



REVIEW OF INNOVATION AND COMPETITIVENESS

A JOURNAL
OF ECONOMIC
AND SOCIAL
RESEARCH

5

VOLUME

ISSUE 1

2019

Editors

Marinko Škare, Juraj Dobrila University of Pula
Danijela Križman Pavlović, Juraj Dobrila University of Pula

Board of Editors

Jurica Pavičić, University of Zagreb | Nikša Alfrević, University of Split | Tihomir Vranešević, University of Zagreb | Soumitra Sharma, Juraj Dobrila University of Pula | Branka Krivokapić Skoko, Charles Sturt University | Peide Liu, Shandong University | Jerzy Paslawski, Poznan University | Irene Lill, Tallinn University of Technology | Edyta Plebankiewicz, Cracow University of Technology | Edmundas Kazimieras Zavadskas, Vilnius Gediminas Technical University | Romualdas Ginevičius, Vilnius Gediminas Technical University | Maria-Gabriella Baldarelli, University of Bologna | Nawazish Mirza, S P Jain School of Global management | Vesna Buterin, University of Rijeka | Justyna Franc-Dabrowska, Warsaw University of Life Sciences | Moshe Hagigi, Boston University

Managing Editor

Katarina Kostelić, Juraj Dobrila University of Pula

Lector

Filomena Škare

Editorial address

Juraj Dobrila University of Pula
Faculty of economics and tourism "Dr. Mijo Mirković"
Zagrebačka 30, 52100 Pula (Croatia)
+385 (0)52 377-047, fax: +385 (0)52 377-013
e-mail: fet-ric@unipu.hr

The print issue is published annually, with continuous publishing of individual articles online.
Annual subscription: 200 HRK.
Journal is published with the help of Ministry of science and education.

Design

Koncept, Pula

Print

Juraj Dobrila University of Pula

Copies

50

JOURNAL DOI: 10.32728/ric
ISSUE DOI: 10.32728/ric.2019.51

ISSN (Print): 1849-8795

ISSN (Online): 1849-9015

CONTENTS

IMPACT OF COMMERCIAL BANK CREDIT ON AGRICULTURAL OUTPUT IN NIGERIA

Aduralere O. Oyelade 5

THE GRAVITY MODEL OF TRADE: A THEORETICAL PERSPECTIVE

Saleh Shahriar, Lu Qian, Sokvibol Kea,
Nazir Muhammad Abdullahi 21

ABILITY TO APPLY FLEXICURITY IN THE CROATIAN LABOR MARKET

Marija Bušelić 43

EXPLORING THE EFFECTS OF HOTEL DEVELOPMENT, ECONOMIC GROWTH AND EXCHANGE RATE ON TOURISM INDUSTRY: EVIDENCE FOR IRAN

Bahman Khanalizadeh, Neda Ranjandish 81

IMPACT OF COMMERCIAL BANK CREDIT ON AGRICULTURAL OUTPUT IN NIGERIA

Aduralere O. Oyelade

Aduralere O. Oyelade

Department of Economics, University of Ibadan, Ibadan, Oyo State, Nigeria
adontopdominating@gmail.com

Article info

Paper category: Original Scientific Paper

Received: 7.6.2018.

Accepted: 16.3.2019.

JEL classification: E02, E23, G21, Q10, Q14

DOI: 10.32728/ric.2019.51/1

Keywords

Agricultural Output; Commercial Bank Loan on Agriculture; FMOLS

ABSTRACT

Purpose. *The purpose of this study was to investigate the impact of commercial bank credits on agricultural output in Nigeria over the period 1980 to 2015 by setting three specific objectives which are to examine the trend of commercial bank credit and agricultural output in Nigeria; to investigate the effect of commercial bank credit on agricultural output in Nigeria and to investigate the effect of commercial bank credit on subsector of agriculture in Nigeria. The trend analysis and the impact of commercial bank credit on subsector of agriculture in Nigeria make this work unique and different from other studies in this area. Trend analysis was used to achieve the first objective and fully modified ordinary least square (OLS) for objective two and three.*

Methodology. *The study employed Fully Modified Ordinary Least Squares (FMOLS) approach.*

Findings. *It was evidenced that interest rate on commercial banks' credit to agriculture and deposit money bank's assets are statistically significant in determine agricultural output in Nigeria within the period considered. Also, commercial bank loan on agriculture and deposit money bank's assets determine the output of crop production in Nigeria; commercial bank loan on agriculture and interest rate on commercial banks' credit to agriculture determine the output of livestock production in Nigeria and commercial bank loan on agriculture and interest rate on commercial banks' credit to agriculture determine the output of forestry in Nigeria while commercial bank loan on agriculture and interest rate on commercial banks' credit to agriculture determine the output of fishing in Nigeria.*

Limitations. *This study is limited because the study does not include other variables that determine the output of agricultural sector in Nigeria. Also, other theories and methods can still be used by other researcher to make it different from this work.*

Originality. *This is an original work and has neither been published in any other peer-reviewed journal nor is under consideration for publication by any other journal.*

1. INTRODUCTION

The role of agriculture in human development cannot be overemphasized. This includes provision of the basic food requirements of human populations; it is the predominant occupation of the working population, especially in agrarian nations; an important way of life, culture and custom of the people (Olagunju and Ajiboye, 2010). Agriculture is the economic mainstay of the majority of households in Nigeria and is a significant sector in Nigeria's economy (Ayeomoni and Aladejana, 2016). The important benefits of the agricultural sector to Nigeria's economy include: the provision of food, contribution to the gross domestic product (GDP), provision of employment, the provision of raw materials for agro-allied industries, and generation of foreign earnings labour (until the early 1970s; agricultural exports were the main source of foreign exchange earnings) (Ogbonna and Osondu, 2015). Commercial banks have traditionally played an important role in financing agriculture. Commercial banks are interested in giving out loans and advances to their numerous customers bearing in mind the three principles guiding their operations which are profitability, liquidity and solvency. However, commercial banks decision to lend out loans are influenced by a lot of factors such as the prevailing interest rate, volume of deposits, the level of their domestic and foreign investment, banks liquidity ratio, prestige and public recognition to mention a few (Olokoyo, 2011).

One of the reasons for the fall in agricultural sector to GDP is lack of access to commercial banks credit to enable them to take advantage of economic opportunities to increase their level of output, hence move out of poverty. Credit constraint has plagued poor farmers and rural dwellers for many years and was thought to be a critical part of a package of inputs needed to boost agricultural production. Majority of farmers lack access to formal credit and this has continued to be a constraint limiting farmers' ability to adopt agricultural technologies and increase productivity. In spite of the importance of credit in agricultural production, its acquisition and repayment are fraught with a number of problems. Institutional problems such as the lending conditions which limit access of investors to credit facilities have not been adequately addressed. A large number of socioeconomic factors all play a role influencing farmers' ability to secure optimum credit. Such factors include risk of loan default, age of the farmers, location, and high interest rate charged by financial providers' (Ajibade, 2011). It is against this backdrop that this study attempts to examine the impact of commercial bank loan on agricultural output in Nigeria. The specific objectives are:

- (i) to examine the trend of commercial bank credit and agricultural output in Nigeria.
- (ii) to investigate the effect of commercial bank credit on agricultural output in Nigeria.

- (iii) to investigate the effect of commercial bank credit on subsector of agriculture in Nigeria.

The general framework of this study is made up of five section. Section one will bring to limelight the introduction of the study and section two involved the literature review. Section three based on methodology and section four focused on empirical analysis while section five based on conclusion and policy recommendations.

2. LITERATURE REVIEW

There are lot of argument in the literature on commercial bank credit and agricultural output. Imoisi *et al.*, (2012) examined credit facilities and agricultural output and productivity in Nigeria from 1970-2010. The results showed that there was a significant relationship between deposit money banks loans and advances and agricultural output. Kolapo, Ayeni and Oke, (2012) carried out an empirical investigation into the quantitative effect of credit risk on the performance of commercial banks in Nigeria over the period of 11 years (2000-2010). The results showed that the effect of credit risk on bank performance measured by the Return on Assets of banks was cross-sectional invariant. That was the effect is similar across banks in Nigeria, though the degree to which individual banks are affected is not captured by the method of analysis employed in the study. A 100 percent increase in non-performing loan reduces profitability (ROA) by about 6.2 percent, a 100 percent increase in loan loss provision also reduces profitability by about 0.65percent while a 100 percent increase in total loan and advances increase profitability by about 9.6 percent.

Ogbonna and Osondu, (2015) analyzed performance of formal credit sources by amount of loan disbursed to agriculture from 1992 to 2012 and determined factors that influenced volume of funds supplied to agricultural sector from formal sources in Nigeria from 1992 to 2012. The 2SLS results showed that the volume of funds supplied to agricultural production from formal sources was affected positively by interest rate and commercial banks' liquidity ratio and negatively by banks' cash reserve ratio (CRR) and index of World agricultural commodity prices. These variables were statistically significant at 1.0% level of probability except the index of World agricultural commodity prices which was significant at 5.0 % alpha level. The diagnostic statistics posted R² and F- ratio values of 0.7904 and 6.46 respectively with Durbin Watson estimates of 2.323311. Ayeomoni and Aladejana (2016) emphasized that the significant role of agricultural sector cannot be underestimated in any nation. The findings showed that short and long run relationship existed between agricultural credit and economic growth in both short and long run respectively. Moreover, real exchange rate and private domestic investment as control variables had direct effect on economic growth whereas inflation rate revealed an inverse relationship in the model.

Filli *et al.* (2015) analyzed factors influencing credits access among small scale fish farmers in Adamawa State, Nigeria. Primary data on access to credits in the study area were collected from 150 respondents who were sampled using purposive and snowball technique from the study area. The result revealed that the coefficients of linear probability model indicate a high R^2 value (0.89) and F-Value was significant at 1% (103.285). Interest rate, farm insurance, payments period, age and subsidy were the positive and significant coefficients, while those of collateral on loan, installment of payment and formalities were negative and significant. The results also indicated that the major problems hindering access to credit were amount acquired, formalities involved and lack of collateral. Ololade and Olagunju, (2013) examined the determinants of credit access by rural farmers in Oyo state Nigeria. Data were collected with the aid of structured questionnaires, administered on 210 respondents using multistage sampling procedure. The data were analyzed with the use of descriptive statistics and logit model. The sigma values of the binomial ($\sigma^2 = 90.32$) logit model that measured the significance of model showed that the data fit the model reasonably well. The binomial logit model revealed that significant relationships existed between sex (-2.0187), marital status (-1.9786), lack of guarantor (2.1517), high interest rate (6.8263) and access to credit. The variables were significant at 10%.

Tawose (2012) investigated the effect of bank loans and advances on industrial performance in Nigeria between 1975 and 2009. The results showed that industrial performance co-integrated with all the identified explanatory variables. Industrial sector as dependent variable was proxied by real GDP, while Commercial Banks' Loan and Advances to Industrial Sector, Aggregate Saving, Interest rate, Inflation Rate, are the independent variables. This suggests that the behavior of real Gross Domestic Product contributed by industrial sector in Nigeria is significantly explained by the commercial banks' loan and advances to industrial sector, aggregate saving, interest rate and inflation rate. Uzomba and Chukwu (2014) investigated the impact and the determinants of Deposit Money Banks' loans and advances granted to agricultural sector in Nigerian sector from 1980 to 2011. The results of the study revealed that the overall model was statistically significant. Based on this, the study concluded that deposit money banks' loans and advances did make positive impact on the agricultural sector of Nigerian within the period of review.

Yakubu and Affoi (2014) analyzed the impact of the commercial banks credit on economic growth in Nigeria from 1992 to 2012. Using the ordinary least square it was found that the commercial bank credit has significant effect on the economic growth in Nigerian. As this was a good achievement, it requires more efforts to maintain and sustain it.

3. METHODOLOGY

The theoretical framework of this work is based on the financial intermediation theory. McKinnon and Shaw (1973) describes financial market as playing the central role in economic development. They attribute differences in economic improvement experienced in different countries to the quality and quantity of services provided by financial institutions. Financial institutions accept deposit from customers and channels the amount mobilized to borrowers in the form of loans and advances. Bank credits represent the amount of loan and advances to individuals and organizations from banking system. Production sector as used is a universal name for organizations in agriculture, manufacturing, mining and quarrying, and real estate and construction.

Based on the above theoretical framework, the model specification is given below.

$$AGDP = f(CBLAGRIC, AGRICEXP, INT, DMBA \& M_2) \quad (1)$$

Where AGDP = Agricultural GDP Output

CBLAGRIC = Commercial Bank Loan on Agriculture

AGRICEXP = Agriculture Expenditure by the Government

INT = Interest Rate on Commercial Banks' Credit to Agriculture

DMBA = Deposit Money Bank's Assets

M₂ = Money Supply

The linear regression is given below in equation (4.2)

$$AGDP = \beta_0 + \beta_1 CBLAGRIC + \beta_2 AGRICEXP + \beta_3 INT + \beta_4 DMBA + \beta_5 M_2 + u_t \quad (2)$$

The linear function of equation (4.2) is giving below

$$LNAGDP = \beta_0 + \beta_1 LNCBLAGRIC + \beta_2 LNAGRICEXP + \beta_3 INT + \beta_4 LNDMBA + \beta_5 LNM_2 + u_t \quad (3)$$

The a priori expectation is that a positive relationship would be established between agricultural output and each of commercial bank loan on agriculture, agricultural expenditure on commercial banks' credit to agriculture and deposit money bank's assets and money supply while a negative relationship will be established between agricultural output and interest rate on commercial banks' credit to agriculture (Uzomba *et al.*, 2014 and Agunuwa *et al.*, 2015).

Table 1.: A priori Expectation

Explanatory variables	Symbols	Hypothesis	Expected sign
Commercial bank loan on agriculture	CBLAGRIC	Commercial Bank Loan on Agriculture is expected to have a positive effect on agricultural GDP output.	+

Explanatory variables	Symbols	Hypothesis	Expected sign
Agriculture expenditure on commercial banks' credit to agriculture	AGRICEXP	Agriculture Expenditure is expected to have a positive effect on agricultural GDP output.	+
Interest rate on commercial banks' credit to agriculture	INT	Interest rate on commercial banks' credit to agriculture is expected to have a negative effect on agricultural GDP output.	-
Deposit money bank's assets and money supply	DMBA	Deposit money bank's assets and money supply is expected to have a positive effect on agricultural GDP output.	+
Money Supply	M ₂	Money Supply is expected to have a positive effect on agricultural output.	+

Source: Author's Computation.

The data used for the research work is basically time series data covering 1980 to 2015 because of the unavailability of data for some of the variables. The data were sourced from Central Bank of Nigeria's (CBN, 2015) Statistical Bulletin and World Bank's World Development Indicators (WDI, 2016). This particular scope was chosen in order to ascertain the impact of commercial bank credit on agricultural output in Nigeria during the period of military and civilian regimes.

4. ESTIMATED TECHNIQUE

The estimation technique include the pre-diagnostic and diagnostic test and the pre-diagnostic include unit root test and co-integration test while diagnostic test include fully modified ordinary least squares method (FMOLS) approach.

4.1. Unit Root Test

To examine the time series properties of the variables in the model the Augmented Dickey Fuller (ADF) test were conducted.

Table 2.: ADF (Augmented Dickey Fuller) Unit Root Test Result

Variable	Level		Status	First Difference	
	t*	ADF Critical Value		t*	ADF Critical value
DLNAGDP	-2.948404	-0.210806	I(1)	-2.951125	-5.527309
DLNCBLAGRIC	-2.948404	0.179424	I(1)	-2.951125	-4.553717
DLNAGRICEXP	-2.951125	-0.769519	I(1)	-2.951125	-10.79063
DINT	-2.948404	-1.132806	I(1)	-2.951125	-7.420087
DLNDMBA	-2.951125	-0.882445	I(1)	-2.951125	-9.533899
DLNG(M ₂)	-2.951125	-0.845638	I(1)	-2.951125	-9.099340

Source: Author's Computation.

The study tests for unit roots on agricultural output, commercial bank loan on agriculture, agricultural expenditure on commercial banks' credit to agriculture, interest rate on commercial banks' credit to agriculture and deposit money bank's assets and money supply. The stationarity of the variables is tested by conducting the Augmented Dickey-Fuller (ADF). The study makes use of unit root in order of guarantee that our inference regarding the important issue of stationarity is unlikely driven by the choice of testing procedures used. The above result implied that all the variables are stationary at first different.

4.2. Co-integration Test

From the unit root test results, it is shown that some of the variables of the model are stable at level while some are stable at first difference. Consequently, it is still important to test for the presence of long-run relation among the variables so as to affirm the result of the unit root test i.e. co-integrating relationship. Co-integration test was carried out to establish the existence of a long-run association between the variables. The test result which was obtained using the Johansen co-integration technique is reported in the Tables 3. and 4.

Table 3.: Unrestricted Co-integration Rank Test (Trace)

Unrestricted Co-integration Rank Test (Trace)				
Hypothesized		Trace	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.616722	78.76995	69.81889	0.0081
At most 1	0.442521	46.16415	47.85613	0.0715
At most 2	0.333844	26.29691	29.79707	0.1200
At most 3	0.283603	12.48504	15.49471	0.1351
At most 4	0.033126	1.145345	3.841466	0.2845

Notes: Trace test indicates 1 co-integrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Source: Author's Computation.

Table 4.: Unrestricted Co-integration Rank Test (Maximum Eigen value)

Unrestricted Co-integration Rank Test (Maximum Eigenvalue)				
Hypothesized		Max-Eigen	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None	0.616722	32.60579	33.87687	0.0703
At most 1	0.442521	19.86724	27.58434	0.3504
At most 2	0.333844	13.81188	21.13162	0.3807
At most 3	0.283603	11.33969	14.26460	0.1380
At most 4	0.033126	1.145345	3.841466	0.2845

Notes: Max-eigenvalue test indicates no co-integration at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

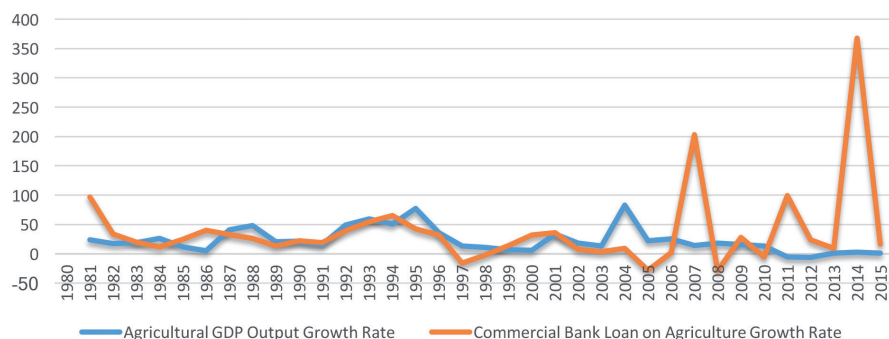
Source: Author's Computation.

The test results indicate that the unrestricted trace rank test suggest one integrating vector in the model and unrestricted co-integration rank test (maximum Eigen-value) suggest the existence of no co-integrating vector in the model. Therefore, the implication of the result is that there is no long-run relationship among the variables.

4.3. Diagnostic Test

4.3.1. Objective one: to examine the trend of commercial bank credit and agricultural output in Nigeria

In order to achieve the first objective, trend analysis of the growth rate of both commercial bank credit and agricultural output in Nigeria from 1980 to 2015 were done and it is presented below.

Figure 1.: Trend of Commercial Bank Credit and Agricultural Output in Nigeria

Source: Author's Computation.

From the Figure 1., the growth rate of commercial bank and that of agricultural output exhibit the same trend up to 2005 showing that as commercial bank loan to agricultural sector increases, this lead to increase in agricultural output in Nigeria. In 2006 and 2007, there was an exponential growth in commercial bank credit and this does not lead increase in agricultural output. In the same vein, the growth rate of commercial bank loan was negative in 2008 and this does not have any effect on agricultural output in the period. By 2009, the growth rate of commercial bank loan move out of negative and the growth rate of agricultural output still remain unchanged. Both the growth of commercial bank loan and agricultural output follows the same trend in 2010 and by 2011, there was an increase in the growth of commercial bank loan while that of the agricultural output was negative. Also there was a fall in the growth rate of commercial bank loan in 2012 and 2013 and agricultural GDP output follow suit and by 2014, there was an exponential growth increase in commercial bank loan to agricultural sector and this affected the growth rate of agricultural output because it increases little. The commercial bank reduces the amount of loan extended to agricultural sector and this affect the growth of agricultural output big time.

From the above, the general observation is that growth rate of commercial bank loan to agricultural sector has not be stable over the period considered in this study as well as that of agricultural output. They both exhibit upward and downward trend over time.

4.3.2. Objective two: to investigate the effect of commercial bank credit on agricultural output in Nigeria

In order to achieve asymptotic efficiency, fully modified ordinary least squares method (FMOLS) will be used to account for serial correlation effects and test for the endogeneity in the regressors that result from the existence of Co-integrating Relationships". The FMOLS method produces reliable estimates for small sample

size and provides a check for robustness of the results and for estimation of a single co-integrating relationship that has a combination of $I(1)$ since the stationarity test confirmed it.

Table 5.: The FMOLS Result of Effect of Commercial Bank Credit on Agricultural Output in Nigeria

Dependent Variable: LNAGDP		
Variable	Coefficient	Prob.
DLNCBLAGRIC	0.235621	0.0000*
DLNAGRICEXP	0.001819	0.9403
DINT	-0.131819	0.0015*
DLNDMBA	0.190430	0.0002*
DLNM2	-0.001968	0.9375
C	20.39837	0.0000*
R-squared 0.989914		
Adjusted R-squared 0.988175		

Note: *, ** and *** denote 1%, 5% and 10% level of significance respectively

Source: Author's Computation.

From Table 5., the R-squared of 0.989914 showed that the explanatory variables i.e. commercial bank loan on agriculture, agricultural expenditure on commercial banks' credit to agriculture, interest rate on commercial banks' credit to agriculture, deposit money bank's assets and money supply can only explained about 98.9% of the variation in agricultural GDP output. The Adjusted R-squared of 0.988175 means that all the explanatory variables can only explained 98.8% of the total variation in agricultural GDP output.

Also from the coefficient, it was observed that commercial bank loan to agricultural sector, interest rate on commercial banks' credit to agriculture and deposit money bank's assets are statistically significant in determine agricultural output in Nigeria within the period considered while commercial banks' credit to agriculture and money supply are statistically insignificant in determine agricultural output in Nigeria. This implies that commercial bank loan to agricultural sector exhibit a positive significant relationship with agricultural output and as a result, a percentage increases in commercial bank loan to agricultural sector will bring about 0.235621% increases in agricultural output and also, interest rate on commercial banks' credit to agriculture exhibit a positive significant relationship with agricultural output meaning that any increase in interest rate on commercial banks' credit to agriculture will bring about 0.131819% decrease in agricultural output in Nigeria. This is an indication that any increase in interest rate on commercial banks' credit to agriculture will discourage farmers from borrowing from commercial bank and this will affect the agricultural output negatively while deposit money bank's assets exhibit a positive relationship with agricultural output in Nigeria, as deposit money bank's assets increases, agricul-

tural output will increase by 0.190430%. Lastly, all the explanatory variables follow the expected sign except for money supply.

4.3.3. Objective three: to investigate the effect of commercial bank credit on subsector of agriculture in Nigeria

In order to make the work unique and different from the past study, fully modified ordinary least square (FMOLS) regression will be carried out on the four subsector of agricultural to know which of the explanatory variables determine their output and it is given below in Table 5.

Table 6.: Fully Modified OLS (FMOLS) on the Effect of Commercial Bank Credit on Subsector of Agriculture in Nigeria

Dependent variable is subsectors of Agricultural output				
	Crop Production	Livestock Production	Forestry	Fishing
Regressor	Coefficient with [Prob]	Coefficient with [Prob]	Coefficient with [Prob]	Coefficient with [Prob]
DLNCBLAGRIC	0.294 [0.000]*	1.512 [0.000]*	2.251 [0.000]*	5.486 [0.000]*
DLNAGRICEXP	0.018 [0.549]	-1.57 [0.393]	-1.826 [0.624]	4.006 [0.712]
DINT	-0.012 [0.634]	-3.961 [0.020]**	-8.279 [0.017]**	-2.072 [0.039]**
DLNDMBA	0.106 [0.052]**	-2.900 [0.412]	-7.153 [0.315]	-1.341 [0.520]
DLNM ₂	0.032 [0.383]	3.396 [0.132]	3.595 [0.428]	1.230 [0.353]
C	3.961 [0.000]*	-1.2503 [0.000]*	-1.430 [0.000]*	-5.541 [0.000]*
R-squared	0.9823	0.939	0.867	0.862
Adj R-squared	0.980	0.930	0.849	0.844

Note: *, ** and *** denote 1%, 5% and 10% level of significance respectively

Source: Author's Computation from E-views 7.

