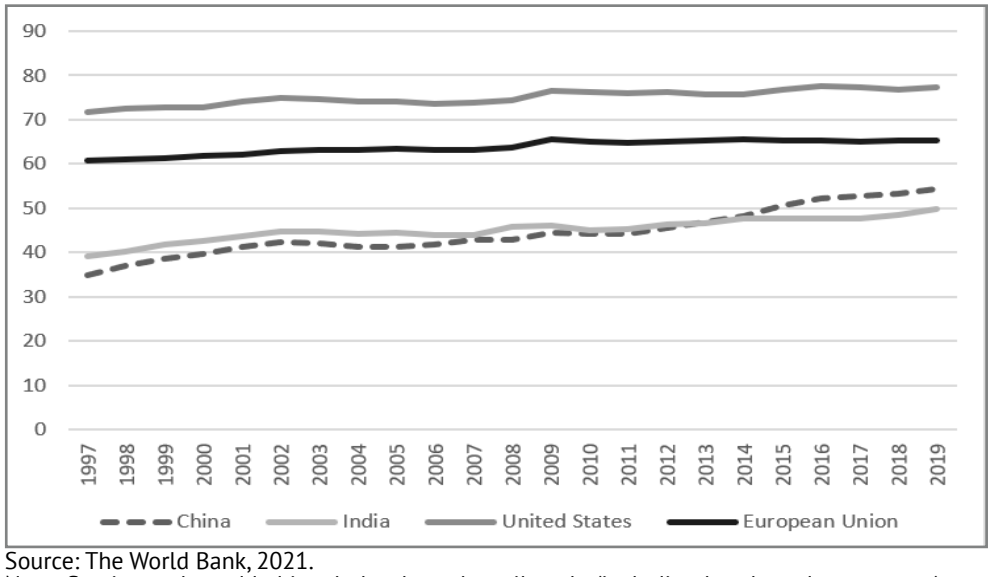


Source: The World Bank, 2021.

While China has decreased its value-added in agriculture to only approx. 7% of GDP in 2019, India, on the other hand, increased this value to approx. 17% of GDP in the same year (Figure 13). From Figure 13, we can also see the differences in the shares of primary activities between China and India, as emerging markets, and USA and EU, as developed markets. The share of primary activities indirectly indicates the value-added created in the economy and the country's level of development. It shows the potentials for increasing the middle class share in the population.

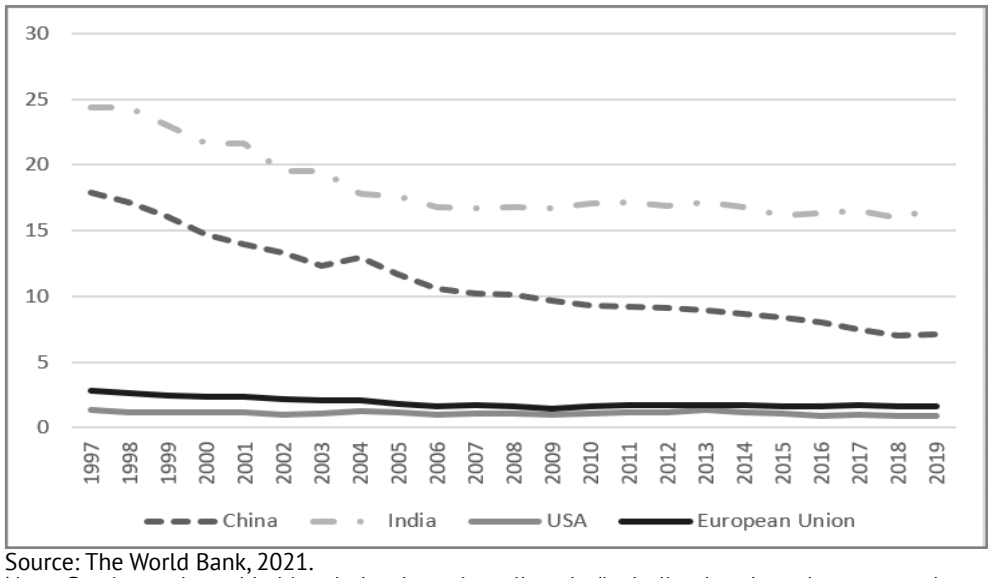
The volume and structure of international trade and the terms of trade substantially impact the growth of GDP and the balance of payments of individual countries. They indicate the economic structure of the country and its opportunities for growth and development. From Figure 14, we can see

Figure 12. Services value added in China, India, USA, and the EU between 1997 and 2019 (% of GDP)



Source: The World Bank, 2021.
Note: Services value added in wholesale and retail trade (including hotels and restaurants), transport, and government, financial, professional, and personal) services such as education, health care, and real estate services. Imputed bank service charges and import duties are included.

Figure 13. Agriculture, forestry, and fishing value added in China, India, USA, and the EU between 1997 and 2019 (% of GDP)

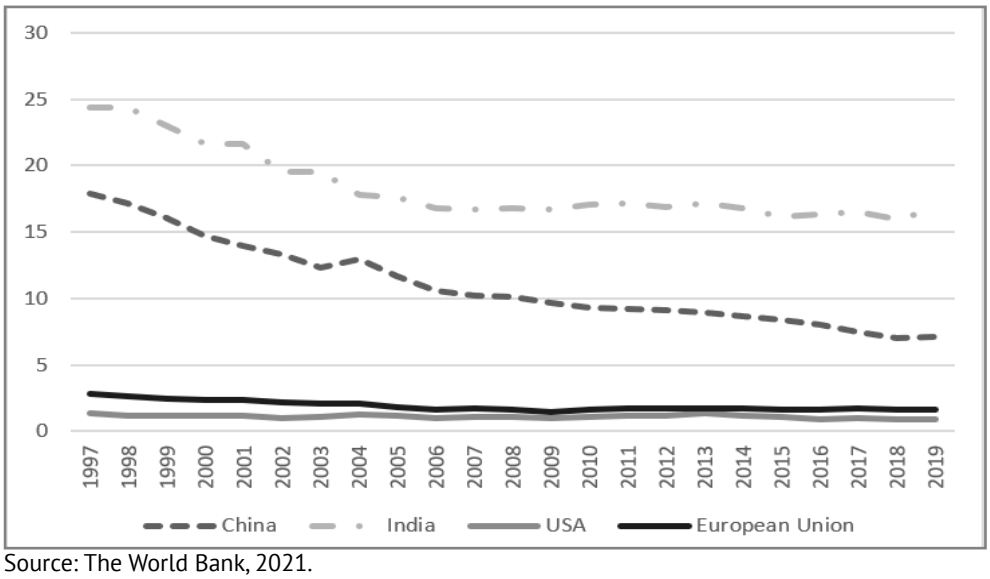


Source: The World Bank, 2021.
Note: Services value added in wholesale and retail trade (including hotels and restaurants), transport, and government, financial, professional, and personal) services such as education, health care, and real estate services. Imputed bank service charges and import duties are included.

the rapidly growing share of Chinese exports of goods and services in GDP that surpassed the shares of India and the USA at the beginning of the 1980s. China overtook second place after the EU in this indicator; however, it also recorded the highest share drop in the 2008 economic crisis period. In recent years the values of this indicator in India and China were similar, with slight precedence of China. China's growing trade openness in the observed period indicates the country's new production and service capacities, new employment possibilities, and increased population income. Further analysis of exports structure would show its possible impacts on population income growth and the share of the middle-income population.

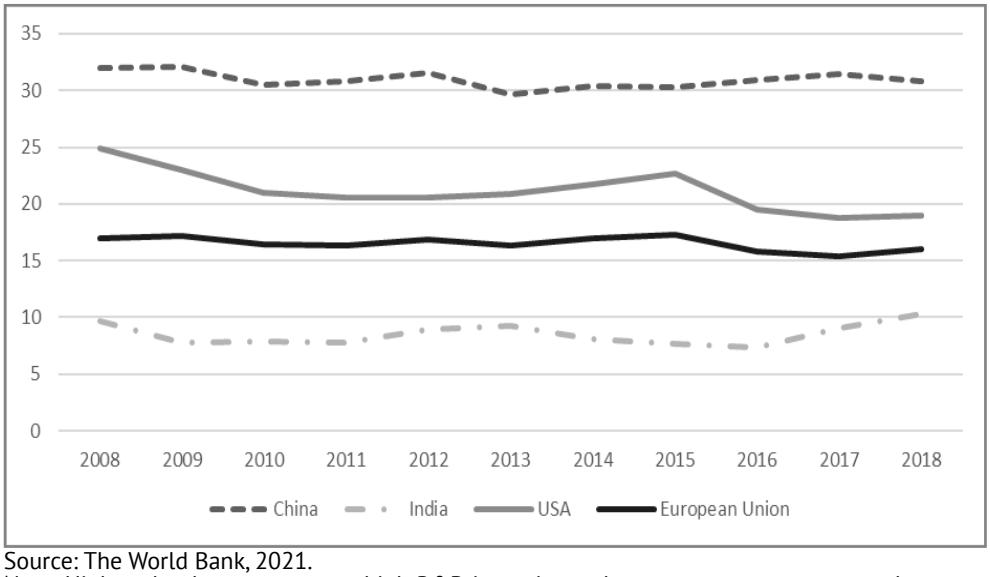
From Figure 15, it is evident that China significantly led in the share of high-technology exports between 2008

Figure 14. Exports of goods and services in China, India, USA, and the EU between 1970 and 2020 (% of GDP)



Source: The World Bank, 2021.

Figure 15. High-technology exports of China, India, USA, and the EU between 2007 and 2019 (% of manufactured exports)

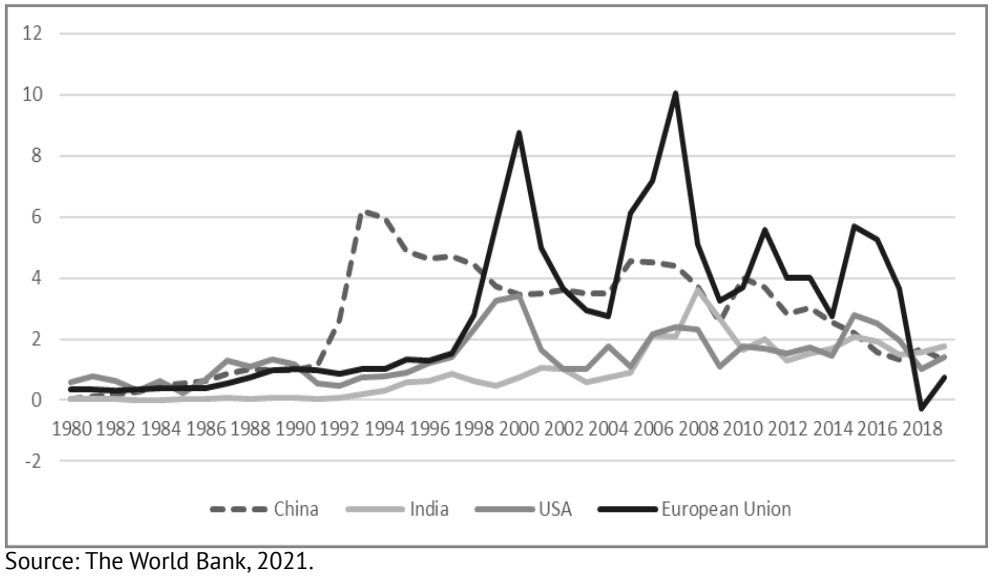


Source: The World Bank, 2021.
Note: High-technology exports are high R&D intensity, such as aerospace, computers, pharmaceuticals, scientific instruments, and electrical machinery.

and 2019 compared to India, the USA, and the EU. High-tech exports can bring additional value-added and create numerous positive spill-over effects in the economy. Among others, it can raise the employees' wages in the value chain and increase the share of the middle-income population.

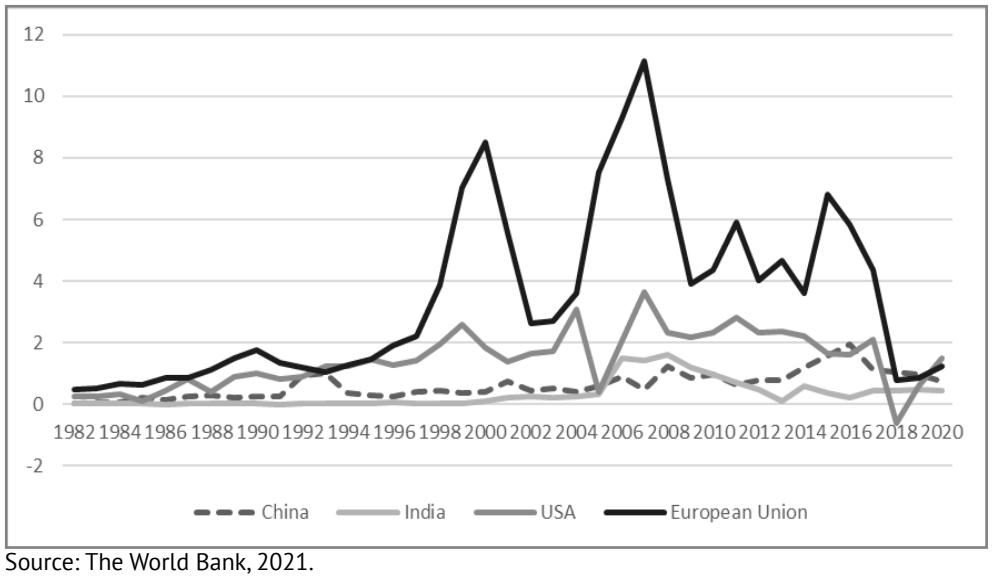
The share of inward FDI in GDP indicates the entry and expansion of foreign capital in the domestic market. With imports and international contractual entry modes, it indicates the country's inward internationalization level. Due to many potential positive effects of inward FDI (e.g., development of sectors and regions, jobs creation, development of entrepreneurship and competitiveness, transfer of modern technology and managerial knowledge, market expansion, favorable impact on the balance of payments), high values of this indicator indicate the favorable business

Figure 16. Foreign direct investment (FDI) in China, India, USA, and the EU between 1980 in 2018 (net inflows, % of GDP)



Source: The World Bank, 2021.

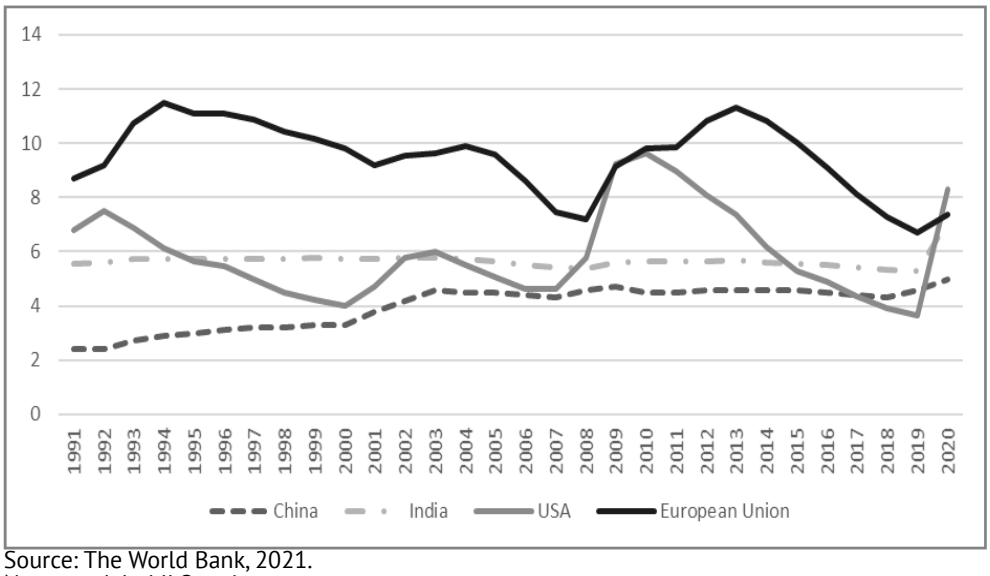
Figure 17. Foreign direct investment (FDI) of China, India, USA, and the EU between 1982 in 2020 (net outflows, % of GDP)



Source: The World Bank, 2021.

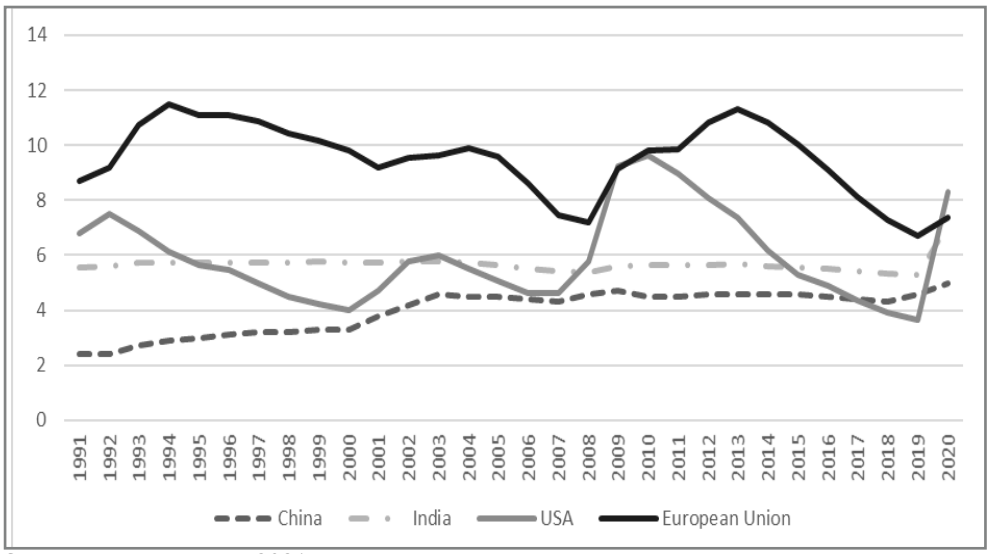
environment of the host country, its entrepreneurial specific knowledge, and capital, and thus opportunities for its development and growth. Figure 16 shows that Chinese GDP growth and exports of goods and services were supported by foreign capital. FDI started to flow into the economy at the beginning of the 1990s. In the whole period until 2019, their inflows were much more stable than FDI inflows into the EU. The share of Chinese inward FDI in GDP was also higher than the Indian share until 2015. China's rapid inward internationalization indicates the economy's expansion in the observed period with various possible socio-economic benefits, including rising income and increasing middle-income population share.

Figure 18. Unemployment in China, India, USA, and the EU between 1991 and 2020 (% of the total labor force)



Source: The World Bank, 2021.
Note: modeled ILO estimate.

Figure 19. Gross fixed capital formation in China, India, USA, and the EU between 1972 and 2018 (% of GDP)



Source: The World Bank, 2021.
Note: Gross fixed capital formation (formerly gross domestic fixed investment) includes land improvements (fences, ditches, drains, and so on); plant, machinery, and equipment purchase; and the construction of roads, railways, and the like, including schools, offices, hospitals, private residential dwellings, and commercial and industrial buildings.

We can see from Figure 17 that with a small-time lag after the inflows of FDI into the economy, China started to invest abroad. Its level of FDI outflows was moderate between 1990 and 2005. However, after this period it started to increase. Almost in the entire observed period, the Chinese level of FDI outflows was higher than the Indian one, with the most considerable precedence recorded in the last years. The share of outward FDI in GDP indicates the growth and development of domestic firms' operations in international markets. Apart from exports and contractual entry modes, it represents a country's outward internationalization level. The share of outward FDI signifies an economy's capital expansion capacities, with potential impacts on global growth of its firms and consequent socio-economic benefits for a country, including rising income of its population.

It is evident from Figure 18 that China recorded lower unemployment than India and the EU between 1991 and 2020. Almost all that period its unemployment was also lower than the unemployment in the USA. China was able to align the needs of the employees with the labor market circumstances in the whole period. It is also evident that the 2008 crisis was less harmful to China and India since both economies could keep low unemployment levels. The share of unemployed people in China remained about the same (4 to 5%) between 2002 and 2019. Thus, China has shown resilience to economic shocks so far, indicating a more stable level of the population's income, including the middle-income population.

Figure 19 shows a significantly higher level of China's domestic capital investment in the whole period between 1972 and 2018 compared to India. After the 2008 crisis, the leading position of China in this indicator against India started to strengthen. An increasing share of domestic investment could indicate new economic activities, newly created jobs, and the rising population's income. However, sources and the structure of these investments are essential factors of their effects and sustainability.

Discussion and Hypothesis Testing

Demographic and macroeconomic market dynamics impact the middle class share in the entire country's population, bringing new opportunities for foreign companies to enter this market. Emerging markets' demography and economy are very dynamic. The size and growth of the middle class at a particular emerging market are essential factors of the market's attractiveness for foreign firms. It could represent a source of a large pool of labor and a broad base of target global consumers. Therefore, FDI decisions are, among others, based on demographic and macroeconomic trends at foreign markets (see Drabble et al., 2015, 11–12). The global middle class, structured from numerous different middle classes at individual markets, is considered the main driver of the global economy in the last century (see Roy, 2018, 32). The efficiency and success of firms in their international business expansion can be related to their choice of middle class members as their target consumer segments or as human resources. Compared to an impoverished and very wealthy social class, the middle class group represents the largest share of the world's population that will continue to grow in the future and thus become the most prominent potential consumer base (Fengler & Kharas, 2017).

Cross-country estimations of middle-income class sizes are challenging because of different levels of the population's income. The middle class is also constantly changing due to countries' socio-economic dynamics. Concerning the existing data, despite the reference to the similar definition of the middle class, several studies estimate the size of the middle class differently. Compared to determining the size of the middle class in China (e.g., KPMG International, 2018; Barton, Chen, & Jin, 2013; Roy, 2018, 32), we even find more significant discrepancies between existent studies on the size of the middle class at the Indian market. According to Shashidhar (2019), one of the more fundamental reasons for this ambiguity is the lack of statistical data on the income of the Indian population (see also Research Unit for Political Economy, 2015), which has proven also in our empirical analysis. Notwithstanding discrepancies in defining middle class and consequently measuring its size, we can argue that parallel to the integration of China and India into the global economy, the middle classes in both countries were growing in the past six decades. Consequently, the countries' economic potentials were increasing and vice versa.

Our empirical analysis shows that China recorded extensive demographic transition (lowering of natural population increase and potential support ratio) and macroeconomic dynamics in the decades until the COVID-19 crisis. The macroeconomic dynamics reflected in higher domestic investment (gross fixed capital formation), exports of goods and services, the share of high-technology exports, FDI flows, and the share of services in the output. Urbanization, employment, and the share of salaried workers also increased. These findings implicate the decrease of the country's poverty and consumption growth, fueled by the increased income of numerous previously low-income individuals. Data shows that, on average, 0.5% of people in China lived below the international poverty line of 1.90% a day (in PPP) between 2009 and 2019 (World Bank, 2021a). On average, 22.5% of these people were in the total population in the same period in India. High numbers of working-age people with

higher salaries spurred additional consumption, raised economic growth, and increased market attractiveness. China gained economic and social benefits from its significantly lower natural population increase and consequently lower potential support ratio within the observed short- and medium-term period.

However, as we could see from our analysis, India's demographic transition was modest compared to China's. Indian natural rate of population increase and potential population support ratio was significantly higher than the Chinese ones. Also, Indian total exports and high-technology exports and FDI inflows, and domestic investment were substantially lower than the Chinese ones. The GDP growth remained moderate in comparison to China. The share of primary economic activities in GDP value-added was relatively high and the share of services low. The average share of salaried workers in the employed population in India was between 15 and 25% in the observed period. In China, however, this share was between 30 and 55% of all employees. The share of India's unemployed and rural populations was relatively high compared to China. The average rate of India's poverty was significantly higher compared to China. Therefore, our set hypothesis (H1: Demographic and macroeconomic dynamics in China and India established conditions for substantial growth of middle classes in both countries in the decades before the COVID-19 crisis) can be only partly confirmed. According to our research, it is valid for China but not for India.

Forecasts, however, suggest that by 2027, India's middle class will become more extensive than the middle class of China, the USA, and Europe (Roy, 2018, 35). This prospect can be related to three the most important enablers of Chinese long-time rapid economic growth: high indebtedness of government, corporations, and households (Lee, 2021; Lee 2021a), exhaustion of natural resources, and the former one-child policy. With the emergence of the COVID-19 pandemic, the first two enablers emerged as significant obstacles for further similar economic expansion of China and herewith for the growth of its middle class. Together with the zero-COVID-19 government's strategy (Wong, 2021a), they have started to slow-down Chinese production, investment and demand. A particularly hard hit has been construction, which supports millions of Chinese jobs. The Chinese one-child policy's short- and medium-term benefits will not be extended into the long-term economic and social advantages. It is estimated that society's aging will cause additional pressures on the Chinese public finances and limit opportunities for high economic growth (see Beckley & Brands, 2021).

Conclusion

Firms' decisions on target markets for their international business activities depend on several factors of foreign markets' local business environments. Apart from political, economic, and technological factors, the demographic environment is crucial for foreign market attractiveness. With favorable demographic trends, the middle-age and middle-income population increase, and large pools of potential human resources and consumers arise. In the last decades, some emerging markets of Asia became attractive not only for the relocation of production or certain links in the supply chain but also as potential markets to end consumers. International trade and investment liberalization, technology and knowledge transfer, industrialization, modernization, and demographic transition contributed to the economic growth of these countries. The latter stimulated new socio-demographic changes, with some countries falling behind the others in international competitiveness. Due to the liberalization and modernization of emerging economies and the technological progress in transport and information-telecommunication technology, the social conditions of emerging economies' populations have improved. Therefore, compared to developed countries, some of these economies recorded higher labor availability and structural efficiency due to larger pools of the younger, educated, working-age population and increased share of the people with higher income. The demographic transition of emerging markets offers additional labor and consumers, essential factors for economic growth and market attractiveness for foreign firms.

As the largest economy of Eastern Asia, China offered global firms a favorable demographic base of the middle class in the decades until the COVID-19 crisis. India lagged behind China in this regard. China used to be considered attractive for international firms because of the cheap labor. However, in the last years, it became attractive because of the vast pool of highly educated workforce and socially established consumers. The key enablers of higher labor availability and higher economy's structural efficiency were a better education system, higher education participation, higher gender equality regarding access to education, and a better health care system. To achieve economic growth, it was not enough to have a good labor supply. It was also necessary to have a labor demand. Since the demand of local employers was not high enough, the Chinese government stimulated foreign direct investment that created jobs. The improvement of demographic characteristics, including population's health conditions, educational attainment, and income, have made China more attractive for trade and FDI activities of foreign firms.

While China's population doubled between 1960 and 2020, the population in India nearly tripled. Due to considerable

differences in their reforms that led to demographic and macroeconomic changes, we estimated that the growth of new middle classes in both countries was different. Herewith, their roles in increasing markets' attractiveness were also not the same. The differences in education enrollment and investments in education in both countries indicate that people in both countries did not have similar local institutional initiatives to raise their income. According to the data of previous studies and the findings of our analysis, India fell behind China significantly in the observed periods. The share of exports in GDP, high-tech exports, and FDI inflows in India was relatively low compared to China. The same is valid for the share of fixed capital formation or domestic investment in GDP. Indian investment abroad was modest in comparison to China's FDI outflows. The socio-economic progress of India was far behind the Chinese one, which resulted in its lower attractiveness for international business activities of foreign firms and lowered the potentials for increasing the share of the middle class that would help raise the economy's dynamics. Due to the unavailability of reliable data on the population's income in both countries, we did not establish and compare the shares of middle classes in both countries in our research. However, as a driving force for FDI and consumption, we estimated that the middle class substantially increased in the Chinese market, but not in Indian. Recently, China has started to face the aging population challenge, although it is still significantly lower than in developed countries. The COVID-19 crisis has revealed some negative consequences of the rapid Chinese economic growth, based on high indebtedness and excessive exploitation of natural resources. Additionally, with a zero-COVID-19 strategy, China is significantly limiting its trade and investment openness. Altogether, after decades of remarkable economic prosperity, China's perspective and herewith its market attractiveness for foreign firms is becoming uncertain.

To estimate the consumption market potentials of China and India concerning the affluence of their middle classes, it would be reasonable for foreign firms to continuously assess trends in the average consumption levels and income levels of the population. Consumers' behavior, which changes rapidly, is related to broader political, economic, social, technological, and natural environments. The effects of globalization allowed the possibility of achieving a global consumer who has similar desires and needs across numerous countries. International managers could perform in-depth market analyses that would show the inclination towards consumption and the typical consumption patterns of middle classes as the most significant population segments. Firms could assess the characteristics of consumption convergence or divergence in these segments. The first would allow standardization and would decrease firms' marketing costs. With glocalization marketing strategies, firms would balance divergent and convergent market characteristics.

Besides consumption and income, firms should also follow the other demographic characteristics of the middle classes and their dynamics in both countries. Due to intense international migration flows and different levels of countries' progress, it would be reasonable to regularly explore the average age, education level, ethnic structure, religious belonging, values, attitudes of the most significant part of the population. Such research is essential when estimating the middle classes as potential employees. It would also show the dynamics of middle class contribution to the social development concerning democratic and other progressive values.

Our research only estimates the middle classes' growth in China and India. The main reason for this was that the statistical data on the population's income in China and India is incomplete.

The valuable further research topic would be a predictive model of middle-class economic potentials according to economies' demographic and macroeconomic dynamics. It would represent a more solid foundation for analyzing markets' attractiveness from the perspective of the size and growth of the middle class. Besides, the current COVID-19 crisis calls upon further comparative research on the development paths of the discussed two largest emerging markets.

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Raziskovanje demografske in makroekonomske dinamike nastajajočih trgov in rasti srednjega družbenega razreda: primer Kitajske in Indije

Izvleček

Politični, gospodarski in družbeni tranzicijski procesi nastajajočih trgov so privedli do spremenjenih demografskih trendov in nove makroekonomske dinamike v teh gospodarstvih. Te spremembe so sprožile rast srednjega družbenega razreda, ki je postal bistven dejavnik privlačnosti nastajajočih trgov za prodajne in proizvodne aktivnosti tujih podjetij. Namen tega članka je analizirati demografske in makroekonomske trende Kitajske in Indije v desetletjih pred krizo COVID-19, da bi ocenili njihovo vlogo pri rasti srednjega družbenega razreda in posledični privlačnosti teh dveh pomembnih nastajajočih trgov za tuja podjetja. Izsledke naše raziskave oblikujemo na obsežnih teoretičnih osnovah in empirični analizi izbranih demografskih in makroekonomskih kazalnikov, povezanih z rastjo srednjega družbenega razreda. Ugotovili smo, da je Indija v opazovanih obdobjih glede demografske tranzicije in makroekonomske dinamike znatno zaostajala za Kitajsko. Kitajska je uveljavila radikalen demografski prehod. Primerjalna analiza makroekonomske dinamike je pokazala trdno vodstvo Kitajske na področjih gospodarske rasti, mednarodne trgovinske in investicijske odprtosti, tehnološkega napredka, zaposlenosti, strukture outputa, domačih investicij, urbanizacije in rednih zaposlitev. Posledično smo ocenili nižjo rast indijskega srednjega družbenega razreda in njegov manjši pomen pri odločitvah tujih podjetij za vstop na indijski trg. Ugotovitve so prinesle nekaj implikacij za mednarodne menedžerje pri segmentiranju in izbiranju ciljnih tujih trgov.

Ključne besede: nastajajoči trg, srednji družbeni razred, demografska tranzicija, makroekonomska dinamika, mednarodno poslovanje, Kitajska, Indija

ORIGINAL SCIENTIFIC PAPER

RECEIVED: AUGUST 2020

REVISED: OCTOBER 2021

ACCEPTED: NOVEMBER 2021

DOI: 10.2478/ngoe-2021-0021

UDK: 658.89:004(592.3)(436)

JEL: L81, D91

Citation: Moerth-Teo, J. Y., Bobek, V., & Horvat, T. (2021). The Effects of Consumers' Buying Behavior on the E-commerce in Highly Developed Emerging Market and Developed Market: The Case of Singapore and Austria. *Naše gospodarstvo/Our Economy, 67*(4), 56-73. DOI: 10.2478/ngoe-2021-0021.

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**NAŠE GOSPODARSTVO
OUR ECONOMY**

Vol. 67 No. 4 2021

pp. 56–73

The Effects of Consumers' Buying Behavior on the E-commerce in Highly Developed Emerging Market and Developed Market: The Case of Singapore and Austria

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Abstract

The e-commerce is becoming increasingly essential and principally relevant in the modern world, especially in the current pandemic. Due to the increased use of the Internet, the growth of e-commerce has escalated. This research focuses on the e-commerce environments of Singaporean and Austrian markets. It contains an outline touching on the theoretical parts and the conduct of an empirical study where the survey results from 206 participants were studied, analysed, and compared. The statistical methods chosen for this research were the t-test analysis and the correlation analysis. The empirical study served as a quantitative discussion on both countries' e-commerce markets. The analysis of the completed questionnaires provided a better and clear understanding of the buying behaviours and their potential impact on the e-commerce markets in Singapore and Austria. Considering the results from the comparisons, the research has also highlighted some interesting findings and differences in the buying behaviours of Singaporean and Austrian shoppers.

Keywords: e-commerce, pricing, buying behaviours, consumers, Singapore, Austria

Introduction

Fundamentally, e-commerce is a form of business with transactions of buying and selling goods or services over the worldwide net. From mobile shopping to online payment encryption and beyond, surrounding e-commerce is a wide variety of data, systems, and tools for online users, buyers, and sellers alike. Most businesses with an e-commerce presence use an e-commerce store and/or an e-commerce

platform to conduct their online marketing and sales activities and oversee their logistics and fulfilment (Moore, n.d.). Since then, the growth of many e-commerce companies has ascended across the board.

The introduction and role of e-commerce platforms have created an enormous impact and have taken the entire world by storm. In recent years, there has been a trend observed in the rise of retail e-commerce globally. The worldwide e-commerce trend has been seen as an ever-increasing climb upwards and is forecasted to grow continuously upwards from 2021 to 2023. E-commerce is proliferating, that it is already slowly eating away parts of the shares from traditional retail (Wonderflow, 2019). Based on the OECD, they believe that the growth of e-commerce can increase the competition within retail markets, enhance consumer choices significantly, and prompt and facilitate innovation in the product distribution section.

Problem statement

This research focuses on the Singaporean and Austrian e-commerce markets, consumers' buying behaviours, and their potential impact on the e-commerce environment. Therefore, it would be insightful to look into the statistics of both countries' e-commerce scenes.

Due to its enduring popularity and the increasing importance and relevance of e-commerce globally and especially in Singapore and Austria, it was compelling to delve deeper and take a closer look into this e-commerce topic. The research focused on the consumers' buying behaviours in a highly developed emerging market and a developed market, Singapore and Austria, respectively, and how the buying behaviours might potentially affect the e-commerce markets. A comparison between the buying behaviours was made to see if there are possibly any significant differences between a Singaporean consumer and an Austrian consumer. As time goes by, there are mutations and evolutions expected from the consumers' buying behaviours, no matter where one comes from initially.

Many factors have to be considered before getting into the final stage of purchasing something through an e-commerce platform. Therein lies a massive number of dynamic factors that may affect each consumer's buying behaviours. Based on Kotler and Armstrong, there are four categorical groups to classify the factors affecting the behaviours of consumers, and they are psychological, personal, social, and cultural (The Open University, n.d.).

The research was conducted from many of the existing researches and studies. The majority of the past research revolved around the effects of e-commerce on consumers' buying behaviours. This research will hopefully contribute to the bigger picture with studies of the consumers' buying behaviours and how it might affect the e-commerce environment, focusing on the Singaporean and Austrian e-commerce markets.

As online consumers ourselves, there are many factors that we will put into consideration before deciding to purchase something through an online platform. Therein lies a considerable number of factors that may affect every consumer's buying behaviours. Based on Kotler and Armstrong, four categorical groups classify the factors affecting consumers' behaviors: psychological, personal, social, and cultural (The Open University, n.d).

The research was conducted from many studies. The majority of them revolved around the impact and/or effects of e-commerce on consumers' buying behaviour. This research and its area of work will contribute to the big picture with studies of the consumers' buying behaviours and how they might impact the e-commerce market, focusing on the Singaporean e-commerce markets.

Research question and hypotheses

The main research question formulated out of this study will be "How will the consumers' buying behaviours affect the e-commerce environment?". Based on the main research question, a sub-research question was then constructed: "Which type of factors may cause an impact on the consumers' buying behaviours?" Hypothesis was created with the research questions being kept in mind: Consumers' buying behaviours may affect the e-commerce environment.

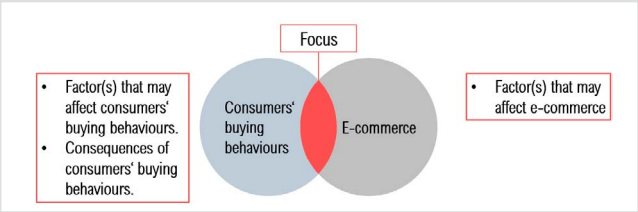
Literature Overview

As shown in Figure 1, the research focus will be the intersection between the consumers' buying behaviours and e-commerce, which inter-joins both circles together. Factors regarding what may affect the consumers' buying behaviours and, subsequently, their consequences on the consumer side will be investigated in detail, and the factors that may affect the e-commerce business environment will also be studied.

Based on the figure mentioned above, an overview of essential literature regarding the identified focus, which explains the previous work and relevant theories related to this context, will be found in the following paragraphs. The journal papers and articles chosen for this review can

be classified into two categories; factors driving consumers' buying behaviours and the rise of e-commerce.

Figure 1. The research focus



Source: own research.

Factors driving consumers' buying behaviours

Millions of consumers create and reinforce new online buying behaviours and habits (Columbus, 2020). Voinea and Filip (2011) have indicated that in recent years, there has been an emergence and rapid growth of new economic importance, of the new types of consumer – also known as the new consumer - whose attitudes, aspirations, and purchasing patterns are different as compared to those existing behaviours in the past. Among the various reasons behind consumers' buying behaviours, a few significant motivators will be discussed below. Said motivators are concerning competitive prices, customer service, customer reviews, and trust.

Competitive prices

Previous research depicts that prices come into consumers' minds before deciding factors (Guo et al., 2019). For many consumers, competitive pricing stays as the number one reason that attracts their attention and, as a result, positively affects their buying behaviours. The majority of the consumers are usually searching for product offers at very affordable or even discounted prices (Kerick, 2019). As per Urne (2020), competitive pricing remains one of the critical factors for success in e-commerce.

Tanir (2018) states that the most crucial store features driving up to 80% of consumers' purchasing decisions is competitive pricing. He also mentioned that around 90% of the e-commerce shoppers are considered the 'masters' of deal hunting. Thanks to the advanced technology and comparison-shopping engines, consumers can now get alerts for multiple items from multiple e-commerce stores that further facilitate their comparison ability between the products offered. This comparison will allow the shoppers to get real-time information concerning the lowest best prices for their desired product or service.

Customer service

Customer service remains one of the critical touchpoints that affect the buying behaviour of consumers. According to Wertz (2017), attracting new customers costs approximately seven times more than retaining the existing customer base. So, the provision of excellent customer service can increase sales and profits and aid the companies, in the long run, to stand out in the virtual competitive marketplace.

Customer reviews

Based on eMarketer (n.d.), a complete 61% of respondents said they had checked online reviews, blogs, and other online customer feedback before moving to the next step, purchasing the new product or service. More than 80% said that such evaluations had held at least some influence on their purchases.

This is further supported by research (Kaushik et al., 2018), which states that the reviews projected on the e-commerce platforms may help certain users during their decision-making process regarding the product itself. A large number of helpful reviews also conveys more information about the product to a customer. Source credibility, review popularity, and usefulness play a vital role in the sales of the product. Their study also confirms the positive effect of the balance of reviews on product sales. Customer reviews can help eliminate any doubts that potential customers may have about their product or may even help when it comes to product selection (Charlton, 2012).

Trust and loyalty

Trust is expected to be even more critical in e-commerce than in traditional commerce because of the paucity of rules and customs in the regulation of e-commerce and that because online services and products typically are not immediately verifiable by the consumers (Gefen and Straub, 2004). The research conducted by Teo and Liu (2005) concludes that consumers' trust in e-commerce vendors and their risk perception can also be regarded as behavioural beliefs that may affect consumers' behavioural attitude – to purchase or not to purchase.

Frequently, the lack of trust is a fundamental reason many users will not purchase goods or services from e-commerce websites. Trust is considered the critical factor for maintaining sustained relationships between the transacting consumer and the e-commerce seller (UK Essays, 2018). Coming hand-in-hand with trust comes the loyalty of the consumers. Without the glue of loyalty, even the best-designed e-business model will collapse. Besides purchasing more from the business, loyal customers would frequently refer new friends

and family members to the e-business, providing yet another rich source of profits. Referrals are considered lucrative in traditional commerce, but the Internet further amplifies this effect since the word 'mouse and keyboard' spreads even faster with just some clicks than word of mouth (Reichheld and Schefter, 2000).

Rise of e-commerce

Technology

The new generation can no longer remember a world without computers, emails, and cell phones (Taken Smith, 2009). Raja and Nagasubramani (2018) have reiterated the importance of technology, stating that today's era of the 21st century is often regarded by many as an era of technology. Technology today plays a significant role in our life. It is frequently associated with growth, as it is seen as a basis of the growth of an economy. Information technology and the Internet have dramatically affected business operations and continue to affect business conduct dramatically. Markets, industries, and businesses are transformed by the ongoing technological wave (Dinu and Dinu, 2014). Business as a whole is changing, thanks to technology and its advancements (Pierson, 2018).

A need for tech savviness

As more technological advances enter the picture and an entirely digital world is foreseen to emerge shortly, many people are "pushed" or even "forced" to educate themselves on the new technology to not be left behind and remain up to date with society. The more technologically literate one is, the better-prepared one will be able to adapt to any form of change (Pierson, 2018). Nowadays, upskilling in technology is becoming a necessity rather than a choice (Rao, 2020).

With our ever-changing environment and the shift from traditional to virtual settings, people need to be equipped with technical skills. Technology will empower the human race and will open up opportunities that were otherwise impossible to reach before. Gupta (2006) illustrates the need to be computer literate. Employers nowadays prefer their workers who are computer literate to those who are not. Computer literacy contributes further to employee and productivity efficiency, therefore making them more valuable to the company.

Explosive growth of e-commerce

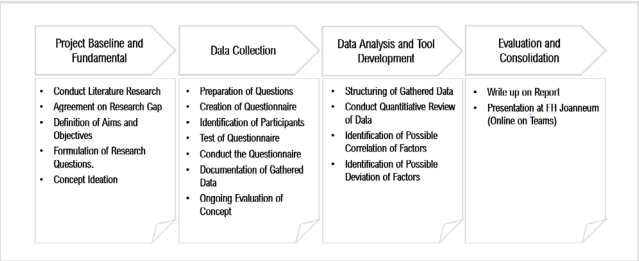
In our current digital age, e-commerce plays a vital role in our lives. With the unfortunate ongoing global COVID-19 pandemic that restricts people from heading out, many families will eventually replace their store and mall visits permanently with online grocery, apparel, and entertainment shopping (Columbus, 2020). This further contributes to the extensive growth of the e-commerce environment.

Based on Kerick, the expected growth of e-commerce is to come from Asia and the US to Europe and throughout Africa to the Middle East. The e-commerce sector is expected to break the net, accounting for double-digit growth in all locations worldwide (Kerick, 2019). Taken Smith (2009) states that the annual growth rate of e-commerce is estimated to be up to 28% at the global level, while individual countries may even have much higher growth rates.

Methodology

A primary research process that is suitable for this thesis is presented by Karlsson (Karlsson, 2016). Based on this process, the actual methodology to achieve an efficient study has been derived and is illustrated in Figure 2. The first step starts with literature research. This is followed by the data collection stage, including preparing the questions suitable for the questionnaire and identifying potential participants. The third step deals with the data analysis based on a quantitative review to identify possible correlations and derivations of factors. The evaluation and consolidation of the gathered results will represent the final step of this report.

Figure 2. The research focus



Source: own research.

Research gap

After conducting the first round of initial literature research, the studies have revealed that the majority of the literature reviews and focus were concentrated on the topic of e-commerce and was covered mainly on the contents such as e-commerce in general, consumer's buying behaviours, risk assessments in e-commerce, factors determining consumers's e-satisfaction and consumer trust in e-commerce (Loo and Sze 2002; Lee et al. 2012; Singh and Sinha 2013; Nisa and Prabhakar 2017; Wagner et al. 2018; Dai et al. 2018).