From the above, it could be seen that commercial bank loan on agriculture and deposit money bank's assets exhibit a positive significant relationship with output of crop production in Nigeria while agricultural expenditure on commercial banks' credit to agriculture and money supply exhibit a positive insignificant relationship with output of crop production in Nigeria while interest rate on commercial banks' credit to agriculture exhibit a negative insignificant relationship with output of crop production in Nigeria. Percentage increase in commercial bank loan on agriculture will bring about 0.294% increase in output of crop production and percentage increase in deposit money bank's assets will bring about 0.106% increase in output of

crop production. Also, the R-squared of 0.9823 showed that the explanatory variables can only explained about 98.2% of the variation in output of crop production in Nigeria. The Adjusted R-squared of 0.980 means that all the explanatory variables can only explained 98% of the total variation in output of crop production in Nigeria.

In the same vein, commercial bank loan on agriculture exhibits a positive significant relationship with output of livestock production in Nigeria and interest rate on commercial banks' credit to agriculture exhibit a negative significant relationship with output of livestock production in Nigeria while money supply exhibit a positive insignificant relationship with output of livestock production in Nigeria and both the agricultural expenditure on commercial banks' credit to agriculture and deposit money bank's assets exhibit a negative insignificant relationship with output of livestock production in Nigeria. Percentage increase in commercial bank loan on agriculture will bring about 1.512% increase in output of livestock production and percentage increase in interest rate on commercial banks' credit to agriculture will bring about 3.961% decrease in output of livestock production. Also, the R-squared of 0.939 showed that the explanatory variables can only explained about 93.9% of the variation in output of livestock production in Nigeria. The Adjusted R-squared of 0.930 means that all the explanatory variables can only explained 93% of the total variation in output of livestock production in Nigeria.

Furthermore, commercial bank loan on agriculture exhibit a positive significant relationship with output of forestry in Nigeria and interest rate on commercial banks' credit to agriculture exhibit a negative significant relationship with output of forestry in Nigeria while money supply exhibit a positive insignificant relationship with output of forestry in Nigeria and both the agricultural expenditure on commercial banks' credit to agriculture and deposit money bank's assets exhibit a negative insignificant relationship with output of forestry in Nigeria. Percentage increase in commercial bank loan on agriculture will bring about 2.251% increase in output of forestry and percentage increase in interest rate on commercial banks' credit to agriculture will bring about 8.279% decrease in output of forestry production. Also, the R-squared of 0.867 showed that the explanatory variables can only explained about 86.7% of the variation in output of forestry in Nigeria. The Adjusted R-squared of 0.849 means that all the explanatory variables can only explained 84.9% of the total variation in output of forestry in Nigeria.

Finally, commercial bank loan on agriculture exhibit a positive significant relationship with output of fishing in Nigeria and interest rate on commercial banks' credit to agriculture exhibit a negative significant relationship with output of fishing in Nigeria while agricultural expenditure on commercial banks' credit to agriculture and money supply exhibit a positive insignificant relationship with output of fishing in Nigeria and deposit money bank's assets exhibit a negative insignificant relationship with output of fishing in Nigeria. Percentage increase in commercial bank loan

on agriculture will bring about 5.486% increase in output of fishing and percentage increase in interest rate on commercial banks' credit to agriculture will bring about 2.072% decrease in output of fishing. Also, the R-squared of 0.862 showed that the explanatory variables can only explained about 86.2% of the variation in output of fishing in Nigeria. The Adjusted R-squared of 0.844 means that all the explanatory variables can only explained 84.4% of the total variation in output of fishing in Nigeria.

5. CONCLUSION AND POLICY RECOMMENDATIONS

The study investigated the impacts of commercial bank credit on agricultural output in Nigeria over the period 1980 to 2015 and the study concluded that commercial bank loan to agricultural sector, interest rate on commercial banks' credit to agriculture and deposit money bank's assets are statistically significant in determine agricultural output in Nigeria within the period considered. Also, commercial bank loan on agriculture and deposit money bank's assets determine the output of crop production in Nigeria; commercial bank loan on agriculture and interest rate on commercial banks' credit to agriculture determine the output of livestock production in Nigeria and commercial bank loan on agriculture and interest rate on commercial banks' credit to agriculture determine the output of forestry in Nigeria while commercial bank loan on agriculture and interest rate on commercial banks' credit to agriculture determine the output of fishing in Nigeria.

Therefore, commercial banks in the nation should increase their loan channel to agriculture for a better performance of both the subsector of agriculture and the sector has a whole. Also, government should subsidized agricultural sector which remain one of the sector that propel growth in Nigeria.

REFERENCES

- Ajibade, T. O.. "Determinants of Credit Rationing among Small Scale Farmers in Ogun State Nigeria. A Thesis Submitted to the Department of Agricultural Economics University of Nigeria, Nsukka in Partial Fulfilment of The Requirements for the Award of Master of Science in Agricultural Economics" (2011).
- Anyanwu, U. and Kalu, A. O. U.. "The effect of Central bank of Nigeria (CBN) Money Supply Management on Commercial Bank Loans and Advances (CBNA) and Output". *Singaporean Journal of Business Economics and Management Studies*, Vol 2, (2014): 1-10
- Asekome, M. O. and Agbonkhese, A. O. "Macroeconomic Indicators and Commercial Banks' Risk Assets Creation in Nigeria". *European Scientific Journal*, Vol. 10, (2014): 547-556
- Ayeomoni, O. and Aladejana, S. A. "Agricultural Credit and Economic Growth Nexus. Evidence from Nigeria". *International Journal of Academic Research in Accounting, Finance and Management Sciences*, Vol. 6, No. (2), (2016): 146-158
- Central Bank of Nigeria Annual Report (CBN). "Statistical Bulletin". Vol. 23, December 2015.
- Chodechai, S. "Determinants of Bank Lending in Thailand: An Empirical Examination for the years 1992 - 1996". Unpublished Thesis, (2004).
- Dadson, A. V. "Determinants of Loan Repayment Default among Farmers in Ghana". *Journal of Development and Agricultural Economics*, Vol. 4, No. 13, (2012): 339-345
- De Gregorio, K. "Determinants of Commercial Bank Interest Margins and Profitability: Some International Evidence". *The World Bank Economic Review*, Vol. 13, No. 2, (1996): 37-40
- Edwin, D. "Credit Risk Management and Profitability in Commercial Banks in Sweden". *University of Gothenburg, Graduate School of Business, Economics and Law, Master of Science in Accounting*, (1990).
- Egwu, W. E. and Akubuilu, C. J. C. "Agricultural Policy, Development and Implementation in Akubuilu, C. J. C. (ed) Chapter in Book of Readings in Agricultural Economics and Extension", (2007).
- Fatukasi, B. "Determinants of Inflation in Nigeria: An Empirical Analysis". *International Journal of Humanities and Social Science*, Vol. 1, (2013): 262-271
- Filli, F. B.; Onu, J. I.; Adebayo, E. F. and Tizhe, I. "Factors Influencing Credits Access among Small Scale Fish Farmers in Adamawa State, Nigeria". *Journal of Agricultural Economics, Environment and Social Sciences*, Vol. 1, No. 1, (2015): 46-55
- Imoisi, A. I.; Sogules, I. W. and Itoro, E. B. "An Appraisal of Credit Facilities on Agricultural Output and Productivity in Nigeria: 1970-2010". *British Journal of Humanities and Social Sciences*, Vol. 7, No. 2, (2012): 24-33
- Kolapo, T. F.; Ayeni, R. K. and Oke, M. O. "Credit Risk and Commercial Banks' Performance in Nigeria: A Panel Model Approach". *Australian Journal of Business and Management Research*, Vol. 2, (2012): 31-38
- Lewis, A. "Performance of Manufacturing Industry". *Discussion Paper No. 2202/01*, World Institute for Development Economics Research, (1982).
- McKinnon, R. I.; Shaw, E. S. "Financial deepening and economic development. New York: Oxford University Press", 1973.
- Oboh, V. U. and Kushwaha, S. "Socio-economic Determinants of Farmers' Loan Size in Benue State, Nigeria". *Journal of Applied Sciences Research*, Vol. 5, No. 4, (2009): 354-358

- Ogbonna, S. I. and Osondu, C. K. "Determinants of Supply of Funds to Agricultural Sector from Formal Sources in Nigeria from 1992 to 2012". *Greener Journal of Agricultural Sciences*, Vol. 5, No. 3, (2015): 081-092
- Ogunbayo, E. I.; Omojolaibi, J. A. and Omonona, B. T. "Determinants of output of agricultural commodities in Nigeria". *International Journal of Agricultural Economics & Rural Development*, Vol. 6, No. 1, (2014): 20-28
- Olagunju, F. I. and Ajiboye, A. "Agricultural Leading Decision: A Tobit Regression Analysis". *African Journal of Food Agricultural Nutrition and Development*, Vol. 10, No. 5, (2010): 1-27
- Olokoyo, F. O. "Determinants of Commercial Banks' Lending Behavior in Nigeria". *International Journal of Financial Research*, Vol. 2, (2011): 61-72
- Ololade R. A. and Olagunju F. I. "Determinants of Access to Credit among Rural Farmers in Oyo State, Nigeria". *Global Journal of Science Frontier Research Agriculture and Veterinary Sciences*, Vol. 13, No. 2, (2013): 17-22
- Shumpeter, J. A. "The Theory of Economic Development Cambridge". *Harvard University*, 1934.
- Stiglitz, J. and Weiss. A. "Credit Rationing in Markets with Imperfect Information". *American Economic Review*, Vol. 71, No. 3, (1981): 393-410
- Tawose, J. O. B. "Effects of Bank Credit on Industrial Performance in Nigeria". *International Business and Management*, Vol. 4, (2012): 158-168
- The World Bank. The World Bank Report, 1996. The World Bank, Washington DC. USA, (1996).
- Uzomba, P. C.; Nwobuisi, C. S.; Jumbo, G. A. and Nwankwo, N. U. An Inquiring into the Impact of Deposit Money Banks' Loans/Advances on Agricultural Sector in Nigeria: 1980 - 2011. *International Review of Social Sciences and Humanities*, Vol. 7, (2014): 130-139
- Yakubu, Y. and Affoi, A. Y. "An Analysis of Commercial Banks' Credit on Economic Growth in Nigeria". *Current Research Journal of Economic Theory*, Vol. 6, No. 2, (2014): 11-15

THE GRAVITY MODEL OF TRADE: A THEORETICAL PERSPECTIVE

**Saleh Shahriar, Lu Qian, Sokvibol Kea,
Nazir Muhammad Abdullahi**

(1-4) College of Economics and Management, Northwest A&F University, Shaanxi, P.R. China

Lu Qian

College of Economics and Management, Northwest A&F University, Shaanxi, P.R. China,
luqian@nwfau.edu.cn

Article info

Paper category: Original Research Paper

Received: 8.6.2018.

Accepted: 19.2.2019.

JEL classification: F1, F10

DOI: 10.32728/ric.2019.51/2

Keywords

Gravity Model; International Trade; Economic Theory; Comparative Advantage; Heckscher-Ohlin Model; Linder Hypothesis; Border, Distance; Competitiveness

ABSTRACT

Purpose. *The purpose of this study is to trace the theoretical developments of the gravity model of trade. The key question is: what are the dominant features of the development of the gravity trade model?*

Methodology. *This research is conducted by employing a number of methods that include the historical, descriptive and analytical methods. The main contribution of this paper is to trace the historical and theoretical development phases of the gravity model.*

Findings. *This study is a novel attempt in terms of the identification of the four distinctive phases of the development of the gravity model. This work would, therefore, expand the existing literature on the gravity model. We argue that the development of the gravity model is the outcome of many research efforts. A large body of literature has given the model a solid theoretical foundation. But there is no consensus about the proper econometric estimation methods of the model. The gravity model is significant both historically and analytically. It is a useful tool for the analysis of international trade. It has become a popular research device used by the researchers and policy makers around the world. The gravity is regarded as one of the most successful models in the literature of international economics.*

Originality. *The original contributions of this paper lie in streamlining the consistent historical development of the gravity model over a longer period of time-frame, ranging from 1885 to 2018.*

Limitations and Implications. *This work is theoretical aspects of the trade gravity model. Future researchers could overcome the limitations by combining the theoretical and empirical studies in a paper. This paper can help the future researchers in dealing with the broad body of literature of gravity model.*

Acknowledement. *This study was supported by the National Natural Science Foundation of China (grants No.71673223 & 71473197), and a PhD scholarship from the China Scholarship Council (CSC). The first author would like to thank the CSC for the financial support. He also acknowledges the invaluable research advice and guidance received from Dr. Yoto V. Yotov, professor at the School of Economics of the Lebow College of Business at Drexel University, Philadelphia, USA. The authors are highly grateful to the anonymous reviewers, managing editor, and the editor-in chief for their kind help and critical comments on the earlier drafts of the paper. However, the authors are responsible for the contents and limitations of the study. They declared no conflict of interests.*

1. INTRODUCTION

The gravity equation has long been an institutionalized topic of research in economics. There has been a great deal of studies with regard to the gravity model. The recent works of Anderson and Yotov (2017); Yotov et al. (2016); Helpman (2011); Bernhofen (2013) and Van Bergeijk and Brakman (2010) are the glaring instances of the growing theoretical literature on the gravity model of trade. The model has been widely used in many empirical fields; such as, the international migration (Beine, Bertoli, and Moraga 2016), tourism (Santana-Gallego, Ledesma-Rodríguez, and Pérez-Rodríguez 2016), health care (Teow et al. 2018), agriculture and livestock (Atif, Haiyun, and Mahmood 2017, Luo and Tian 2017), international trade (Batra 2006, Edmonds, La Croix, and Li 2008, Irshad et al. 2018, Erdey and Pöstényi 2017, Huot and Kakinaka 2007, Kahouli 2016, Rahman 2010, Narayan and Nguyen 2016, Gashi, Hisarciklilar, and Pugh 2016, Zhou, Li, and Lei 2019, Shahriar, Qian, and Kea 2019, Martínez-Zarzoso and Johannsen 2017, Kohl 2019), and investment (Pericoli, Pierucci, and Ventura 2014, Liu et al. 2017, Chang 2014). The gravity model has, in this way, become a useful tool of international trade analysis. It is a device to explain international capitals and labor flows. But, the development of the model is not linear due mainly to the lack of theoretical foundations up to 1960s. In a thesis, Starck (2012) addressed the theoretical development of the gravity in respect to the factors that brought gravity modeling into mainstream economics. Starck's 2012 thesis wasn't aimed at identifying the historical developments of the gravity model. The existing review essays, articles and books on the development of the international trade theory would allow one to understand together the development of the gravity model. At present, there is no study that documents the systematic developments of the gravity model in its different historical periods. This study intends to fill the research gap. So, the main purpose of the paper is to trace the theoretical and historical developments of the gravity model of trade. The main contributions of this paper lie in streamlining the consistent historical development of the gravity model over a longer period of time-frame ranging from 1885 to 2018.

The paper is organized as follows. Section 1 is an introduction, followed by section 2 that elucidates the materials and methods as well as draws the hypothesis from the international trade and economic theories. Sections 3 analyzes the historical developmental phases of the gravity model, addresses the key econometric issues and presents the analytical results. Finally, section 4 concludes the paper.

2. MATERIALS AND METHODS

This study is historical, descriptive and analytical in nature. We have largely relied on the secondary materials. For the sake of delimitation of the scope, the paper will focus on the theoretical works of the gravity model for the period, 1885-2018. To

put the analysis into its proper perspectives, some hypotheses are drawn from the international trade theories in the next section.

2.1. Theoretical Background

2.1.1. Theory of Absolute Advantage

Adam Smith articulated the benefits of trade in his theory of absolute advantage. The theory of absolute advantage is an extended version of his doctrine of the division of labor (Smith 1993).

2.1.2. Theory of Comparative Advantage

David Ricardo developed the first comprehensive theory of comparative advantage in his classic book entitled *On the Principles of Political Economy, and Taxation* (1817). He developed the now familiar model with two countries, two goods and single input, labor. According to him, comparative advantage is the main reason for international trade between two countries. Trade between two countries can benefit both countries if each country exports the goods in which it has a comparative advantage. The Ricardian model shows how difference between economies give rise to trade and gains from trade. Ricardo's model remains one of the greatest insights in economics (Krugman and Obstfeld 2002). He developed the theory of comparative advantage to illustrate the benefits of free trade (Helpman 2011). In a research paper, Ruffin (2002), a noted economist observed as follows,

Ricardo's discovery of the law of comparative advantage must rank as one of the most remarkable stories in the history of economic thought (2002: 746).

Furthermore, the concept of revealed comparative advantage is widely applied to measure the competitiveness of trade and commodities. In this regard, Balassa's revealed comparative advantage and Vollrath's export competitiveness are of special impotence (French 2017, Cai and Leung 2008, Béla 1965).

2.1.3. The Specific Factors Model

This model was developed by Paul Samuelson and Ronald Jones (Krugman and Obstfeld 2002). It gives emphasis on the specific factors of productions. The model assumes an economy that produces two goods and that can allocate its supply of labor between the two sectors. Unlike the Ricardian model, however, the specific factors model allows for existence of factors of production besides labor. Whereas labor is a mobile factor that can move between sectors, these other factors are assumed to be

specific. Factors specific to export sectors in each country gain from trade, while factors specific to import-competing sectors lose. Mobile factors that can work in either sector may gain or lose.

2.1.4. The Heckscher-Ohlin (HO) Model

The HO model was considered as the backbone of international trade in the last many decades. It is one of the most influential theoretical constructs in international economics.

The HO model has been one of the fundamental theorems in theory (Fujiwara and Shimomura 2005). This model focuses on differences between countries in their relative factor endowment and differences between on their commodities in the intensities with they use these factors. It emphasizes the interactions between the proportions in which they are used in producing various kinds of goods. Countries usually tend to export the products that are intensive in the factors with which they are abundantly supplied. The model demonstrate that comparative advantage is influenced by the interaction between nation's resources (the relative abundance of factors of productions) and the technology of production. The model is known as the theory of factor-proportions.

2.1.5. Monopolistic Competition Model

Paul Krugman adopts the Dixit and Stiglitz (1977) model of monopolistic competition whereby a consumer's utility is positively related to a number of varieties of manufactured products and each variety is produced subject to the increasing returns to scale that results when an element of fixed costs is added to labor cost that are proportional to outputs. Krugman's 1979 paper assumes that each country produces many varieties of a single type of good, whereas elements of inter-sectoral trade are introduced in his 1980 paper by letting each country produce two kinds of products, with many varieties of each kind (Krugman, 1979; Krugman, 1980). Trade may be divided into two varieties in the model of monopolistic competition. Within an industry two-way trade in differentiated products is called intra-industry trade; trade that exchanges the products of one industry for the products of another is called inter-industry trade. Intra-industry trade shows economies of scale, interindustry trade reflects comparative advantage. Intra-industry trade does not generate the strong effects on income distribution as interindustry trade. Helpman (1987) produced a pioneering work which for the first time confronted the monopolistic competition model with data and showed that its main predictions were consistent with manufacturing trade between advanced industrial economies.

2.1.6. 'New Trade' Theory

Many of the contentious problems raised by Ricardo continue to resonate in the twenty-first century. His ideas and innovative propositions remain valid in the contemporary economic systems (Peach, 2007; King, 2013). We are also witnessing the revival of the Ricardian trade theory led by the work of Eaton and Kortum (2002). The Eaton-Kortum model is a kind of Ricardian many country many good trade models with bilateral trade costs. There are different lines of explanations and modeling of the 'new trade' theory (Alvarez and Lucas, 2007; Naito, 2017). But the innovative idea is a two-parameter probabilistic model that creates the requirement of inputs for producing each good. One of the remarkable features of the model is that it enables us to analyze the effects of trade openness and liberalization on the extensive margins of trade. The role of firms in trade is on the rise. Several economists provides a link between firm-level and aggregate observations that allows for a general equilibrium examination of the effect of aggregate shocks on individual firms (Eaton, Kortum, and Hramarz, 2011). The world trade is currently characterized by two factors: the rise of interindustry trade and technologically sophisticated multinational firms (Melitz and Trefler, 2012).

3. ANALYSIS AND DISCUSSION

3.1. Development of the Gravity Model

This section is organized to provide a theoretical perspective on the developments of the gravity model. The developments of the gravity model can be discussed systematically in several developmental phases:

- 1885-1962: The Historical Roots of The Gravity Equation
- 1962-1966: The Beginning of the Traditional Gravity Model
- 1966-2003: The Theoretical Foundations of the Gravity Model
- 2003- 2017: The Revival of the Gravity Model

The next section elaborates the historical developmental phases of the gravity model.

3.1.1. 1885-1962: The Historical Roots of the Gravity Equation

The motivation of the gravity was drawn from Newton's Law of Universal Gravitation proposed in 1687. According to Newton, an object in the globe attracts any other particle thanks to a force that is proportional directly to the product of their masses and inversely proportional to the square of the distance between them. In that context, an early cogent formation was the 1885 publication of Regenstein's paper titled *The Laws of Migration*. He tried to explain how the 'currents' of migration

are driven by the 'absorption of center of commerce and industry' but grow less with the distance proportionately'. Afterwards Linder (1961) and Samuelson (Samuelson, 1948, 1949). advanced their concepts known as 'Linder hypothesis and 'Factors-price equalization' respectively that were useful in the building of trade theories (Bergstrand, 1990a; Choi, 2002; Mcpherson, Redfearn, and Tiesla, 2000). They were basically concerned with the gains from trade.

3.1.2. 1862-1966: Beginning of the Traditional Gravity Model

A group of Dutch economists led by Tinbergen was the first to formulate the mathematical equation of gravity-type model and applied it in an empirical setting. Tinbergen pioneered the gravity equation in his seminal work entitled *Shaping the World Economy* (1962). He supervised the PhD thesis of Linnemann (1966). In the literature, Tinbergen is credited as the first author to econometrically identify what has now become a benchmark traditional gravity model for studying international trade flows. He was the first 1969 Nobel laureate for his outstanding contributions in the world economy. In fact, his work has become the standard text of reference to the early version of the traditional gravity equation (Van Bergeijk and Brakman, 2010). Tinbergen's work is also important in spurring more publications by his students. Pöyhönen (1963) Pulliainen (1963) and Linnemann (1966) worked to further develop the theoretical foundations of the gravity equation. There are some interesting questions that are not covered in this paper. What made Tinbergen decide to use an equation from physics? Did he think it was an adequate and realistic representation of international trade or was it just a pragmatic and convenient model? Was he criticized by peers for presenting a model with any theoretical foundation? How did the community of economists respond to such an a-theoretical model? These questions could profitably become the objects of further scientific inquiries to the historians of economic thoughts and analyses.

However, Linnemann (1966) used the gravity in an extensive empirical analysis. His book is a major breakthrough in terms of empirical calculations of aggregate trade flows and remains a classic reference source.

The traditional gravity equation is as follows:

$$Trade_{ij} = \alpha \cdot \frac{GDP_i \cdot GDP_j}{Distance_{ij}} \quad (1)$$

Where, $Trade_{ij}$ is the value of the bilateral trade between country i and j , GDP_i and GDP_j are country i and j 's respective national incomes. Distance is a measure of the bilateral distance between the two countries and is a constant of proportionality. Taking logarithms of the gravity model equation as in (1) we get the linear form of the model and the corresponding estimable equation as:

$$\log(\text{Trade}_{ij}) = \alpha + \beta_1 \log(\text{GDP}_i \cdot \text{GDP}_j) + \beta_2 \log(\text{Distance}) + u_{ij} \quad (2)$$

Where α , β_1 and β_2 are coefficients to be estimated. The error term, u_{ij} , captures any other shocks, events, and unobserved factors that may affect bilateral trade between the two countries.