A void in the research on comparing buying behaviors in e-commerce between a highly developed and a developed

market has been identified. Furthermore, a lack of research was observed on the linkage between the consumers' buying behaviors and its potential impact on the e-commerce environment. The possibility of a linkage has received limited research attention. Certain factors, for example, the availability of a product, have also received relatively limited attention in the research fields towards the e-commerce settings. Hence, this research study further enriches and contributes to the already available data and information with a study on the factors that may affect the consumers' buying behaviors in a highly developed market, Singapore and a developed market, Austria, and if these buying behaviors would potentially affect the e-commerce environment.

Research design

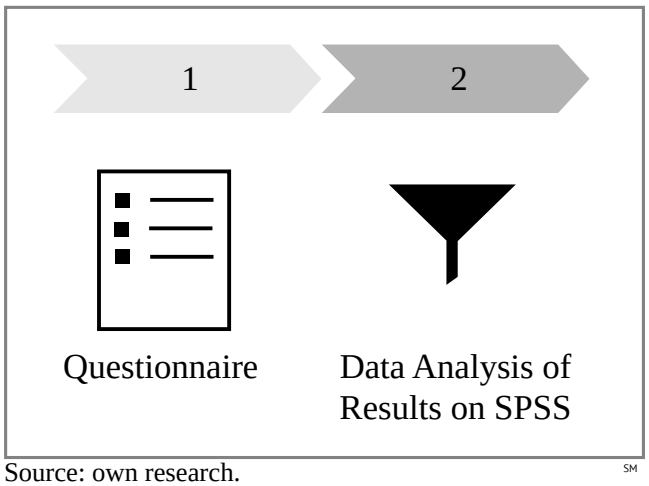
For the empirical part of this research, a questionnaire was structured and designed on QuestionPro, distributed to willing participants. A convenience sample of 80 participants for each country was selected and expected, totaling 160 participants. Eighty participants are expected from Singapore, and the other 80 participants are expected from Austria. The statement with a total of 160 responses was assumed as the results would then be sufficient to arrive and contribute to a significant statistical statement. However, this research project aims to gather as many participants as possible within the research timeframe of two weeks. This was planned as there are drop-outs or invalid datasets to be anticipated during the questionnaire collection phase. In questionnaires, it is always better to have a more significant number of participants than the intended target, as this may also reduce the accidental risk of having an extreme or biased group (Hydrocephalus Association, n.d.).

When the questionnaire was completed, the participants were sent an online link through various communication platforms – mainly through personal contacts and social media to reach a bigger audience. The collation of results would come before the data analysis, as shown in Figure 3. The data will be analyzed in due course with the SPSS statistical software, version 26.

Pre-testing the questionnaire

Based on the works of Converse and Presser (1986), pre-testing of a survey is a crucial way to pinpoint problem areas, reduce respondent burden, determine whether or not the respondents are interpreting the questions correctly, and ensure that the order of questions does not influence the way the respondent might answer. They have also stated that pre-testing, in other words, is a critical examination of the survey instrument that will help determine if the survey will function adequately as a valid and reliable social science research tool. Once the setup of the draft questionnaire was completed, a round of pre-testing was conducted. The draft questionnaire was sent out to two participants from Singapore and two participants from Austria. Pre-testing displayed the possible pitfalls of the questionnaire and, at the same time, tested if the questions made sense to the participants and if they would be able to understand what this research wishes to convey to them fully.

Figure 3. The research design



Source: own research.

Questionnaire

Two sets of the same questionnaire were designed and constructed on Question Pro. The first questionnaire set was designed for the Singaporean participants and the second one for the Austrian participants. There was a complete set of 15 questions for the entire questionnaire. Some of the questions in the questionnaire have employed the usage of a 5-point Likert scale. The Likert (1932) scale remains one of the most commonly used instruments for measuring the participants' opinions, preferences, and/or attitudes (Leung, 2011, p. 412). Leung (2011, p. 412) has indicated that a typical Likert scale question consists of several items with around 4 to 7 points of categories each. Furthermore, Sachdev and Verma (2004, p. 104) have stated that question(s) with a 5-point Likert scale was most recommended by researchers, as it would reduce the frustration level of the respondents and increase the response rate its quality. In the following paragraphs, the questions from the questionnaire are examined and discussed.

The beginning of the questionnaire started with the generic questions of gender and age. The age group depicts a variety of different options ranging from 23 and under to 56 and above. The age groups were specifically structured this way with references made to the generation chart as seen below in figure 14, which would enable the ability to construct a comparison and observe if there are any differences between

the participants' buying behaviours based on their age groupings – take, for example, the buying behaviours between the Generation Xs (1965 – 1980) as compared to the Generation Zs (1997 to 2012).

Once the general questions are out of the way, the construction and structure of the remaining questions were created to be the perfect match and the right fit for this fundamental research's objectives and aims. First of all, the question asked is how often the participants will purchase from brick-and-mortar stores: How often do you purchase from a retail store?

Once the participants have completed this question, the following question will be similar. However, the participants were questioned on how often they purchased from an e-commerce store for this time around. The reasoning behind this question was to check if e-commerce has increased the frequency of the participants' making purchases from the online store. After that, the participants will rate and choose from the Likert scale, ranging from strongly disagree to strongly agree to the previous statement that e-commerce has indeed increased the frequency of the participant making purchases: *How often do you purchase from an e-commerce store? Has e-commerce increased the frequency of you making purchases?*

Upon completion, the participants were prompted to the next question, which continued the first two frequency questions. This time around, the question was adjusted to fit the subject of COVID-19. As the pandemic made its entry known in 2019, it has increased the importance and relevance of e-commerce to the entire world. As a result, the participant was also asked with a Likert scale agree/disagree question, whether COVID has increased the frequency of them making purchases from e-commerce. Following this question, the participants will be prompted further and questioned on how often they have made purchases due to COVID-19 from an e-commerce store: *Has COVID increased the frequency of you making purchases from e-commerce?* How frequent have you purchased due to COVID-19 from an e-commerce store?

The participants were presented with three options: purchasing from retail stores, e-commerce stores, or both. For this questionnaire, the participants were not redirected or linked to another question to prevent the loss of useable datasets. No matter which option they choose, all participants will be prompted to the same question next: *Do you prefer to purchase from: retail stores or e-commerce stores or both?*

The next question was designed to understand the reason(s) behind why participants prefer to purchase from retail stores. For this question, participants were able to choose the multiple answers where they deemed fit. Do they have the option to input other reasons under the 'Others' option if the answers provided do not fit into their consideration: *Which of the factors below positively affect your buying behaviours from a retail store?*

Next, a similar question was set for the participants. However, this question was designed to find out and understand the factors and motivations behind the participants' buying behaviors from an e-commerce store. Likewise, participants could choose one or more factors, should the listed factors positively affect and support their buying behaviours from any e-commerce stores. When participants cannot locate a factor that supports their buying behaviours, they have the 'Others' option to pen down their factor(s): *Which of the factors below positively affect your buying behaviours from an e-commerce store?*

The following question was designed to understand which factors have increased the frequency of the participants making purchases from the e-commerce store: *Which of the factors below has increased your purchases from an e-commerce store?*

The participants were asked for the reasons and/or motivation behind why they have stopped purchasing from an e-commerce store. For this question, participants were also able to choose multiple answers for the reasons behind why they have stopped purchasing from an e-commerce store. An additional option of 'Have not stopped purchasing online' was provided for the participants who have not stopped purchasing from e-commerce. In a similar fashion as the previous questions, participants were able to input other factors. Should they not be able to find a factor that has stopped them from purchasing online: *Have you stopped purchasing from an e-commerce store because of …?*

The final two questions were added to the questionnaire and updated to the 5-point Likert scale measurement, which will enable a deeper analysis of the gathered datasets obtained from the participants. For the second last question, participants were asked to rate the importance they placed on the six factors listed below, from a scale of 1 being not important at all to a 5, which is Essential. Participants were able to rate each factor with the range provided, from Not important to Essential. *On a scale from 1 to 5, please rate the importance of the factors below before you would purchase from an e-commerce store: availability of product, competitive pricing, convenience, customer service, customer reviews, loyalty/trust.*

The last question was aimed to tackle and understand the impact of the five factors on how each of the said factors will stop the participants from purchasing from an e-commerce store. Participants were able to choose from a scale of 1, being no impact at all, to a 5, a powerful impact. Participants

were able to rate each factor with the range provided, from No impact to Powerful impact. *On a scale from 1 to 5, please rate the impact of the factors below why you would stop purchasing from an e-commerce store: bad experience from previous buys, mistrust, negative customer reviews, not having the ability to choose and touch the product.*

Results

A total response rate of 242 was collected from both groups of the target audiences. As predicted from the beginning, there would be a drop-out of the participants expected. From the Singaporean participants, 20 participants have dropped out before completing the entire questionnaire, and the drop-out rate sums up to 19.4%. For the Austrian participants, 16 of the participants have dropped out before completing the entire questionnaire, and the drop-out rate sums up to 15.5%. Once the drop-out datasets had been removed, there were 206 useable datasets. An equal number of participants have been obtained from both groups, 103 Singaporeans and 103 Austrians, ranging between 23 and over 56 years of age.

Out of the 103 Singaporean participants, 75 of them were females, and 38 were males. The majority of the participants, 83 of them, were between 24 to 39 years old, followed by 24 under the age group of 23 and 6 in 40 to 55. The average time that each participant took to complete the questionnaire was approximately around 3 to 4 minutes. There were also 103 participants obtained, of which 35 of them were females, and 82 were males. The majority of the participants, 98 of them falls under the age group between 24 to 39 years old, followed by 8 participants under the age group of 23 and under, followed by 10 participants who belong to the age group of 40 to 55 years and lastly 1 participant in the age group of 56 and above. The average time taken by the Austrian participants to complete the questionnaire took a little longer than the Singaporean participants, and the participants needed approximately 5 minutes to complete the questionnaire.

Exciting findings

Frequency of purchases for Singaporeans and Austrians

Based on the questionnaires' findings as observed in Table 1, 37 of the participants from Singapore purchased at least once a month from a retail store. This option contributed to the majority of choices chosen by the participants, followed by 29 participants who purchased at least twice a month, 22 participants who purchased more than five times a month, and 15 of them who purchased only once in a year or less. According to the responses from the Austrians, as seen in table 1, 36 of the participants purchased at least once a month from a retail store, and another 36 of them purchased at least twice a month. These two options contributed to the majority of the responses chosen by the participants, followed by 22 of them who purchased more than five times a month and 9 of them who purchased only once in a year or less.

As seen in Table 2, most of the participants in Singapore, 33, answered with purchasing once a month. Followed by 28 of the participants who purchased at least twice a month, then 25 who purchased more than five times a month, and lastly, 17 purchased once in a year or less from the e-commerce stores. In Austria 51 participants have chosen that they purchased once in a month from e-commerce stores. This group constitutes the majority. They were followed by 31 who purchase at least twice a month, 13 who purchase once in a year or less, and lastly, eight who purchase more than five times in a month.

Table 1. Frequency of purchases from retail stores

Frequency of Purchases (Retail)	Country	23 and under	24 to 39	40 to 55	TOTAL
Once in a year or less	Singapore	4	10	1	**15**
	Austria	-	7	2	**9**
Once in a month	Singapore	5	31	1	**37**
	Austria	4	30	2	**36**
At least two times a month	Singapore	5	22	2	**29**
	Austria	2	30	4	**36**
More than five times a month	Singapore	4	16	2	**22**
	Austria	-	20	2	**22**

Source: own research.

Next, the participants were questioned if e-commerce has increased the frequency of them making purchases. Table 3 displays the overview of the participants' responses in Singapore and Austria. In Singapore 74% of the participants have either chosen the strongly agree or agree, with 43 of them choosing strongly agree and 34 of the participants choosing to agree. The remaining participants have either taken the neutral stand, disagreed, or strongly disagreed with this statement. Sixteen of the participants felt neutral to this statement, whereas eight disagreed, and lastly, 2 of them strongly disagreed with the statement. As in Austria, 52% of participants agreed with the statement of e-commerce increasing the frequency of them making purchases. Out of this, 47 of the participants have indicated that they agreed to this statement, and seven have chosen the strongly agree option. The remaining participants have chosen that they felt neutral to the question, with 28 of them, followed by ten who disagreed and 11 who strongly disagreed with this statement.

Taking the worldwide pandemic and the stringent restrictions into account, the participants were also questioned if the COVID-19 has increased the frequency of purchasing from an e-commerce store. Table 4 depicts the participants' responses. It can be observed that the responses obtained were similar to the previous statement. In Singapore 75% of the participants have agreed that COVID-19 has increased the frequency of them making purchases from an e-commerce store, with 47 strongly agreeing and 31 of the participants who have agreed to this statement. Of the remaining participants, 13 felt neutral, 10 of them disagreed, and 2 of the participants strongly disagreed. In Austria 64% of the participants have agreed to this statement, with 34 strongly agreeing and 32 agreeing. The remaining participants indicated that they were neutral or disagreed with this statement, with 17 feeling neutral, 15 of them disagreeing, and 5 of the participants strongly disagreeing.

Table 2. Frequency of purchases from e-commerce stores

Frequency of Purchases (E-commerce)	Country	23 and under	24 to 39	40 to 55	TOTAL
Once in a year or less	Singapore	5	12	-	**17**
	Austria	2	8	3	**13**
Once in a month	Singapore	9	21	3	**33**
	Austria	3	43	5	**51**
At least two times a month	Singapore	3	22	3	**28**
	Austria	1	28	2	**31**
More than five times a month	Singapore	1	24	-	**25**
	Austria	-	8	-	**8**

Source: own research.

Table 3. Frequency of purchases increased from online stores due to e-commerce

Question: E-commerce has increased the frequency of you making purchases from e-commerce.						
	Country	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
How much do you agree/disagree to this statement?	Singapore	2	8	16	34	**43**
	Austria	11	10	28	**47**	7

Source: Own research.

Table 4. Frequency of purchases increased from online stores due to COVID-19

Question: E-commerce has increased the frequency of you making purchases from e-commerce.						
	Country	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
How much do you agree/disagree to this statement?	Singapore	2	10	13	31	**47**
	Austria	5	15	17	32	**34**

Source: own research.

This brings us to the next question, where the participants were questioned on how frequently have they purchased due to the pandemic from an e-commerce store. As observed in Table 5, most of the participants in Singapore, 41, have purchased at least two times a month. Twenty-five have indicated that they purchased more than five times a month, followed by 23 purchasing once a month and the last 14 participants purchasing once in a year or less. While most of the Austrian participants, 40 of them, have answered that they purchased once in a month, whereas 29 have purchased at least two times a month. Twenty-one of the participants has answered that they purchased once in a year or less, followed by 13 of them who have purchased more than five times a month from an e-commerce store.

Preferences of Singaporean and Austrian shoppers

Table 6 depicts an overview of the Singaporean participants buying preferences. As observed in the table, most of the participants, 79, have chosen to purchase from both retail and e-commerce stores. Out of these 79 participants, 58 belong in the age group of 24 to 39 years, 15 belong to the age group 23 and under, and six from 40 to 55 years of age. For the participants who have not chosen both options, 17 of them have chosen that they preferred to purchase from e-commerce stores. Out of these 17 participants, 15 belonged to the age group 24 to 39, and 2 belonged to 23 and under. The remaining 7 participants chose their preference as purchasing from retail stores. Six of them belonged to the age group 24 to 39, and 1 of them belonged to 23 and under.

The primary purchasing preference of the Austrians also lies in both options, with a total of 57 participants. Out of these 57 participants, 51 belonged to the age group of 24 to 39 years, followed by three from age group 23 and under and three from age group 40 to 55. The second more popular option was to purchase from the retail stores, with 32 participants who have chosen this option. Of these 32 participants, 23 were in the age group of 24 to 39 years, followed by 6 of them who were 40 to 55 years of age, and lastly, three who belonged to the age group 23 and under. The 'least' popular option was to purchase from e-commerce stores, with 14 participants who have chosen it. Out of the 14 participants, 13 belonged to 24 to 39 and only 40 to 55.

Table 5. Frequency of purchases due to COVD-19 from e-commerce stores

Frequency of Purchases (due to COVID-19)	Country	23 and under	24 to 39	40 to 55	TOTAL
Once in a year or less	Singapore	3	11	-	**14**
	Austria	2	15	4	**21**
Once in a month	Singapore	8	14	1	**23**
	Austria	3	36	1	**40**
At least two times a month	Singapore	6	30	5	**41**
	Austria	1	26	2	**29**
More than five times a month	Singapore	1	24	-	**25**
	Austria	-	10	3	**13**

Source: own research.

Table 6. Participants' buying preferences

Preference(s)	Country	23 and under	24 to 39	40 to 55	TOTAL
To purchase from retail stores	Singapore	1	6	-	7
	Austria	3	23	6	32
To purchase from e-commerce stores	Singapore	2	15	-	17
	Austria	-	13	1	14
Both	Singapore	15	58	6	79
	Austria	3	51	3	56

Source: own research.

Reasons for preferences on purchases

Next, the participants were asked the reason(s) that positively motivated their preferences to purchase from the retail stores. Participants were allowed to choose for more than one of the reasons where they deemed fit. Table 7 depicts an overview of the breakdown of the participants' motivation(s) that drives their preferences to shop in the retail stores. A total of 87 participants have chosen that they like to shop at the retail stores because of the ability to choose and touch the product they wish to purchase what comes next after their first preference was the availability of the product(s) in stores, where 62 of the participants have picked this option. Followed by 45 participants who think that competitive pricing drives their preferences, 36 of them have loyalty/trust with the retail stores. Two of the participants have provided other reasons, and the factors given were; the service factor and that the participant enjoys the human interaction with the service staff as well as the ambiance of the store, whereas the next participant has indicated that for the fashion buys, he/she would be able to try on the physical item as well as being able to know the quality of the item that they wished to purchase as well as being able to examine the craft.

Similarly in Austria, the bulk of the participants, 88 of them, have answered that they enjoyed choosing and touching their product before purchase. The following popular options were the product's availability, with 57 participants who opted for this choice, and the loyalty/trust the 56 participants had and felt towards the retail stores. This was followed by 25 of the participants who felt motivated by the competitive pricing offered by the stores and lastly, one who had provided another factor, the ability to get the specific product that he/she was looking for instantly.

Next, the participants were questioned about the positive motivation(s) driving their shopping preferences through e-commerce stores. Participants were also able to opt for more than one factor, should the factor(s) fit their preferences. Table 8 shows that in Singapore the most significant portion of the choices went to convenience, with 87 participants who opted for it. Following this factor, 79 of the participants felt compelled by the competitive pricing offered by e-commerce stores. Ranking closely was customer reviews, where 77 participants have chosen as the reason that motivated them to purchase from e-commerce. Forty-eight participants have chosen the product's availability, with loyalty/trust trailing behind with 42 votes. Lastly, thirty-two participants have chosen customer service, and there was another option chosen, and the factor is written the ability to have more variety in the choices for the purchase that he/she wishes to make.

Table 7. Reasons behind participants' retail store preferences

Retail Stores	Country	23 and under	24 to 39	40 to 55	TOTAL
Availability of Product	Singapore	10	48	4	**62**
	Austria	4	47	6	**57**
Competitive pricing	Singapore	8	33	4	**45**
	Austria	3	19	3	**25**
Enjoy the ability of being able to choose and touch the product	Singapore	16	67	4	**87**
	Austria	4	74	10	**88**
Loyalty/trust	Singapore	11	23	2	**36**
	Austria	5	47	4	**56**
Others	Singapore	-	1	1	**2**
	Austria	-	1	-	**1**

Source: own research.

Competitive pricing came out as the most chosen factor that drove the Austrian participants' preferences, with 83 votes (Table 8). Convenience was voted as the second favourite factor, with 73 participants who have chosen it. Following very closely behind comes the factor availability of the product, with 72 counts. Fifty-one participants have chosen customer reviews, 12 have chosen loyalty/trust with the e-commerce stores, followed by one who has inputted another factor; the factor provided was the possibility of a more extensive selection of choices for the item he/she wishes to purchase, and if the participant is looking for something unique, he/she would be able to find it faster in the e-commerce store.

The participants were further prodded with the five factors. They were questioned about which of the factors would

increase the frequency of their purchases from e-commerce. The collated results are displayed and seen in Table 9. The top voted factor in Singapore, with 81 counts were convenience. Next up, 68 of the participants have chosen competitive pricing as the factor that increased their frequency of e-commerce purchases. Customer reviews were next, with 52 votes. They were followed by the product's availability with 46 votes, and 21 have chosen customer

Table 8. Reasons behind participants' e-commerce store preferences

E-commerce Stores	Country	23 and under	24 to 39	40 to 55	TOTAL
Availability of Product	Singapore	6	41	1	**48**
	Austria	6	59	7	**72**
Competitive pricing	Singapore	11	62	6	**79**
	Austria	5	71	7	**83**
Convenience	Singapore	17	65	5	**87**
	Austria	6	60	7	**73**
Customer Reviews	Singapore	16	57	4	**77**
	Austria	4	43	4	**51**
Customer Service	Singapore	5	26	1	**32**
	Austria	1	10	-	**11**
Loyalty/trust	Singapore	7	31	4	**42**
	Austria	-	12	-	**12**
Others	Singapore	-	1	-	**1**
	Austria	-	1	-	**1**

Source: own research.

Table 9. Factors that increases the frequency of e-commerce purchases

Factors increasing the frequency of purchases e-commerce	Country	23 and under	24 to 39	40 to 55	TOTAL
Availability of Product	Singapore	4	39	3	**46**
	Austria	5	56	5	**66**
Competitive pricing	Singapore	8	54	6	**68**
	Austria	5	56	7	**68**
Convenience	Singapore	13	64	4	**81**
	Austria	4	45	6	**55**
Customer Reviews	Singapore	7	40	5	**52**
	Austria	3	25	3	**31**
Customer Service	Singapore	2	18	1	**21**
	Austria	-	7	-	**7**
Loyalty/trust	Singapore	4	20	2	**26**
	Austria	-	7	-	**7**
Others	Singapore	-	2	-	**2**
	Austria	-	2	-	**2**

Source: own research.

service. Two have chosen others and have provided the factors that have increased the frequency of their purchases. The first given factor was the ongoing promotion campaign, and an example of the 11.11 promotion was provided. The next factor was the delivery right to their doorstep, especially if the participant purchases something heavy or bulky, he/she will not have to carry the heavyweight back home.

The most voted factor in Austria was competitive pricing, with 68 counts (Table 9). The next factor was the product's availability, with 66 of the participants who had opted for it. Convenience was voted next, with 55 votes. This was followed by customer reviews with 31 votes, seven chosen customer service, and seven opted for the loyalty/trust factor. Last but not least, 2 of the participants have chosen others but have failed to provide any reasoning behind their choices.

Lastly, the participants were questioned about the factor(s) that have stopped them from purchasing from e-commerce. The overview of the data collected from the Singaporean participants can be observed in Table 10. Based on the data collected, the most off-putting factor to the Singaporeans were negative customer reviews, with 61 votes behind this option. The next factor chosen the most was the bad experience obtained from their previous buys with 52 votes, followed by the factor of not having the ability to choose and touch the product they wished to purchase with 37 votes. Thirty-two participants have opted for uncompetitive pricing, followed by 29 who have chosen mistrust as the factor that has stopped them from purchasing from e-commerce stores. Lastly, 25 of them have indicated that they have not stopped purchasing from e-commerce stores, and 1 participant has chosen the other option and has indicated a not applicable statement for him/her.

A big part of the participants in Austria, 48 of them, have opted not to stop purchasing from e-commerce (Table 10). The next most voted factor, with 35 votes, was negative customer reviews, followed by 32 votes who have opted for terrible experiences from previous buys. Twenty-five of the participants have chosen that they have stopped purchasing from e-commerce because of not having the ability to choose and touch the product they wished to purchase, and 20 of them have chosen mistrust as the factor. Last but not least, the least voted factor was uncompetitive pricing with 12 votes, and 3 of the participants have opted for the others option. The participants provided the other factors that have stopped them from purchasing from e-commerce were; the potential CO_2 impact on the environment, supporting the local economies, and having only bad delivery options.

Table 10. Factors that have stopped participants from purchasing from e-commerce

Factors that have stopped the purchases e-commerce	Country	23 and under	24 to 39	40 to 55	TOTAL
Bad Experience from Previous Buys	Singapore	9	41	2	**52**
	Austria	2	26	4	**32**
Mistrust	Singapore	3	24	2	**29**
	Austria	-	19	1	**20**
Negative Customer Reviews	Singapore	9	48	3	**61**
	Austria	3	29	3	**35**
Not having the ability of being able to choose and touch the product	Singapore	6	30	1	**37**
	Austria	2	21	2	**25**
Uncompetitive Pricing	Singapore	7	25	-	**32**
	Austria	1	10	1	**12**
Have not stopped purchasing online	Singapore	3	20	2	**25**
	Austria	3	42	3	**48**
Others	Singapore	-	1	-	**1**
	Austria	-	3	-	**3**

Source: own research.

Analysis based on t-test

In order to analyse the factors that may or may not affect the consumers' buying behaviours t-test analysis was chosen. A convenient significance value of 0.05% was assumed throughout this entire research.

A significance value of 5% was assumed and utilized throughout this entire research. Table 11 shows an overview of the t-test analysis results for the Likert scale question 11, on how vital the six factors, namely availability of a product, competitive pricing, convenience, customer service, customer reviews, and loyalty/trust, are for the participants before they would purchase from e-commerce. The exhibited p-values for Singapore show that the only factor with p-value higher than 0.05 was availabity of product. Thus, the null hypothesis could not be rejected. Thus, the availability of product may not affect Singaporean consumers' buying behaviour in e-commerce settings. For all other factors the null hypothesis could be rejected since the p-value was lower than the assumed significance value of 0.05. As a result, competitive pricing, convenience, customer service, customer reviews and loyalty/trust might affect Singaporean consumers' buying behaviour (s) in e-commerce settings.

Table 11. Results of t-test for question 11

One-sample t-test (Sig. (2-tailed))		
Factors tested	Singapore	Austria
Availability of Product	0.771	0.006
Competitive Pricing	0.000	0.415
Convenience	0.008	0.000
Customer Service	0.004	0.237
Customer Reviews	0.000	0.000
Loyalty/Trust	0.002	0.810

Source: own research.

According to results of the t-test in the Austrian sample (Table 11), availability of product, convenience and customer reviews play an important role in the Austrian consumers' buying behavior(s) in e-commerce settings. In these three cases the p-value was lower than the 0.05 and the null hypothesis could be rejected. On the other hand, competitive pricing, customer services and loyalty/trust might not affect the Austrian consumers' buying behaviour(s) in the e-commerce settings since they exhibit p-values lower than 0.05 and the null hypothesis for these factors could not be rejected.

Table 12 provides an overview of the t-test analysis results for the Likert scale question 12, on how the five factors, namely bad experience from previous buys, mistrust, negative customer reviews, inability to choose and touch the product, and lastly uncompetitive pricing, would stop the Singaporean and Austrian consumers from purchasing from the e-commerce.

Table 12. Results of t-test for question 12

One-sample t-test (Sig. (2-tailed))		
Factors tested	Singapore	Austria
Bad Experience from Previous Buys	0.001	0.422
Mistrust	0.000	0.110
Negative Customer Reviews	0.246	0.000
Inability to Choose and Touch the Product	0.328	0.328
Uncompetitive Pricing	0.775	0.000

Source: own research.

The t-test analysis conducted for Singapore on the factors bad experience from previous buys and mistrust have revealed p-values lower than 0.05. The null hypothesis could be rejected. Thus, these two factors might affect Singaporean consumers' buying behaviour(s) in e-commerce settings. While negative customer reviews, inability to choose and touch the product and uncompetitive pricing might not affect Singaporean consumers' buying behaviour(s) in e-commerce, since for these three factors the p-values are higher than 0.005 and the null hypothesis could not be rejected.

While, the t-test results for Austria (Table 12) show that bad experience from previous buys, mistrust and inability to choose might not affect the Austrian consumers' buying behaviour(s) in the e-commerce settings since the p-values for these factors are higher than 0.05 and the null hypothesis could not be rejected. On the other hand, negative customer reviews and uncompetitive pricing revealed p-values lower than 0.05 and the null hypothesis could be rejected. Thus, negative customer reviews and uncompetitive pricing might affect the Austrian consumers' buying behaviour(s) in the e-commerce settings.

Correlation analysis

Subsequently, after conducting the t-test analyses, a correlation analysis between the six factors was also tested with Pearson's correlation test and the study of each of its significance values. Pearson's r varies between +1 and -1, where +1 is a perfect positive correlation, and -1 is a perfect negative correlation. With a value of 0, it means that there is no linear correlation at all (Ezspss, n.d.).

Table 13 depicts an overview of the datasets obtained from the Pearson correlation analysis on the six factors: availability of a product, competitive pricing, convenience, customer service, customer reviews, and loyalty/trust for the Singaporean participants. It can be observed that with the Pearson's correlation test for the availability of product shows a small, moderate correlation strength to competitive pricing, convenience, service and reviews with statistically significant Pearson Correlation r-values among of 0.248 and 0.366, and even lower r-value for loyalty/trust, which is not statistically significant.

The correlation analysis results for the competitive pricing show weak correlation with convenience, service, reviews and loyalty/trust with statistically insignificant r-values among 0.016 and 0.190. Thus, there is no evidence of the existence of the correlation. As for convenience the r-values regarding other factors are statistically significant and exibit values among 0.269 and 0.404, providing evidence of weak correlation among convenience on one hand and service, review and loyalty/trust on the other. Correlation among customer service and reviews amounts to 0.323 and is statistically significant, while correlation among customer service and loyalty/trust resulted in 0.361 and is also statistically significant. And the last pair of factors is correlation among customers reviews and loyalty/trust, where the statistically significant r-value is 0.280.

Table 14 depicts an overview of the datasets obtained from the Pearson correlation analysis on the six factors: availability of a product, competitive pricing, convenience, customer service, customer reviews, and loyalty/trust for the Austrian

Table 13. Pearson correlation analysis for Singapore

Factors tested	Pricing	Convenience	Service	Reviews	Loyalty/Trust
Availability of Product	0.248	0.294	0.289	0.366	0.130
Sig. (2-tailed)	0.012	0.003	0.103	0.000	0.189
Competitive Pricing	-	0.118	0.019	0.190	0.016
Sig. (2-tailed)	-	0.233	0.847	0.055	0.870
Convenience	-	-	0.306	0.404	0.269
Sig. (2-tailed)	-	-	0.002	0.000	0.006
Customer Service	-	-	-	0.323	0.361
Sig. (2-tailed)	-	-	-	0.001	0.000
Customer Reviews	-	-	-	-	0.280
Sig. (2-tailed)	-	-	-	-	0.004

Source: own research.

Table 14. Pearson correlation analysis for Austria

Factors tested	Pricing	Convenience	Service	Reviews	Loyalty/Trust
Availability of Product	0.062	0.018	-0.046	-0.004	0.066
Sig. (2-tailed)	0.533	0.853	0.645	0.970	0.507
Competitive Pricing	-	-0.044	0.049	0.160	0.154
Sig. (2-tailed)	-	0.657	0.623	0.107	0.121
Convenience	-	-	0.217	-0.162	0.072
Sig. (2-tailed)	-	-	0.028	0.101	0.470
Customer Service	-	-	-	0.166	0.366
Sig. (2-tailed)	-	-	-	0.094	0.000
Customer Reviews	-	-	-	-	0.121
Sig. (2-tailed)	-	-	-	-	0.224

Source: own research.

participants. The availability of product shows a very weak statistically insignificant correlation to competitive pricing, convenience, service, reviews and loyalty/trust. Thus, there is no evidence that this correlation does exist within this sample population. Similarly, there is no proof of correlation among convenience and reviews, and among convenience and loyalty/trust, as there are relatively low statistically insignificant r-values. However, there is a weak statistically significant correlation among convenience and service. Furthermore, there is no statistically significant correlation among customer service and customer reviews, and among customer reviews and loyalty/trust. But correlation among customer service and loyalty/trust is proven to be statistically significant with r-value of 0.366.

Interpretation of Results

The main hypothesis “Consumers' buying behaviours may affect the e-commerce environment.” can be divided into two parts considering a positive or negative effect of selected factors related to customer behaviours to the e-commerce environment.

Regarding the positive factors in Singapore, the one-sample t-test analyses showed that the participants placed higher importance on certain factors before they purchased from e-commerce. It was found that the following factors: competitive pricing, convenience, customer service, customer reviews, and loyalty/trust, may play a role towards the contribution of a positive effect and impact on their buying behaviours in the e-commerce environment. Availability of product was ruled out with the t-test analysis, and thus it was implied that this factor might not affect their buying behaviour(s) for the e-commerce. As for Austria, the results of t-test analysis have shown that the following factors: product availability, convenience, and customer reviews, may positively affect customers’ buying behaviour(s) in the e-commerce environment. Competitive pricing, customer service, and loyalty/trust were ruled out and may not cause any positive impacts on their buying behaviour(s).

Regarding the negative effect in Singapore and based on the t-test, the factors identified were bad experiences from previous buys and the sense of mistrust that would impact their buying behaviour(s) negatively. The following factors were ruled out from the one-sample t-test and thus would not negatively affect the Singaporeans' buying behaviour(s): negative customer reviews, inability to choose and touch the product, and lastly, uncompetitive pricing. In Austria, the results of the t-test have disclosed that negative customer reviews and uncompetitive pricing might negatively affect and impact their buying behaviour(s) in the e-commerce environment for the Austrians. The remaining factors, bad experience from previous buys, mistrust, the inability to choose and touch the product, were tested and ruled out as having any adverse effects on the Austrians' buying behaviour(s).

Based on the outputs received from the Pearson's correlation tests, some weak signs of correlation, be it positive or negative, between the five factors existed. For this research's case, it was discovered from the sample of Singapore that when the factor availability of the product was chosen, it was also highly likely that the following factors competitive pricing, convenience, and customer reviews, would be selected well. Also, as most of the correlations were relatively weak, with r-values ranging from 0.2 to 0.4, it indicates weak relationships between the tested factors. With double-checking conducted on the results with the significance test, the outcomes have proven that specific correlations may have existed between the factors. There were no negative correlations detected from the Singapore sample. For the Austrians, it was discovered from the sample dataset that when the factor customer service was chosen, it was probable that the factor loyalty/trust would be selected. The majority of the correlations were relatively weak, with r-values ranging from 0.01 to 0.3, which indicated weak relationships between the tested factors. However, after conducting a check with the significance test results, some of the outcomes could not prove the correlations between the factors. On the other hand, several negative correlations were detected, for example, the factor availability of the product and its correlation with the factor of customer service. It could be interpreted that when the Austrians chose product availability, they are less likely to have also chosen customer service. However, a check with the significance test has shown otherwise and, as such, holds insufficient evidence to confirm that the negative correlations existed.

Conclusion

The data collected has revealed that most Singaporean consumers and a majority of the Austrian consumers mostly purchase once a month from the retail stores. Similarly, these two groups of sample consumers also purchase once a month from e-commerce. Based on the findings observed from the statement "E-commerce has increased the frequency of you making purchases," it can be observed that Singaporean participants feel that they are generally more impacted by e-commerce. A higher number of the Singaporeans, 43 of them, feel a solid agreement to the prior statement than 7 of the Austrians' strong agreements. Lastly, the overall agreement rate (between agree and strongly agree) of 74% from the Singaporeans was also higher than the Austrians' agreement rate at 52%.

A considerable portion of the Singaporean and Austrian consumers have indicated that they prefer to shop from retail and e-commerce stores. Seventy-nine of the Singaporeans and 57 of the Austrians have chosen both retail and e-commerce as their preferences. For the remaining sample, which has not chosen both as a preference, it can be gathered that 32 of the Austrians prefer to shop from retail stores, and 17 of the Singaporeans prefer to shop from e-commerce. Overall, it can be concluded from this sample data that Singaporeans may hold a higher preference towards purchasing from e-commerce in general, as compared to the Austrians.

The primary motivator that may have positively impacted the buying behaviours of most Singaporeans and Austrians to purchase from retail stores was the ability to choose and touch the product(s) that they wish to buy. Following behind very closely was the factor availability of the product as the second most chosen motivator by both sample groups.

Next, briefly will discuss the motivators that positively push and support the Singaporeans and Austrians to purchase from e-commerce stores. Based on the data, it was observed that convenience was the top motivator that most Singaporeans have chosen, which may positively impact their online buying behaviours. The second most chosen factor was competitive pricing. Whereas for the Austrian participants, the bulk has chosen competitive pricing as the primary motivator that may positively impact their online shopping preferences and following very closely behind was the chosen factor, convenience.

Statistical t-test analysis was conducted on the responses obtained from both of the sample groups. It was observed from the results that for Singaporeans, competitive pricing, convenience, customer service, customer reviews, and loyalty/trust are the five factors that may positively impact washing behaviours in e-commerce settings. As for the Austrian consumers, it was discovered that their results were different from that of the Singaporean consumers. The listed four factors: availability of the product, convenience, and customer reviews, were found to have a potentially positive impact on the Austrian consumers' buying behaviour(s) in the e-commerce settings.

Similarly, the statistical t-test analysis was also conducted on the data samples to identify the potential negative impact(s) a factor may have on the participants' buying behaviours. As derived from the obtained results, it was seen that bad experiences from their previous buys and mistrust could potentially negatively impact Singaporean consumers' online buying behaviours. As for the Austrian consumers, the following factors that may have posed negative impact(s) on their online buying behaviours were negative customer reviews and uncompetitive pricing.

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Učinki nakupnega vedenja potrošnikov na e-trgovino na visoko razvitem nastajajočem trgu in razvitem trgu: primer Singapurja in Avstrije

Izvleček

E-trgovina postaja v sodobnem svetu vse bolj pomembna in predvsem aktualna, zlasti v trenutni pandemiji. Zaradi povečane uporabe interneta je rast e-trgovine eskalirala. Ta raziskava se osredotoča na e-trgovinski okolji singapurskega in avstrijskega trga. Vsebuje oris, ki se dotika teoretičnih delov in izvedbe empirične študije, v kateri smo proučili, analizirali in primerjali rezultate anketiranja 206 udeležencev. Za to raziskavo sta bili izbrani statistični metodi analiza t-testa in korelacijska analiza. Empirična študija je služila kot kvantitativna razprava o trgih e-trgovine obeh držav. Analiza izpolnjenih vprašalnikov je omogočila boljše in jasno razumevanje nakupnega vedenja in njegovega možnega vpliva na trge e-trgovine v Singapurju in Avstriji. Glede na rezultate primerjav je raziskava izpostavila tudi nekaj zanimivih ugotovitev in razlik v nakupnem vedenju singapurskih in avstrijskih kupcev.

Ključne besede: e-trgovina, oblikovanje cen, nakupno vedenje, potrošniki, Singapur, Avstrija

ORIGINAL SCIENTIFIC PAPER

RECEIVED: OCTOBER 2021

REVISED: NOVEMBER 2021

ACCEPTED: NOVEMBER 2021

DOI: 10.2478/ngoe-2021-0022

UDK: 338.48:339.138

JEL: M31, Z32

Citation: Krupka, Z., Dobra, A., & Vlašić, G. (2021). Factors Influencing the Perception of Destination Brand Luxuriousness. *Naše gospodarstvo/Our Economy, 67*(4), 74-86. DOI: 10.2478/ngoe-2021-0022

NG
OE

**NAŠE GOSPODARSTVO
OUR ECONOMY**

Vol. 67 No. 4 2021

pp. 74–86

Factors Influencing the Perception of Destination Brand Luxuriousness

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Abstract

The main purpose of this paper is to identify and investigate the factors that influence the building and managing of luxury destination brands. Based on a review of existing literature, the authors identified eight crucial factors: accommodation quality, quality of gastronomy offers, premium price, service quality, luxury shopping, unique experience, transportation infrastructure, and celebrity. The research was conducted on a sample of 619 respondents from 16 countries. Factor and regression analyses were used. The results indicate that the availability of celebrity and luxury shopping has the strongest significant influence on luxury destination brand building, while the impact of accommodation quality and a premium price is non-significant, and, interestingly, transportation infrastructure has a negative and significant impact. A convenience sample and the possibility of omitting certain factors (e.g. safety) from the research represent the main research limitations. This research contributes to marketing and brand management literature by identifying and investigating the factors that help in building and managing a luxury destination brand, which to date has been neglected in literature.

Keywords: brand management, luxury, destination, building factors, luxury branding

Introduction

Until 2020 and the COVID-19 pandemic, tourism was one of the fastest growing economic sectors in the world. According to the World Tourism Organization (UNWTO), international tourist arrivals grew by 7% in 2019 (the global economy grew by 3.8%) compared to the previous year to reach a total of 1.4 billion (two years ahead of forecasts). All the regions of the world – from Europe and Asia to the Americas and Africa – recorded growth, which implies that tourism has become an important industry for those countries that are not traditionally considered to be tourist-oriented. To maintain growth, continents, countries, cities, villages and man-made resorts, in other words destinations (Hanna, Rowley, &

Keegan, 2021; Pike, 2004), need to differentiate themselves one from another. Therefore, destination brand management has become a strategic orientation for many countries, and the destination itself is one of the crucial parts of a holistic tourist experience (Kani, Aziz, Sambasivan, & Bojei, 2017; Baker & Cameron, 2008).

Prayag (2010) defines a destination brand as a unique combination of functional and non-functional characteristics and the value-added products/services that consumers associate with the brand. From a marketing point of view, a destination brand is a combination of physical and emotional experiences communicated to consumers through various elements of a brand, with the aim of facilitating the choice of destination (Lim & Weaver 2014; Lichrou, O'Malley, & Patterson 2008). In contrast, from the consumer's point of view, a destination brand represents a set of perceptions that are the result of the associations they have about the destination and the experience they gain in the destination; delivered under a specific brand name (Balakrishnan, Nekhili & Lewis 2011).

Today, consumers are offered various choices of destination and they choose one which has a positive image and whose image is in line with their perception of themselves (Rossidis et al., 2019). According to Dwivedi, Yadav and Patel (2009), destination image is a set of objective knowledge, impressions, prejudices and feelings a customer has about a certain destination. It represents tourists' expectations of the destination (Leisen 2001), which means that destination branding is critical for a destination to be identified and differentiated in the mind of a potential consumer (Qu, Kim & Im, 2011; Abodeeb, Wilson & Moyle, 2015).

In the modern highly competitive global market, destinations that only rely on the '3S of tourism' (sun, sea and sand) are easily substitutable. One possible way that a destination can stand out from the masses and differentiate itself is by creating a luxury destination brand. Although many papers have been written on topics related to destination branding (Reif, 2020; Iloranta, 2019; Kirant Yozcu, 2017; Kani et al. 2017; Tasci, Gartner & Cavusgil 2007; Mishra 2010; Hankinson 2009; Hudson & Ritchie 2009; Choi & Cho 2016), and whilst luxury as a concept has been present in marketing and branding literature for over two decades (Beverland 2006; Dubois & Duquesne 1993; Mandel, Petrova & Cialdini 2006; Nueno & Quelch 1998), according to the authors' knowledge, there is still a lack of research dealing with building and managing a luxury destination brand.

From an economic perspective, luxury brands can be defined as those whose ratio of functional utility to price is low, while the ratio of intangible and situational utility to price is high (Nueno & Quelch 1998.) From a marketing perspective, luxury brands are frequently defined in terms of their excellent quality, high transaction value, hedonic value and uniqueness (Lee, Hsu, Chen & Wu 2018; Tak & Pareek 2016; Fionda & Moore 2009). In addition to possible functional attributes, luxury brands are even more sought for their emotional and symbolic values arising from image, social status, exclusivity, high quality, superb performance and premium prices (Krupka, Ozretic-Dosen & Previsic 2014; Beverland 2006). Therefore, luxury brands can be understood as those that consumers buy because of the emotions they associate with them, and functional quality is what is implied.

A luxury destination brand can be defined as a combination of various elements of a brand and offer in the destination, which consumers perceive as luxurious, with the aim of achieving recognition and distinction from other destinations by building a positive prestigious image. A luxury destination brand combines all luxury products, services and experiences, and meets all the needs and desires of the luxury tourist segment (Correia, Kozak & Del Chiappa, 2020; Seo & Buchanan-Oliver 2015). Park, Reisinger and Noh (2010) emphasise that experience is an essential part of a luxury offer, as well as one of the fundamental components of a destination brand. By consuming a luxury destination brand, consumers express their identity and personality to the public (Sung, Choi, Ahn & Song 2015).