Equation (2) is the core gravity equation where bilateral trade is predicted to be a positive function of income and negative function of distance.

3.1.3. 1966–2003: The Theoretical Foundations of the Gravity Model

Anderson was the first economist who formed the theoretical economic foundation for the gravity equation under the assumptions of product differentiation by place of origin and Constant Elasticity of Substitution (CES) expenditures. Anderson's ground-breaking study was based on the Armington assumption (1969). Incorporating the product differentiation approach, Anderson derived the gravity equation which explains the presence of income variables in the model. Some early contributions to gravity literature are the outstanding papers of Bergstrand (Bergstrand, 1990a; Bergstrand, 1985, 1989). He was the second author to provide the microeconomic bases of the gravity model. He developed a relationship between trade theory and bilateral trade, and included the supply side of the economy explicitly. During this period, some authors have contributed remarkably to the development of trade theory (Brakman and Garretsen, 2009; Helpman and Krugman, 1985; Krugman and Obstfeld, 2002; Helpman, 1984; Helpman, Melitz, and Rubinstein, 2008). Based on the research on eighteen industrial countries, Helpman (1987) established a linkage between the monopolistic competition model and gravity model. The gravity approach thus was gradually gaining its economic foundations. In a paper Kabir, Salim, and Al-Mawali (2017) discussed the development and application of the gravity model into the four broad themes: 1) generalized gravity model; 2) intra-industry trade; 3) homogeneous and heterogeneous products and 4) structural gravity model.

Deardorff (1998) revealed that the gravity model was consistent with a large number of trade models such as HO model, increasing returns to scales, Ricardian model and so on. Evenett and Keller (2002) showed that only two important theories namely, HO model and increasing returns to scale are enough to explain the success of the gravity equation. In the meantime, McCallum (1995) published an influential paper that used the gravity equation to estimate the influence of national borders on the Canada-U.S. regional trade patterns using data on interprovincial and international trade by Canadian provinces for the period 1988–1990.

McCallum (1995) showed that, other things being equal, the estimated interprovincial trade was more than 20 times larger than trade between the Cana-

dian provinces and the US states. Since the seminal publications of McCallum (1995) and Helliwell (1997), the economists have wondered how borders could generate a home bias in consumption. The 'border effect' has thus been one of the most discussed topics for investigations (Carter and Goemans, 2018; Feenstra, 2002; Magerman, Studnicka, and Van Hove, 2016). There are a great deal of analyses and works centering on the question of border effects that are familiar in the literature as the 'McCallum Border Puzzle.' A study analyzed the border effects on the extensive and intensive margin of trade to solve the distance puzzle and concludes that the distance puzzle remains unsolved (Cheong, Kwak, and Tang, 2015).

3.1.4. 2003- 2017: The Revival of the Gravity Model

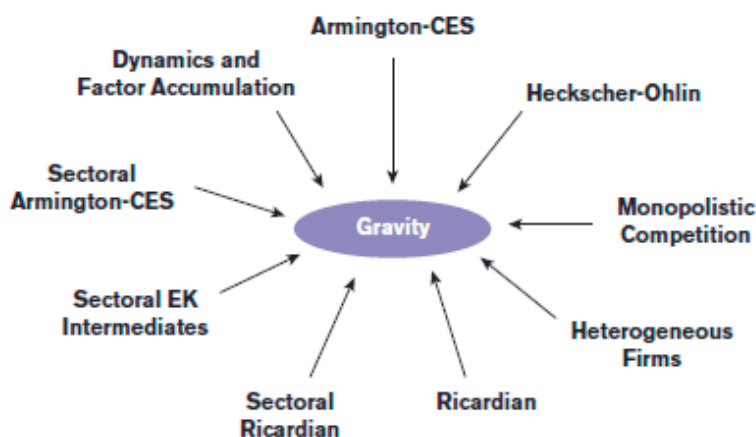
This period has generated renewed interest in the gravity model. There has been a proliferation of studies using the gravity model. Why have the researchers been interested in application of the model?

In this regard, several factors could be accounted. **First**, Anderson and van Wincoop (2003) provided an apparent solution to the problem of McCallum border puzzle. According to their study, the gravity equation estimated by McCallum is suffering from omitted variable bias. They used the same dataset used by McCallum to establish their arguments, and Anderson and van Wincoop (2003) thus developed a more consistent and efficient model by adding the multiple resistance factors and applied it to solve the famous McCallum border puzzle. The gravity model is the main tool to link trade barriers and costs. Research indicated how trade costs affect and therefore act as a source of comparative advantage or disadvantage (Milner and McGowan, 2013). **Second**, there is a resurgence of gravity theory and applied works. Hundreds of papers and books have used the gravity model to study and quantify the effects of various determinants of international trade. Even for the first time, gravity equation got treated and discussed in a separate chapter of a textbook (Feenstra, 2004). Various types of models are emerging in the literature in accordance with the nature of data and estimation methods. For instance, the dynamic gravity model is proposed in the presence of panel data (Olivero and Yotov, 2012). In addition, Head and Mayer (2015) studied the estimation procedures, technical questions and theoretical interpretations of the gravity model and described the success of gravity model as 'workhorse, toolkit and cookbook'. As a result of the previous studies the model, in no way, is an intellectually 'orphan' rather is now connected to the rich family of economic theory (Anderson and Yotov, 2017; Anderson, 2004; Anderson and van Wincoop, 2004; Feenstra, Markusen, and Rose, 2001; Helpman, Melitz, and Rubinstein, 2008; Bergstrand 1985). According to Yotov et al. (2016) there are at least five remarkable arguments that may explain the great success and popularity of the gravity model.

1) Intuitive Model: The gravity model of trade is very intuitive. It resembles Newton's Law of Gravity.

2) Strong Theoretical Foundations: The gravity model of trade is a structural construction with strong theoretical foundations (Figure 1.) This property makes the gravity framework particularly appropriate for counterfactual analysis, such as quantifying the effects of trade policy.

Figure 1.: Gravity model's strong theoretical foundations



Source: adapted from Yotov et al. (2016: 12).

3) General Equilibrium: The gravity model represents a realistic general equilibrium system. That general equilibrium environment simultaneously accommodates multiple countries, multiple sectors, and even firms.

4) Flexible Structure: The gravity model is a flexible approach. The flexible structure of the gravity can be integrated within a wide class of broader general equilibrium frameworks in order to study the links between trade and labor markets, investments, environments, climate change etc.

5) Predictive Power: Social science research and economic modeling have four basic purposes: exploration, description, explanation, and prediction (Ethridge, 2004; Babbie, 2007). One of the most attractive characteristics of the gravity model is its predictive capacity. Empirical nature of gravity equations of trade flows consistently delivers a remarkable fit between 60 and 90 percent with aggregate data as well as sectoral data for both goods and services (Van Bergeijk and Brakman, 2010).

3.2. Econometric Techniques and Methods of the Gravity Model

The econometric specification of the gravity model is a debatable topic in the literature. There is no uniformity of consensus about the econometric specification

of the gravity model (Egger, 2002; Kalirajan, 2008; Nuroğlu and Kunst, 2013; Matyas, 1997; Baltagi, Egger, and Pfaffermayr, 2015; Bergstrand, Egger, and Larch, 2013). The advantages of using panel data are well known. First, the much larger sample size in comparison with cross-sectional or time-series studies increases the precision of regression estimates. Second, it can circumvent omitted variable bias and heterogeneity problems that often arise in cross-sectional investigations. The omission of important variables could lead to the biased results and misleading conclusions (Pesaran, 2015; Wooldridge, 2005; Wooldridge, 2002). Therefore, the researchers are suggested to apply the panel data for estimation of the gravity model of international trade (Baltagi, Egger, and Pfaffermayr, 2015; Egger, 2002; Egger and Staub, 2015). In the next section, we will address the key econometric and the methodological aspects of the gravity model.

3.2.1. Linear Methods

Zero trade flows are a problematic issue in gravity model. The logarithm of zero is not defined. Therefore, truncations and censoring methods are proposed in the literature to address the problems of zero flows in trade datasets. There are some biases and problems in these procedures of estimation. The loss of information is a big problem. This happens due to the inefficiency of the estimation techniques. It may lead to biased estimation for the omission of data (Baldwin and Harrigan, 2011; Burger, van Oort, and Linders, 2009; Martin and Pham, 2015). In their paper, Westerlund and Wilhelmsson (2011) stated that the elimination of trade flows leads to sample selection bias. In case of commodity or sectoral trade, the prevalence of 'zero' is a common issue in the estimation of gravity model (Burger, van Oort, and Linders, 2009; Martin and Pham, 2015). However, a panel data model permits recognizing how the relevant variables evolve through time and identifying the specific time or country effects. So, there should be more efforts for methodological improvements with a view to incorporating the dynamic panel data methods.

3.2.2. Nonlinear Methods

Among the nonlinear methods the most frequently used are nonlinear least squares (NLS), Feasible Generalized Least Square (FGLS), the Heckman Sample Selection Model, Gamma Pseudo Maximum Likelihood (GMPL) and Poisson Pseudo Maximum Likelihood (PPML). Silva and Tenreiro (2006) explored the limitations of the NLS, and suggested to apply PPML model for robust estimation. Gómez-Herrera (2012) argued for the application of Heckman Sample Selection Model to avoid the inconsistent estimation of the gravity parameters. This is a two-step estimation method. In the first step, a probit model is estimated to define whether two countries trade or not. In the second step, the expected values of trade, conditional on that

country trading, are estimated using Ordinary Least Squares (OLS). Several studies suggested PPML and Heckman Selection models to ensure the robustness of results or estimations in the presence of zero trade flows (Álvarez et al. 2018, Haq, Meilke, and Cranfield 2012). Siliverstovs and Schumacher (2007) provides empirical evidence in favor of the Poisson Quasi Maximum Likelihood (PQML) methods instead of the traditional OLS. So, it can be argued that a wide range of research methods are employed to estimate the gravity parameters. Table 1. shows that each method has its own advantages and disadvantages.

Table 1.: Advantages and disadvantages of various estimation methods

Method	Advantages	Disadvantages
OLS	-Simple	- Loss of information due to the removal of zero trade flows - Biased coefficient
Tobit	-Simple - It deals with the problems of zero trade flows	- Lack of theoretical foundation
Panel fixed effects	-Simple - It controls for unobserved heterogeneity	- Loss of information - Elimination of zero trade flows - Sample selection bias
Heckman model	- Different set of variables and coefficients to determine the probability of censoring and the value of the dependent variable - No multicollinearity problems - It provides a rationale for zero trade flows	- It may be difficult to find an identification restriction - Exclusion variables are required
Poisson Pseudo Maximum Likelihood (PPML)	- It deals with the zero trade flows problem. - unbiased estimates in the presence of heteroskedasticity - All observations are weighted equally - The mean is always positive	- It may present limited - dependent variable bias when a significant part of the observation.
Nonlinear Least Square	- It deals with the zero trade flows problem	- It assigns more weight to observations with a larger variance (inefficiency). - Not robust to heteroskedasticity - Sample selection bias
Feasible Generalized Least Square (FGLS)	- It deals with the zero trade flows problem - It is robust to heteroskedasticity	- The variance covariance matrix should be estimated first

Source: Gómez-Herrera, 2013.

Table 2.: Result matrix of the gravity model development

Serial	Author and work	Serial	Author and work
First phase: 1885-1962			
1	Ravenstein (1885)	4	Samuelson (1949)
2	Ravenstein (1889)	5	Linder (1961)
3	Samuelson (1948)		
Second Phase: 1962-1966			
1	Tinbergen (1962)	3	Linnemann (1966)
2	Pöyhönen (1963)		
Third Phase: 1966-2003			
1	Anderson (1979)	11	Engels and Rogers (1996)
2	Krugman (1979)	12	Matyas (1997)
3	Krugman (1980)	13	Helliwell (1997)
4	Bergstrand (1985)	14	Deardorff (1998)
5	Helpman and Krugman (1985)	15	Harris and Matyas (1998)
6	Bikker (1987)	16	Matyas (1998)
7	Helpman (1987)	17	Egger (2000)
8	Bergstrand (1989)	18	Feenstra, Markusen, and Rose (2001)
9	Bergstrand (1990b)	19	Egger (2002)
10	McCallum (1995)	20	Evenett and Keller (2002)
Fourth Phase: 2003-2018			
1	Anderson and van Wincoop (2003a)	17	Head, Mayer, and Ries (2010)
2	Feenstra (2004)	18	Olivero and Yotov (2012)
3	Lai and Zhu (2004)	19	Starck (2012)
4	Brun et al. (2005)	20	Gómez-Herrera (2012)
5	Silva and Tenreyro (2006)	21	Bernhofen (2013)
6	Kalirajan (2007)	22	Head and Mayer (2014)
7	Melitz (2007)	23	Costinot and Rodríguez-Clare (2014)
8	Helpman, Melitz, and Rubinstein (2008)	24	Bergstrand, Larch, and Yotov (2015)
9	Melitz (2008)	25	Baltagi and Egger (2015)
10	Henderson and Millimet (2008)	26	Baltagi, Egger, and Pfaffermayr (2015)
11	Kalirajan (2008)	27	Egger and Staub (2015)
12	Chaney (2008)	28	Yotov et al. (2016)
13	Baier and Bergstrand (2009)	29	Anderson, Vesselovsky, and Yotov (2016)
14	Anderson (2010)	30	Shepherd (2016)
15	Lawless (2010)	31	Anderson and Yotov (2017)
16	Van Bergeijk and Brakman (2010)	32	Chaney (2018)

Source: Authors' own elaboration.

Table 2. presents the streamlined result matrix that summarizes the theoretical development trends and historical evolutions of the gravity model. The matrix shows the development of the gravity model is a gradual outcome of endless research efforts.

4. CONCLUSION

The aim of the paper has been to trace the historical and theoretical developments of the gravity model of trade. As seen above, we have contributed in a couple of ways. First, it provides an extensive literature review which includes the seminal works in the field of trade gravity model. In this regard, Tables 1. and 2. address the key econometric issues and present the development of the gravity model. Second, the paper distinguishes four phases of the developments of the gravity model and describes the main research works in these distinctive phases.

We have made two central arguments in this paper. First, the developments of the gravity model could be seen as a gradual outcome of a great deal of research efforts during a longer period of time. The contributions of many researchers have given the model a solid theoretical foundation. Second, there is no universal unity of consensus on the econometric specification of the gravity model. Different analysts and economists have employed the different econometric techniques and research methods to achieve their research goals. The properties of econometric estimations and methodologies make the gravity theory an interesting topic of research and inquiry. Further research is strongly recommended to explore the new dimensions of the gravity model. Last but not least, the future of the gravity model will largely depend on how it could be adaptable to the changing environments and trade flows along with its new analytical approach to the emerging datasets as well as the methodological innovations. This study would help future researchers in dealing with the broad body of literature on the gravity trade model.

REFERENCES

- Alvarez, Fernando, and Robert E. Lucas. "General Equilibrium Analysis of the Eaton-Kortum Model of International Trade." *Journal of Monetary Economics* 54 (6), (2007):1726-1768. doi: 10.1016/j.jmoneco.2006.07.006.
- Álvarez, Inmaculada C., Javier Barbero, Andrés Rodríguez-Pose, and José L. Zofio. "Does Institutional Quality Matter for Trade? Institutional Conditions in a Sectoral Trade Framework." *World Development* 103, (2018):72-87. doi: 10.1016/j.worlddev.2017.10.010.
- Anderson, James E. "Trade and Informal Institutions." (2004): 279-293. doi: 10.1002/9780470757697.ch8.
- Anderson, James E. "The Incidence of Gravity." In *Gravity Model in International Trade: Advances and Applications*, edited by Peter A. G. van Bergeijk and Steven Brakman, Cambridge, Cambridge University Press (2010): 71-87
- Anderson, James E. . "A Theoretical Foundation for the Gravity Equation." *The American Economic Review* 69 (1), (1979): 106-116
- Anderson, James E., and Eric van Wincoop. "Gravity with Gravitas: A Solution to the Border Puzzle." *American Economic Review* 93 (1), (2003):170-192. doi: 10.1257/00028280321455214.
- Anderson, James E., and Eric van Wincoop. "Trade Costs." *Journal of Economic Literature* 42 (3), (2004):691-751. doi: 10.1257/0022051042177649.
- Anderson, James E., Mykyta Vesselovsky, and Yoto V. Yotov. "Gravity With Scale Effects." *Journal of International Economics* 100, (2016):174-193. doi: 10.1016/j.jinteco.2016.03.003.
- Anderson, James E., and Yoto V. Yotov. *Short Run Gravity*. (2017):1-75.
- Atif, Rao Muhammad, Liu Haiyun, and Haider Mahmood. "Pakistan's Agricultural Exports, Determinants and Its Potential: An Application of Stochastic Frontier Gravity Model." *The Journal of International Trade & Economic Development* 26 (3), (2017):257-276. doi: 10.1080/09638199.2016.1243724.
- Babbie, Earl. *The Practice of Social Research*. Belmont, California: Wadsworth Pub. Co. (2007).
- Baier, Scott L., and Jeffrey H. Bergstrand. "Bonus vetus OLS: A Simple Method for Approximating International Trade-cost Effects Using the Gravity Equation." *Journal of International Economics* 77 (1), (2009):77-85. doi: 10.1016/j.jinteco.2008.10.004.
- Baldwin, Richard and James Harrigan. "Zeros, Quality, and Space: Trade Theory and Trade Evidence." *American Economic Journal: Microeconomics* 3 (2), (2011):60-88. doi: 10.1257/mic.3.2.60.
- Baltagi, Badi H., Peter Egger, and Michael Pfaffermayr. "Panel Data Gravity Models of International Trade." In *The Oxford Handbook of Panel Data*, edited by Badi H. Baltagi, UK, Oxford: Oxford University Press. (2015):608-641
- Baltagi, Badi H., and Peter Egger. "Estimation of Structural Gravity Quantile Regression Models." *Empirical Economics* 50 (1), (2015):5-15. doi: 10.1007/s00181-015-0956-5.
- Baltagi, Badi H Peter H. Egger, and Michael Pfaffermayr. "Special issue on the estimation of gravity models of bilateral trade: Editors' introduction." *Empirical Economics* 50 (1), (2015):1-4. doi: 10.1007/s00181-015-1010-3.
- Batra, Amita "India's Global Trade Potential: The Gravity Model Approach." *Global Economic Review* 35 (3), (2006):327-361. doi: 10.1080/12265080600888090.

- Beine, Michel Simon Bertoli, and Fernandez, Jusus, Huertas, Moraga. "A Practitioners' Guide to Gravity Models of International Migration." *The World Economy* 39 (4), (2016):496-512. doi: 10.1111/twec.12265.
- Béla, Balassa. "Trade Liberalization and Revealed Comparative Advantage." *The Manchester School of Economics and Social Studies* 33 (2), (1965):99-123
- Bergstrand, Jeffrey H. 1990. "The Heckscher-Ohlin-Samuelson Model, the Linder Hypothesis and the Determinants of Bilateral Intra-Industry Trade." *Economic Journal* 100, (1990):1216-1229
- Bergstrand, Jeffrey H. "The Gravity Equation in International Trade: Some Microeconomic Foundations and Empirical Evidence." *The Review of Economics and Statistics* 67 (3), (1985):474-481
- Bergstrand, Jeffrey H. "The Generalized Gravity Equation, Monopolistic Competition, and the Factor-Proportions Theory in International Trade." *The Review of Economics and Statistics* 71 (1), (1989):143. doi: 10.2307/1928061.
- Bergstrand, Jeffrey H. "The Heckscher-Ohlin-Samuelson Model, The Linder Hypothesis and the Determinants of Bilateral Intra-Industry Trade." *The Economic Journal* 100, (1990):1216-1229. doi: 10.2307/2233969.
- Bergstrand, Jeffrey H., Peter Egger, and Mario Larch. "Gravity Redux: Estimation of gravity-equation coefficients, elasticities of substitution, and general equilibrium comparative statics under asymmetric bilateral trade costs." *Journal of International Economics* 89 (1), (2013):110-121. doi: 10.1016/j.jinteco.2012.05.005.
- Bergstrand, Jeffrey H., Mario Larch, and Yoto V. Yotov. "Economic Integration Agreements, Border Effects, and Distance Elasticities in the Gravity Equation." *European Economic Review* 78, (2015):307-327. doi: 10.1016/j.euroecorev.2015.06.003.
- Bernhofen, Daniel; Falvey, Rod; Greenaway, David; and Kreickemeier, Udo. 2013. *Palgrave Handbook of International trade*. New York: Palgrave Macmillan.
- Bikker, Jacob A. "An International Trade Flow Model with Substitution : An Extension of the Gravity Model." *Kyklos* 40, (1987):315-337
- Brakman, Steven and Harry Garretsen. "Trade and Geography: Paul Krugman and the 2008 Nobel Prize for Economics." *Spatial Economic Analysis* 4 (1), (2009):5-23. doi: 10.1080/17421770902739120.
- Brun, Jean F., Celine. Carre`re, Patrick. Guillaumont, and Jaime, Melo. D. "Has Distance Died? Evidence from a Panel Gravity Model." *The World Bank Economic Review* 19 (1), (2005):99-120. doi: 10.1093/wber/lhi004.
- Burger, Martijn, Frank van Oort, and Gert-Jan Linders. "On the Specification of the Gravity Model of Trade: Zeros, Excess Zeros and Zero-inflated Estimation." *Spatial Economic Analysis* 4 (2), (2009):167-190. doi: 10.1080/17421770902834327.
- Cai, Junning, and PingSun Leung. "Towards a More General Measure of Revealed Comparative advantage Variation." *Applied Economics Letters* 15 (9), (2008):723-726. doi: 10.1080/13504850600748992.
- Carter, David B., and Goemans. H. B. "International Trade and Coordination: Tracing Border Effects." *World Politics* 70 (01), (2018):1-52. doi: 10.1017/s0043887117000284.
- Chaney, Thomas. "Distorted Gravity: The Intensive and Extensive Margins of International Trade." *American Economic Review* 98 (4), (2008):1707-1721. doi: 10.1257/aer.98.4.1707.
- Chaney, Thomas. "The Gravity Equation in International Trade: An Explanation." *Journal of Political Economy* 126 (1), (2018):150-177

- Chang, Shun-Chiao. "The Determinants and Motivations of China's Outward Foreign Direct Investment: A Spatial Gravity Model Approach." *Global Economic Review* 43 (3), (2014):244-268. doi: 10.1080/1226508x.2014.930670.
- Cheong, Juyoung, Do Won Kwak, and Kam Ki Tang. "The Distance Effects on the Intensive and Extensive Margins Of Trade Over Time." *Empirical Economics* 50 (2), (2015):253-278. doi: 10.1007/s00181-015-0927-x.
- Choi, Changkyu. "Linder Hypothesis Revisited." *Applied Economics Letters* 9, (2002):601-605. doi: 10.1080/1350485011011123.
- Costinot, Arnaud, and Andrés Rodríguez-Clare. "Trade Theory with Numbers: Quantifying the Consequences of Globalization." In *Handbook of International Economics*, edited by E. Helpman, K. Rogoff and G. Copinath, Oxford: Elsevier B.V. (2014):197-261
- Deardorff, Alan V. "Determinants of Bilateral Trade: Does Gravity Work in a Neoclassical World?" In *The Regionalization of the World Economy*, edited by Jeffrey A. Frankel 7-32. USA, Chicago: University of Chicago Press. (1998).
- Dixit, A.K. , and Joseph.E Stiglitz. "Monopolistic Competition and Optimum Product Diversity." *The American Economic Review* 67 (3), (1977):293-308
- Eaton, Jonaton. , and Samuel Kortum. "Technology, Geography, and Trade." *Econometrica* 70 (5), (2002):1741-1779.
- Eaton, Jonaton , Samuel Kortum, and Francis Hramarz. "An Anatomy of International Trade." *Econometrica* 79 (5), (2011):1453-1498. doi: 10.3982/ecta8318.
- Edmonds, Christopher, Sumner La Croix, and Yao Li. "China Trade: Busting Gravity's Bounds." *Journal of Asian Economics* 19 (5-6), (2008):455-466. doi: 10.1016/j.asieco.2008.09.013.
- Egger, Peter. "A Note on Proper Econometric Specification of the Gravity Model." *Economic Letters* 66, (2000):25-31
- Egger, Peter. "An Econometric View on the Estimation of Gravity Models and the Calculation of Trade Potentials." *The World Economy* 25, (2002):297-313
- Egger, Peter. H., and Staub, Kevin E. "GLM estimation of trade gravity models with fixed effects." *Empirical Economics* 50 (1), (2015):137-175. doi: 10.1007/s00181-015-0935-x.
- Engels, Charles. and Rogers, John. H. "How Wide Is Border? ." *The American Economic Review* 85 (5), (1996):1112-1125
- Erdey, László. and Andrea Pöstenyi. "Determinants of the Exports of Hungary: Trade Theory and the Gravity Model." *Acta Oeconomica* 67 (1), (2017):77-97. doi: 10.1556/032.2017.67.1.5.
- Ethridge, Don Erwin, *Research Methodology in Applied Economics: organizing, planning and conduting economic research*. Ames: Blackwell Publishing 2004.
- Evenett, Simon. J., and Wolfgang Keller. "On Theories Explaining the Success of the Gravity Equation." *Journal of Political Economy* 110 (2), (2002):281-316
- Feenstra, R. *Advanced International Trade:Theory and Evidence*. USA, Princeton University Press. 2004.
- Feenstra, Robert. C. "Border Effects and the Gravity Equation: Consistent Methods for Estimation." *Scottish Journal of Political Economy* 49 (5), (2002):491-506. doi: 10.1111/1467-9485.00244.
- Feenstra, Robert. C. , Markusen, James R. and Rose, Andrew K. "Using the Gravity Equation to Differentiate Among Alternative Theories of Trade." *Canadian Journal of Economics* 34 (2), (2001):430-447