To address the deficit in luxury destination brand literature and research, this paper focus on identifying and investigating the factors that influence building and managing a luxury destination brand.

Factors That Influence Luxury Destination Brand Building and Management

Accommodation Quality

Accommodation is one of the key components when building a destination brand, since it determines which profile of visitors will choose a specific destination and what type of tourism will develop in the destination (Presbury, Fitzgerald, & Chapman, 2005). Luxury accommodation mostly refers to hotels, and visitors of such hotels expect delivery of superior value in terms of reputation and quality (Belyakova, 2018; Tkaczynski & Rundle-Thiele, 2011). Presbury et al. (2005) indicate that hotels are considered luxurious if they offer superior content and service, while Hwang and Heesup (2014), as well as Giglio, Pantano, Bilotta and Melewar (2020), emphasise quality at room level as an important element that has a positive effect on luxuriousness. Furthermore, high price is an indicator of high-quality accommodation (Maden, Göztaş & Topsümer 2015; Park et al. 2010), but also visitors to luxury accommodation expect delivery of high quality, good location,

pleasant atmosphere, spacious rooms, comfort and internet access (Lu, Berchoux, Marek & Chen 2015).

Based on the aforementioned, it can be concluded that customers will perceive a certain destination luxurious if that destination can offer high quality accommodation, by combining tangible and intangible elements of the overall accommodation offer. Accordingly, accommodation quality will have a positive impact on the luxuriousness of the atmosphere along with the building of a prestigious brand image in the visitor's perception (Hwang & Heesup 2014). Therefore, the following hypothesis arises:

H1: The perceived quality of accommodation has a positive effect on destination brand luxuriousness.

Quality of gastronomy offer

Gastronomy, in the context of the restaurant and food available in a destination, is an important component of the overall tourist experience and has a significant impact on tourist satisfaction and the differentiation of a destination (Correia, Moital, Ferreira da Costa & Peres 2013; Balakrishnan et al. 2011). In the past two decades, the concept of luxury tourism has moved from (traditionally) 5-star hotels and resorts to unique experiences – one of which is unique dining (Batat, 2021; Hanžek & Sušić, 2020; Park et al. 2010). Peng and Huiling Chen (2015) and Chen, Peng and Hung (2015) state that luxurious restaurants are full-service restaurants whose environment (interior design, atmosphere, staff service) and offer (food and beverage) are carefully prepared and presented, and are unique, noticeable and superior in terms of quality. Appetizers that are priced at higher than USD 20 (Chen et al. 2015) are an additional factor in the perception of a luxurious restaurant, as are other guests who give the restaurant a sense of exclusivity (Peng & Huiling Chen, 2015). The fact that gastronomy accounts for about one-quarter of a destination's revenue stresses its importance for the destination (Daries, Cristobal-Fransi, Ferrer-Rosell & Marine-Roig, 2018). As a result of all the aforementioned, gastronomy is one of the attractive factors of a destination and has a great role in creating a destination's brand image (Marine-Roig & Anton Clave, 2016).

Given the above, it can be concluded that the quality of a destination's gastronomy has an influence on customers' perception and the overall experience of the destination as being more or less luxurious, consequently proposing the following hypothesis:

H2: The perceived quality of a destination's gastronomy has a positive impact on its brand luxuriousness.

Premium price

Brun and Castelli (2013) define luxury in the context of high price by saying that luxury goods are worth just because they are expensive, and that luxury applies to all goods/services with a high price, i.e. those with a price that is at least two to three times higher than the low-cost variants. For luxury consumers, premium prices are not an obstacle when buying products and services, as long as they are accompanied by high quality and exclusivity (Maden et al., 2015). The particularity of luxury brands is that they communicate prestige and status and suggest the position of a luxury consumer in society, whereas premium price suggests a brand's exclusivity. Therefore, premium price can be seen as the essence of luxury, highlighting the characteristics of rarity and exclusivity not only of the brand, but also its user (Seo & Buchanan-Oliver, 2015). Additionally, premium price is important for those who are concerned about their privacy during their stay in the destination, ensuring a certain level of privacy (Park et al., 2010). From the foregoing, the following hypothesis arises:

H3: A perceived high price has a positive impact on the luxuriousness of a destination brand.

Service quality

In today's highly competitive environment, service quality helps to differentiate a company from the competition, indicates its excellence (Hwang & Heesup, 2014) and is an important factor in building brand image (Lu et al., 2015). Service quality can be defined as the difference between the expected and delivered service (Hwang & Heesup, 2014), as it depends on the needs and expectations of customers and whether the level of provided service will meet their needs and expectations. It is one of the most important factors that influence customers' satisfaction and perceived values (Cronin & Taylor, 1992; Petrick & Backman, 2002). In cases where a destination is striving to build a luxury brand image, the full range of services of the destination (restaurants, hotels, shops, public services, etc.) should be at a high level, since tourists who are willing to pay a premium price expect a premium service quality. Furthermore, in addition to the fact that it creates a destination brand image, service quality influences tourists' decisions whether or not to return to a destination (Kim, Holland & Han, 2013).

Delivered high service quality among customers triggers a sense of value and is an essential part of a luxury brand (Hwang & Heesup, 2014), therefore raising the following hypothesis:

H4: Perceived service quality has a positive impact on the luxuriousness of a destination brand.

Luxury shopping

Following accommodation, tourists' biggest expenditure is shopping, which accounts for 30% of all tourist activities (Kinley, Forney & Kim, 2012). Shopping is often cited as a significant, sometimes primary, reason for travelling and is associated with emotional motives such as relaxation, enjoyment and entertainment (Henderson, Chee, Mun & Lee, 2011). Balakrishnan (2009) stresses that shopping is becoming the number one leisure time activity, whereas Park et al. (2010) point out that many tourists travel abroad in order to purchase luxury products. Luxury stores are most commonly located in carefully selected tourist destinations, which benefit from the fact that they offer luxury shopping centres and luxury brand districts. Due to their convenience, recognised standard on a global scale, safety, cleanliness and service quality, they are popular among luxury tourists (Park et al. 2010).

Given the effort involved when choosing a destination as a location for luxury stores, the possibility of luxury shopping suggests the existence of luxury elements, which is ultimately an indicator of a luxurious destination itself. Therefore, this raises the following hypothesis:

H5: The possibility of luxury shopping has a positive impact on the luxuriousness of a destination brand.

Unique experience

The reasons for choosing a particular destination vary from individual to individual, but each of them is seeking something unique at the destination (Tkaczynski & Rundle-Thiele, 2011). Trends in the past ten years have shown that luxury goes beyond product and services – today it includes experience and authenticity (Park et al. 2010). Factors by which a destination can build a unique experience are culture, heritage, history, art or unique natural beauties (Dwivedi et al., 2009; Konecnik & Go, 2008). Alongside the aforementioned factors, what influences a unique experience are factors such as entertainment and recreation, for instance, nightlife, golf courses, casinos or wellness centres, i.e. a form of product or service that creates an exotic experience among consumers (Park et al., 2010).

According to Hwang and Heesup (2014), the uniqueness of a product or service – in this case the uniqueness of natural and cultural attractions, recreational and many other activities – is the key criterion according to which brand, in the context of this paper, a destination brand, is perceived prestigious. In accordance with all of the above stated, the following hypothesis is proposed:

H6: A unique experience in a destination has a positive impact on the luxuriousness of a destination brand.

Transportation infrastructure

Transportation infrastructure is indispensable for tourism and a key determinant of destination development, therefore a developed infrastructure, such as airports and roads, increases the attractiveness of a destination (Dwivedi et al., 2009; Mostafavi Shirazi & Puad Mat Som, 2011). Convenient transportation not only means that a destination must be near an international airport, but is also observed in terms of the duration of the journey to and from the airport to the final destination, and the possibility of access to sites of interest, such as shopping centres and other tourist attractions (Huang & Chiu, 2006). Therefore, convenient transportation can be defined as effective transportation that ensures tourists have access to a reasonable level of transportation service.

A well-connected destination is one that has easy access, is accessible from a tourist's country of origin and has developed local transportation infrastructure (Balakrishnan et al., 2011). Hence, the accessibility, in the context of a tourist destination, can be seen as a dimension of the quality of life (Tóth, Dávid & Vasa, 2014). According to Hwang and Heesup (2014), since quality of life is considered one of the key determinants of luxury, it can be concluded that transport connectivity is an important factor when building a luxury destination brand. In accordance with the above, the following hypothesis is proposed:

H7: Developed transportation infrastructure has a positive impact on the luxuriousness of a destination brand.

Celebrity

A celebrity is a person who enjoys public recognition, as the general public attaches characteristics and distinctive attributes to them, such as attractiveness and reliability (Um 2013), and they therefore play an important role in marketing activities. Celebrities are an important source of information and have an influence on customers' perceptions, thus magazines such as *In Style* and *Vogue*, as well as numerous social media platforms, show famous and successful people when consuming luxury brands, thereby encouraging customers to imitate them (Seo & Buchanan-Oliver, 2015). Marketing experts expect that positive feelings toward celebrities will transfer to the brand that this celebrity uses and/or endorses

(Ozretic-Dosen, Skare & Krupka, 2011). Diesbach (2012) points out that celebrities promote a destination and create an image of a luxury brand if they themselves are tourists in that destination. In that way, a spill-over effect of perceived luxury from celebrity to the destination brand occurs.

Today, as well as in the past, those aspiring to luxury status want to stand out from the crowd and thereby often choose celebrities as their role model, who, because of their status, behaviour and consumption of luxury brands, attract public attention (Wong & Lai 2015). To conclude, if a destination is associated with a famous person who has important, attractive attributes and symbolic values to which luxury customers aspire, consequently it will have a positive impact on the luxury destination brand, thus the following hypothesis can be proposed:

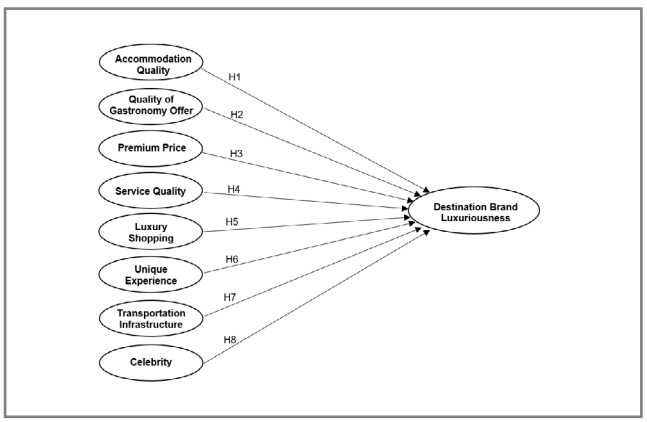
H8: Celebrities as brand destination users have a positive impact on the luxuriousness of a destination brand.

Methodology and Results

Conceptual framework

According to brand management, destination branding and luxury branding literature, the conceptual framework (Figure 1) was defined to analyse the impact of the quality of accommodation and gastronomy, premium price, service quality, luxury shopping, unique experience, transportation infrastructure and celebrity on the perceived luxuriousness of a destination brand. Those factors were recognised as antecedents of luxury destination brand building both from academic and business points of view. A proposed conceptual framework was developed to research the hypotheses it outlined.

Figure 1. Conceptual framework and research hypotheses



Sample and procedure

To test the hypotheses, a survey was conducted on a sample of 619 respondents from 16 countries (Australia, Austria, Bosnia and Herzegovina, Croatia, Finland, France, Germany, Italy, Norway, Poland, Serbia, Slovenia, Spain, Sweden, the United Kingdom and the USA) who travelled at least 10 times in the last 30 months. The respondents were approached via the LinkedIn and Facebook platforms. A self-administered highly structured questionnaire was used to collect the data. The respondents were asked to think about the last destination they visited and to express their level of agreement with 38 items (see Table 1) on a 5-point Likert scale (1 – Strongly disagree; 5 – Strongly agree). Existing validated scales originally in English were used, which were then translated and tested using 'back-to-back' translation (English > OtherLanguage > English). Finally, the questionnaire was distributed in six languages – English, German, Italian, Spanish, French and Croatian.

Additionally, respondents had to answer five demographic questions about gender, age, nationality, education, and monthly household income. In terms of gender, 217 (35.06%) respondents were male, while 402 (64.94%) were female. Of all the respondents, 288 (46.53%) of them were aged 18 to 25, 216 (34.89%) were between the age of 26 and 40, 80 (12.92%) respondents were aged between 41-55, while 29 (4.69%) of them were aged between 56 and 65, and only 6 (0.97%) were 65 and over. In terms of their education level, most of them (255; 41.20%) have a Master's degree, followed by a Bachelor's degree (190; 30.69%), while others (150; 24.23%) had completed college courses, PhD degrees (17: 2.75%), primary school education (4; 0.65%), and a postgraduate degree (3; 0.48%). In terms of monthly household income, the largest group of respondents (121; 19.55%) live in a household which has a monthly income of between EUR 901 and EUR 1,500, followed by households with a monthly income of between EUR 1,501 and EUR 2,000 EUR (111; 17.93%) and less than EUR 500 (91; 14.70%). Of the respondents, 86 (13.90%) live in a household with a monthly income of between EUR 501 and EUR 900, 80 (12.92%) between EUR 2,001 and EUR 3,000, 57 (9.21%) between EUR 3,001 and EUR 4,000, while 47 (7.59%) of respondents live in a household with a monthly income of more than EUR 5,500. The smallest group of respondents (26; 4.20%) live in a household with a monthly income of between EUR 4,001 and EUR 5,000.

Results

A confirmatory factor analysis (see Table 1) shows that for each variable all factors have loadings greater than 0.5 and a Cronbach's alpha greater than 0.7, which are the levels

recommended by Hair, Babin, Anderson and Black (2018). The model was tested using a regression analysis with factors explaining 56.20% of the dependent variable Destination Brand Luxuriousness ($R^2 = 0.562$; sig = 0.000).

The model shows that the variables *Accommodation Quality* (sig = 0.743; VIF=2,195) and *Premium Price* (sig = 0.461; VIF=1,414) do not have a significant impact (p>0.05) on the extent to which a tourist perceives a destination's luxuriousness. This implies that H1 and H3 are rejected. Such a result may be a reflection of the fact that each destination (regardless of its luxuriousness) offers a diverse set of options in terms of accommodation quality and a diverse set of price levels to suit tourists' budget and preferences. Therefore, it can be argued that these two do not depend on the destination itself (and its luxuriousness), but rather on customers' preference and choice within the destination, which they decided upon after having chosen the destination.

Transportation Infrastructure has a negative and significant (p<0.05) impact on perceived Destination Brand Luxuriousness (β = -0.091; p = 0.010; VIF=1,652), thus rejecting H7. While better transportation infrastructure enables greater accessibility of the destination, greater accessibility implies more uniformly distributed tourists can visit the destination, thus creating a distribution of tourists and making the destination perceived as 'mass market' destination.

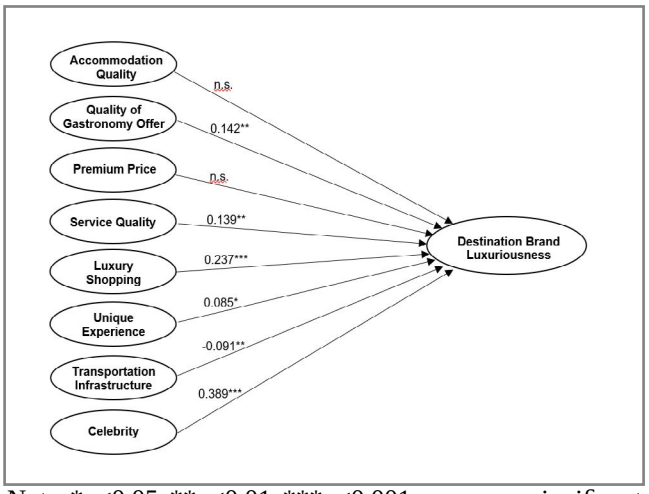
The other hypotheses are accepted. The most significant impact on perceived Destination Brand Luxuriousness is exhibited by the association of the destination with *Celebrity* (H8; β = 0.389; p = 0.000; VIF=1,757) and the availability of *Luxury Shopping* (H5; β = 0.237; p = 0.000; VIF=1,943). These two variables imply a transfer of brand perceptions between celebrities and luxury fashion brands on one side, and destination brand on the other.

Quality of Gastronomy Offer (H2; β = 0.142; sig = 0.003; VIF=3,080) and Service Quality (H4; β = 0.139; sig = 0.003; VIF=2,947) positively and significantly (p<0.05) influence perceived Destination Brand Luxuriousness, thus confirming H2 and H4. Service and gastronomy quality are expected to correlate with the type of tourists the destination is targeting. These two do not have distribution across options within a destination but are rather a characteristic of a destination with similar options across the whole destination. In other words, restaurants and service workers are expected to deliver great quality in a more luxurious destination. They are 'destination-specific', thus by selecting a destination, tourists select a certain set of options in terms of quality of gastronomy and service quality.

Unique Experience (H6; β = 0.085; sig = 0.018; VIF=1,672) significantly (p<0.05) and positively influences perceived Destination Brand Luxuriousness. Uniqueness of experiences, similar to quality of gastronomy and service quality, is 'destination-specific', and therefore exhibits the same type of influence where destinations that can provide more unique benefits are likely to be perceived as more luxurious. These three variables are 'destination-specific' and have a positive impact on perceived Destination Brand Luxuriousness.

The model was tested using linear regression ($R^2 = 0.562$; p = 0.000). The results are shown in Figure 2.

Figure 2. Luxury Destination Brand Model



Note: *p<0.05; **p<0.01; ***p<0.001; n.s. = non-significant

Discussion and Implications

This research contributes to marketing and brand management literature by identifying and investigating factors that help in building and managing a luxury destination brand. There have been lot of studies that focused on destination branding and luxury branding, however, few of them dealt with luxury destination brand building phenomena. Several theoretical and managerial implications arise from the findings of this research.

Theoretical implications

The first important implication is that celebrities and the availability of luxury shopping are two factors that most affect the luxuriousness of a perceived destination brand. Famous people, such as actors, singers, athletes, models and successful business people, have characteristics that are appealing to many people and lifestyles that a lot of people aspire to but cannot afford. The products and services they use are considered to be luxury brands and the destinations they visit also match their image and lifestyle (Seo

Table 1. Measures and descriptive statistics

	Mean	S.D.	CFA Factor loading	Cronbach α	Literature
Accommodation quality					
The rooms are spacious in this destination.	3,836	1,125	0.801	0.890	Presbury et al. (2005); Tkaczynski & Rundle-Thiele (2011); Hwang & Heesup (2014); Maden et al. (2015); Park et al. (2010); Lu et al. (2015)
The beds are comfortable in this destination.	3,847	1,064	0.837		
A range of toiletries are available in the bathroom.	3,636	1,255	0.842		
The rooms are equipped with modern technology in this destination.	3,444	1,210	0.823		
The rooms are well designed in this destination.	3,419	1,235	0.867		
Quality of gastronomy					
This destination has excellent food.	3,803	1,127	0.832	0.909	Correia et al. (2013); Balakrishnan et al. (2011); Park et al. (2010); Peng & Huiling Chen, (2015); Chen et al. (2015); Daries et al. (2018)
This destination offers a wide selection of food and beverages.	3,768	1,158	0.814		
There are many high-quality restaurants in this destination.	3,742	1,128	0.809		
Restaurants in this destination are beautifully designed.	3,723	1,045	0.839		
The restaurant staff in this destination are professional.	3,845	0.980	0.837		
The restaurant staff can provide necessary information about the food and drinks.	3,839	1,008	0.794		
This destination has better restaurants than other destinations.	3,172	1,058	0.711		
Premium price					
Products and services are expensive in this destination.	3,248	1,227	0.915	0.878	Brun & Castelli (2013); Maden et al. (2015); Seo & Buchanan-Oliver (2015); Park et al. (2010)
Prices are significantly above expectations in this destination.	3,163	1,192	0.863		
Prices are higher than the prices in other destinations.	3,164	1,203	0.922		
Service quality					
Service quality is very high in this destination.	3,606	1,057	0.878	0.841	Hwang & Heesup (2014); Lu et al. (2015); Hwang & Heesup (2014); Cronin & Taylor (1992); Petrick & Backman (2002); Kim et al. (2013)
People working with tourists are very professional and can answer my questions.	3,787	1,043	0.898		
I think that the service quality is better than the service I would receive in other destinations.	3,374	1,042	0.842		
Luxury shopping					
This destination offers a great selection of famous luxury brands.	3,126	1,337	0.941	0.917	Kinley et al. (2012); Henderson et al. (2011); Balakrishnan (2009); Park et al. (2010)
There are various shops with an excellent range of products.	3,230	1,280	0.935		
The range of famous luxury brands is better than in other destinations.	2,966	1,315	0.907		

Table 1. Measures and descriptive statistics (cont.)

	Mean	S.D.	CFA Factor loading	Cronbach α	Literature
Unique experience					
This destination is unique.	3,855	1,144	0.853	0.859	Tkaczynski & Rundle-Thiele (2011); Park et al. (2010); Dwivedi et al. (2009); Konecnik & Go (2008); Hwang & Heesup (2014)
This destination offers something that no other destination can offer.	3,643	1,181	0.866		
This destination offers 'something different'.	3,686	1,160	0.877		
This destination is unique due to its historical monuments.	3,557	1,252	0.691		
This destination is unique due to its natural beauty.	3,821	1,059	0.666		
This destination offers a unique urban experience (architecture, entertainment).	3,506	1,181	0.686		
Transportation infrastructure					
This destination is easily accessible.	3,792	1,037	0.809	0.877	Dwivedi et al. (2009); Mostafavi Shirazi & Puad Mat Som (2011); Huang & Chiu (2006); Balakrishnan et al. (2011); Tóth et al. (2014); Hwang & Heesup (2014)
This destination is well connected.	3,804	1,072	0.877		
Transport links within this destination are good.	3,688	1,094	0.898		
Transport links to different attractions/locations in this destination are good.	3,651	1,034	0.830		
Celebrity					
Celebrities visit this destination.	3,243	1,270	0.903	0.917	Um (2013); Seo & Buchanan-Oliver (2015); Ozretic-Dosen et al. (2011); Diesbach (2012); Wong & Lai (2015)
Trendsetters are frequent guests of this destination.	2,995	1,187	0.934		
It is known as being a trendy destination for the rich and famous.	2,881	1,399	0.923		
Celebrities make this destination more popular.	3,061	1,358	0.847		
Destination brand luxuriousness					
I perceive this destination as a luxury destination.	3,031	1,297	0.938	0.941	Beverland (2006); Dubois & Duquesne (1993); Mandel et al. (2006); Nueno & Quelch (1998); Lee et al. (2018); Tak & Pareek (2016)
When describing this destination, I would mention luxury as one of its characteristics.	2,901	1,338	0.954		
Staying in this destination provides a sense of luxury.	2,913	1,333	0.947		

Note: In addition to CFA (confirmatory factor analysis) for previously developed and validated scales; EFA (exploratory factor analysis) was performed using items for all independent variables with results exhibiting no significant cross-loadings, KMO=0,941 and Barlett's test of sphericity: Chi-square=16429,287; df=595; Sig=0,000.