- French, Scott. "Revealed Comparative Advantage: What Is It Good For?" *Journal of International Economics* 106, (2017):83-103. doi: 10.1016/j.jinteco.2017.02.002.
- Fujiwara, Kenji, and Koji Shimomura. "A Factor Endowment Theory of International Trade Under Imperfect Competition and Increasing Returns." *Canadian Journal of Economics* 38 (1), (2005):273-289
- Gashi, Petrit, Mehtap Hisarciklilar, and Geoffrey Pugh. "Kosovo - EU Trade Relations: A Dynamic Panel Poisson Approach." *Applied Economics* 49 (27), (2016):2642-2654. doi: 10.1080/00036846.2016.1245836.
- Gómez-Herrera, Estrella. "Comparing Alternative Methods to Estimate Gravity Models of Bilateral Trade." *Empirical Economics* 44 (3), (2012):1087-1111. doi: 10.1007/s00181-012-0576-2.
- Haq, Zahoor. Ul Z., Meilke, Karl., and Cranfield, John. "Selection Bias in a Gravity Model of Agrifood Trade." *European Review of Agricultural Economics* 40 (2), (2012):331-360. doi: 10.1093/erae/jbs028.
- Harris, Mark N., and Laszlo Matyas. *The Econometrics of Gravity Model*. 1-18. Retrieved from <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.200.6624&rep=rep1&type=pdf>. (1998).
- Head, Keith, and Thierry Mayer. "Gravity Equations: Workhorse, Toolkit, and Cookbook." In *Handbook of International Economics*, edited by Elhanan Helpman, Kenneth Rogoff and Gita Gopinath, (2015):131-195. Oxford: Elsevier B.V.
- Head, Keith, Thierry Mayer, and John Ries. "The Erosion of Colonial Trade Linkages After Independence." *Journal of International Economics* 81 (1), (2010):1-14. doi: 10.1016/j.jinteco.2010.01.002.
- Helliwell, John F. "National Borders, Trade & Migration." *Pacific Economic Review* 2 (3), (1997):165-185
- Helpman, E. "Imperfect Competition and International Trade: Evidence from Fourteen Industrial Countries." *Journal of the Japanese and International Economies* 1, (1987):62-81
- Helpman, E. *Understanding Global Trade*. USA: Harvard University Press, 2011.
- Helpman, Elhanan. "A Simple Theory of International Trade with Multinational Corporations." *Journal of Political Economy* 92 (3), (1984):451-471. doi: 10.1086/261236.
- Helpman, Elhanan, and Paul R. Krugman. *Market Structure and Foreign Trade*. 1985. Cambridge, Massachusetts: The MIT Press.
- Helpman, Elhanan, Marc Melitz, and Yona Rubinstein. "Estimating Trade Flows: Trading Partners and Trading Volumes." *Quarterly Journal of Economics* 123 (2), (2008):441-487. doi: 10.1162/qjec.2008.123.2.441.
- Henderson, Daniel J., and Daniel L. Millimet. "Is Gravity Linear?" *Journal of Applied Econometrics* 23 (2), (2008):137-172. doi: 10.1002/jae.974.
- Huot, Norak, and Makoto Kakinaka. "Trade Structure and Trade Flows in Cambodia: A Gravity Model." *Asean Economic Bulletin* 24 (3), (2007):305-319. doi: 10.1355/ae24-3b.
- Irshad, Muhammad Saqib, Qi Xin, Saleh Shahriar, and Hamza Arshad. "A Panel Data Analysis of China's Trade Pattern with OPEC Members: Gravity Model Approach." *Asian Economic and Financial Review* 8 (1), (2018):103-116. doi: 10.18488/journal.aefr.2018.81.103.116.
- Kabir, Mahfuz, Ruhul Salim, and Nasser Al-Mawali. "The Gravity Model and Trade Flows: Recent Developments in Econometric Modeling and Empirical Evidence." *Economic Analysis and Policy* 56, (2017):60-71. doi: 10.1016/j.eap.2017.08.005.

- Kahouli, Bassem. "Regional Integration Agreements, Trade Flows and Economic Crisis: A Static and Dynamic Gravity Model." *International Economic Journal* 30 (4), (2016):450-475. doi: 10.1080/10168737.2016.1204338.
- Kalirajan, Kaliappa. "Regional Cooperation and Bilateral Trade Flows: An Empirical Measurement of Resistance." *The International Trade Journal* 21 (2), (2007):85-107. doi: 10.1080/08853900701266555.
- Kalirajan, Kaliappa. "Gravity Model Specification and Estimation: Revisited." *Applied Economics Letters* 15 (13), (2008):1037-1039. doi: 10.1080/13504850600993499.
- King, John E. "Ricardo on Trade." *Economic Papers* 32 (4), (2013):462-469. doi: 10.1111/1759-3441.12057.
- Kohl, Tristan. "The Belt and Road Initiative's Effect on Supply-chain Trade: Evidence from Structural Gravity Equations." *Cambridge Journal of Regions, Economy and Society* 12 (1), (2019):77-104. doi: 10.1093/cjres/rsyo36.
- Krugman, P. "Increasing Returns, Monopolistic Competition, and International Trade." *Journal of International Economics* 9, (1997):469-479
- Krugman, P.. "Scale Economies, Product Differentiation and the Pattern of Trade." *American Economic Review* 70 (5), (1980):950-959
- Krugman, Paul R., and Obstfeld, M. *International Economics: Theory and Policy*. China: Tsinghua University Press. (2002)
- Lai, Huiwen, and Susan Chun Zhu. "The Determinants of Bilateral Trade." *Canadian Journal of Economics* 37 (2), (2004):459-483
- Lawless, Martina. "Deconstructing Gravity: Trade Costs and Extensive and Intensive Margins." *Canadian Journal of Economics* 43 (4), (2010):1149-1172
- Linder, S.B. *An Essay on Trade and Transformation*. Stockholm: Almqvist & Wiksells. (1996).
- Linnemann, H. *An Econometric Study of International Trade Flows*. 1996. Amsterdam. North-Holland Pub. Co.
- . Liu, Hai Yue, Ying Kai Tang, Xiao Lan Chen, and Joanna Poznanska. "The Determinants of Chinese Outward FDI in Countries Along "One Belt, One Road". " *Emerging Markets Finance and Trade* 53 (6), (2017):1374-1387. doi: 10.1080/1540496X.2017.1295843.
- Luo, Zijun, and Xu Tian. "Can China's Meat Imports Be Sustainable? A Case Study of Mad Cow Disease." *Applied Economics* 50 (9), (2017):1022-1042. doi: 10.1080/00036846.2017.1349288.
- Magerman, Glenn, Zuzanna Studnicka, and Jan Van Hove. "Distance and Border Effects in International Trade: A Comparison of Estimation Methods." *Economics: The Open-Access, Open-Assessment E-Journal* 10, (2016):1-31. doi: 10.5018/economics-ejournal.ja.2016-18.
- Martin, Will, and Pham, Cong S. *Estimating the Gravity Model When Zero Trade Flows Are Frequent and Economically Determined*. World Bank. (2015)
- Martínez-Zarzoso, Inmaculada, and Florian Johannsen. "The Gravity of Arms." *Defence and Peace Economics*, (2017):1-25. doi: 10.1080/10242694.2017.1324722.
- Matyas, L. "The Gravity Model: Some Econometric Considerations." *The World Economy* 21 (3), (1998):397-401
- Matyas, Laszlo. "Proper Econometric Specification of the Gravity Model." *The World Economy* 20 (3), (1997):363-368

- McCallum, John. "National Borders Matter: Canada-U.S. Regional Trade Patterns." *The American Economic Review* 85 (3), (1995):615-623
- Mepheron, M.A., Redfearn, M. R. and Tiesla, M. A. "A Re-examination of the Linder Hypothesis: A Random- Effects Tobit Approach." *International Economic Journal* 14 (3), (2000):123-136. doi: 10.1080/10168730000000032.
- Melitz, Jacques. "North, South and Distance in the Gravity Model." *European Economic Review* 51 (4), (2007):971-991. doi: 10.1016/j.euroecorev.2006.07.001.
- Melitz, Jacques. "Language and Foreign Trade." *European Economic Review* 52 (4), (2008):667-699. doi: 10.1016/j.euroecorev.2007.05.002.
- Melitz, Marc J., and Daniel Treffer. "Gains from Trade when Firms Matter." *Journal of Economic Perspectives* 26 (2), (2012):91-118. doi: 10.1257/jep.26.2.91.
- Milner, Chris, and Danny McGowan. 2013. "Trade Costs and Trade Composition." *Economic Inquiry* 51 (3), (2013):1886-1902. doi: 10.1111/j.1465-7295.2012.00496.x.
- Naito, Takumi. "An Eaton-Kortum Model of Trade and Growth." *Canadian Journal of Economics* 50 (2), (2017):456-480
- Narayan, Seema, and Tri Tung Nguyen. "Does The Trade Gravity Model Depend On Trading Partners? Some Evidence From Vietnam And Her 54 Trading Partners." *International Review of Economics & Finance* 41, (2016):220-237. doi: 10.1016/j.iref.2015.08.010.
- Nuroğlu, Elif, and Kunst, Robert M. "Competing Specifications of the Gravity Equation: a Three-Way Model, Bilateral Interaction Effects, or a Dynamic Gravity Model with Time-Varying Country Effects?" *Empirical Economics* 46 (2), (2013):733-741. doi: 10.1007/s00181-013-0696-3.
- Olivero, María Pía, and Yoto V. Yotov. "Dynamic Gravity: Endogenous Country Size and Asset Accumulation." *The Canadian Journal of Economics* 45 (1), (2012):64-92
- Peach, Terry. "Ricardo as a "Classical Economist": The "New View" Reexamined." *History of Political Economy* 39 (2), (2007). doi: 10.1215/00182702-2007-005.
- Pericoli, F. M., Pierucci, E. and Ventura, L. "A note on gravity models and international investment patterns." *Applied Financial Economics* 24 (21), (2014):1393-1400. doi: 10.1080/09603107.2014.925065.
- Pesaran, M.Hashem. *Time Series and Panel Data Econometrics*. UK, Oxford: Oxford University Press.(2015).
- Pöyhönen, P. "A Tentative Model for the Volume of Trade Between Countries." *Weltwirtschaftliches Archiv* 90, (1963):93-100
- Pulliainen, K. "A World Trade Study: An Econometric Model of the Pattern of the Commodity Flows in International Trade in 1948-1960." *Ekonomiska Samfundets Tidskrift* 16, (1963):69-77
- Rahman, Mohammad Mafizur. "The Factors Affecting Bangladesh's Exports: Evidence From the Gravity Model Analysis." *The Journal of Developing Areas* 44 (1), (2010):229-244. doi: 10.1353/jda.0.0075.
- Ravenstein, E.G. "The Laws of Migration." *Journal of the Statistical Society* 48 (2), (1885):167-235
- Ravenstein, E.G. "The Laws of Migration." *Journal of the Royal Statistical Society* 52 (2), (1889):241-305
- Ruffin, Roy J. "David Ricardo's Discovery of Comparative Advantage." *History of Political Economy* 34 (4), (2002):727-748

- Samuelson, Paul A. "International Trade and the Equalisation of Factor Prices." *The Economic Journal* 59 (230). (1948):163-184.
- Samuelson, Paul A. "International Factor-Price Equalisation Once Again." *The Economic Journal* 59 (234). (1949):181-197
- Santana-Gallego, María, Francisco J. Ledesma-Rodríguez, and Jorge V. Pérez-Rodríguez. "International trade and tourism flows: An extension of the gravity model." *Economic Modelling* 52, (2016):1026-1033. doi: 10.1016/j.econmod.2015.10.043.
- Shahriar, Saleh, Lu Qian, and Sokvibol Kea. 2019. "Determinants of Exports in China's Meat Industry: A Gravity Model Analysis." *Emerging Markets Finance and Trade* 55(11), 2544-2565, doi: 10.1080/1540496X.2019.1578647.
- Sheperd, Ben. *The Gravity Model of International Trade: A User Guide (An Updated Version)*. 2016. Bangkok, Thailand: United Nations Economic and Social Commissions for Asia and the Pacific.
- Silverstovs, Boriss, and Dieter Schumacher. 2007. "Using the Gravity Equation to Differentiate among Alternative Theories of Trade: Another look." *Applied Economics Letters* 14 (14):1065-1073. doi: 10.1080/13504850600706446.
- Silva, J.M.C.S., and S. Tenreiro. "The Log of Gravity." *The Review of Economics and Statistics* 88 (4), (2006):641-658
- Smith, Adam. *An Inquiry into the Nature and Causes of the Wealth of Nations* 1993. (ISBN: 978-7-5447-5993-9). Oxford: Oxford University Press.
- Starck, Sarah Cathérine. "The Theoretical Foundation of Gravity Modeling: What are the Developments That Have Brought Gravity Modeling Into Mainstream Economics?" Master Thesis, Department of Economics, Copenhagen Business School. (2012)
- Teow, Kiok Liang, Kelvin Bryan Tan, Hwee Pin Phua, and Zhecheng Zhu. "Applying Gravity Model to Predict Demand of Public Hospital Beds." *Operations Research for Health Care* 17, (2018):65-70. doi: 10.1016/j.orhc.2017.09.006.
- Tinbergen, J. *Shaping the World Economy, Suggestion for An International Economic Policy*. New York: Twentieth Century Fund. (1962)
- Van Bergeijk, P.A.G., and S Brakman, eds. *The Gravity Model in International Trade: Advances and Application* Cambridge: Cambridge University Press. (2010)
- Westerlund, Joakim, and Fredrik Wilhelmsson. "Estimating the Gravity Model Without Gravity Using Panel Data." *Applied Economics* 43 (6), (2011):641-649. doi: 10.1080/00036840802599784.
- Wooldridge, Jeffrey M. "Simple Solutions to the Initial Conditions Problem in Dynamic, Nonlinear Panel Data Models with Unobserved Heterogeneity." *Journal of Applied Econometrics* 20 (1), (2005):39-54. doi: 10.1002/jae.770.
- Wooldridge, Jeffrey M. *Econometric Analysis of Cross Section and Panel Data*. 2002. Cambridge: MIT Press.
- Yotov, Yoto V., Roberta Piermartini, José-Antonio Monteiro, and Mario Larch. *An Advanced Guide to Trade Policy Analysis: The Structural Gravity Model*: (2016). United Nations; The World Trade Organization.
- Zhou, Li, Lingzhi Li, and Lei Lei. "Avian Influenza, Non-Tariff Measures and the Poultry Exports of China." *Australian Journal of Agricultural and Resource Economics* 63 (1), (2019):72-94. doi: 10.1111/1467-8489.12285.

ABILITY TO APPLY FLEXICURITY IN THE CROATIAN LABOR MARKET

Marija Bušelić

Marija Bušelić

Juraj Dobrila University of Pula,
Faculty of economics and tourism "Dr. Mijo Mirković", Pula, Croatia,
mbusel@unipu.hr

Article info

Scientific paper category: Original Scientific Paper

Received: 24.1.2019.

Accepted: 21.5.2019.

JEL classification: E24

DOI: 10.32728/ric.2019.51/3

Withdrawn

Keywords

Labour market Flexibility Labour market Comparative Analysis Croatia

ABSTRACT

PURPOSE. *For the purpose of enforcing flexicurity, deregulation of national labor standards is necessary. The purpose of the paper is to analyze the basic components of flexicurity as well as its secondary components (demographic, social and industrial relations) for a better understanding of the representation of basic flexicurity components in the Republic of Croatia compared to the selected EU states.*

METHODOLOGY. *The paper is illustrated in order to provide a methodology that allows for how many components of flexicurity are represented in the Croatian labor market in relation to selected European countries which grouped together by in groups according to common characteristics with respect to flexicurity.*

RESULTS. *The research results show an unfavorable position of the Republic of Croatia in terms of flexicurity components compared to other researched countries. We have to point out that certain components show a minimal advancement. Therefore, Croatia would profit from a stronger social dialogue in order to balance the stated components. Croatia could implement flexicurity only under the condition of developing new solidary interest relations that will reflect not only the changed needs of the workers and employers as collective partners but also that of the unemployed.*

CONTRIBUTION. *The paper deals with issues that are discussed not only at national level but also on EU level. The scientific contribution of the work derives from the extensive empirical (qualitative and quantitative) research. The paper contains a detailed analysis, appropriate scientific research methods and numerous current and secondary sources of foreign and domestic scientific literature. Work is important for the academic community, policy makers, experts, students of economics and management, as well as for the wider public interested in the labor market. It also provides important insight into further design and development of labor market policies in Croatia.*

LIMITATIONS. *Limitations in the research were for some countries (such as for Croatia becoming a member of the European Union in 2013) because there was no uniform data for all the years of research needed.*

1. INTRODUCTION

Flexicurity is an integrated strategy for the strengthening of flexibility and security on the labor market. It tries to balance the employers' needs for flexible workforce with the workers' need for security - assurance they will not face long periods of unemployment. On these grounds, flexicurity became an official EU policy in the field of employment in 2007.

Flexicurity is thus the response to the globalization and restructuring of companies, an optimal solution enabling flexible forms of work on one hand and the security of employment on the other.

The implementation of flexicurity requires a deregulation of national labor law standards.

In order to make the deregulation of labor law standards easier, the European Commission passed a series of accompanying documents: Better Regulation Strategy (BR), Commission White Paper on European Governance (2001), the Commission's Communication on general principles and minimum standards for consultation of interested parties (2002), the Interinstitutional agreement on better law making (2003), the Commission Strategy for Growth and Jobs (2005) and Impact Assessment Guidelines (revised in 2009) (European Commission, 2014).

With flexicurity as a new option in employment policy, it is necessary to create a new balance between flexibility and security on the labor market, which would lead to changes in the area of labor market deregulation. The application of flexicurity needs to encompass all workers, regardless of the kind of their employment (permanent jobs and atypical contracts). New activities and policy options that enable a greater flexibility and an improvement in the employment security for the most vulnerable population group and changes in the attitudes of both workers and employers. A cooperation of all social actors is needed in order to have mutual trust and realize the integrated flexicurity strategy.

For that reason, the aim of this research is to establish the extent to which the components of flexicurity are represented on the Croatian labor market compared to the observed EU countries.

The purpose of the paper is to analyze the basic components of flexicurity as well as its secondary components (demographic, social and industrial relations) for a better understanding of the representation of basic flexicurity components in the Republic of Croatia compared to the selected EU states. The results of the research are based on Eurostat, OECD and ILO databases.

The research includes 15 countries with a different level of development and economic growth as well as a different organization of the labor market. In terms of territory, the research includes Mediterranean countries (Greece, Spain, Italy and France), central European countries (Germany, Poland, the Czech Republic, Slovakia, Hungary, Slovenia and Croatia), Anglo-Saxon countries (Ireland and the UK) and Scandinavian countries (Denmark and Sweden).

Reasons for inclusion in the research of these 15 countries are that they can be grouped into four groups each of which has common characteristics. Thus, the characteristics of Nordic countries in achieving the highest level of flexicurity in the European Union, the Central European countries except Germany (which have a higher demand for labor supply) are former Transitional from the Socialist system and are cautious of flexicurity, Anglo-Saxon promotes primarily flexibility, while the characteristic of Mediterranean countries is low level of flexibility and security.

This research is part of the scientific project "Flexicurity and socially responsible business operation: comparative analysis of labor markets in Croatia and Slovenia" financed by the Faculty of Economics and Tourism "Dr. Mijo Mirković".

2. PAST RESEARCH

According to Wilthagen and Tros (2004) the first concept of flexicurity is credited to the Dutch professor H. Adriaansens who started using the term in his speeches and interviews in 1995.

The term flexicurity includes high social security of workers and the activities directed to the improvement of skills and activation of the unemployed.

In the past decade, flexicurity imposed itself as the basic model for the reform of social and economic policies, assuming a growth of competitiveness of the European market. The reason for security interconnecting with flexibility is in the European Commission that emphasized and adopted this policy. The set balance between flexibility and security is defined in the European employment strategy. The position of the EC Council is that security represents a significant element of impact on the competitiveness of companies by way of improving quality and productivity, thus easing the adjustment of employee and workplace to economic changes. On the basis of these assumptions the Council of Europe recommended member states to introduce flexicurity in order to increase the possibilities of employment. A large number of papers have appeared on flexicurity (and flexibility) and a number of researches have been done since. "The majority of research focuses on single elements of flexicurity (like Bernal-Verdugo, Furceri and Guillaume, 2012; Dosi et al., 2017; Kahn, 2010; Cournède, Denk and Garda, 2016; Algan and Cahuc, 2006), while some deal with the very process of measurement of flexicurity (Tros, 2012 and Chung, 2012) identifying the most relevant indicators according to single components" (Ostrovidov Jakšić, A., 2017: 44). In order to identify different security policies, Wilthagen and Tros (2004) constructed a matrix including all dimensions of flexibility and security, resulting in 16 different combinations that should result in a win-win situation on the labor market.

The combination of labor market flexibility and economic security in the old age in Denmark is very different from other European countries, from the standpoint of both the development of the system and its outcomes. On one hand, flexibility on the Danish labor market is not connected to the creation of atypical workplaces. The unions had

fought for flexibility for over 50 years before the state ensured workers with workplaces based on standard conditions relative to wages, working hours and social rights.

The flexible aspects of the Danish labor market as well as the extension of the second pillar pension system for the coverage of private sector employees, are the result of negotiations between parties on the labor market.

Liberalization, "flexibilization" and market orientation are recommended according to the rules of the international organization as the OECD in order to achieve solid economic results.

In the last two decades flexicurity has become one of the most important terms in the European discussion on the future of workers on the labor market.

Theoreticians Madsen (2006) and Bredgaard et al (2006/2007) pointed out that Denmark attracted significant international attention in the decade preceding the economic crisis. The reason was a very low unemployment rate and the highest employment rate in the European union and the overall positive macroeconomic effect. In terms of "flexicurity", the Danish labor market model included a highly functional relationship between a low level of employment security, labor market security, high level of unemployment insurance and active labor market policies. In a wider European flexicurity discourse, Denmark was soon seen as an inspiration for the European social model that should guide member states in the development of their employment strategies (European Commission, 2006). After the peak of the positive economic cycle, until Spring 2008, Denmark had the lowest unemployment rate of 3,1%. After that came the economic crisis that significantly affected EU member states. At the beginning of 2011 Denmark had an unemployment rate of 8,2% due to a trimstral decrease of the GDP by 8%. With a rate of 8,2% Denmark got close to the average among European countries. This gave way to additional research on the capabilities of the Danish model.

Madsen (2013) pointed out that theoreticians (Andersen, 2012; Andersen and Svarer, 2012; Eichhorst et al., 2010; Leschke and Watt, 2010; OECD, 2010) discussed the ways and reasons for the crisis on the Danish market, connecting their research with the flexibility and security denoting the Danish model.