& Buchanan-Oliver, 2015). Therefore, there is a spill-over effect between celebrities' brand image to a destination's brand image (and vice versa). This has been particularly prominent in recent years with the growing impact of social network influencers. Luxury brand management literature stresses the importance of location (where luxury brands are sold) as one of the most important factors in building and maintaining a luxury image (Tak & Pareek, 2016). Therefore, the availability of luxury shopping at a destination signals that it is a prestigious location and again there is a spill-over effect of luxury image from products/service brands to the destination brand. Celebrities and the availability of luxurious shopping have the greatest impact on building and managing the luxuriousness of a destination brand because they can make an association and transfer the experience of luxury.

This research also reveals that the perceived luxuriousness of a destination brand is not influenced by premium price and accommodation quality, which was one of the biggest surprises. Although premium price is one of the luxury market's main characteristics (Brun & Castelli, 2013), it

seems that it is not that important for luxury destination brand building in comparison to some other characteristics. A look at the results reveals that celebrities and the availability of luxury shopping have the strongest influence on the luxuriousness of a perceived destination brand; one could argue that customers get used to high prices and/or that they are willing to pay more than they have previously. When talking about destination marketing and brand management, accommodation quality is one of the key components that needs to be taken into consideration (Presbury et al., 2005). However, according to this research, it is not significant for the luxuriousness of a destination brand. The reason for this can be found in the fact that accommodation represents a substitute short-term 'home' for customers, hence they expect high-quality. Another reason, perhaps an even stronger one, is the development of internet services/platforms such as Booking.com, Kayak and, especially, Airbnb. They have enabled that in each destination, regardless of the luxury image it wants to project, a 'large' part of the accommodation available is not considered to be luxurious (the possibility of booking less spacious rooms at a low price which is opposed to the perceptions and description of quality accommodation), or that premium price and accommodation quality are something that is considered *condicio sine qua non* for building a luxury destination brand and, as such, is expected to be as such.

Finally, another surprising finding is that transportation infrastructure has a negative impact on the perceived luxuriousness of a destination brand. According to Henderson (2009), transportation infrastructure is indispensable for tourism as one of the key factors for destination development, but at the same time developed transportation infrastructure, such as airports and roads, increases the attractiveness of a destination. In this case, increasing the attractiveness of a destination is equivalent to wider availability, which ultimately leads to mass tourism. In addition, the growth in low-cost airlines and their development mean that many tourism destinations are easily and cheaply available (one of the reasons why premium price is not a significant factor for the perceived luxuriousness of a destination brand), thus encouraging mass tourism. The characteristics of luxury brands are rarity, elitism and uniqueness (Walley, Custance, Copley & Perry, 2013), which is opposite to the features of mass tourism.

Managerial implications

To build a luxury destination brand, all stakeholders (government, companies, people, etc.) need to be coordinated and communicate the same associations and image. Without these factors, it is practically impossible to create a luxury destination brand.

From a managerial perspective, perhaps the most important implication is that transportation connectivity does not lead to the creation of a luxury destination brand. Although, transportation connectivity means a better standard of life for local people, at the same time it means that the destination is easily accessible for a lot of people. This is extremely important for local government when deciding about the number of flights and, especially, attracting low-cost carriers to the destination.

Another important implication, again for local government as well as for companies, is that service quality is an important factor in building a luxury destination brand. This means that local governments should be very attentive when employing and managing people who are in direct contact with tourists (public sectors such as public transportation, medical services, police, tourism-related offices, etc.). In contrast, service quality in restaurants, hotels, entertainment premises, department stores etc. should also be at a high level because the luxury tourist segment demands it.

Finally, an implication that is again directed at both governments and companies is that the unique experience tourists receive at a destination forms their perception about the luxuriousness of a destination brand. This means that companies, with government help, need to create an atmosphere in the destination (Michelin star restaurants, availability of luxury shopping, entertainment and sport activities, cultural and natural attractions) that will, in customers' minds, create unique memories which will turn into the perception of a luxury destination brand.

Conclusions

To conclude, this research indicates that the underlying principle behind whether or not a certain factor is important for the perceived luxuriousness of a destination brand lies in *the extent to which a customer can create/perceive a connection between brands*. The strongest influence is by factors which enable direct brand luxury transfer (availability of luxury shopping - H5 and association with celebrities - H8). Further, the strong influence is by *factors which are expected to have a limited distribution of choices once a destination is selected* (i.e. factors which expect to have a co-determination with the selection of the destination – H2 and H4, followed by H6). *No influence was exhibited by the factors which have a distribution of options, regardless of the choice of destination that a tourist makes* (rejected H1 and H3).

Finally, luxury destination brand management is an important area in which not enough research has been done to date, thus

this paper helps to fill the gap. However, due to an increasing number of tourists and intensive global competition, as well as the 'new normal' caused by the COVID-19 pandemic, it is necessary to continue doing research in this area.

This research has a couple of limitations that can be seen as opportunities for future research. Given that this is one of the few papers that deals with an investigation of the factors that influence building and managing a luxury destination brand, this study should be replicated and additional factors should be included, such as *sense of a security* in the sense of physical security as well as health considered security in the destination which could play a crucial role in the future. Additionally, it would be interesting to see whether a destination's country of origin and its level of development play a role in the perceived luxuriousness of destination brand, and also to investigate whether there is a difference between respondents' perceptions if they are from developed or developing countries, in terms of their cultural background, purchasing power, etc. Finally, it would be beneficial to research how destination brand luxuriousness influences consumers' loyalty with *self-perception* as a moderate variable. Doing so could provide very useful insights for academics, and even more so for practitioners when defining products/services and marketing communication.

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Dejavniki, ki vplivajo na dojemanje luksuznosti destinacijske znamke

Izvleček

Glavni namen tega članka je identificirati in raziskati dejavnike, ki vplivajo na izgradnjo in upravljanje luksuznih destinacijskih znamk. Na podlagi pregleda literature smo identificirali osem ključnih dejavnikov: kakovost namestitve, kakovost gastronomske ponudbe, višji cenovni razred, kakovost storitev, luksuzno nakupovanje, edinstvena izkušnja, prometna infrastruktura in prepoznavnost. Raziskava je bila izvedena na vzorcu 619 anketirancev iz 16 držav. V raziskavi smo uporabili faktorsko in regresijsko analizo. Rezultati so pokazali, da imata prepoznavnost in dostop do luksuznega nakupovanja najpomembnejši vpliv na izgradnjo luksuzne destinacijske znamke, medtem ko je vpliv kakovosti namestitve in višjega cenovnega razreda nepomemben, prometna infrastruktura pa ima, zanimivo, negativen ter pomemben vpliv. Priročen vzorec in možnost izpuščanja nekaterih dejavnikov (npr. varnosti) iz raziskave predstavljata glavne omejitve raziskave. Naša raziskava prispeva k literaturi o trženju in upravljanju blagovnih znamk, saj identificira in raziskuje dejavnike, ki pomagajo pri izgradnji in upravljanju luksuzne destinacijske znamke, čemur se do sedaj v literaturi ni posvečalo pozornosti.

Ključne besede: upravljanje blagovnih znamk, luksuz, destinacija, dejavniki izgradnje, znamčenje luksuza

ORIGINAL SCIENTIFIC PAPER

RECEIVED: SEPTEMBER 2021

REVISED: OCTOBER 2021

ACCEPTED: NOVEMBER 2021

DOI: 10.2478/ngoe-2021-0023

UDK: 58.3:338.48-053.81(497.4)

JEL: F23, F62, J11, N35

Citation: Nemec Rudež, H. (2021). A Demand-Side Analysis of Intellectual Capital in the Accommodation Industry: The Case of the Youth Market in Slovenia. *Naše gospodarstvo/Our Economy, 67*(4), 86-95. DOI: 10.2478/ngoe-2021-0023.

A Demand-Side Analysis of Intellectual Capital in the Accommodation Industry: The Case of the Youth Market in Slovenia

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Abstract

To date, research on intellectual capital (IC) in tourism has dealt with the supply-side view. This study continues the research into IC and develops a new perspective dealing with the demand side of IC in the accommodation industry, focusing on young consumers. On the theoretical ground, the study adapts the supply-side IC indicators to the demand-side perspective. A convenience sampling approach is used, and data was collected from 150 students representing the youth market. Exploratory factor analysis (EFA) is used to identify the dimensions of human, customer and structural capital of the accommodation industry for the youth market. Five dimensions of IC perceived by the youth market are identified: 'Employee attitudes towards work' and 'Employee qualification' constitute human capital; 'Connectedness with guests' and 'Accommodation reputation and image' represent customer capital, and 'Structural knowledge' reflects structural capital for youth in the accommodation industry.

Keywords: intellectual capital, accommodation industry, demand-side, youth market, Slovenia

Introduction

Corporate knowledge invested in people, products, information systems, customer relationships and reputation enhances the value of the customer experience and creates a competitive advantage in the marketplace. Thus, it forms a company's intellectual capital (IC). IC has attracted much attention in recent decades, including in the tourism industry. There are many definitions of it (Marr and Moustaghfir, 2005); however, Pedro et al. (2018, p.2,518) give the general definition of IC as 'a combination of intangible resources represented by all types of knowledge, information, intellectual property, among others, deriving from human and technological resources, which are sources for the generation of value added for a country, a region, an organisation or even for an individual, forming a renewable source of competitive advantage.' To date, IC has been studied from the supply side, including the view of managers and/or employees, which provides a partial view of IC.

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Vol. 67 No. 4 2021

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This study examines the demand-side view of IC. In this way, it attempts to enrich the state of research in the tourism industry in two ways. First, by examining IC from the customer side, and second, by contributing to the body of research on the youth market. Young people are gradually replacing older generations of tourists, thus representing the tourists of the future (Cavagnaro et al., 2018). Nevertheless, this market is still under-researched.

Over the last two decades, a wealth of literature has emerged examining different areas of IC in the tourism industry from the supply side, initially focusing on the hotel industry (Engstrom et al., 2003; Enz, 2006; Nemec Rudež and Mihalič, 2007; Saldamli, 2008; Pulic et al., 2009; Laing et al., 2010; Kim et al., 2011; Kim et al., 2012; Zeglat and Zigan, 2014), and only later on tourism businesses in general (Gomezelj Omerzel and Smolčić Jurdana, 2016), tourism bureaus (Sharabati et al., 2013) and tourism agencies (Aboushouk and Tamamm, 2021), with IC research of the accommodation industry being left behind. Moreover, research on the consumer perspective, for which IC has essentially been developed and represents the competitive advantage and added value, has consistently been neglected.

The aim of this paper is to identify the elements of IC from the demand-view by focusing on consumer perceptions in the accommodation industry as an alternative view of IC. The demand-side view of the content of IC and how it is perceived by consumers has not yet been explored. Accordingly, the paper contributes to the literature in two ways. The first contribution is to identify the elements of IC in tourism from a consumer perspective. The second contribution is to provide a foundation for marketing strategies and the development of competitive advantages based on IC the youth market.

Since consumers in the accommodation industry are very heterogeneous, which makes it difficult to study demand-side perspectives in the accommodation industry in general, this study is limited to a more homogeneous group represented by the youth market, thus providing more valid results. The need to focus IC on specific consumer segments has already been identified by Roos et al. (2001). In other words, the knowledge behind IC and its development must be targeted to specific segments. Moreover, today's youth tourists are very specific travellers who are growing up in the midst of a rapidly changing world and are very different from other travellers (Cavagnaro et al., 2018; Robinson and Schaenzel, 2019). Therefore, a study that includes the general population may yield superficial results that are unlikely to represent specific segments.

This paper is organised as follows. First, an overview of the previous literature on IC is given followed by a description of the methodology and data used. The third section contains an explanation of the empirical results, while the fourth covers a discussion of the findings and a description of the main conclusions. The research provides a new view of IC that can also be applied to other industries.

Literature Review

IC improves business performance (Bontis, 1998; Bontis et al., 2000; Engstroem et al., 2004; Enz, 2006; Nemec Rudež and Mihalič, 2007; Khalique et al., 2020; Costa et al., 2020), creates market value of a business (Sveiby, 1997; Roos et al., 1998; Brooking, 1998; Steward, 1999; Laing et al., 2010; Kianto et al., 2014), supports innovativeness and growth of tourism companies (Gomezelj Omerzel and Smolčić Jurdana, 2016), and increases a firm's competitiveness in the marketplace (Klein, 1997; Sullivan, 2000; Edvinssson, 2002; Marr and 2004, Khalique et al., 2013). Marr et al. (2004, p.566) state that 'a long-term competitive advantage can only be gained from the management of the knowledge assets underlying organisational capabilities.' Knowledge that is integrated into the tourism product creates value for consumers. Thus, a market-oriented company needs a good understanding of what exactly creates value for consumers in the IC context. IC and its content have been analysed from the managers' perspective reflecting the supply side.

Marr et al. (2004) reviewed components and measures of IC. Later, Aiseneberg Ferenhof et al. (2015) reviewed 83 peer-reviewed articles on IC published between 2004 and 2014 covering various industries. Only two of them (Nemec Rudež and Mihalič, 2007; Laing et al., 2010) cover the field of hospitality and tourism, which shows the lack of IC classification in tourism research. Studies (Roos et al., 1998; Stewart, 1999; Sveiby 2001) mostly use three dimensions of IC – human, customer and structural (organisational) capital.

Human capital is fundamental in creating new value for customers. It includes employees' knowledge, their competencies and attitudes towards work, innovativeness and intellectual agility of employees (Roos et al., 1998; Stewart, 1999; Bontis, 1998; Sveiby, 1997). It is a key driver of innovation and should be continuously developed to gain or maintain a competitive advantage.

Although developed by human capital, structural capital represents the knowledge embodied in a firm and the firm can thus easily control it. Bontis et al. (2000, p.88) defined it as the part of intellectual capital that 'includes all the non-human storehouses of knowledge in organisations which include the databases, organisational charts, process manuals, strategies, routines and anything whose value to

the company is higher than its material value.' According to Stewart (1999), structural capital is meant to serve two purposes. One is to preserve procedures that might otherwise be lost, while the other is to connect people with information and expertise on a 'just-in-time' basis. Today, it has become clear that structural capital in the tourism industry is focused on IT and various new information channels, supported by the internet.

Customer capital is developed in the interaction between supplier and customer. Neither human capital nor structural capital has any value unless customer capital creates the supplier-customer relationship. Following Bontis et al. (2000), customer capital is the embedding of knowledge in the supplier-customer relationship. Knowledge invested in creating customer satisfaction and customer commitment to the supplier, supplier image and reputation form customer capital (Nemec Rudež and Mihalič, 2007; Khalique et al., 2018). Some studies, such as Nemec Rudež and Mihalič (2007) and Zeglat and Zigan (2014) refer to relationship capital, which is broader than customer capital and also include knowledge built into relationships with other groups (such as business partners, the local community and government).

The components of human, structural and customer capital differ slightly among different authors. According to Marr and Moustaghfir (2005), going through the previous studies of IC, it can be categorised into seven dimensions: employee skills and expertise, organisational culture, relationships with stakeholders, organisational image and reputation, technological infrastructure, intellectual property and rights, and practices and routines.

IC has proven to be the key element for success in hotels and represents the basis of service quality in the hotel sector (Sardo et al., 2018). Knowledge is dynamic and flows between IC dimensions. Using data collected from hotel employees in 13 hotels in Norway, Engstroem et al. (2003) identified a strong relationship between human capital and structural capital and found that 'hotels with both high human and structural capital will yield a greater profit' (Ibid, p.301). Kim et al. (2011) confirmed three dimensions of IC in the Korean hospitality industry following sub-dimensions previously also identified by Engstroem (2003) and Nemec Rudež and Mihalič (2007). Using the IC dimensions and sub-dimensions of Kim et al. (2011), Kim et al. (2012) reported direct impacts between the IC dimensions and direct impacts of structural (organisational) capital and customer capital on firm performance in hotels in Korea. Sharabati et al. (2013) investigated IC in Jordanian tourism organisations. Zeglat and Zigan (2014) found that relationship capital, human capital and structural capital have a positive and significant influence on firm performance in upscale Jordanian hotels. As shown in these studies, to date the relevance of IC has been studied from the supply-side perspective, usually from the perspective of managers or employees.

Other areas of IC need to be addressed that cover different parts of knowledge and contribute to a competitive advantage of accommodation today. Caring for and communicating with people with special needs (Rodrigues Bailoa, 2015) as well as providing a safe environment for customers (Brooking, 1998, p.16; Guthrie et al., 2006) and sustainability (Dal Mas, 2019) need to be considered when examining the demand side of IC in the accommodation industry. In light of the COVID-19 pandemic, the knowledge built up in adapting safety measures is recognised as a valuable asset for customers.

Identifying how to create value for customers requires demand-side IC research. To date, demand side perceptions of IC in the tourism industry (and elsewhere) have not been studied. Indeed, a consumer-driven business requires a good understanding of consumer needs and wants (Kotler and Armstrong, 2008) and co-creation where consumers are involved in creating product value (Prahalad and Ramaswamy, 2004). In view of this, a consumer-focused company needs to really understand the consumers' perspective of IC and manage it appropriately to meet consumers' needs and wants and create value for them. The study of consumers' views of IC requires a focus on homogeneous groups; otherwise, the results are too general to be used for targeted IC development.

The following hypothesis is proposed: Human capital, structural capital and customer capital of the accommodation industry are composed of different elements from the perspective of the young customer.

Since customers are the ones who value an accommodation product, the IC and its elements should be understood from the consumers' point of view. This research offers a new perspective on IC, which can be applied to other industries.

Methodology and Data

In developing the questionnaire, the same approach to assessing IC was used as in the supply-side studies. More specifically, human, customer and structural capital variables used in previous studies examining the human, customer and structural capital (Bontis, 1998; Nemec Rudež and Mihalič, 2007; Kim et al., 2011; Zeglat and Zigan, 2014; Rastrollo-Horrilloa and Rivero Diaz, 2019), including the new IC challenges of orientation to people with special

needs (Rodrigues Bailoa, 2015), safety briefings (Brooking, 1998, p.16; Guthrie et al., 2006) and sustainability (Dal Mas, 2019) are transformed and adapted from the supply-side variables to the demand-side view of consumers. Thus, the questionnaire consists of two parts. The first part explores the importance of IC including 11 human capital items, 12 customer capital items and 12 structural capital items in the accommodation industry. Respondents were asked to rate their answers on a five-point Likert scale (from 1 - not at all important, to 5 - very important). The second part deals with the socio-demographic characteristics of the respondents. All the questions were coded.

A convenience sampling was used for data collection. It is a non-probability sample which is useful in an exploratory study. The study focuses on university students as representatives of the youth population, specifically tourism students at the University of Primorska in Slovenia. There are two reasons for choosing this population. Firstly, tourists as a whole are too diverse in terms of their characteristics, needs, desires and lifestyles to be treated as one group. Furthermore, according to Han et al. (2017), a sample consisting of college students provides a relatively homogeneous sample profile and helps to achieve high internal validity of the data. Secondly, at the time this research was conducted in spring 2021 travel was largely restricted, thus making access to tourists difficult.

The data were collected from tourism students during May 2021. Using the web survey software 1KA (2021), 280 students were invited to complete the online questionnaire anonymously. After completing the questionnaire, the survey data were downloaded from 1KA (2021) into SPSS (version 26) and analysed. Following Khalique et al. (2015) and Dal Mas (2019), exploratory factor analysis (EFA) with varimax rotation was used to identify the underlying factors. The human capital, customer capital and structural capital factors for the accommodation industry were identified separately. The Cronbach's alpha coefficient was used to test internal consistency of items within each factor.

A total of 150 usable questionnaires were completed and used for analysis; this equates to a response rate of 54%. The profile of the respondents is shown in Table 1. The respondents were predominantly women (79 %), while 19% of respondents were male and 9% did not provide any information on gender. In terms of the age distribution of respondents, 38% were aged 19-20, 37% were aged 21-22, 9% were aged 23-24, and 6% were 25 years or older. Of the respondents, 10% did not provide details of their age. Most respondents were undergraduates (87%), while only 4% were graduate students and 9% did not provide information on their education status. The travel intensity of the respondents shows that 2% of respondents do not travel, while 10% of the respondents travel, but not every year. Fifty-one percent of the respondents travel on average once or twice a year, while 28% of the respondents travel on average three times a year or more. A further 9% of the respondents gave a different answer or did not answer the question.

Table 1. Descriptive statistics of the respondents' profiles

	Frequency	Percentage
Gender		
Male	108	79%
Female	29	19%
Non-specified	13	9%
Age		
19-20	57	38%
21-22	56	37%
23-24	14	9%
25+	8	6%
Not specified	15	10%
Level of study		
Undergraduate study	130	87%
Graduate study	6	4%
Not specified	14	9%
Travel intensity		
Never travel	3	2%
Not every year	15	10%
Travel once to twice a year on average	77	51%
Travel 3 times a year on average or more	41	28%
Other or not specified	14	9%

Source: own research.

Research Results

To identify the underlying common factors, EFA was used with varimax rotation separately for each of the three IC components: on 11 items relating to human capital, on 12 items relating to customer capital, and on 12 items relating to structural capital. Thus, the sample is large enough to conduct EFA since 150 respondents meet the requirement stated by Nunnally (1978) that the ratio of respondents to items should be at least 10:1. The eigenvalue criterion and the scree plot are used to determine the number of common factors. All item communalities are adequate following Taherdoost et al. (2014) and the factor loadings are

above 0.6. Thus, all the items and factors are retained for further analysis. Factor loadings, eigenvalues, percentage of variance explained and Cronbach's alpha are illustrated for the selected factors (Tables 2-4).