Among the researched issues was whether Danish politics reacted to the crisis and whether the crisis stress led to the decomposition of the basic pillars of the model or there were, after all, no obstacles to the implementation of the principle of flexicurity.

As for a direct intervention on the labor market, numerous measures were taken since the beginning of the crisis. In March 2009, a flexible possibility was introduced for the employers to decrease working hours in case of a temporary drop of demand for their products. A maximum duration of job sharing usually lasted for 13 weeks but employers could demand an extension by another 13 weeks.

Economists have not yet reached a consensus on the direction and size of the relation between employment policy and outcomes on the labor market, especially

Withdrawn

in regard to unemployment.

As for the effect of the employment policy on unemployment, Nickell et al. (2001) found that a passive employment policy affects the structural unemployment as a long-term phenomenon.

Accordingly, Scarpetta (1996) and Elmeskov et al. (1998) show that a high legal protection of workers increases structural unemployment, especially for the young and the long-term unemployed.

Schivardi and Torrini (2008) found that such a strict employment policy in the Republic of Croatia decreased the incentive for the increase of employment in Italian companies.

In the book *Reforming severance pay* (2012), the authors Holzmann, R., Vodopivec, M., Boeri and Jimeno (2005) and Kugler and Pica (2008) pointed out the negative effect of a rigid employment policy on the business success of Italian companies. Therefore, the regulation regarding the costs of layoffs could diminish their readiness to employ (Stubelj, 2010).

Heckman et al. (1999) and Kluve and Schmidt (2002) have come to similar conclusions.

In 2009, Hujer et al. have analyzed the German market and concluded that labor market programs did not have any positive impacts on coming out of unemployment in Western Germany. Still, one has to point out that this was the year directly connected to the 2008 crisis.

Boeri T. and Jan van Ours (2008) point out in their research that Europe should adjust its legal labor market institutions because it is responsible for an increasingly high and longer unemployment. Although Germany reached a great recession in 2009 with a strong legal protection of employment, it shortened the working hours and thus avoided layoffs of workers. In that way, Germany got through a strong recession with a minimal loss of workplaces.

Calmfors L., Forslund A. and Hemström M. (2001) research the influence of an active employment policy on unemployment and point out that such measures should be directed towards employment and keeping people facing long-term unemployment while they recommend direct employment for the young, without subventions. They also plead a non-renovation of unemployment allowance for individuals, for the period of unemployment.

3. BASIC COMPONENTS OF FLEXICURITY

When applying the flexicurity model it is necessary to bear in mind the relation of interests of employers and employees. The employer should adjust to the contemporary demands of the market, which requires an adjustment of the number of employees to the amount of work while, on the other hand, the workers demand a secure employment and continuous income from their work.

This opposed system tells us that the employers tend toward deregulation of the labor market while the workers wish to adjust the work conditions to their personal life.

Since the labor markets of the EU member states are very heterogeneous it is almost impossible to implement a unique flexicurity model. With this in mind, the European Commission, in cooperation with national governments, social partners and academics, determined the common principles of flexicurity. It also researched how the countries can implement them through the following four components:

- Flexible and reliable contracts
- Comprehensive strategies of lifelong learning
- Active labor market policies
- Modern social security systems (European Commission, 2007).

These four components shall be addressed theoretically in this part of the paper followed by numerical values to corroborate the theory.

Flexible and reliable contracts are the first component of flexicurity. They aim at securing employment and income in both an ongoing workplace and in case of a layoff, as well as connecting the worker to the workplace and the employer by way of suitable legislation. Job security is usually expressed with the OECD Indicator of Employment Protection Legislation (EPL). Since employment can be permanent and temporary, the 2013 EPL index is shown for both kinds of employment. However, we have to say that employment security comes before workplace security. Regardless of this component, there is need for a certain level of legal protection in order to protect the interests of the workers. The consequence of a high level of regulation is a lack of elasticity and rigidity of labor because it prevents economic subjects from adapting to the market, especially so in times of economic shocks.

The second component is about lifelong learning. The term of lifelong learning means all the activities connected to learning that go on throughout the life of an individual. The main goal of the whole process is an advancement of knowledge, skills and realization of individual goals, whether professional or personal. The importance of lifelong learning is especially felt during an economic crisis through an increased offer of labor and a decreased demand for labor. Through lifelong learning an individual increases his competitiveness and employability and is included in all aspects of social life. Lifelong learning includes learning within formal and informal education and informal learning. Since the environment is changing very fast in such circumstances, lifelong learning becomes necessary through promotions and the improvement of existing skills and knowledge. (EduCentar, 2014). Workers would find it easier to be employed and adapt to the new concept of labor market with a resulting increased productivity.

The third component of flexicurity is an active labor market policy. The primary aim of active employment measures is to contribute to a functioning labor market. These measures are support for: unemployed people looking for work, people with

Withdrawn

disabilities or a diminished capability to work that wish to work, find a job, and employers looking for labor or wishing to keep employees. There is a wide range of active employment measures encompassing all categories of unemployed people.

Measures of active labor market policies are implemented by centers - public employment offices. They can offer education, orientation and skill development to the unemployed. These can be short activities of orientation and clarification, regular education and training (certified informal education institutions, special projects and periods of training). Jobs that are subject to subventions with public or private employers can be used to requalify professional and social competences of the unemployed. Pay subventions (in private and public sector) given to employers for the employment of the unemployed depend on the duration of the unemployment. The duration of the subvention depends on the category the unemployed person belongs to.

Practical work training in public and private companies can be used to retrain the person looking for work and thus improve his qualifications. The person looking for work continues to receive the benefit for insurance in case he is unemployed for the duration of the stage aiming at developing his skills (Danish Agency for Labor Market and Recruitment, 2018).

The fourth component is relative to social security rights. Flexibility and security are multidimensional concepts appearing in various forms.

Per Kongshøj Madsen starts from Atkinson's model of flexible company. That model enables us to tell four different kinds of flexibility: numerical flexibility, working hours flexibility, functional flexibility and wages flexibility (Atkinson, 1984).

Frederick and Ties (2004) point out four forms of security: labor security, job security, income security and combined security.

Job security means the security of staying in the same job through the selection of employees and a mandate with the same employer.

Labor security means the same security but not necessarily with the same employer. What is key in employment are the general trends in the demand for labor, active labor market policy, policies of education and training.

The security of income is relative to the insurance of income in case of unemployment, illness or accidents and is expressed through systems of public transfers.

Combined security represents the possibility to combine professional and private life, for example through pension programs, maternity leaves, volunteering, etc.

4. COMPARATIVE ANALYSIS OF THE RESEARCH ON THE REPRESENTATION OF THE COMPONENTS OF FLEXICURITY IN THE REPUBLIC OF CROATIA AND OTHER SELECTED EU MEMBER STATES

In this chapter, numerical indicators are used to express components of flexicurity in 15 selected EU countries, among which Croatia. The obtained results wish to establish the position of Croatia among the analyzed countries in the area of rep-

resentation of flexicurity components. Besides the basic components of flexicurity it is necessary to explain the situation on the labor market through an analysis of demographic variables reflecting the situation on the labor market by way of the employment and unemployment rates. We also need to clarify how much the changes in labor legislation affected changes in flexibility of working hours and the form of employment as well as the situation in the area of industrial relations.

4.1. Flexible and reliable contracted labor

In order to diminish the rigidity of the labor market and make it more flexible, there should be reliable and flexible contracted labor, which requires a modernization of labor legislation, acceptable collective contracts as well as an elastic organization of work. These elements are basic factors of labor market flexibility.

Regardless of labor market and business flexibility, there is need for a suitable - moderate level of deregulation directed towards the legal protection of workers.

A too strong legal protection prevents employers from terminating work contracts even when terminations are justified.

As already stated, legal protection is measured with employment protection legislation index representing the total strictness of labor regulation. The value of the index is from 0-5, where zero indicates a very labile regulation and five a very strict labor regulation. The overall strictness of regulation of collective layoffs represents the sum of expenses for individual layoffs and all additional costs of collective layoffs.

Withdrawn

The index of legal protection of workers with permanent and temporary employment for 15 EU member states is shown in Figure 1.

(in sources for the year 2014). The protection legislation index for temporary employees was highest in France, 3.8 in 2013, and lowest in the United Kingdom, 0.5 in 2014. When comparing all the observed countries with Croatia, the following countries have a higher protection legislation index for permanent employees: Germany 3, France and Italy 2.8, the Czech Republic 2.7, Sweden, 2.5, Greece, Poland and Slovenia 2.4. Some countries have the same index as Croatia: Denmark, Slovakia and Spain 2.3. A lower index is present in: Ireland, Hungary 2.1 and the United Kingdom 1.6.

On grounds of this analysis we can conclude that out of 15 observed countries, 8 have a higher protection legislation index for permanent employees than Croatia, while 11 countries have a lower index for temporary employees than Croatia.

It can also be observed that Croatia has the same protection legislation index for permanent employees as Denmark, 2.3, while the protection legislation index for temporary employees is 1.1 higher in Croatia than in Denmark (2.9: 1.8).

Regardless of the index in Croatia which is 50% below its value (0-5), the employers point out that it creates obstacles in terminating contracts, especially in specific circumstances. (Afrić - Rakitovac, K., Bušelić, M., 2018.)

Referring to the above, Biondić et. al (2002) are of the opinion that the legal protection of employment is relative to the regulations limiting the possibilities for employers to adapt the level of employment in their companies to their needs.

The fact is that in Croatia the cancellation procedure is complex and requires expert knowledge in the implementation of what small and medium-sized companies, most of them in Croatia, do not have. Simplification of procedures that would take into account the dynamics and modernity of business processes would lead Croatian employers to a more favorable position.

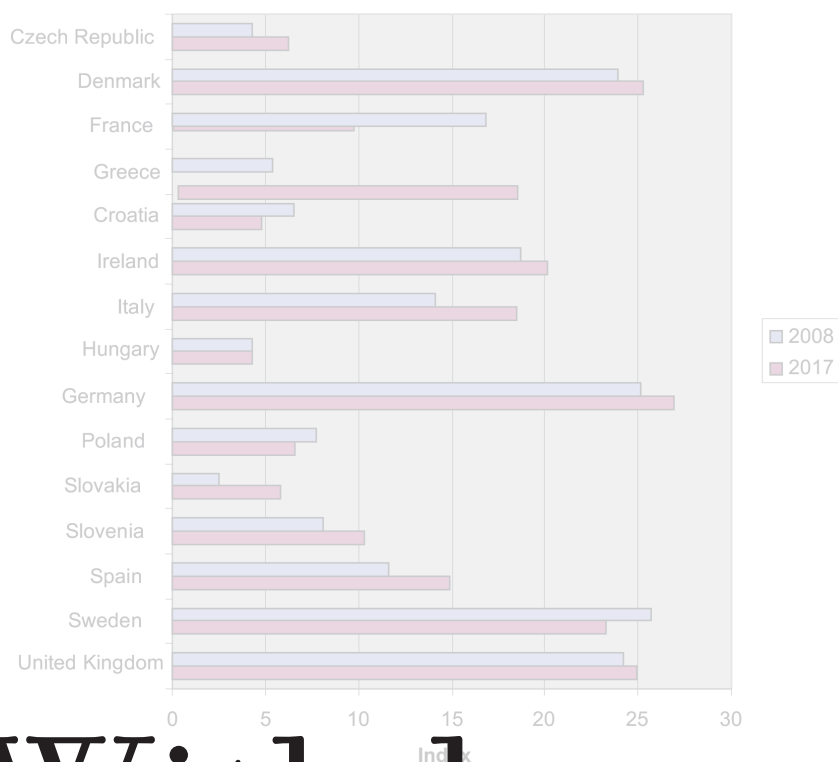
4.2. Non-standard forms of work

The following part of the research looks into and presents flexible forms of work: part-time work, work from home and temporary agency work.

4.2.1. Part-time work

Part-time work is one of the traditional kinds of non-standard employment. This kind of work gained importance towards the end of the 20th century. Satisfaction with this kind of work depends on whether it is a choice or a necessity. In cases when part-time jobs are a choice, they often serve to balance business and family life. As opposed to contract workers, part-time workers (whose workload differs according to the company) have all the rights arising from employment accordingly to the number of hours and the duration of employment (pension, social security, paid days off, sick leave), (Bušelić, M. 2017: 124).

Part-time work shown in Figure 2.

Figure 2.: Part-time work in 2008 and 2017 (in %)

Source: Creation of the author, according to: <https://ec.europa.eu/eurostat/data/database>

The total weekly working hours are established through the Employment Questionnaire (Eurostat data). They are based on the total of hours spent working and exclude the time spent commuting to and from work, as well as the lunch break. For almost all observed countries there are about 40 hours a week. The difference between full-time and part-time is established based on the spontaneous responses of the participants.

The majority of western European countries in 2008 and 2017 have a high percentage of part-time workers, the highest being in Sweden 25.7%/23.3%, Germany 25.1%/26.9%, United Kingdom 24.2%/24.9%, Denmark 23.9%/25.3% and Ireland 18.7%/20.1%. Like the majority of the ex-socialist countries, Croatia also has a low share of part-time workers in the observed years (Croatia 6.5%/4.8%, Greece 5.4%/9.7%, the Czech Republic 4.3%/6.2%, Hungary 4.3%/4.3% and Slovakia 2.5%/5.8%).

Despite an improvement in the Croatian legislation there are still provisions of the labor legislation that discourage employers from employing part-time workers. It has to be pointed out that there is also a very low interest of workers for this kind of work.

An analysis of these information leads us to conclude that western European countries have a high rate of part-time employment which ensures a high flexibility of the labor market compared to post-transition countries where there is no tradition of part-time employment.

4.2.2. Work from home

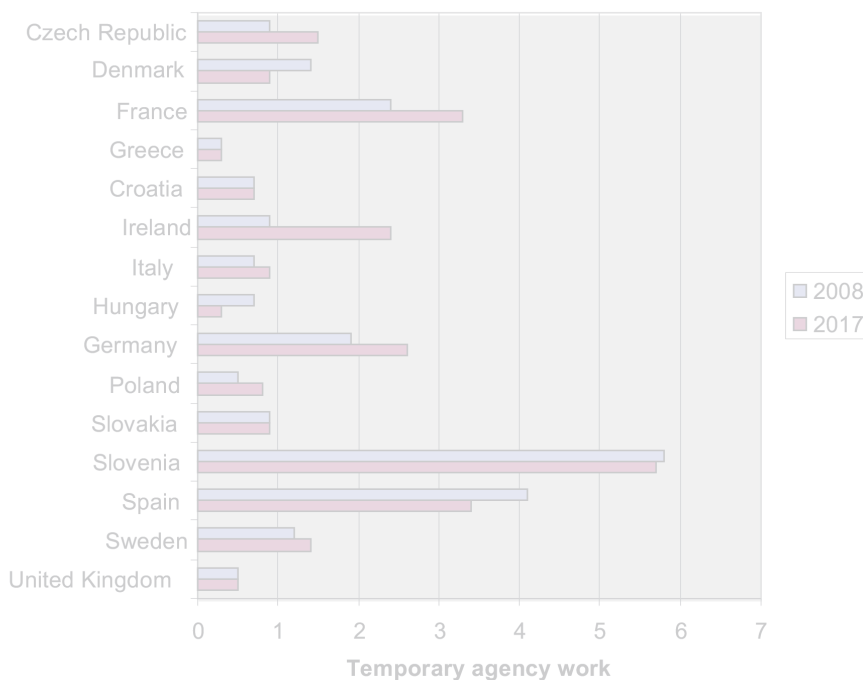
Croatia not only has a relatively low rate of part-time employment, but it also has a low rate of people working from home. In the observed years it was the lowest in the European Union (2008 - 0.9% and 2017 - 1.4%). Of all the ex-socialist and post-transition countries, Slovenia has the highest rate of those working from home (2008 - 4.8% and 2017 - 7.2%). A comparative analysis of work from home for the observed countries shows that it is highest in Denmark (2008 - 10.0% and 2017 - 8.6%) and France (2008 - 9.8% and 2017 - 6.8%) (Eurostat, 2018.). These facts point to a greater flexibility of labor in the observed countries compared to Croatia although Croatia has the necessary legislation for these forms of work.

4.2.3. Temporary agency work

Agencies for temporary employment have appeared in response to the demands of the labor market and the flexibilization of labor rights and relations. The first countries to introduce agency work in Europe were the Netherlands (1965) and Germany (1970) (Laleta S., Tržanović A., 2015). Agencies saw an expansion in the very beginning of the crisis in 2007, when their considerable capability to adapt their activity to the new situation on the labor market was recognized. The work of the agencies is regulated with laws, by laws, collective agreements and practice codes. In the Republic of Croatia, the 2014 Labor Act regulates in detail the activity of agencies for temporary employment. Figure 3 shows a comparison of temporary agency work among the observed countries for the period of 2008 and 2017.

According to the share of workers employed by agencies for temporary employment, Croatia kept the same share in 2017 compared to 2008 (0.7%), while the average in the EU was 1.7% for 2017. An above average share can be seen in Slovenia (5.7%), Spain (3.4%), France (3.3%), Germany (2.6%) and Ireland 2.4%).

Withdrawn

Figure 3.: Temporary agency work (%)

Source: Eurostat, author, according to: <https://stats.ec.europa.eu/data/dataset/LMPEXP>

Withdrawn

4. Situation on the labor market

The analysis of the situation on the labor market includes the rate of activity, the rate of employment and the unemployment rate. These variables are a quality indicator of the situation on the labor market owing to the activity rate which shows the connection between employment and unemployment rates and the issue of inactive population. Active population are individuals between the ages of 15 and 64 (according to the ILO definition). National legislations most often accept the lower limit while the upper limit is established depending on the rate of activity or inactivity of the population. All the employed and the unemployed are considered active population.

4.3.1. Activity rate

Active population is the source of the offer of labor and the main determinant of the labor potential of a society. The active population is in the group of those capable of work, however, mere capability is not enough, there is need for active willingness

of the individual to look for and accept a job fitting to his capabilities (according to Wertheimer - Baletić, A., 1999).

In an analysis of the average duration of a working career in terms of the active part for the observed countries, the Eurostat data show high shares in Sweden (2017 - 41.7 years), Denmark (2017 - 39.6 years), the United Kingdom (2017 - 38.9 years), Germany (2017 - 38.4 years), Ireland (2017 - 36.7 years), Slovenia (2017 - 35.6 years), France (2017 - 35.2 years) and Spain (2017 - 35.1 years) (Eurostat, 2018). Based on the years of work in EU member states, the average in 2017 was 35.9 years. This number is 0.3 higher than the one in 2016 and 3.0 higher than in 2000. We can conclude that the ageing of the population leads to the need for a growth in the rate of activity and consequently to an extension of the working life.

The lowest rates of the average working life were found in Italy (2017 - 31.6 years), Croatia (2017 - 32.5 years) and Greece (2017 - 32.7 years) (Eurostat).

These rates reflect on the rates of activity so that it is important to note for Croatia that a large part of the active population has passed on to the inactive population (early retirement). Figure 4. shows the activity rate from the age of 15 to 64.

Figure 4.: Rate of active population (15 - 64 years)



Source: Creation of the author, according to: <https://ec.europa.eu/eurostat/data/database>

Croatia has one of the lowest activity rates in the age 15 - 64 (66.5). This activity rate is the result of the employment and unemployment rates when comparing the observed countries. The activity rate is a changeable variable because it changes depending on the economic, demographic and social factors. One of the reasons for Croatia was the trend of the economic activity which was negative in the period 2009 - 2015 (negative GDP rate). Demographic factors are also important for Croatia because birthrate has been very low from 1990 until today. With this negative trend there is also emigration relative to younger capable population. This phenomenon is certainly conditioned by the economic growth rate and thus with a lower possibility of employment. For that reason, Croatian labor market today has a low offer of a large number of occupations.

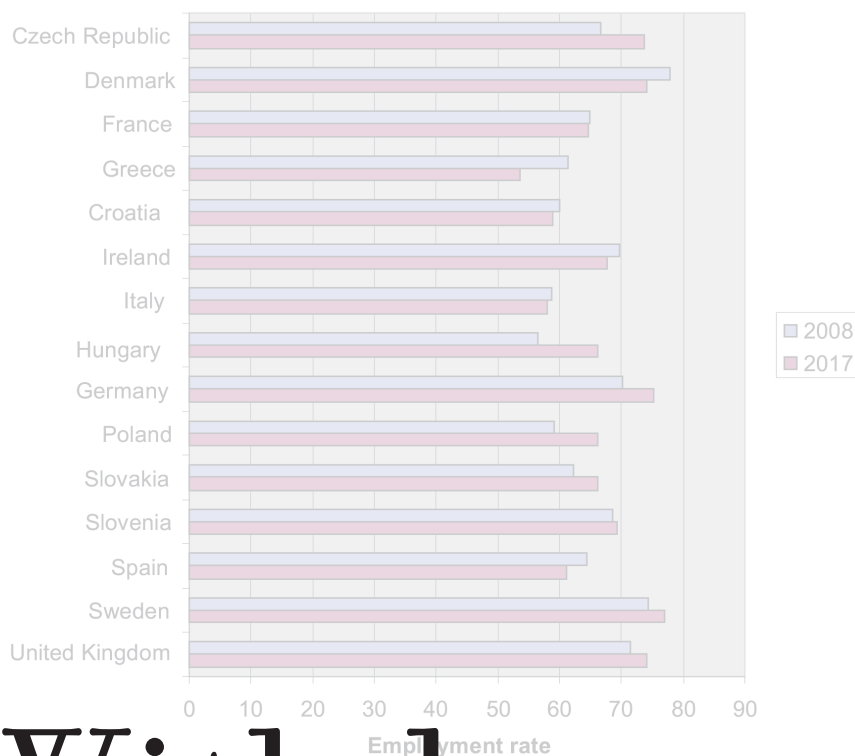
It would be good if we could increase economic activity in order to employ young and highly educated people and change individual education programmes so that there is demand for lifelong learning with the aim of employing people in an unfavorable position on the labor market.

4.3.2. Employment rate

The employed account for the part of the active population who, according to the official statistics, have an employer, whether temporary or permanent and regardless of the working hours and the property of the legal person. Here is the definition of the employed according to the Employment Questionnaire conducted by the Croatian Statistical Service in keeping with the international definition (ILO) with the aim of harmonizing the indicators published by Eurostat. Therefore, the image shows the indicators following the stated definition because they were taken over from Eurostat. The definition states: "An employed person is a person who during the reference week performed work for pay, profit or family gain. These are all employees, self-employed people and family members helping in the business subject owned by a family member (company, trade, freelance occupation, farms) or in some other form of family processing activity or people working for pay per contract, immediate pay in money or things. The Questionnaire, therefore, includes all people who during the reference week performed work, even if just for one hour, regardless of their formal status and regardless of the modality of payment for work. Therefore, the employed in the Employment Questionnaire may be a pensioner, a student or a housewife". (Employment Questionnaire, NO.: 9.2.7., 2018).

Figure 5. shows the number of the employed in 15 European states according to the Employment Questionnaire.

Figure 5.: Employment rate



Withdrawn

Source: Granting of the author according to <http://ap.iss.eurostat.ec.europa.eu/nr/show.do?code=sdg-ergan&lang=en>

The figure shows that countries with a high employment rate in 2008 kept a high position in 2017 as well (Sweden 76.9%, Germany 75.3%, Denmark 74.2%, United Kingdom 74.1% and the Czech Republic 73.6%). On the other hand, countries with a lower rate in 2008, keep it in 2017 (Greece 53.5%, Italy 58.0% and Croatia 58.9%). Countries of the ex-socialist block have a better employment rate compared to Croatia, Slovenia 69.3%, Hungary and Slovakia 66.2% while the Czech Republic was already listed among the countries with the highest rate.

All these countries had a lower unemployment rate than Croatia and thus a higher activity rate, which certainly reflects on the social representation of the society.

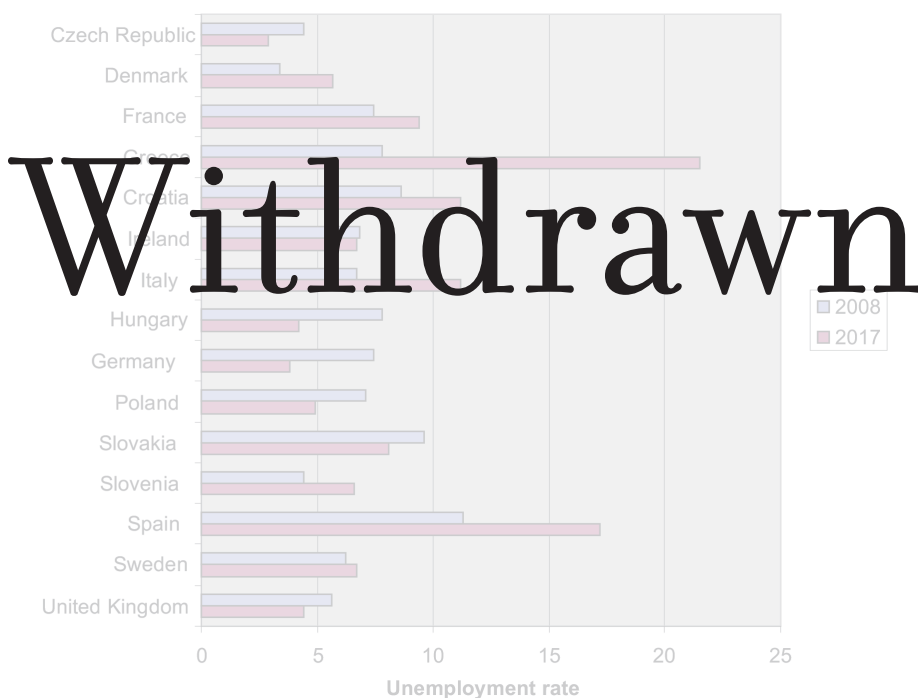
If we add the ratio of permanent and temporary workers, the highest share of temporary workers in 2017 in the overall employment was in Spain (26.8%), Poland (26.1%) and Croatia. The lowest share was that of the United Kingdom (5.7%). All the other analyzed countries had a rate below 20% ranging from 8.8% in Hungary to 17.7% (Eurostat, 2019).

4.3.3. Unemployment rate

Besides inflation, unemployment is considered to be the biggest problem today, not only economic but also social. Unemployment causes high fiscal expenses, diminishes the value of human capital, increases inequality in society and causes serious psycho-social consequences for the individual and the society as a whole. The unemployment rate shows the number of unemployed workers as part of the workforce.

This image is based on the information taken from the Employment Questionnaire. The questionnaire unemployment was defined by the International Labor Organization (ILO). According to this organization the standard international definition of unemployment covers all persons of working age who were: without work during the reference period, were available for work during the reference period, and seeking work, i.e. had taken specific steps in a specified recent period to seek paid employment). (ILO, https://www.ilo.org/ilostat-files/Documents/description_UR_EN.pdf)

Figure 6.: Unemployment rate



Source: Creation of the author, according to: <https://ec.europa.eu/eurostat/data/database>

The analysis of the unemployment rate among the observed countries in 2008

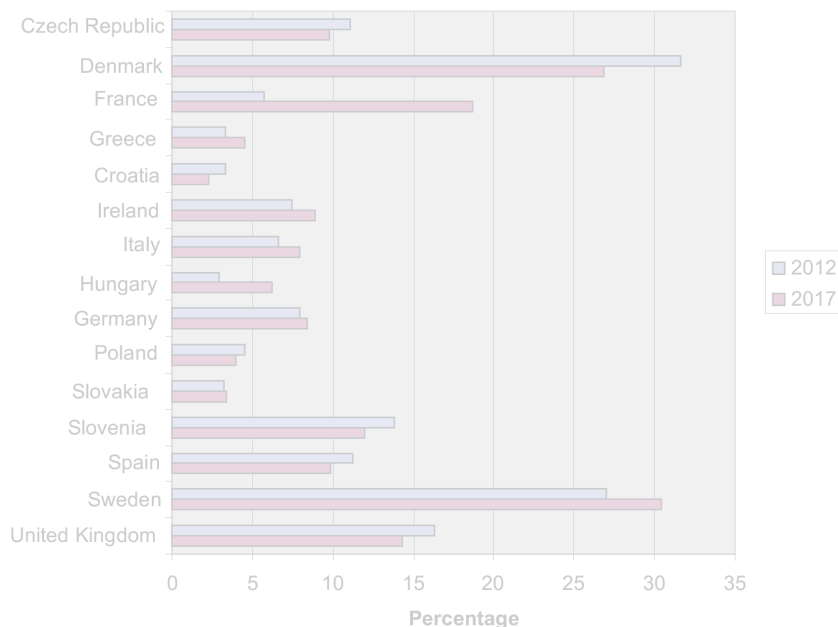
proves that the highest rate was in Spain (11.3%) which traditionally has a high unemployment rate, as confirmed in 2017 (17.2%). Greece had a relatively lower rate in 2008 (7.8%) but the economic crisis and the problems of imbalance in the Greek economy (GDP growth rate of 1.7% in 2017) brought Greece to the highest unemployment rate among all observed countries in 2017 (21.5%). Although the Republic of Croatia had an unemployment rate of 8.6% in 2008, due to a rate of 11.2% in 2017, it is on third place per negativity. The cause is a negative GDP growth rate in the period 2009 - 2015. The unemployment rates in France (7.4% : 9.4%) and Slovakia (9.6% : 8.1%) are also among the highest in both 2008 and 2017. The lowest rate among western European countries in both 2008 and 2017 was recorded in Denmark (3.4% : 5.7%), Germany (7.4% : 3.8%), the United Kingdom (5.6% : 4.4%), while Sweden maintains an almost constant rate (6.2% : 6.7%). As opposed to western European countries, the new post-transition central European countries who accessed the European Union in 2004 besides Croatia also have a low unemployment rate (except Slovakia): Czech Republic (4.4% : 2.9%), Slovenia (4.4% : 6.6%), Poland (7.1% : 4.9%), Hungary (7.8% : 4.2%), Slovakia (9.6% : 8.1%). All these countries except Slovenia had a higher unemployment rate in 2008 than in 2017. The reason for this can be found in the growth of the GDP growth rate as well as in the mobility of part of the workforce to the labor markets of western European countries.

In order to keep unemployment at a low level there has to be economic growth as well as, according to Scutaria (2015), an organization of requalification courses, professional training and usage of new fields that can open up jobs.

Withdrawn

4.4. Lifelong learning

Lifelong learning is today becoming an imperative. It increases the need to include growing numbers of active people in various educational programmes. (Bušelić, M., 2017: 145.) With that in mind the European Union brings educational programmes for various levels of education and they have become the largest program for lifelong learning with a budget of 6.9 billion euros. The programme aims at contributing to the development of the Union as an advanced knowledge society, sustainable economic development, higher employment rate and a higher level of social cohesion. (European Commission, 2017). The rate of participation in lifelong learning is shown in Figure 7.

Figure 7.: Participation rate in lifelong learning

Source: Creation of the author, according to: https://ec.europa.eu/eurostat/statistics-explained/images/3/34/Adult_participation_in_learning%2C_2012_and_2017_%28%C2%B9%29_%28%25_of_the_population_aged_25_to_64_in_the_last_4_weeks%29.png

Figure 7. points to the conclusion that Denmark and Sweden have very high above average rates of participation in lifelong learning. In the observed period (2012 and 2017) the United Kingdom, France, Slovenia, Spain and the Czech Republic are in the range from 10 - 20% participation.

The Republic of Croatia has a very low rate of participation in lifelong learning in 2012 and 2017 when it was the lowest among the observed countries of the European Union (3.3%; 2.3%).

Having recognized the problem, in November 2015 the Republic of Croatia passed a Strategy for lifelong learning and professional orientation and career development in the Republic of Croatia 2016 - 2020.

The strategy is based on international and national contexts. The international context is based on directives of lifelong learning and professional learning of the OECD, the World Bank and the European Commission.

The national context is based on the tradition of professional orientation, the analysis of the existing education policy and the needs of the labor market.

In the Strategy for lifelong learning and professional orientation and career development, within the topical priority "employment and human resources devel-

opment", Croatia has defined the key goals which are in keeping with the European employment strategy.

These goals are:

- Attract and keep a large number of people on the workplaces and modernize the social protection systems;
- Improve the adaptability of the workers and the companies and the flexibility of the labor market;
- Increase the investments in human resources through better education and skills;
- Improve the role of the civil society in the shaping and implementation of the policies.

(European Commission, 2015)

A study of the said goals leads us to the conclusion that they affect the employment sector, the social sector and the civil society sector.

Since the strategy was passed only in 2015 and harmonized with the international context, due to the increasingly fast technological development, it is expected that the rate of participation in lifelong learning in Croatia shall grow.

4.3.5. Active employment policy

The third component of flexicurity is an active employment policy with the purpose of integrating the unemployed and inactive persons in the world of work. Its task is to give the unemployed the possibility to acquire new knowledge and skills, the possibility to find work and support for employment.

Measures to fight unemployment came about during the great world economic crisis (1929 - 1933) in the form of public works. Active policy measures grew stronger after the Second World War. Since then they appear through many different programmes, depending on the rate of unemployment and the structure of the unemployed as well as on the financial possibility of the state to finance or co-finance certain programmes.

We differentiate direct and indirect active measures against unemployment.

Direct measures include the following: opening of new jobs through public works, mediation and counselling in employment by employment services, aid in self-employment, training and requalification, co-financing of employment, encouragement of geographical, economical and professional activities, shortening working hours and diminishing benefits for the unemployed.

Indirect measures of an active employment policy are directed towards spreading small and medium enterprise, self-employment and lowering of taxes for employers for each newly employed person.

Generally speaking, the measures are directed towards groups of the unemployed who are most often in an unfavorable position on the labor market. These are young people, people with disabilities, the elderly, long-term unemployed, women and special groups.

Withdrawn

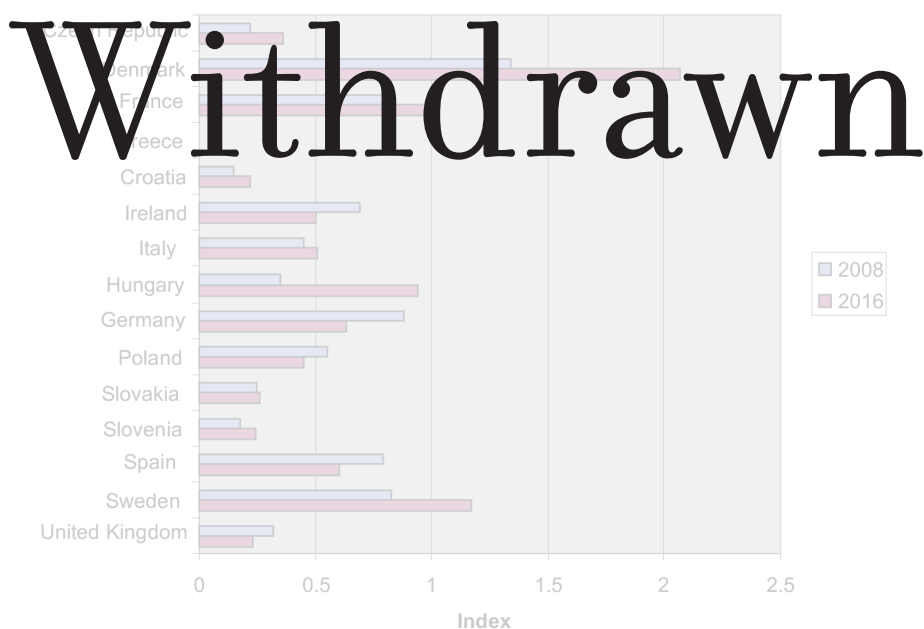
Escherudo, V. (2018) researched the effectiveness of active labor market policies. Her research was mainly about the employment of lowly qualified individuals. The research included the period from 1985 - 2010 and was carried out through the joint database for several countries and time series for 31 developed countries.

Her basic conclusion was that the measures directed towards endangered population groups were more effective than other active employment policy measures in the sense of diminishing unemployment and increasing employment. It is interesting to note that the positive aspects of those policies were especially useful for the lowly qualified workers. Bassanini, A. and Duval, R. (2006) analyzed the labor market for 21 countries of the OECD for the period from 1982 - 2003 and concluded that the observed countries had long-term benefits from an active employment policy. As a matter of fact, well planned active employment policy packages may diminish unemployment and balance efficacy and skills of the unemployed.

One of the main goals of the Croatian Government is to use active employment policies to support the transition from unemployment to the world of work with education, gaining work experience, through public works, subventions for the employment of certain groups of the unemployed or through encouraging self-employment (According to: <https://vlada.gov.hr/mjere-aktivne-politike-zaposljavanja/211>).

Figure 8. shows the consumption on active employment policy marking the amount of GDP on 1% of the unemployed finding employment.

Figure 8.: Consumption on active employment policy (%)



Notes: Greece - 2015 *, Italy - 2015 *, Spain - 2015 *, France - 2015 *, United Kingdom - 2011 **

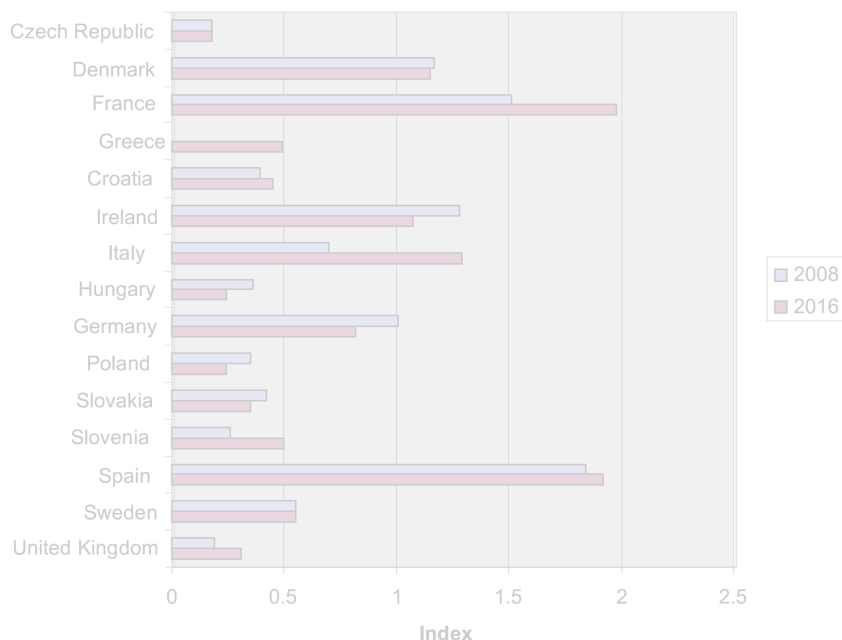
Source: Creation of the author, according to: <https://stats.oecd.org/Index.aspx?DataSetCode=LMPEXP>

The largest consumption for programmes of active employment policy among the observed countries was recorded in Denmark for 2008 and 2016 (1.34; 2.07). This is not surprising since Denmark is actively implementing the flexicurity model and committing to spend on measures of active policy as a component of flexicurity. Other countries with high consumption on active policy (figure 8) are Sweden, Germany and France. Ex-socialist countries have a much lower (below average) expenditures on active employment policy, among which Croatia has one of the lowest. We have to point out that Croatia is a country that was last to become part of the European Union in 2013 and therefore had a shorter time to use the European Social Fund as a considerable support for an active employment policy. For those reasons, such programmes have multiplied after 2013 in Croatia but are still not so present and successful as they are in more developed European countries.

4.3.6. Passive employment policy

A passive labor market policy and unemployment benefits have a double effect. On one hand, they are useful for the protection of living standard of the unemployed while on the other hand they diminish the motivation to seek for work and might result in a deficit in certain professions on the labor market (due to a long stay in financed unemployment). For this reason, this policy is most often a negative determinant on the labor market. An additional negative consequence of a passive employment policy is black work, which also affects the extension of time one wants to use the measures of a passive employment policy. The system of benefits should be organized in such a way as to protect the unemployed but also motivate them to find work as soon as possible (Bušelić, *et al.*, 2017: 119.) In Croatia the material protection of the unemployed is ensured through the Act on Job-Finding Services and Rights During Unemployment.

Withdrawn

Figure 9.: Consumption on passive employment policy (%)

Notes: Greece - 2015 *, Italy - 2015 *, Spain - 2015 *, France - 2015 *, United Kingdom - 2011 **

Source: Creation of the author, according to: <https://stats.oecd.org/Index.aspx?DataSetCode=LMPEXP>

The consumption on passive employment policy in terms of material protection of the unemployed depends on their number. Figure 9 shows that Spain and France have the highest consumption for passive policy, and it follows the trends of their unemployment rates, as is visible in Figure 6. As opposed to these countries Denmark has a below average unemployment rate but also significant expenditures for social policy in terms of unemployment benefits. Such a situation is a consequence of the implementation of flexicurity where people stay unemployed for a relatively short time.

4.3.7. Industrial relations

Industrial relations encompass the development of collective relations between workers and employers by way of their representatives. They include a tripartite dimension with the presence of public authorities on different levels.

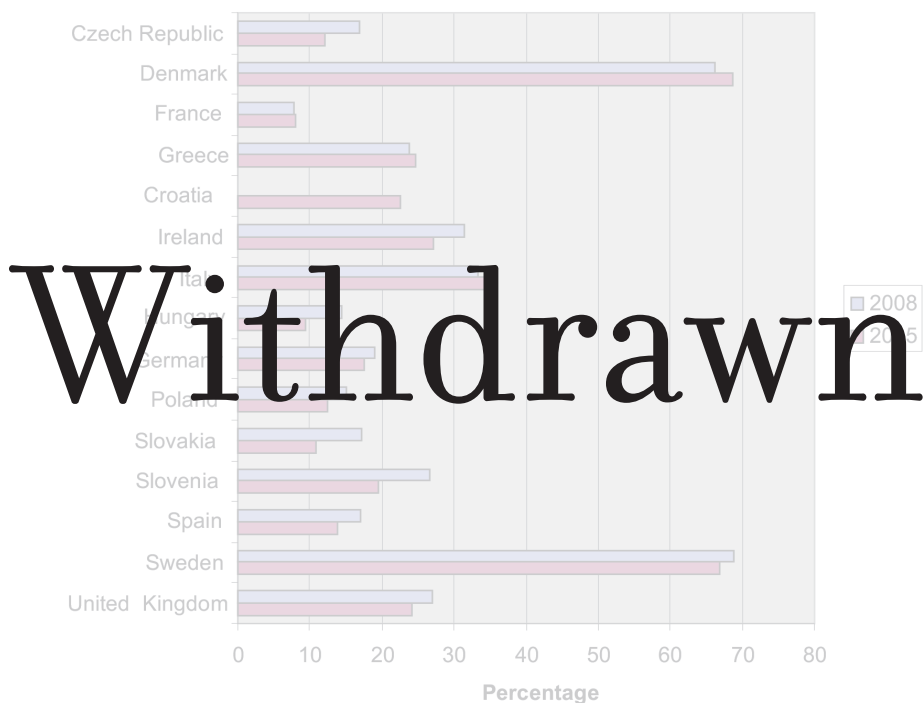
In 2015 there were 633 unions registered in Croatia and for the participation in the tripartite bodies on a national level there are four union associations of a higher level with 334.939 members, according to the last data from 2013. Furthermore, there are 58 associations of employers in the Republic of Croatia, one being repre-

sentative in tripartite bodies on the national level, the Croatian Association of Employers employing a total of 394.739 workers (Ministry of Labor and Pension System, taken from Ostrovidov Jakšić, A., 2017: 73).

The Croatian Labor Act regulates the rights and obligations of workers and employers including the issues relative to membership in a union. The law says that a worker must not be put in a less favorable position than other workers because he is member of a trade union.

It is especially forbidden to stipulate a labor contract with a worker on condition he does not enter a trade union, or on condition comes out of it. Along the same lines, a contract cannot be cancelled, or a worker put in a less favorable condition than others because he is member of a trade union or is taking part in union activities outside of his working hours (Labor Act, 2014, art. 186).

Figure 10.: Number of employees who are members of trade unions (%)



Notes: *** Ireland - 2016, **Poland - 2014, *Croatia and Greece - 2013.

Source: Creation of the author, according to: <https://stats.oecd.org/Index.aspx?DataSetCode=TUD>

An analysis of Figure 10. shows that in 2013 Croatia had the lowest share of the employed who were trade union members (22.5%) thus being among countries with a low share of trade union members despite the legal freedom to organize unions.

Countries that stand out for their high share of union members are Denmark (68.6) and Sweden (66.8). Strong unions are a basic element for partnership and a system of collective negotiation in Denmark as well as in other Scandinavian countries. Almost 70% of the employed in Denmark are part of a trade union. The Danish labor market, as opposed to other EU member states, is more regulated with contracts between social partners. This means that the labor market is mainly regulated with collective contracts and with a small number of laws relative to the labor market.

Sweden is also highly unionized and has a Confederation of Professional Employees (TCO). Then there is also the Swedish Confederation of Professional Associations (SACO) which is developing faster in the private sector. SACO includes associations in its membership, like self-employed professionals (architects, consultants, pharmacists, dentists). 4% of SACO members are full-time self-employed and 5% are part-time workers. The restructuring of the labor market in Sweden resulted in an increase in the number of self-employed workers so that they are also present in the other two acknowledged central trade union organizations in Sweden (the Swedish Trade Union Confederation - LO and the Confederation of Professional Employees - TCO). All these trade unions are acknowledged by the government and employers and make an integral part of the tripartite body (Fulton, L., 2013).

Unfortunately, the average number of members in trade unions in Croatia is declining. Croatian trade union leaders are of the opinion that trade union membership will continue to decline due to the flexibilization of the labor market. Flexibilization should not affect the decline of membership as can be seen in Denmark and Sweden. Countries that apply the model and are the most unionized in the European Union. The work of the trade union as a member of the tripartite body in the economic and social council should be constructive because the rights of the workers should be protected, especially when negotiating collectively agreements. We hope that unionization in Croatia shall not decline further and that trade unions shall take greater responsibility because their leaders cannot only promote themselves.

5. CONCLUSION

Every EU member state applies its own set of institutes and policies, which results in a certain "state of flexicurity". There is no clear-cut strategy or direction of flexicurity for all countries. The flexicurity directives proposed by the European Union may serve as principles. However, the basic components of flexicurity need to be integrated with an effective social dialogue based on mutual trust among the social partners.

This paper researched the components of flexicurity for Croatia and the selected countries of the European Union. The task was to establish the position of Croatia compared to other selected EU member states in regard to the representation of the said components. The results proved that the components of flexicurity

ricity are barely present in the Croatian labor market as opposed to other analyzed markets of variously developed countries of the EU. The analysis of the first component of flexicurity, relative to reliable and flexible contractual relations, is expressed with the index of protection legislation which showed that the said index is below 50% of its value. Regardless of its amount, employers are dissatisfied when having to terminate contracts in unfavorable business conditions. The amount of the index enabled a certain flexibilization of working hours, by means of part-time work, work from home and temporary agency work. However, they are at a very low level compared to other observed countries and do not enable a satisfactory level of flexibility.

The most unfavorable results for Croatia among observed countries were in the component of lifelong learning with a rate of 2.3% because the countries that follow are Slovakia with a rate of 3.4% and Poland 4.0%, which is by 2.3% and 3.4% higher than Croatia. In this component of flexicurity Slovenia is in a highly favorable position compared to Croatia because it has a rate of 12.0%. It is clear that Croatia should see a greater engagement of the employers in training their employees and the state with active employment policy measures. Unfortunately, there is a larger share of passive than active measures in Croatia. Past research proved that an extended duration of the unemployment benefit affected an increase of unemployment and the later stability of employment. Analyses have shown that the unemployed who have found employment immediately after exploiting all the benefits will receive lower salaries when employed. These results show that the unemployment benefits discourage people from seeking new employment and when they eventually find work, their incomes are usually lower. This suggests there is an increased risk of repeated unemployment because they become less selective.

When we speak of the need to introduce flexicurity it is impossible without taking security into account. The reason is that the implementation would be socially ineffective and besides having negative effects on the level of individuals and households, it would also have negative macroeconomic consequences. There is need for a balanced policy that can diminish the obstacles to adjustment and at the same time ensure employment for workers. Policy makers - social partners need to seek for new social models of workers' protection, protecting workers who are entering the dynamic labor market of a globalized economy.