The EFA revealed a two-factor structure for human capital. The communalities of all items are above 0.5, except the communality for the item 'The staff speaks a (foreign) language that I understand', which has a communality of 0.432, which is sufficient according to Taherdoost et al. (2014). The Cronbach's alpha values for the two factors were 0.893 and 0.676 (Table 2). Following Wim et al. (2008 in Hajjar, 2018), the Cronbach's alpha above 0.6 is acceptable. The two factors explained 60.082% of the total variance across the 11 variables included. The first identified factor is interpreted as 'Employees' attitudes towards work' and consists of 8 items (eigenvalue = 4.434; variance explanation = 40.308%). This factor gives a very high grand mean value of 4.3, suggesting that people are a very important pillar of accommodation in the youth market. The second factor of human capital is titled 'Employee qualification' and includes three variables related to employee qualification (eigenvalue = 2.175; explained variance = 19.774%). The grand mean score of 3.5 for these items indicate that young people do not rate employee qualification as very important. The mean values of the variables range from 2.9 to 4.1.

The communalities for the items of customer capital are all above 0.5 with the exception of the communality for the item 'The accommodation is suitable for the disabled', whose value of 0.488 is still sufficient following Taherdoost et al. (2014). In terms of customer capital, two factors with eigenvalues greater than 1.00 emerged, explaining 69.1% of the total variance (Table 3). The first factor is named 'Connectedness with guests' (eigenvalue = 4.701; explained variance = 39.178%) with a Cronbach's alpha of 0.911; this reflects the different aspects of interaction and connection between accommodation and guests and includes eight items. For young guests, it is important to build up a bond with the accommodation and its staff, as is also shown by the grand mean value of the items included in the factor (3.9). The second factor is called 'Reputation and image of the accommodation' and consists of four items related to the awareness and reputation of the accommodation (eigenvalue = 3.586; explained variance = 29.887) with a Cronbach's alpha of 0.676. The grand mean value of this factor is very low (2.5), which shows that knowledge invested in the image and reputation of accommodation is not important for today's youth market.

All communalities of structural capital items are above 0.5. The EFA conducted on 12 items of structural capital yielded one factor solution, suggesting that all items fit a single theoretical construct. All communalities are above 0.5. A single factor with quite high loadings summarises all the diverse aspects of structural knowledge embodied in a company. The factor is titled 'Structural knowledge" (eigenvalue = 9.105; explained variance = 75.875%). The Cronbach's alpha is 0.970. This factor results in a high grand mean value of 4.1, which shows the importance of this type of knowledge in the youth market. Since the lowest item means of structural capital are related to the latest market trends (mean = 3.3), innovativeness (mean = 3.4), sustainability (mean = 3.8) and guest satisfaction information for further improvement (mean = 3.3), it can be seen that the focus of structural knowledge is mainly on service performance and information access.

Discussion and Conclusion

This study provides insights into the customer view of IC and its structure. The empirical findings show the consumer-based view of IC and confirm the existence of five IC dimensions that serve further research in academia and help accommodation and other tourism providers to better understand and develop IC and improve various aspects of the creation of IC.

The first finding is that consumers perceive IC through five dimensions; 'Employees' attitudes towards work' and 'Employee qualification' comprise human capital, 'Connectedness with guests' and 'Reputation and image of the accommodation' represent customer capital, and 'Structural knowledge' reflects structural capital. Comparing the components of IC with the study by Marr and Moustaghfi (2005), some parallels emerge with customer capital. They also divided customer capital into the dimensions of customer relationship and image and reputation. Human capital, on the other hand, seems to be divided into employees' competence and attitudes towards work from the perspective of young people, a division similar to Roos et al. (1998), which remains an important pillar of intellectual capital in tourism, as also highlighted by Abdullah and Othman (2019). Moreover, employee attitudes towards work show a stronger importance for the selected target group, as is illustrated by the higher mean scores of the respondents. Structural capital is considered more integral. Young people now in their early twenties, no longer distinguish between IT and other parts of embedded knowledge, as was the case in studies formulated two decades ago from the supply-side perspective.

The second finding concerns human capital as perceived by customers. Employees' attitudes towards work represent an important dimension for young people, who place less emphasis on employee qualifications. This does not diminish the importance of staff qualifications and experience and in

line with Khalique et al. (2020) who state that human capital is 'non-substitutable', staff qualifications are essential in developing staff attitudes towards guests. The third finding is that the youth market is not concerned with the reputation and image of the accommodation, but rather the intensity of the various aspects of the bond between the accommodation provider and the guest is important. Accommodation providers targeting the youth market should invest in knowledge that fosters the relationship between accommodation and guests. The fourth finding shows that today's youths do not distinguish between the internet and IT aspects of structural capital and other, more traditional aspects of structural capital (such as culture, coordinated work, following the latest trends, etc.). The reason for this is that they have grown up heavily networked with IT and social media, and therefore regard them as an integral part of structural capital. The proposed hypothesis is thus partially confirmed. Human capital and customer capital each consist of two different elements, while structural capital is perceived as one-dimensional in the youth market, contrary to expectations.

Table 2. Factor analysis results of human capital

Factors and items	Factor loading	Eigenvalue	Variance (%)	Alpha	Mean
Factor 1: Employees' attitudes towards work		4.434	40.308	0.893	4.3
The staff try to solve my problems when they arise.	0.791				4.6
The staff do their job conscientiously.	0.773				4.4
I feel comfortable with the staff in the accommodation.	0.728				4.4
The staff communicate well with guests.	0.794				4.5
The staff do their work on time.	0.795				4.3
The staff work together creatively to solve problems.	0.696				4.0
The staff speaks a (foreign) language that I understand.	0.642				4.1
I can see that the staff enjoy their work.	0.651				4.0
Factor 2: Employee qualification		2.175	19.774	0.676	3.5
The staff know my needs and requirements well.	0.742				3.5
The staff are sufficiently qualified to do their job.	0.772				4.1
The staff are experienced.	0.740				2.9

KMO = 0.881, Bartlett's test of sphericity = 743.85 at d.f. = 55 with a significance of p = 0.000
Source: own research.

Compared with previous studies on the classification of IC (Bontis, 1998; Nemec Rudež and Mihalič, 2007; Kim et al., 2011; Zeglat and Zigan, 2014; Rastrollo-Horrilloa and Rivero Diaz, 2019), there are similarities between the supply-side view and the demand-side view of IC. However, the results show that the demand-side view of IC should be investigated in addition to the supply-side management view. IC perceptions of targeted consumer segments would enhance the understanding of IC in the accommodation industry and give an integrated view of IC.

Theoretical and practical implications are drawn from the study. From a theoretical point of view, the study highlights that IC should be analysed from both the supply and demand sides. It can expose the gap between the two views and perceptions of what constitutes a competitive advantage and helps to close the gap. From a managerial point of view, the findings are useful for tourism managers in increasing competitive advantage based on IC. There are some IC components that are rated as very important, while others are perceived as more average in importance. Therefore, development efforts for the youth market should be guided by the factors that have been highlighted as more important: 'Employees' attitudes towards work', 'Connectedness with guests' and 'Structural knowledge'. Communication, relationships and digital marketing seem to be the most important aspects in which to invest and develop in order to address the youth market in the accommodation industry. In light of the present findings, young people are less concerned with staff qualifications and the reputation and image of the accommodation, as they are not the core IC for the youth market. In other words, knowledge invested in different aspects of human relations and broader IT use is a crucial component in creating and developing a competitive

Table 3. Factor analysis results of customer capital

Factors and items	Factor loading	Eigenvalue	Variance (%)	Alpha	Mean
Factor 1: Connectedness with guests		4.701	39.178	0.911	3.9
Taking care of guests is the focus of the staff.	0.793				4.1
Information about the accommodation is available online.	0.875				4.4
The accommodation responds quickly to online questions from guests.	0.881				4.3
The accommodation is active on social networks.	0.748				3.7
Positive things are written on social networks.	0.784				4.1
The accommodation is suitable for the disabled.	0.601				3.7
Discounts are offered to regular guests.	0.696				3.5
Customers are thanked for positive feedback on social networks.	0.572				3.7
Factor 2: Reputation and image of the accommodation		3.586	29.887	0.676	2.5
The accommodation is part of a well-known chain.	0.895				2.3
The accommodation is widely known.	0.864				2.4
The accommodation has a good reputation.	0.829				2.7
The accommodation is large.	0.817				2.4

KMO =0.896, Bartlett's test of sphericity = 1260.21 at d.f. = 66 with a significance of p = 0.000
Source: own research.

Table 4. Factor analysis results of structural capital

Factors and items	Factor loading	Eigenvalue	Variance (%)	Alpha	Mean
Factor 1: Structural knowledge		9.105	75.875	0.970	4.1
The service is in line with the latest market trends.	0.777				3.3
Booking is easy.	0.898				4.4
Check-in and check-out are easy.	0.929				4.5
There is a pleasant atmosphere in the accommodation.	0.917				4.5
Operation of the accommodation is sustainable.	0.808				3.8
Reasonable guest requirements are solved quickly.	0.929				4.3
There is a quick response to complaints.	0.941				4.3
Guest satisfaction information is collected for further improvement.	0.743				3.3
The accommodation offers innovative products.	0.772				3.4
Safety measures are taken.	0.894				4.5
The work of the staff is coordinated.	0.893				4.2
Relevant information is given to guests in time.	0.917				4.5

KMO =0.942, Bartlett's test of sphericity = 2355.15 at d.f. = 66 with a significance of p = 0.000
Source: own research.

advantage when addressing the youth market. Knowledge management and IC that deepen relationships with guests require attention in academia and among accommodation providers. The findings cannot be generalised to the entire population because this exploratory study focused on young people. Since a more homogeneous group of people can provide relevant insights for a specific segment suitable for targeted marketing, the study is limited to the perception of IC in the youth market. Despite the study's limitation to the youth market, it reveals IC perceptions for the youth market and provides a good basis for extended research to other segments. Indeed, IC should address specific segments, their desires and lifestyles within the target marketing. Research replications with other segments would give an understanding of the importance of IC.

Research can be extended to include other sectors of the tourism industry to identify customers' perceptions for the purposes of targeted product design and IC. Although this study provides a relevant understanding of IC from the customer's perspective, there is still a gap in the understanding of IC by other stakeholders (e.g. investors, regulators), as previously discussed by Krambia-Kapardis and Thomas (2006).

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Intelektualni kapital v nastanitveni dejavnosti s strani povpraševanja: primer trga mlajših potrošnikov

Izvleček

Raziskave o intelektualnem kapitalu (IK) v turizmu so se do sedaj ukvarjale s pogledom s strani ponudbe. Članek nadaljuje z raziskovanjem IK s strani povpraševanja v nastanitveni dejavnosti, s poudarkom na mladih potrošnikih. Pričujoča raziskava na osnovi teoretičnih izhodišč ponudbene strani IK prilagaja kazalnike IK strani povpraševanja. Uporabljen je pristop priložnostnega vzorčenja. Podatki za raziskavo so bili zbrani s strani 150 študentov, ki predstavljajo trg mlajših potrošnikov. Eksploratorna faktorska analiza (EFA) je uporabljena za identificiranje dimenzij človeškega, odjemalskega in strukturnega kapitala v nastanitveni dejavnosti. Identificiranih je pet dimenzij IK, ki so zaznani s strani mlajših potrošnikov: "Odnos zaposlenih do dela" in "Kvalifikacija zaposlenih" predstavljata človeški kapital; "Povezanost z gosti" in "Ugled in imidž nastanitve" predstavljata odjemalski kapital, "Strukturirano znanje" pa odraža strukturni kapital za mlajše potrošnike v nastanitveni dejavnosti.

Ključne besede: intelektualni kapital, nastanitvena dejavnost, stran povpraševanja, trg mlajših potrošnikov, Slovenija

ORIGINAL SCIENTIFIC PAPER

RECEIVED: JULY 2021

REVISED: OCTOBER 2021

ACCEPTED: NOVEMBER 2021

DOI: 10.2478/ngoe-2021-0024

UDK: 336.76:330.143(65)

JEL: C13, C52, M41

Citation: Kimouche, B. (2021). The Effect of Stock Market Listing on Real Earnings Management: Evidence From Algerian Companies. *Naše gospodarstvo/ Our Economy*, 67(4), 96-107. DOI: 10.2478/ngoe-2021-0024.

NG
OE

**NAŠE GOSPODARSTVO
OUR ECONOMY**

Vol. 67 No. 4 2021

pp. 96 – 107

The Effect of Stock Market Listing on Real Earnings Management: Evidence From Algerian Companies

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Abstract

This paper aims to explore the effect of the Algiers Stock Exchange listing on real earnings management. The study included 14 non-financial non-listed companies during the period 2015-2019 and six non-financial listed companies during the period 2010-2019. Due to the small number of companies listed on the Algiers Stock Exchange, the period of study was extended in the case of listed companies to provide enough observations. The measurement of real earnings management is based on the model of abnormal cash flows from operations (Roychowdhury, 2006), while the hypothesis testing is based on a model of multiple linear regression. The results indicate that the company size and the nature of financial statement (consolidation) do not have any effect on real earnings management in Algerian companies. The results are not consistent with the author's hypothesis about the positive effect of stock market listing on real earnings management. The empirical evidence suggests that the Algiers Stock Exchange listing has had a negative effect on real earnings management in Algerian companies. This might be due to the scrutiny of auditors and regulators as the number of companies is easy to control, which decreases the opportunity for Algerian companies to rely on real earnings management in accordance with the opportunistic or informational view.

Keywords: real earnings management, stock market listing, company size, consolidation, Algerian companies

Introduction

The main objective of accounting practice is to provide useful information for the users of financial statements to make decisions and allocate resources (IASB, 2018). To this end, conceptual framework and accounting policies and rules are developed carefully by standard-setting bodies to guide managers towards improving the quality of accounting. However, that objective may not correspond with the objectives of managers and their interests as suggested by the agency theory (Jensen & Meckling, 1976). As a result, managers can engage in some practices to affect the financial statements in accordance with their specific objectives or to reassure users about their interests or provide signals to users about private information.

Real earnings management is a widely used practice to manipulate financial statements, especially since implementation of the Sarbanes Oxley-Act in 2002 (Graham et al., 2005), and the reinforcement of internal control systems and transparency by institutional bodies and companies. Real earnings management is usually used whether for opportunistic or informational objectives to change the form and content of financial statements, thus affecting users' perceptions of the company and their decisions.

Previous studies have looked into numerous aspects of real earnings management, including the determinant factors, suggesting that earnings management is determined by many factors, such as the financial and economic characteristics of companies. Stock market listing is a characteristic that can be useful to classify companies in terms of real earnings management or explain the differences between companies in this regard. Investigation of stock market listing as a potential determinant of real earnings management can be justified by the many differences between listed and non-listed companies in terms of governance, financing resources, capital structure, ownership, consolidation of financial statements, institutional control and supervision, disclosure and transparency requirements, size, and users of financial statements.

Since the 1990s Algeria has been undergoing a long transition period to shift from socialism to capitalism and integrate into the international economy. This shift has been accompanied by deep economic and institutional reforms to keep up with the new economic reality. These reforms imposed an accounting reform to satisfy the needs of users who require different attributes of accounting quality within the new environment. As is the case in other countries, managers of Algerian companies have a wide range of incentives to manipulate earnings based on operational decisions, especially under the Financial Accounting System, which was adopted in 2010.

Algeria has a young stock market that currently only includes six companies, because the majority of companies in Algeria are family and SMEs. The Algiers Stock Exchange is less active and less efficient compared to developed countries; however, it provides a complete database of market information and financial reports of companies. To date, no studies have been done to explore the effect of Algiers Stock Exchange listing on accounting practices in Algerian companies. Therefore, this study relates to the effect of stock market listing on real earnings management in Algerian companies through asking the following question:

Has the Algiers Stock Exchange listing had an impact on real earnings management in Algerian companies?

The purpose of this study is to explore whether the managers of Algerian companies employ real earnings management to manipulate financial statements and the extent to which real earnings management is employed. This study also aims to examine whether the Algiers Stock Exchange listing had an influence on the extent of real earnings management.

The results indicate that the stock market listing has had a negative effect on real earnings management in Algerian companies, which reflects the reality of the Algerian institutional and economic environment, where the preparation of financial statements is primarily intended to meet the legal requirements rather than serving investors. The results also reflect the predominance of the scrutiny of auditors and regulators as the number of companies is easy to control, which decreases the opportunity for Algerian companies to rely on real earnings management in accordance with an opportunistic or informational view.

This paper contributes to the empirical research on real earnings management in several ways. On the one hand, it interested in the stock market listing as a determinant of real earnings management, to which not enough attention has been paid in previous studies, and also provides supplementary empirical evidence about real earnings management determinants. The study was conducted in Algeria, which is a developing country, providing additional evidence about earnings management practices in different environments.

The remainder of this paper is structured as follows. Section 2 is a literature review, Section 3 clarifies the method and materials used, Section 4 summarises the results and discussion, and Section 5 contains the conclusion.

Literature Review and Hypotheses

Previous studies

Studies about earnings management determinants is a common research stream in accounting (Fakhfakh & Nasfi, 2012; Charfeddine, Riahi & Omri, 2013; Sousa Paiva & Costa Lourenço, 2016; Priharta & Rahayu, 2019; Abdullahi et al., 2020; Saleh, Abu Afifa & Haniah, 2020; Tran & Duong, 2020; Ghaleb, Kamardin & Tabash, 2020), which allows fluctuations in earnings management levels to be understood as well as managers' behaviour in terms of earnings management. In this regard, many variables have been used as determinants, such as indebtedness, company size, performance, ownership structure, dividend policy, leverage, performance, audit quality, etc. Even though the literature uses many determinants from the financial market (prices, returns, volume, etc), few studies were found that investigate stock market listing as a determinant of earnings management. As a result,

through this literature the author tried to include studies that touch on any dimensions of this study.

Burgstahler, Hail & Leuz (2006) examined whether capital market pressures and institutional factors motivate companies to report earnings that reflect economic performance, using the level of earnings management as a dimension of accounting quality. The study included 378,122 firm-year observations from private and public, non-financial companies, across 13 countries of the European Union, during the period 1997-2003. The results revealed that private companies present higher levels of earnings management, and the strong legal systems are associated with lesser earnings management in private and public companies. They also suggested that private and public companies respond differently to institutional factors (book-tax alignment, outside investor protection, capital market structure).

Lopes, Tukamoto & Galdi (2007) investigated the impact of cross-listing and adjustments towards the US GAAP on earnings management practices in Brazilian companies. Employing 1,026 firm-year observations during the period 1996-2003, and using five proxies of earnings management, they found evidence that neither cross-listing nor adjustments towards the US GAAP have impacted earnings management in Brazilian companies.

Eng & Lin (2012) examined the quality of financial reporting of Chinese companies cross-listed in the United States and Hong Kong comparing the non-cross-listed Chinese companies, based on earnings management, timely loss recognition, and price-earnings association as measures of financial reporting quality. They indicated that both cross-listed and non-cross-listed companies showed significant earnings smoothing and earnings management, while they did not record any evidence about timely loss recognition practices. They concluded that the market considers the earnings and book value data of cross-listed companies to be more informative than those of non-cross-listed companies in the event of good news.

Cornanic & Novak (2015) studied earnings management as a means of avoiding delisting from a stock market, using a sample of 47,599 firm-year observations for 2,532 companies during the period 1998-2011. The results showed that companies in danger of being delisted from a stock market (NASDAQ) report higher performance-adjusted discretionary accruals, and the inflated accruals are associated with an increased likelihood of maintained listing.

Mellado-Cid, Jory & Ngo (2017) analysed real earnings management by companies prior to their debt issuances and how they affect the bond yield spreads. The sample size employed consists of 5,608 firm-quarter observations, which is equivalent to 1,578 companies, during the period 1980-2012. According to the results, bond-issuing companies increased their real earnings management practices in the five quarters leading up to bond issuance. Additionally, an inverse association between the yield spread and pre-issue real activities manipulation was observed.

Nuanpradit (2018) tried to explore the relationship between information asymmetry and sales activities-based real earnings management, and the effect of CEO-Chairman duality on that relationship in Thailand. The study included 3,582 firm-year observations from the Stock Exchange of Thailand during the period 2001-2015. The findings revealed that information asymmetry increases real earnings management and that CEO-Chairman duality leads to real earnings management in companies without information asymmetry problems.

Dang, Hoang & Tran (2018) investigated the factors that impact accrual-based earnings management (AEM) and real earnings management (REM) in Vietnam. The study included 260 companies listed on the Vietnam Stock Exchange during 2012-2016. The results showed that consolidation of financial statements, financial performance, financial leverage, and stock issuance have positive impacts on AEM, while audit has a negative impact on AEM. In contrast, financial performance and financial leverage have a positive impact on REM.

Haga, Höglund & Sundvik (2018) analysed real earnings management among privately-owned versus publicly listed companies in the UK, using 90,594 private firm-year observations and 3,688 public firm-year observations for the years 2006 to 2014. The findings suggested that public companies engage in more earnings management through operating activities. According to the explanations, capital market pressure and ownership characteristics drive the results.

Alawag (2021) explored the real earnings management behavior in the context of a parent-subsidiary relationship, by comparing between business groups and companies without any controlled subsidiaries. The study used the random-effects generalised least squares (GLS) estimation, including 8,501 parent and nonparent companies from 73 countries, during the period 215-2019. The results showed that ultimate parent companies have lower abnormal production costs and abnormal discretionary expenses than nonparent companies. In contrast, parent companies have higher abnormal operating cash flow than non-parent companies.

In Algeria, and within the limits of this literature review, there is no study directly in relation to the subject of the present study, other than a few studies that looked into some of the determinants of accounting and real earnings management. Kimouche & Cherroun (2020) were interested in the effect of financial leverage on accounting earnings management in

Algerian companies. They employed the financial statements of 14 Algerian companies during the period 2006-2018, using a multiple linear regression model and panel data to test the hypotheses. According to the results, financial leverage does not have any effect on accounting earnings management in Algerian companies. However, the debt cost has a significant and positive impact on accounting earnings management.

Kimouche & Charchafa (2020) examined whether financial performance and activity level have an effect on real earnings management in Algerian companies. The study included 82 firm-year observations for 17 Algerian companies during 2015-2019, using a multiple linear regression model that relates real earnings management, measured as the abnormal operating cash flows, with the financial performance and activity level. The results suggested that the effect of financial performance on real earnings management is not significant. However, they suggested a negative and significant effect of the activity level on real earnings management in Algerian companies.