In order to better understand the possibilities for the implementation of flexicurity on the Croatian labor market it was necessary to analyze the length of the working life, the rates of activity, the rates of employment and unemployment and industrial relations. Starting from the average duration of working life, the lowest was in Italy, Croatia and Greece. At the same time, these countries had the lowest activity rates of work capable population. Compared to Croatia, Slovenia is in a much more favorable position with the average rate of retirement being higher, a better rate of activity and employment and a lower unemployment rate.

Croatia therefore needs a stronger social dialogue in order to balance the stated discrepancies. This is especially important since only about a fourth of the employed are part of a trade union so that their position should be balanced with the other partners in order to have a better balance on the labor market. Considering their position, trade unions should not go back to the traditional employment models.

Algann, Y. and Cahuc, P. (2006) claim that the Mediterranean and central European countries will be able to implement the Danish model of flexicurity with a decrease of passive employment policy measures and relying on a strong tripartite body and the public.

Flexicurity could be implemented in Croatia only if new solidary interest forms appear, reflecting not only the changed needs of the workers and employers as collective partners but also that of the unemployed.

Withdrawn

REFERENCES

- Afrić, Rakitovac, K., Bušelić, M. Implementation of flexicurity through corporate social responsibility, 36th International Scientific Conference on Economic and Social Development "Building Resilient Society", Book of proceedings, (2018): 732-741
- Algan, Y., and Cahuc, P. (2006). Civic attitudes and the design of labor market institutions: Which countries can implement the Danish flexicurity model? CEPR Discussion Papers, No. 5489.
- Andersen, Torben M. and Michael Svarer, 2006, "Flexicurity-the Danish Labour-Market Model", Ekonomisk Debatt, 1, (2006): 17-29
- Bassanini, A., and Duval, R. (2006). Employment patterns in OECD countries: Reassessing the role of policies and institutions. OECD, Economics Department Working Papers, No. 46.
- Belot, M., and van Ours, J. C., Does the recent success of some OECD countries in lowering their unemployment rates lie in the clever design, Rev. soc. polit., god. 19, br. 2, (2004): 107-130, Zagreb 2012.
- Bernal-Verdugo, Lorenzo E., Davide Furceri and Dominique Guillaume, 2012,
- "Crises, Labor Market Policy, and Unemployment", IMF Working Papers, br. 12/65, Washington, DC: International Monetary Fund.
- Bilić, A., Perkušić, T., Ugovor o radu na određeno vrijeme kao modus implementacije fleksibilnosti na tržištu rada, Mostariensia, 20, Sveučilište u Mostaru, (2016): 199. - 217
- Biondić, I., Crnić, S., Martinis, A., Indeks zakonske zaštite zaposlenja u Hrvatskoj i međunarodna usporedba, Financijska teorija i praksa 26 (4), (2002): 837 - 860
- Boeri, T., and van Ours, J. C. (2008). The economics of imperfect labor markets. Princeton: Princeton dosadašnja istraživanja University Press.
- Bušelić, M. (2017) Suvremeno tržište rada, Sveučilište Jurja Dobrile, Pula.
- Calander, M., Matslars, K. and Uggendoff, J. (2009). Benefit duration and employment duration: Job match quality: A regression-discontinuity approach. Berlin: Deutscher Institut für Wirtschaftsforschung.
- Calmfors, L., Forslund, A., and Hemström, M. Does active labor market policy work? Lessons from the Swedish experiences. Swedish Economic Policy Review, 8(2), (2001): 61-124
- Cazes, Sandrine and Alena Nesporova, "Combining Flexibility and Security for Employment and Decent Work in the Western Balkans", South- East Europe Review, 9(2), (2006): 7-24
- Chenic A. S., Angelescu c., Gheorghita A. R., Providing Labor Market Flexicurity and Quality of Life Through Better Education and Professional Training, Procedia - Social and Behavioral Sciences, Volume 46, (2012): 4560-4566
- Chung, Heejung, "Measuring Flexicurity: Precautionary Notes, a New Framework, and an Empirical Example", Social Indicators Research, 106(1), (2012): 153-171
- Cournède, Boris, Oliver Denk and Paula Garda, 2016, "Effects of Flexibility-Enhancing Reforms on Employment Transitions", OECD Economics Department Working Papers, br. 1348, Pariz: OECD.
- Danish Agency for Labour Market and Recruitment (2018.), Active labor market policy measures, <https://www.star.dk/en/active-labour-market-policy-measures/>

Dolenc, Primož and Suzana Laporšek, "Flexicurity Policies and Their Association with Productivity in the European Union", *Prague Economic Papers*, 22(2), (2013): 224-239

Dolenc P., Laporšek S., Do Flexicurity Policies Affect Labour of their labor market reforms?. *Oxford Economic Papers*, 56(4), (2012): 621-642

Dolenc, P., Laporšek, S., and Šeparović, A., Does labor taxation affect unemployment? Croatian worker in international perspective. *Ekonomika istraživanja*, 24(3), (2011): 86-101

Dolenc, P., and Laporšek, S., Tax wedge on labor and its effect on employment growth in the European Union. *Prague Economic Papers*, (4), (2010): 344-358. Available from <http://www.vse.cz/pep/abstrakt.php3?IDcl=381>

EduCentar, (2014.), Zašto je cjeloživotno učenje toliko važno, <https://www.educentar.net/Vijest/11430/Zasto-je-cjelozivotno-ucenje-toliko-vazno/>

Escheduro, V., (2018.) Are active labor market policies effective in activating and integrating low-skilled individuals? An international comparison, https://www.researchgate.net/publication/323641160_Are_active_labour_market_policies_effective_in_activating_and_integrating_low-skilled_individuals_An_international_comparison

European Commission, (09.01.2019.), Temporary employees as a percentage of the total number of employees, by sex and age (%), http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=lfsq_etpga&lang=en

European Commission, (13.12.2018.), Employed persons working from home as a percentage of the total employment, by sex, age and professional status (%) http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=lfsa_ehomp&lang=en

European Commission (09.10.2018.), Duration of working life - statistics, https://ec.europa.eu/eurostat/statisticsexplained/index.php?title=File:Duration_of_working_life_2017.png

European Commission (30.08.2017.), Glossary:Lifelong learning - Statistics Explained, https://ec.europa.eu/eurostat/statistics-explained/index.php/Glossary:Lifelong_learning

European Commission, 2015, 2016 Annual Report of the Intergovernmental Labour Market, izvještaj u okviru ugovora br. VC/2015/0682, Bruxelles: Europska komisija

European Commission, 2015, Employment and Social Developments in Europe 2015, DG EMPL Review, Chapter II.3, Social Dialogue, Bruxelles: European Commission.

European Commission, 2015, Strategija cjeloživotnog profesionalnog usmjeravanja i razvoja karijere u Republici Hrvatskoj 2016. - 2020. https://cdn1.fpfis.tech.ec.europa.eu/epale/cdn/farfuture/NLHYqMNQv23uoJYKI3zUPkhp5pf4WBkyfWpkeyY/mtime:1456491278/sites/epale/files/strategija_cpu_i_razvoja_karijere_u_rh_2016.-2020.pdf

European Commission Impact Assessment Guidelines, (2014.) dostupno na: http://ec.europa.eu/governance/impact/commission_guidelines/commission_guidelines_en.htm

European Commission, 2013, Flexicurity in Europe, Administrative Agreement JRC No.31962-2010-11 NFP ISP - FLEXICURITY 2 Final Report, Luxembourg: Office for Official Publications of the European Communities

European Commission, 2012., Evaluation of Flexicurity 2007-2010, izvještaj ICF GHK za Europsku komisiju (DG EMPL) u okviru ugovora br. VC/2011/0682, Bruxelles: Europska komisija.

European Commission, 2007., Flexicurity, <https://ec.europa.eu/social/main.jsp?langId=en&catId=102>

Fialová, K., & Schneider, O., Labor market institutions and their effect on labor market performance in the new EU member countries. *Eastern European Economics*, 47(3), (2009): 57-83. doi:10.2753/EEE0012-8775470303

Fulton, L. (2013.) Worker representation in Europe. Labour Research Department and ETUI. Produced with the assistance of the SEEurope Network, online publication available at <http://www.worker-participation.eu/National-Industrial-Relations>.

HNB, 2013, Okvir 1. Analiza pokazatelja fleksibilnosti tržišta rada u Hrvatskoj, Bilten br. 194, Zagreb: Hrvatska narodna banka.

HNB, 2014, Okvir 2. Reforma Zakona o radu i fleksibilnost tržišta rada u Hrvatskoj, Bilten br. 209, Zagreb: Hrvatska narodna banka.

Hujer, R., Rodrigues, P. J. M., and Wolf, K. (2009). Estimating the macroeconomic effects of active labour market policies using spatial econometric methods. *International Journal of Manpower*, 30(7), 648-671. doi:10.1108/01437720910997335

ILO, https://www.ilo.org/ilostat-files/Documents/description_UR_EN.pdf Unemployment rate

Laleta, S., Križanović, A., Rad putem agencija za privremeno zapošljavanje u hrvatskom, europskom i usporednom pravu, Zbornik Pravnog fakulteta Sveučilišta u Rijeci, Vol. 36 No. 1, (2015): 305-340

Madsen, P., K. (2009.), Flexicurity in Danish - A New Model for Labour Market Reform?, Centre for Labour Market Research (CARMA) Aalborg University

Matković, T., Biondić, I., Reforma zakona o radu i promjena zaštite zaposlenja, Financijska teorija i praksa, 27 (4), (2003): 515-528

OECD (2015.), <https://www1.compareyourcountry.org/employment-protection-legislation/en/0/176/datatable>, Employment protection legislation Organisation for Economic Co-operation and Development

Opis devetorazličito ljudskim pravima. Međunarodni pakt o ekonomskim, kulturnim i socijalnim pravima iz 1966. godine. http://www.gariboldi.hr/wp-content/uploads/2016/10/medunarodni_pakt_o_gospodstvu_socijalnim_i_kulturnim_pravima.pdf

Ostrovicov Jakić, A., (2017.) Postoji li mogućnost primjene koncepta fleksibilnosti na tržište rada u Republici Hrvatskoj, Privredna kretanja i ekonomska politika, Ekonomski institut Zagreb

Savjetodavni odbor: EU Hrvatska, 05. svibanj 2009., Fleksibilnost u Republici Hrvatskoj, Socijalno partnerstvo

Scutariu, A., L., (2015.), An analysis of unemployment in the countries of eastern and Central Europe in the context of EU adhering, The USV Annals of Economics and Public Administration Volume 15, Special Issue

Središnji državni portal, Vlada Republike Hrvatske, (2016.) <https://vlada.gov.hr/mjere-aktivne-politike-zaposljavanja/211>

Stubelj, I., Valuation of Slovene publicly traded companies with a valuation model based on expected earnings and growth opportunities. *Managing Global Transitions*, 8(1), (2010): 23-47.

Zakon o posredovanju pri zapošljavanju i pravima za vrijeme nezaposlenosti, Narodne novine, br. 80/2008., 94/2009., 121/2010., 25/2012., 118/2012., 12/2013., 153/2013., 16/2017.

Zakon o radu, Narodne novine, br. 38/1995., 54/1995., 65/1995., 102/1998., 17/2001., 82/2001., 114/2003., 123/2003., 142/2003., 30/2004., 68/2005., 149/2009., 61/2011., 82/2012., 73/2013. (prestao važiti), 93/2014.

Withdrawn

Žiljak, Tihomir, "Politike cjeloživotnog učenja u Europskoj uniji i Hrvatskoj", *Političko obrazovanje*, (1)1, (2005): 67-95

Wertheimer - Baletić, A., (1999.), *Stanovništvo i razvoj*, MATE, Zagreb

Wilthagen, T., and Tros, F., The concept of 'flexicurity': A new approach to regulating employment and labor markets. *Transfer: European Review of Labour and Research*, 10(2), (2004): 166-186

Withdrawn

APPENDIX 1.: PROTECTION LEGISLATION INDEX AND PART-TIME WORK

	2013 - permanent	2013 - temporary	Part time 2008 in %	Part time 2017 in %
Czech Republic	2.7	2.1	4.3	6.2
Denmark	2.3	1.8	23.9	25.3
France	2.8	3.8	16.8	18.2
Greece	2.4	2.9	5.4	9.7
Croatia	2.3**	2.9**	6.5	4.8
Ireland	2.1	1.2	18.7	20.1
Italy	2.8	2.7	14.1	18.5
Hungary	2.1	2	4.3	4.3
Germany	3	1.8	25.1	26.9
Poland	2.4	2.3	7.7	6.6
Slovakia	2.3	2.4	2.5	5.8
Slovenia	2.4***	2.1***	8.1	10.3
Spain	2.3	3.2	11.6	14.9
Sweden	2.5	1.2	25.7	23.3
United Kingdom	1.6***	0.5***	24.2	24.9

Permanent and temporary workers: *Croatia 2015, **Slovenia and the United Kingdom 2014

Source: <https://www1.compareyourcountry.org/employment-protection-legislation/en/o/176/datatable>
<https://ec.europa.eu/eurostat/data/database>

APPENDIX 2.: WORKFORCE ACTIVITY RATE AND UNEMPLOYMENT RATE

	Activity rate 2008	Activity rate 2017	Unemployment rate 2008	Unemployment rate 2017
Czech Republic	69.7	75.9	4.4	2.9
Denmark	80.7	78.9	3.4	5.7
France	69.9	71.5	7.4	9.4
Greece	66.7	68.3	7.8	21.5
Croatia	65.8	66.5	8.6	11.2
Ireland	74.9	72.7	6.8	6.7
Italy	58.7	65.5	6.7	11.2
Hungary	56.4	71.2	7.8	4.2
Germany	70.1	78.3	7.4	3.8
Poland	63.8	69.6	7.1	4.9
Slovakia	68.8	72.1	9.6	8.1
Slovenia	71.8	74.2	4.4	6.6
Spain	72.7	73.9	11.3	17.2
Sweden	76.0	82.5	6.2	6.7
United Kingdom	75.8	77.6	5.6	4.4

Source: Questionnaire unemployment, <https://ec.europa.eu/eurostat/data/database>

APPENDIX 3.: RATE OF EMPLOYMENT AND TEMPORARY AGENCY WORK

	Employment rate		Temporary agency work	
	2008	2017	2008	2017
Czech Republic	66.6	73.6	0.9	1.5
Denmark	77.9	74.2	1.4	0.9
France	64.9	64.7	2.4	3.3
Greece	61.4	53.5	0.3	0.3
Croatia	60.0	58.9	0.7	0.7
Ireland	69.7	67.7	0.9	2.4
Italy	58.7	58.0	0.7	0.9
Hungary	56.4	66.2	0.7	0.3
Germany	70.1	75.3	1.9	2.6
Poland	59.2	66.1	0.5	0.8
Slovakia	62.3	66.2	0.9	0.9
Slovenia	68.6	69.3	5.8	5.7
Spain	64.5	61.1	4.1	3.4
Sweden	74.3	76.9	1.2	1.4
United Kingdom	71.5	74.1	0.5	0.5

Source: <https://ec.europa.eu/eurostat/data/database>
<https://stats.oecd.org/Index.aspx?DataSetCode=LMPEXP>

Withdrawn

APPENDIX 4.: RATE OF PARTICIPATION IN LIFELONG LEARNING

	Lifelong learning	
	2012	2017
Czech Republic	11.1	9.8
Denmark	31.6	26.8
France	5.7	18.7
Greece	3.3	4.5
Croatia	3.3	2.3
Ireland	7.4	8.9
Italy	6.6	7.9
Hungary	2.9	6.2
Germany	7.9	8.4
Poland	4.5	4.0
Slovakia	3.2	3.4
Slovenia	13.8	12.0
Spain	11.2	9.9
Sweden	27.0	30.4
United Kingdom	16.3	14.3

Source: https://ec.europa.eu/eurostat/statistics-explained/images/3/31/Adult_participation_in_learning%2C_2012_and_2017_%28%C2%B9%29_%28%25_of_the_population_aged_25_to_64_in_the_last_4_weeks%29.png

Withdrawn

APPENDIX 5.: CONSUMPTION ON ACTIVE AND PASSIVE
EMPLOYMENT POLICY (%)

	Active measures		Passive measures	
	2008	2016	2008	2016
Czech Republic	0.22	0.36	0.18	0.18
Denmark	1.34	2.07	1.17	1.15
France	0.82	1.01*	1.51	1.98*
Greece	-	-	-	0.49*
Croatia	0.15	0.22	0.39	0.45
Ireland	0.69	0.50	1.28	1.07
Italy	0.45	0.51*	0.70	1.29*
Hungary	0.35	0.94	0.36	0.24
Germany	0.88	0.63	1.01	0.82
Poland	0.55	0.45	0.35	0.24
Slovakia	0.25	0.26	0.42	0.35
Slovenia	0.18	0.24	0.26	0.50
Spain	0.79	0.60*	1.84	1.92*
Sweden	0.83	1.17	0.55	0.55
United Kingdom	0.32	0.23**	0.19	0.31**

Notes: Greece - 2015 *, Italy - 2015 *, Spain - 2015 *, France - 2015 *, United Kingdom - 2011 **

Source: <https://stats.oecd.org/Index.aspx?DataSetCode=LMPEXP>

Withdrawn

APPENDIX 6.: NUMBER OF TRADE UNION MEMBERS AMONG THE EMPLOYED

	2008	2015
Czech Republic	16.9	12.0
Denmark	66.2	68.6
France	7.8	7.9
Greece	23.8	24.7*
Croatia		22.5*
Ireland	31.4	27.2***
Italy	33.4	35.7
Hungary	14.4	9.4
Germany	19.0	17.6
Poland	15.1	12.4**
Slovakia	17.2	10.9
Slovenia	26.6	19.6
Spain	17.1	13.9
Sweden	68.8	66.8
United Kingdom	27.0	24.2

Notes: *** Ireland - 2016, **Poland - 2014, *Croatia and Greece - 2013

Source: <https://stats.oecd.org/Index.aspx?DataSetCode=TUD>

Withdrawn

EXPLORING THE EFFECTS OF HOTEL DEVELOPMENT, ECONOMIC GROWTH AND EXCHANGE RATE ON TOURISM INDUSTRY: EVIDENCE FOR IRAN

Bahman Khanalizadeh, Neda Ranjandish

- (1) Department Economics, College of Economics and Accounting,
Islamic Azad University, South Tehran Branch, Tehran, Iran
(2) Department Economics, College of Economics and Accounting,
Islamic Azad University, Central Tehran Branch, Tehran, Iran
-

Bahman Khanalizadeh

Department Economics, College of Economics and Accounting,
Islamic Azad University, South Tehran Branch, Tehran, Iran
Khanali.bahman@yahoo.com

Article info

Scientific paper category: Preliminary Paper

Received: 18.2.2019.

Accepted: 21.5.2019.

JEL classification: F02

DOI:10.32728/ric.2019.51/4

Keywords

GDP; Hotel development; Real exchange rate; Tourism industry; ARDL; IRAN

ABSTRACT

The Purpose. *This study is to investigate factors affecting the attraction of international tourists to Iran for the years 1983 to 2015.*

Design/Methodology/Approach. *In this article, we examine using Autoregressive Distributed Lag (ARDL) method to explore the estimating the impacts of economic growth, hotel development, real exchange rate on tourism industry.*

Findings/Implications. *The results of this study showed that the effect of all variables hotel development, merchandise trade, real exchange rate and real gross domestic product on international tourism In Iran, in the long-term and short-term positive and also bilateral relationship is between them. Also, the greatest impact on the increase in the number of tourists entering Iran is the real effective exchange rate and real GDP and a very important point that the results of this research show is that the development of hotels can increase both the short and long term of the number of international tourism to Iran, so in this regard, the development of the necessary technologies to increase this industry should be It will be on the agenda of the private and public sector of Iran.*

Originality. *Given the increasing number of international tourists and the growing role of the tourism industry in the economies of the country, identification of effective factors in attracting international tourists is more than necessary. Governments and the private sector need to identify the factors affecting the tourism industry in order to develop, compete and survive in the tourism industry.*

1. INTRODUCTION

Tourism is an important social and economic phenomenon that follows a pattern of evolution which is important to understand. The macro econometric perspective considers that tourism-demand patterns are explained by economic and social conditions at an aggregate level (Santana-Gallego et al., 2011; Seetanah, 2011).

Tourism often describes as the movement of people away from home to other places of interest, it's one of the largest and fastest growing industries in the world, Travel and Tourism Council (Al-Badi et al., 2017).

In this century, tourism is becoming an important and the fastest growing sector in many countries after the telecommunication and information sectors (Crouch & Ritchie, 1999). Growing tourism sector has huge potential to generate income, investment, employment and foreign exchange. According to the World Tourism Travel Council (WTTC, 2010), the contribution of travel & tourism sector to gross domestic product (GDP), total employment, and total investments are 9.8%, 8.6% and 9.8%, respectively (Yazdi, Khanalizadeh, 2016).

As well as, tourism stimulates other economic industries by direct, indirect and induced effects. In addition, tourism is an important factor in the diffusion of technical knowledge, stimulation of research and development and the accumulation of human capital (Chou, 2013).

But Sustainable tourism industry development means the optimal use of social, natural, cultural and financial resources for national development on an equitable and self-sustaining basis to provide a unique visitor experience and an improved quality of life through partnerships among local government, private sector and communities (Rukuiziene, 2014).

Because of the increase in the international tourism sector in terms of its contribution to the national economy, in recent years there have been conducted vast theoretical and empirical studies on tourism demand, particularly in the countries which has a high dependence on tourism sector.

With the drying up of other sources of foreign currency, such as agricultural and mining exports, the tourism sector has assumed an important role as the only remaining major source of foreign currency. Since tourism remains a vital sector in the economy, its rejuvenation in the short-term will contribute to the economy because the other sectors such as agriculture and mining will only find their feet in the medium-term and beyond, due to the drastic structural changes which are needed to revive them (Yazdi, Khanalizadeh, 2016).

Figure 1. shows the trends and growth rates in international tourist arrivals to Iran from 1983-2015.

During this period, international tourist arrivals to the IRAN were rising.

In this paper, using the autoregressive distributed lag (ARDL), we seek to find and analyze the determinants of the international tourism, number of arrivals for

IRAN. The contribution of this paper is two- fold: (i) it expands the database using new variables and (ii) uses the autoregressive distributed lag (ARDL) to investigate the determinants of international tourism, number of arrivals.

Figure 1.: The trends and growth rates in international tourist arrivals to IRAN



Source: WDI.

The rest of the research is organized as follows. Section 2 provides a background to international tourism. Section 3 provides the theoretical basis for investigating the determinants of the international tourism and the method used in this survey while Section 4 presents the empirical results. Section 5 concludes the paper by drawing policy implications.

2. LITERATURE REVIEW

2.1. Determinants of tourism

Tourism is one of the most rapidly growing sectors in the world. World tourism flows and tourism receipts show a stable increase in recent years. Tourism is one of the most rapidly growing sectors in the world. World tourism flows and tourism receipts show a stable increase in recent years. For most of the countries, tourism is an important source of additional income, foreign exchange, employment and tax revenues. Tourism has become an importance-gaining sector in the country's economy. Therefore, in regard to development the sector in a highly planned and controlled manner it is important to determine the factors which have impact on countries tourist inflow.

The literature that examines the determinants of tourism industry is increasing. The literature reviewed several determinants of tourism, growth domestic product, real exchange rate, hotel development, trade. Often, the main sources of increase tourism are variables above.

Balaguer and Cantavella (2002) investigate the long run and causality relationship between tourism and economic growth in Spanish economy. The results of Johansen and cointegration tests show that tourism receipts have unidirectional effects on economic growth and hypothesis of TLGH is confirmed in this country. Also, the convergence of income and tourism earnings is sustained by the inclusion of external competition (exchange rate).

Halicioglu (2004) empirically examined aggregate tourism demand function in Turkey using time series data (1960-2002). He employs bound testing cointegration that proposed by Pesaran et al. (2001) to estimate long run and short run relationship among income, price, and transportation cost variables. Results indicated that income is the most significant variable in explaining tourism demand function in Turkey.

Kim and et al. (2006) discovered the bidirectional causality between the tourism and economic growth in Taiwan. This means that these two variables reinforce each other. On the other hand, Oh (2005) found that in the case of the Korean economy, the hypotheses of tourism-led economic growth could not be verified and in the period of 1971-2001 had not been found long run relationship link between tourism receipts and economic growth.