Kimouche & Cherroun (2020) analysed the impact of debts and their cost on real earnings management in Algerian companies. The study used the model of Roychowdhury (2006) to measure real earnings management, and a multiple linear regression model to test the hypotheses, and included 119 firm-year observations for 17 Algerian companies during the period 2012-2018. According to the results, debts and the cost of debts do not have any impact on real earnings management in Algerian companies, which contradicts most studies, due to the specificities of the economic and institutional Algerian environment.

Kimouche & Charchafa (2021) explored the effect of accounting accruals on real earnings management in Algerian companies, starting from the view that there is a negative relationship between accounting earnings management and real earnings management. The study included 100 observations relating to 20 companies from 2015 to 2019. The test of the hypothesis was based on a model under the form of linear regression that relates real earnings management proxy to accounting accruals. The results confirmed the assumption, suggesting a negative and statistically significant effect of accounting accruals on real earnings management in Algerian companies.

It is foreseen that this study will be useful both for literature and in practice. On the one hand, it relates to the stock market listing as a determinant of real earnings management, which has not received enough attention in studies to date. The stock market listing is a prominent variable that can substantially affect the governance system in companies and their relationships with the external environment and also their obligations in terms of disclosure and transparency. On the other hand, this study was carried out in Algeria, which is a developing country, providing additional evidence about earnings management practices in different environments.

Real earnings management concepts

Earnings management is an accounting practice that is widely used by managers, whether intentionally or not, in order to affect the form and content of financial statements, which can affect their quality, thus changing the views of users towards the company and their assessments for its future perspectives. Schipper (1989) defined earnings management as a "purposeful intervention in the external financial reporting process with the intent of obtaining some private gain".

Watts & Zimmerman (1990) used an opportunistic view to describe earnings management as the use by managers of different methods and interpretations in financial accounting to achieve certain objectives, instead of having a faithful presentation of the company's financial position. According to Abad et al. (2018), earnings management can be achieved through managerial discretion in the application of accounting standards or by changing the timing or structuring of real transactions.

Healy & Wahlen (1999) also focused on the opportunistic view considering that earnings management occurs when managers use judgment in financial reporting and in structuring transactions to alter financial reports to either mislead some stakeholders about the underlying economic performance of the company or to influence contractual outcomes that depend on reported accounting numbers.

Since the mid-1980s, studies have traced an explosive growth in accounting earnings management practices by managers (Beneish, 2001). These practices are accrual-based, so they are easy to execute since accruals are the main product of GAAP and the result of accounting decisions related to the accounting policies and estimations. Accounting earnings management includes some techniques that are conducted in accordance with the accounting rules and principles, through the selection of appropriate accounting policies, and the use of estimations and judgments in the application of those accounting policies, in order to control the level of earnings, which affects the performance of the company and its financial position in terms of form and content (Kimouche & Cherroun, 2020).

Following the implementation of the Sarbanes Oxley-Act in 2002, which was introduced to increase transparency and support internal control, Cohen, Dey & Lys (2008) stated that the use of accounting earnings management significantly declined. Consequently, real earnings management has

become an alternative, as it is difficult for auditors and regulators to discover because it can be identified as a legal response to the economic conditions (Cohen, Dey & Lys, 2008; Cohen & Zarowin, 2010; Kothari, Mizik & Roychowdhury, 2012; Abad et al., 2018). The increasing trend towards real earnings management is confirmed by Graham, Harvey, and Rajgopal (2005), who provide evidence that the financial officers of US public firms recognise that most earnings management actions are carried out via real actions.

Roychowdhury (2006) described real earnings management as departures from the normal operational practices of a company, which are motivated by the desire of managers to mislead all or some stakeholders that the financial reporting objectives have been met. According to Cooper, Downes & Rao (2017), real earnings management refers to the action of managers to change a company's real activities by their operating, investment, and financing decisions to affect the financial position of a company and its financial performance.

Real earnings management is distinct from accounting earnings management because accrual-based earnings management involves discretionary accounting choices allowed within accounting regulation with no direct cash flow effects. On the contrary, real earnings management comprises real business activities that have a direct influence on cash flows from operations. The impact of real earnings management on performance derives from cash flows, not from accruals as is the case for accounting earnings management (Janin, 2000).

Real earnings management can be achieved through many managerial decisions related to the operation, such as sales manipulation (price discounts, flexible credit terms for customers), overproduction to report a lower cost of sales, and discretionary expenditure (general and administrative, selling, and advertising expenditures). Managerial decisions for real earnings management also contain the investment decisions such as the sales of fixed assets and a reduction in research and development expenditure, as well as financing decisions such as stock options, stock repurchases, hedges, debt-equity swaps, and securitisation.

Existing literature has usually used two perspectives to explain earnings management motivations, the 'Opportunistic view' and the 'Informational view'. The first assumes that managers employ earnings management to achieve self-benefits through misleading users or disclosing information consistent with their expectations about the performance and financial position of the company. The second assumes that earnings management is a means to reduce information asymmetry by providing relevant information for users and provide a signal for the financial market about the company's future perspectives, in order to improve its valuation.

Based on the 'Positive Accounting Theory' of Watts & Zimmerman (1978) and the works about the 'Value Relevance' of accounting information (Lev, 1989; Amir, Harris & Venuti, 1993; Francis & Schipper, 1999; Barth, Beaver & Landsman, 2001), earnings management motivations can be classified into three groups:

- Contractual motivations: where contracts between a company and stakeholders depend on financial statements, thus managers seek to provide accounting information consistent with contractual clauses to increase their incentives, improve their reputation or comply with debt covenants.

- Financial market motivations: where managers tend to affect stock prices, especially in the lead-up to IPOs and stock offerings, and disclose earnings consistent with analysts' forecasts or management estimates, to prevent any significant volatility in stock prices in the short term.

- Institutional motivations: that result from the expected relationship between accounting information and governmental decisions leading managers to manipulate earnings to reduce income tax payments or avoid any potential legislation (antitrust, environment protection, consumer and employee rights, etc.), thus reducing political costs.

Hypotheses development

The explanations for the effect of stock market listing on real earnings management can be found in the financial market motivations of earnings management that correspond with the informational view. In this regard, earnings management can be useful, as it can potentially improve the informativeness of earnings by conveying private information on the future prospects of the company, which is beneficial to investors (Dechow & Skinner, 2000; Jiraporn et al., 2008; Siregar & Utama, 2008; Scott, 2011). Earnings management is also a means for managers to signal their expectations about the company's future performance and its cash flows.

Compared to non-listed companies, listed companies have more motivations to employ earnings management. The main explanation for this is to reduce the conflict of interest between shareholders, creditors, and managers (Mitchell, Agle & Wood, 1997). According to Ambrose & Bian (2010), the information contained in stock price volatility leads managers to avoid regulatory costs through earnings management. The adjustment of earnings figures through earnings management is also expected to reassure users of financial statements on the continuity and profitability of business operations, thus increasing the company's stock liquidity (Hieu et al., 2019).

Earnings management may allow managers to maintain a good reputation with stakeholders, as it can affect positively stock prices and company value (Change & Warfield, 2005; Chen et al., 2006; Charfeddine, Riahi & Omri, 2013; Chen, Cheng & Wang, 2015). For these reasons, it can be expected that managers of listed companies have more tendencies to manage earnings; hence this study starts from the following hypothesis:

Hypothesis: The Algiers Stock Exchange listing has had a positive effect on real earnings management in Algerian companies.

Method and Materials

Data collection

This study covered 14 non-financial non-listed companies during the period 2015-2019 and six non-financial listed companies during the period 2010-2019. Due to the small number of companies listed on the Algiers Stock Exchange, the period of study in the case of listed companies was extended to provide enough observations for the model estimation. The only criterion used in the selection of the studied companies was the availability and accessibility of their financial statements, due to the secrecy and caution that characterise corporate governance in Algerian companies. The financial statements were collected through direct contact with the chief financial officers of companies.

Model for hypotheses testing

The model used in this study takes the form of a linear regression that relates real earnings management (REM_{it}) with the stock market listing (COT_{it}), the nature of financial statements (NFS_{it}), and company size ($SIZE_{it}$) as shown in Equation (1). NFS_{it} and $SIZE_{it}$ were added as control variables, because the consolidation procedures can affect the accounting practices of a company, whether in the separate or consolidated financial statements, while accounting practices differ according to company size.

$$REM_{it} = \alpha_0 + \alpha_1 COT_{it} + \alpha_2 NFS_{it} + \alpha_3 SIZE_{it} + \xi_{it} \quad (1)$$

Where REM_{it} is the extent of real earnings management; COT_{it} is the listing on the Algiers Stock Exchange; it takes 1 if the company is listed on the Algiers Stock Exchange in the fiscal year, otherwise 0. NFS_{it} is the nature of financial statements; it takes 1 if the company presents consolidated financial statements for the fiscal year, otherwise 0. $SIZE_{it}$ is the company size at the end of the period calculated as the logarithm of total assets divided by ten. α_0, α_1, α_2 are the regressions coefficients; ξ_{it} is the error term.

Measurement of real earnings management

The measure of real earnings management is based on the abnormal cash flows from operations (Roychowdhury, 2006) as shown in Equation (2).

$$\frac{CFO_{it}}{A_{it-1}} = \beta_0 + \beta_1 \frac{1}{A_{it-1}} + \beta_2 \frac{S_{it}}{A_{it-1}} NFS_{it} + \beta_3 \frac{\Delta S_{it}}{A_{it-1}} NFS_{it} + \delta_{it} \quad (2)$$

Where CFO_{it} is the net cash flows from operations for the period; A_{it-1} is the total assets at the end of the period; S_{it} is the sales for the period; β_0, β_1, β_2, and β_3 are parameters; δ_{it} is the error term, which represents the abnormal cash flows and is used as a proxy for real earnings management (cash-based earnings management).

Results and Discussion

Descriptive statistics

Table 1 presents the descriptive statistics for 124 firm-year observations of different variables. The table shows that the data includes 52 firm-year observations for listed companies versus 72 for non-listed companies, and 48 firm-year observations for companies with consolidated financial statements versus 76 for companies with separate financial statements. For SIZE, a comparison between the mean and the median suggests that the data are normally distributed, unlike REM where the mean is more than the median, indicating that real earnings management practices measured by abnormal cash flows represent an average of 7.83% of the total assets. According to the standard deviations, even though SIZE is more dispersed than REM, the dispersion of data is acceptable.

Correlation analysis

The results of correlation between different variables are summarised in Table 2, which indicates a negative medium and statistically significant relationship at 1% level between the Algiers Stock Exchange listing and real earnings management, which means that Algerian listed companies practice less real earnings management than non-listed companies. In

contrast, the relationships of the nature of financial statements and company size with real earnings management are not statistically significant. The relationships between different independent variables are not statistically significant, except that between the nature of financial statements and the Algiers Stock Exchange listing, which is positive medium and statistically significant at a level of 1%.

Table 1. Descriptive statistics for the variables

	REM	COT		NFS		SIZE
		1	0	1	0	
Observations	124	52	72	48	76	124
Mean	0.0783	-	-	-	-	0.7556
Median	0.0594	-	-	-	-	0.7441
Std. Deviation	0.0642					0.0964
Minimum	0.0015	0		0		0.6126
Maximum	0.2761	1		1		0.9959

Source: Depending on SPSS.

Table 2. Correlation results

		REM	COT	NFS	SIZE
REM	Pearson Correlation	1	-0.376*	-0.013	-0.071
	Sig. (2-tailed)		0.002	0.884	0.431
COT	Pearson Correlation		1	0.353*	-0.019
	Sig. (2-tailed)			0.000	0.830
NFS	Pearson Correlation			1	0.012
	Sig. (2-tailed)				0.896
Observations		124	124	124	124

*. The correlation is significant at 0.01 (2-tailed).
Source: Depending on SPSS.

Univariate analysis

The univariate analysis was based on a test, in terms of real earnings management, of the differences between the listed and non-listed companies on the one hand, and the companies with consolidated financial statements and companies with separate financial statements on the other hand. The Mann-Whitney test was employed, which is used to make comparisons between independent groups when data distribution is not normal. The results shown in Table 3 indicate that the mean of real earnings management for listed companies (0.057) is less than those for non-listed companies (0.093) and that the difference is statistically significant at a level of 1% according to the Mann-Whitney test (Sig. = 0.000). The results also indicate that the mean of real earnings management for companies with consolidated financial statements (0.077) is less than those for companies with separate financial statements (0.079) and that the difference is not statistically significant according to the Mann-Whitney test (Sig. = 0.954).

Table 3. Mann-Whitney test results

	REM(COT)[a]	REM(NFS)[b]
Mean(0)	0.093	0.079
Mean(1)	0.057	0.077
U de Mann-Whitney	1154	1870
W de Wilcoxon	2429	3301
Z	-3.545	-0.058
Sig. asymptotic (2-tailed)	0.000	0.954

a. Grouping variable: COT. b. Grouping variable: NFS.
Source: Depending on SPSS.

Regression model estimation results

Table 4 summarises the results of the Model (1) estimation, which shows that the model of study is statistically significant at a level of 1% (Sig. = 0.010), as the calculated F statistic (3.965) is more than the F critical value in the table. As a result, the Adjusted R-squared is medium and reached 0.339, thus the independent variables in Model (1) explain 33.90% of the changes in real earnings management, and consequently, the remainder of the changes in real earnings management (66.10%) can be explained by errors and other variables.

In terms of the regression coefficients, it appears that the coefficient related to the company size (SIZE) is not statistically significant (Sig. = 0.369), suggesting that company size does not affect real earnings management, or in other word, there is no difference between big and small companies in terms of real earnings management. The coefficient related to the nature of financial statements (NFS) is also not statistically significant (Sig. = 0.097), therefore, the consolidation process does not have any effect on real earnings management, thus, in terms of real earnings management, there are no differences between companies with consolidated financial statements and those with separate financial statements.

The results indicate that the coefficient related to the Algiers Stock Exchange listing is statistically significant at a level of 1%, where the calculated T statistic (3.347) is more than the T critical value from the table. The coefficient reached 0.041 with a negative sign, suggesting that the Algiers Stock

Exchange listing has had a negative effect on real earnings management. Thereby, Algerian listed companies practice less real earnings management than non-listed companies, which contradicts the hypothesis of the study.

Table 4. Factor analysis results of structural capital

	Model[a]	Coefficient value	T	Sig.	VIF	Adjusted R squared	F	Sig.	Durbin-Watson
1	(Constant)	0.129	2.889	0.005	-	0.339	3.965	0.010	1.889
	COT	-0.041	-3.347	0.001	1.143				
	NFS	0.020	1.679	0.097	1.143				
	SIZE	-0.052	-0.902	0.369	1.001				

a. Dependent variable: REM.
Source: Depending on SPSS.

Finally, the author tested the validity of Model (1) through the Ordinary Least Squares (OLS) assumptions. As illustrated in Table 4, the Variance Inflation Factors (VIF) are very low for all variables, which is consistent with the results of correlation about the absence of any significant and strong correlation between the independent variables, thus the criterion of multicollinearity is met. Table 4 also shows that the calculated Durbin-Watson value reached 1.889 and is situated between 2 and the upper critical value (dU = 1.774). This means that the criterion of no autocorrelation (no linear dependence) between residuals is met. Table 5 shows the results of the normality test for the residuals, indicating that the Kolmogorov-Smirnov test and Shapiro-Wilk test are not statistically significant, neither at a level of 1% nor at 5%. Therefore, the residuals of Model (1) are normally distributed.

Table 5. Normality test results for the residuals

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Standardised Residual	0.103	124	0.200	0.773	124	0.063

a. Lilliefors Significance Correction.
Source: Depending on SPSS.

Table 6. Homoscedasticity test results for the residuals

Breusch-Pagan and Koenker test statistics and sig-values		
	LM	Sig.
BP	8.024	0.056
Koenker	6.311	0.097
Null hypothesis: heteroscedasticity not present (homoskedasticity) if sig-value less than 0.05, reject the null hypothesis.		

Source: Depending on SPSS.

In terms of Table 6, which shows the results of the homoscedasticity test for the residuals, it appears that the Breusch-Pagan test and Koenker test are not statistically significant, neither at a level of 1% nor at 5%. Therefore, the residuals of Model (1) are homoscedastic. According to these results, the OLS assumptions are met; hence the validity of Model (1) is confirmed.

According to the results of this study, company size does not have any effect on real earnings management, which is not the case for most of the previous studies that suggest differences between companies in terms of real earnings management according to their size. This can be due to the structure of the Algerian economy, where the majority of companies are SMEs or family firms, and therefore their managers are subject to the same motivations of real earnings management.

In terms of the nature of financial statements, it is supposed that accounting for consolidation provides managers with more flexibility to manipulate earnings. However, this is not the case in Algerian companies, where the results of study revealed no effect of consolidation on real earnings management. This can be explained by the objectives of consolidated financial statements that tend to serve investors, while in Algeria the preparation of financial statements – whether consolidated or separated – is primarily aimed at meeting the legal requirements.

Finally, this study indicates that stock market listing has a negative effect on real earnings management, This finding differs from the results of Lopes, Tukamoto, and Galdi (2007) and Eng and Lin (2012), who found that cross-listing did not have an effect on earnings management, and Cornanic and Novak (2015), Mellado-Cid, Jory, and Ngo (2017), Dang, Hoang, and Tran (2018), and Nuanpradit (2018), who found that stock market listing had a positive effect on real earnings management. The positive effect is due to the opportunistic motivation to maintain the listing or to achieve the expectations of managers or analysts, or to the informational motivation to reduce information asymmetry, providing relevant information for users, and signal the stock market about the future perspectives of a company.

In Algeria, the explanations are different, where the negative effect of listing on real earnings management might be due to the scrutiny of auditors and regulators as the number of companies is easily controllable. Additionally, the listed companies are large and have clearly defined rules of governance including the board of directors, internal audit and audit committee, which limit the practices of real earnings management. Moreover, the users of financial statements of listed companies are conscious of, and have the ability to analyse information or consult financial analysts, and they can also obtain information from other sources.

Conclusion

The determinant(s) of earnings management is a common research field in accounting for the purpose of explaining fluctuations of earnings management and understanding managers' behaviour in terms of earnings management. In this regard, this paper relates to stock market listing as a determinant of real earnings management due to the importance of stock market listing in the explanation of the behaviour of managers and their choices and explains the disparity between companies in terms of numerous characteristics. Stock market listing is a prominent attribute because listed companies are exposed to different conditions than non-listed companies, such as institutional control, supervision by market committees, reporting and transparency requirements, control of analysts and investors.

Due to the importance of stock market listing, this paper explored the effect of the Algiers Stock Exchange listing on real earnings management. The study included 14 non-financial non-listed companies during the period 2015-2019 and six non-financial listed companies during the period 2010-2019. Due to the small number of companies listed on the Algiers Stock Exchange, the period of study in the case of listed companies was extended to provide enough observations for the model estimation. The study was based on the model of abnormal cash flows from operations (Roychowdhury 2006) to measure real earnings management, and used the nature of financial statements (consolidated or separate) and the company size as control variables. The data analysis employed descriptive statistics, correlation, the Mann-Whitney nonparametric test, and multiple linear regressions.

The results indicate that company size and the nature of financial statements (consolidation) do not have an effect on real earnings management in Algerian companies, which contradicts the results of most previous studies. This can be explained by the particularities of the Algerian economy, which is mostly composed of SMEs and family firms. These results can also be assigned to the accounting culture in Algeria, where the preparation of financial statements – whether consolidated or separated – is primarily intended to meet the legal requirements rather than serving investors.

The results are not consistent with the hypothesis of this study on the positive effect of the Algiers Stock Exchange listing on real earnings management. The empirical evidence of this study suggests that stock market listing has a negative effect on real earnings management in Algerian companies. This is due to the scrutiny of auditors and regulators as the number of companies is easy to control, which decreases the opportunity for Algerian companies to rely on real earnings management in accordance with the opportunistic or informational view.

Despite the importance of this study, it is limited in terms of its methodology due to the small sample size and the use of only one indicator of real earnings management (abnormal cash flows), where existing literature has distinguished between many practices of real earnings management including production costs and discretionary expenses that cannot be reflected by abnormal cash flows. Consequently, future studies must extend the sample size and use other indicators of real earnings management and other explanatory or control variables such as industry, ownership structure, governance, and debt. Auditors of Algerian companies must pay more attention to real earnings management practices through the valuation of the internal control system, especially for non-listed companies, in order to enhance the quality of financial statements. Algerian regulators must put in place mechanisms of control for non-listed companies to reduce earnings management practices.

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Učinek kotacije na borzi na upravljanje realnih dohodkov: dokazi iz alžirskih podjetij

Izvleček

Namen tega članka je raziskati učinek kotacije na borzi v Alžiru na upravljanje realnih dohodkov. V študijo je bilo vključenih 14 nefinančnih podjetij, ki niso kotirala na borzi v obdobju med letoma 2015 in 2019, in 6 nefinančnih podjetij, ki so kotirala na borzi v obdobju med letoma 2010 in 2019. Zaradi majhnega števila podjetij, ki kotirajo na borzi v Alžiru, smo za podjetja, ki so kotirala na borzi, podaljšali obdobje študije, da smo lahko prišli do zadostnega števila spoznanj. Merjenje upravljanja realnih dohodkov temelji na modelu nenormalnih denarnih tokov iz poslovanja (Roychowdhury, 2006), medtem ko preverjanje hipoteze temelji na modelu večkratne linearne regresije. Rezultati kažejo, da velikost podjetja in narava računovodskega izkaza (konsolidacija) ne vplivata na upravljanje realnih dohodkov v alžirskih podjetjih. Rezultati niso skladni z našo hipotezo o pozitivnem učinku kotacije na borzi na upravljanje realnih dohodkov. Empirični dokazi kažejo, da kotacija na borzi v Alžiru negativno vpliva na upravljanje realnih dohodkov v alžirskih podjetjih. To je lahko posledica nadzora s strani revizorjev in regulatorjev, saj je število podjetij enostavno nadzorovati, kar zmanjšuje možnost za alžirska podjetja, da se zanesejo na upravljanje realnih dohodkov v skladu z oportunističnim ali informacijskim pogledom.

Ključne besede: upravljanje realnih dohodkov, kotacija na borzi, velikost podjetja, konsolidacija, alžirska podjetja

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