Fayissa and et al. (2007) investigated the impact of tourism on economic growth and development in Africa. They used panel data of 42 African countries over the 1995 to 2004. The results show that these countries could enhance short run growth by strategically strong tourism industries.

Lee and Chang (2007) using new heterogeneous panel cointegration technique, investigate the long run and causality relationship between economic growth, tourism development and Exchange rate for OECD and non-OECD countries. They result show tourism development and real exchange rate have positive impact on economic growth but the impact of tourism on GDP of non-OECD countries is more than OECD countries. Also, in long run, bidirectional causality is confirmed in non-OECD countries between economic growth and tourism receipts.

Zortuk (2009) focused on the relationship between the expansion in tourism and economic growth using Granger causality test based on VECM. Results show that there is long run equilibrium relationship between gross domestic product and tourism arrivals. He finds that there is unidirectional causality from tourism development to economic development in Turkey. This study used quarterly data over the 1990q1 to 2008q3.

Arslanturk and et al. (2011) using the rolling window and time-varying coefficients estimation methods, investigated the Granger causality based on Vector Error

Correction Model (VECM) between economic growth and tourism receipts in Turkey from 1963–2006. They result show that GDP does not have predictive power for tourism receipts, and also tourism receipt positively Granger causes GDP after early the 1983s. This means that tourism receipts have a positive impact on the economic growth in Turkey.

Yazdi and Khanalizadeh (2016) in Their paper estimates the coefficients of the determinants of international tourism demand for the period 1995–2014 in the USA using the gravity framework. The analysis is based on a panel dataset of tourist arrivals among 14 countries using autoregressive distributed lag methods. Also, they did show that real gross domestic product, consumer price index, real exchange rate and certain specific events have a significant impact on international tourism demand.

2.2. The Hotel Industry

The competitiveness of a country derives from the performance of its enterprises (Barros, 2005), which certainly include the hotel industry. While a community's growth stimulates hotel performances, in turn hotels contribute to the community's economic, social, and cultural development (Go and et al, 1994). The hotel industry benefits from a destination's economic growth and stability and community developments, such as office buildings, retail malls, and entertainment facilities, which draw both business and leisure travelers and help create demand for hotel rooms. There are many other factors (e.g., input, process, output, and outcome) that determine hotel industry's competitiveness. Indeed, hotels utilize input factors and produce a variety of products and services (outputs), and the nature of these outputs depends very much on hotels' strategic and competitive positions in the region. The impact of these measures in terms of tangible outcomes is reflected by the market share of the hotel industry and by the price competitiveness of the hotel industry in the regional market (Tsai and et al, 2009).

But Hotels, as experienced by other businesses, are facing various external pressures (from communities, competitive forces and also governmental regulations) that push for environmentally friendly practices. In addition, the increase in environmentally mindful tourists reveals a future trend that could jeopardize the industry if environmental matters are not addressed.

Furthermore, since few hotels that follow the standards of sustainable tourism, lack of full awareness about sustainable tourism.

In Iran, there is a huge lack of interest in hotels and industry tourism practices, sustainable tourism education and awareness, lack of skills in identification and help to resolve environmental sustainability development challenges and impacts in local communities and hotel workers, managers and owners, lack of focus on the advantages of sustainable tourism management, as well as lack of support and encouragement for sustainable development from central and local governments, public sector, tourism

and environmental organizations and business sector itself, also there is no effective implementation to resource management, conservation and long-term planning programs and this leads us to facing a lot of problem in development and sustainability and in order to eliminate them we need to drag owners, employees and local community attention on this problem throw this case study and the survey.

García-Pozo and et al. (2013) The purpose of their paper was to analyze the impact on rooms pricing of environmental management practices in the hotels of Andalusia (Southern Spain). The results from the regression analysis they showed that room prices increase when the quality of hotel services is improved by implementing environmental sustainability measures. This means that consumers positively value the implementation of environmentally sustainable measures because, by increasing its utility, they are willing to pay a premium price for the service provided.

Siti-Nabiha and et al. (2014) in study "The Development of a Green Practice Index for the Malaysian Hotel Industry", the method of developing a green practice index for the Malaysian hospitality industry, the differences and advantages of this method compared to the commonly used Delphi method and finally the Malaysian Green Practice Index for the hotel industry are presented.

Finally, Masa'deh and et al (2017) in this study titled "The Effect of Hotel Development on Sustainable Tourism Development In Jordan", using ANOVA analyzes, shown a positive impact on the development of the hotel and the development of tourism. Also, results indicated that there are no significant differences in the impact hotel development on sustainable tourism development in favor of age, educational level, personal income, work position, and hotel classification.

3. RESEARCH METHODS

3.1. Model specification

Our empirical model investigates the impact of economic growth, Real exchange rate, Hotel numbers and trade on international tourism. The functional link between these variables yields:

$$\text{TOUR} = f(\text{GDP}_t, \text{HOTEL}_t, \text{EX}_t, \text{TR}_t) \quad (1)$$

The natural logarithmic transformation of Eq. (1) yields the following equation:

$$\text{LnTour}_t = \alpha_0 + \alpha_1 \text{LnGDP}_t + \alpha_2 \text{LnHOTEL}_t + \alpha_3 \text{LnEX}_t + \alpha_5 \text{Ln TR}_t \quad (2)$$

3.2. Econometric Methods

To analyze the dynamics of growth domestic product, real exchange rate, trade and hotel development on tourism industry in IRAN, we first used the traditional unit root tests of ADF in order to show that all variables used in analysis are not $I(2)$. Secondly, by using Autoregressive Distributed Lag (ARDL) bounds testing approach, developed by Pesaran et al. (2001), we examine the long term relationship between the variables, estimate the long and short term relationship between of growth domestic product, real exchange rate and hotel development and tourism industry and infer the causal relationships based on a dynamic error correction model (ECM).

3.2.1. ADF Test for Unit Root

To check for such non-stationarity, many tests have been developed, out of which the Dickey and Fuller (1979) test with the augmentation for the error term which is not white noise and has the problem of autocorrelation has been used here. The Augmented Dickey-Fuller (ADF) test tackles the problem of serial correlation of error terms by incorporating the lagged dependent variable in the equation as additional repressors (Qayyum, 2002). The ADF equation in general form is given below:

$$\Delta LY_t = \alpha + \beta T + \rho LY_{t-1} + \sum_{i=1}^{\rho+1} \gamma_{t-i} \Delta y_{t-i} + \varepsilon_t \quad (3)$$

Where $i = 1, 2, 3, \dots, n$.

3.2.2. Bounds Testing Approach

The use of the bounds technique is based on three validations. First, Pesaran et al. (2001) advocated the use of the ARDL model for the estimation of level relationships because the model suggests that once the order of the ARDL has been recognized, the relationship can be estimated by OLS. Second, the bounds test allows a mixture of $I(1)$ and $I(0)$ variables as regressors, that is, the order of integration of appropriate variables may not necessarily be the same. Therefore, the ARDL technique has the advantage of not requiring a specific identification of the order of the underlying data. Third, this technique is suitable for small or finite sample size (Pesaran et al., 2001).

Regarding the relationship international tourism (TOUR), real domestic product (Y), the real exchange rate (EX), commodity trade (TR), hotel development (HOTEL), we specify the following equation:

$$\Delta \text{LnTOUR}_t = a_0 + \sum_{i=1}^n a_{1i} \Delta \text{LnGDP}_{t-i} + \sum_{i=1}^n a_{2i} \Delta \text{LnHOTEL}_{t-i} + \sum_{i=1}^n a_{3i} \Delta \text{EX}_{t-i} + \sum_{i=1}^n a_{4i} \Delta \text{LnTR}_{t-i} + \lambda \text{ECM}_{t-1} + u_t \quad (4)$$

a_1, a_2, a_3 and a_4 correspond to the long-run relationship in Equation. Where ECM_{t-1} is the error correction term which is gained from the following estimated cointegration equation:

$$ECM_t = \text{LnTOUR}_t - a_0 + \sum_{i=1}^n a_{1i} \Delta \text{LnGDP}_{t-i} + \sum_{i=1}^n a_{2i} \Delta \text{LnHOTEL}_{t-i} + \sum_{i=1}^n a_{3i} \Delta \text{LnEX}_{t-i} + \sum_{i=1}^n a_{4i} \Delta \text{LnTR}_{t-i} \quad (4)$$

3.2.3. Granger Causality Analyses

In the final step, we can usage Granger causality testing to examine the presence of any bidirectional causal link across the variables under review. To this end, we run the pairwise Granger causality tests and the vector error correction model for the short- and long-run relationships, respectively. Two phases are suggested by Engle and Granger: the first stage recovers the estimated residuals from Equation (2), while the second stage estimates the parameters related to the short-run adjustment. The estimation of the dynamic vector error correction model is given as follows:

$$\begin{bmatrix} \Delta \text{Ln TOUR}_t \\ \Delta \text{LnGDP}_t \\ \Delta \text{LnHOTEL}_t \\ \Delta \text{LnEX}_t \\ \Delta \text{LnTR}_t \end{bmatrix} = \begin{bmatrix} c_1 \\ c_2 \\ c_3 \\ c_4 \\ c_5 \end{bmatrix} + \sum_{i=1}^p \begin{bmatrix} \beta_{11} & \beta_{12} & \beta_{13} & \beta_{14} & \beta_{15} \\ \beta_{21} & \beta_{22} & \beta_{23} & \beta_{24} & \beta_{25} \\ \beta_{31} & \beta_{32} & \beta_{33} & \beta_{34} & \beta_{35} \\ \beta_{41} & \beta_{42} & \beta_{43} & \beta_{44} & \beta_{45} \\ \beta_{51} & \beta_{52} & \beta_{53} & \beta_{54} & \beta_{55} \end{bmatrix} \begin{bmatrix} \Delta \text{Ln TOUR}_t \\ \Delta \text{LnGDP}_t \\ \Delta \text{LnHOTEL}_t \\ \Delta \text{LnEX}_t \\ \Delta \text{LnTR}_t \end{bmatrix} + \begin{bmatrix} \lambda_1 \\ \lambda_2 \\ \lambda_3 \\ \lambda_4 \\ \lambda_5 \end{bmatrix} ECM_{t-1} + \begin{bmatrix} \varepsilon_{1t} \\ \varepsilon_{2t} \\ \varepsilon_{3t} \\ \varepsilon_{4t} \\ \varepsilon_{5t} \end{bmatrix} \quad (5)$$

ECM_{t-1} is the lagged error-correction term. Residual terms are uncorrelated random disturbance term with zero mean and i 's are parameters to be estimated.

4. DATA DESCRIPTION

We obtain annual data for the period 1983-2015 in Iran. The variables that are included in the empirical analysis are international tourism (TOUR), which is defined as the total number of inputs, real GDP (Y), which in the fixed price of 2010, the real exchange rate (EX), commodity trade (TR), Measured as its share of gross domestic product and hotel development as the total number of hotels defined. The data are derived from the Database Development, Database of World Bank and the Statistics Center of Iran. All variables have been transformed into natural logarithms for analysis. We used E views 10 to do the analysis.

5. EMPIRICAL ANALYSIS AND RESULTS

In this experimental research we used Augmented Dickey-Fuller Stationary unit root tests to check for the integration order of each variable. We use unit root tests to ensure that no variable is integrated at I (1) or beyond. We have used the ADF unit root test to check for stationarity. The results in Table 1. show that all variables are non-stationary at their level form and stationary at their first differences.

Table 1.: Augmented Dickey-Fuller Stationary Test Results

Variable	Critical Value	Prob	Variable	Constant No Trend	Critical Value	Prob
Ln TOUR	-2.957110	0.9731	DLn TOUR	-4.46064**	-2.960411	0.0015
Ln HOTEL	-2.986225	1.0000	DLn HOTEL	-4.468139**	-2.960661	0.0013
Ln GDP	-2.967767	0.9109	DLn GDP	-2.961693**	-2.967767	0.0506
Ln EX	-2.976263	0.0210	DLn EX	-3.591443**	-2.960411	0.0011
Ln TR	-2.627420	0.3133	DLn TR	-5.542487**	-2.976263	0.0001

Notes: (*) and (**) indicate 1% and 5% significance level respectively

Source: Author's Estimation using Eviews 10.

In this study, the F-statistics are calculated over significant critical values of all levels. The guideline says that if the F-data calculated is greater than the critical value, the variables maintain long-term communication among them. In this situation, the variables of this study are the long-term sequel among them, which means that the variables of this study move together, since the F-statistic is too high a significant level (see Table 2.).

Table 2.: The critical values of bound test

Computed F- statistic: 6.2739	Critical values	
	Lower bound I(0)	Upper bound I(1)
1% significant level	4.280	5.840
5% significant level	3.058	4.223
10% significant level	2.525	3.517

Source: Author's Estimation using Eviews 10.

Therefore, based on the ARDL approach the long run nexus model is as follows:

The null hypotheses of no cointegration are rejected, implying long-run cointegration relationships amongst the variables. The VECM is set up for considering short and long-run causality. The optimum lags are selected relying on minimizing the Akaike Information Criterion (AIC). The maximum lag order 3 was set. With that maximum lag lengths setting, the ARDL model is selected using AICARDL (3, 3, 0, 0,

1) represents the ARDL model in which HOTEL, TR, EX and GDP take the lag length 3,3,0,0,1 respectively. All estimated coefficients can be interpreted as long-run elasticities, given that variables are expressed in natural logarithms in Table 3. The long-run coefficients of TOUR, HOTEL, TR, EX and GDP estimated from these techniques have the same magnitude at the 5% significance levels.

Table 3.: Long-run Estimation Results

Dependent Variable: LnTOUR				
Variable	Coefficient	Std. Error	T-Statistic	Prob
Ln HOTEL	0.05**	0.028808	1.959420	0.0567
Ln TR	0.36**	0.170985	2.137431	0.0474
Ln EX	0.67**	0.181686	3.697721	0.0018
Ln GDP	2.70**	0.333526	8.125152	0.0000
C	-62.164966**	9.453305	-6.576003	0.0000

Notes: (*) and (**) indicate 1% and 5% significance level respectively

Source: Author's Estimation using Eviews 10.

The results indicate that all estimated coefficients are statistically significant. Based on these are international tourism results, we show that real GDP and Real exchange rate are the two major drivers in increasing international tourism. Moreover, the estimates indicate that a 1% increase in Hotel development, merchandise trade, Real exchange rate and real gross domestic product leads to higher Respectively international tourism (the total number of arrivals) by 0.05%, 0.36%, 0.67%, 2.7% in the Long run.

The results of the short causality are described in Table 4. The error correction mechanism (ECM) is used to check the short-run relationship among the variables. The coefficient of ECM t-1 which indicates that speed of adjustment for short-run to research in the long-run equilibrium is significant.

Table 4.: Error correction model (ECM) for short-run elasticity ARDL (3, 3, 0, 0, 1)

Dependent Variable:				
DLnTOUR				
Variable	Coefficient	Std. Error	T-Statistic	Prob
Ln HOTEL	0.30**	0.59134	5.093792	0.0001
Ln TR	0.17**	0.102059	1.742213	0.0095
Ln EX	0.32**	0.061175	5.342949	0.0001
Ln GDP	1.55**	0.219634	7.081198	0.0000
ECM (-1)	-0.75**	-5.1889	-5.032792	[0.0000]
R-Squared	0.998815			
Akaike info Criterion	49.2618			

Dependent Variable:				
Schwarz Criterion	37.8141			
F-Statistic	7.8933	0.000		
Durbin-Watson	2.0917			

Notes: (*) and (**) indicate 1% and 5% significance level respectively

Source: Author's Estimation using Eviews 10.

The speed of adjustment process restores the equilibrium. The relatively high coefficients imply a faster adjustment process. The values of the coefficients of $ECMt-1$ (-0.75) indicating that the variables will adjust to the long-run equilibrium in about 1.33 period following a short-run shocks.

The estimates indicate that a 1% increase in Hotel development, merchandise trade, Real exchange rate and real gross domestic product leads to higher Respec-tively international tourism (the total number of arrivals) by 0.30%, 0.17%, 0.32%, 1.55% in the short run.

Table 5.: VECM Granger Causality results

Short run						Long run
Variable	DLn TOUR	DLn HOTEL	DLn TR	DLn EX	DLn GDP	ECM(-1)
DLn TOUR	-	5.2313** [0.022]	16.8986** [0.001]	22.8848** [0.000]	13.8555** [0.001]	26.9250** [0.000]
DLn HOTEL	5.3699** [0.020]	-	0.17496 [0.676]	23.3308** [0.000]	0.91649 [0.338]	20.9971** [0.000]
DLn TR	16.1799** [0.001]	2.2975 [0.130]	-	6.6534** [0.010]	.53153 [0.466]	6.1531** [0.003]
DLn EX	9.1984** [0.002]	0.3547E-4 [0.995]	5.0361** [0.025]	-	7.5785** [0.023]	25.0319** [0.000]
DLn GDP	.39402** [0.005]	6.3219** [0.042]	.030815 [0.861]	.19565 [0.658]	-	5.0566** [0.025]

$x \rightarrow y$ means x Granger causes y .

Note: ** denote the statistical significance at the 5% levels.

Source: Author's Estimation using Eviews 10.

The results from the causality test reveals a short-run bidirectional causality running between all Variable to international tourism at the 5% significance level.

The error correction term is statistically significant for all Variable equations.

6. DISCUSSION AND CONCLUSIONS

The purpose of this research was to investigate the effect of Hotel development, merchandise trade, Real exchange rate and real gross domestic product on interna-tional tourism (the total number of arrivals). In Iran, we use the ARDL distributive

auto regression model using the World Bank statistical data for the period 1983-2015. The results of the proposed model suggest that there is a significant and positive effect of all proposed model variables on the international tourism (total number of arrivals) in the long run and in the short run. Granger's causality test also reflects the fact that there is a two-way causality relationship between all variables with international tourism (the total number of arrivals) in Iran.

It has been concluded from passing all statistical tests related to the matter that the model is stable. In other words, the coefficients seem to follow a stable pattern during the estimation period. As a result, the model proves to be usable for decision-making purposes, and its results to be relevant and merit.

Therefore, a very important point that the results of this research show is that the development of hotels can increase both the short and long term of the number of international tourism to Iran, so in this regard, the development of the necessary technologies to increase this industry should be. It will be on the agenda of the private and public sector of Iran. Also, the greatest impact on the increase in the number of tourists entering Iran is the real effective exchange rate and real GDP. In case, economic goal is to cause an increase in tourism industry, then the long run nature of this relationship will come in handy.

As a matter of fact, Now, the territorial tourism industry is developing by using some sustainable tools the global accession networking, green economy jams, which makes easier way to manage tourism information and reveal structural market changes. Also, tourism environment serves also for share to sustainable regional development bringing people into closer contact with nature. Finally, descriptive and general indicators are pointing to the difficulties to investigate properly the sector impacts for sustainable tourism development.

Such diversity of activities in regional level leads on findings on different sustainable tourism impacts, with the identification of positive and negative impacts. Their evaluation is required for keeping the framework of national tourism industry with new findings for improving it by clustering.

Hence, our results suggest that government in Iran country should provide:

- (1) More incentives for private investors in hotel development.
- (2) Avoid exchange rate fluctuations for increase Sustainable Tourism Development.
- (3) Improve in infrastructure economic for trade Openness development
- (4) Develop economic policy tools that stimulate the tourism industry.
- (5) Better education for the tourism work force.
- (6) Improvement in marketing skills.
- (7) Promotion of cultural and natural resources for growth tourism industry
- (8) More resources should be allocated to tourism and travel industries.

In the end, the main target This research is of providing updated knowledge on concepts, ideas and empirical studies on competitiveness in the base of tourism development and the hotel industry and should help, to a large amount, researchers in advancing from existing knowledge bases. Further research work on critical subject in the competitive methods, competitive forces at the industry, firm-specific level, as well as the destination level, have also been suggested. By such work and the development of suitable methodologies for evaluation and significant indicators for future benchmarking, the understanding of the ever-changing parameters, policies, and institutional elements in the trade environment that impact future competitiveness in the hospitality and tourism sector can be better enhanced.

REFERENCES

- Al-Badi, A., & Al-Kaaf, W. "Financial Incentives for Adopting Cloud Computing in Higher Educational Institutions". *Asian Social Science*, 13(4), (2017): 162-174. <https://doi.org/10.5539/ass.v13n4p162>
- Arslanturk, Y., Balçilar, M., and Ozdemir, Z. Time-varying linkages between tourism receipts and economic growth in a small open economy. *Economic modeling*, 28, (2011): 664-671
- Barros, C.P. Measuring efficiency in the hotel sector. *Annals of Tourism Research*, 32(2), (2005): 456-477
- Balaguer J., and Cantavella-Jorda M. Tourism as a long-run economic growth factor: the Spanish case. *Applied Economics* 34(7), (2002): 877-884
- Chou, M. Does tourism development promote economic growth in transition countries? A panel data analysis. *Economic Modelling*, 33, (2013): 226-232
- Crouch, G. I. A meta-analysis of tourism demand. *Annals of Tourism Research*, 22(1), (1995): 103-118
- Dickey, D. A. and W. A. Fuller. Distribution of estimators for autoregressive time series with a unit root, *Journal of the American Statistical Association* 74, (1979): 427-431
- Masa 'deh, R. Nasseef, M. Sunna, C. Suliman, M. Albawab, M. The Effect of Hotel Development on Sustainable Tourism Development. *International Journal of Business Administration*, Vol. 8, No. 4., (2017): 16-33
- Fayissa, B., Nsiah, C., and Tadasse, B. The Impact of Tourism on Economic Growth and Development in Africa, DEPARTMENT OF ECONOMICS AND FINANCE WORKING PAPER SERIES, (2007): 1-21
- Halicioglu, F. An ARDL Model of International Tourist Flows to Turkey. *Global Business and Economics Review* 2004 Anthology, (2004): 614-624
- García-Pozo, A., Sánchez-Ollero, J.-L., & Marchante-Mera, A. Environmental Sustainability Measures and their Impact on Hotel Room Pricing in Andalusia (Southern Spain). *Environmental Engineering and Management Journal*, 12(10), (2013): 1971-1978
- Go, F.M., Pine, R., & Yu, R. Hong Kong: Sustaining competitive advantage in Asia's hotel industry. *Cornell Hotel and Restaurant Administration Quarterly*, (1994): 35(5), 50-61
- Lee, C. Chang, C. Tourism Development and Economic Growth: A Closer Look at Panels, *Tourism Management* 29(1), (2007): 180-192
- Kim HJ, Chen MH, Jang SC. Tourism expansion and economic development: the case of Taiwan. *Tourism Management* 27, (2006): 925-933
- Oh, C.-O. The contribution of tourism development to economic growth in the Korean economy. *Tourism Management*, 26, (2005): 39-44
- Pesaran, M.H., Y. Shin., and Smith R. Bounds testing approaches to the analysis of level relationships, *Journal of Applied Econometrics*, 16, (2001): 289-326
- Qayym, A. Demand for bank lending by private business sector in Pakistan. *The Pakistan Development Review*, 41(2), (2002): 149-159
- Rukuizienė, R. Sustainable Tourism Development Implications to Local Economy. *Regional Formation and Development Studies*, 3(14), (2014): 170-177. <https://doi.org/10.15181/rfds.v14i3.873>
- Santana-Gallego, M., Ledesma-Rodríguez, F., & Pérez-Rodríguez, J. V. Tourism and trade in OECD countries, a dynamic heterogeneous panel data analysis. *Empirical Economics*, 41(2), (2011): 533-554

Seetanah, B. Assessing the dynamic economic impact of tourism for Islands economies. *Annals of Tourism Research*, 38(1), (2011): 291-308

Siti-Nabiha, A. K., George, R. A., Wahid, N., Amran, A., Mahadi, R., & Abustan, I. The Development of a Green Practice Index for the Malaysian Hotel Industry. *Issues in Social and Environmental Accounting*, 8(1), (2014): 23-47. <https://doi.org/10.22164/isea.v8i1.88>

Tsai, H. Song, H. Wong, K. Tourism and hotel competitiveness research. *Journal of Travel & Tourism Marketing*, (2009): 1-45

Statistical Center of Iran. 2018.

World Development Indicator. (2018). Retrieved from <http://data.worldbank.org/data-catalog/worlddevelopment-indicators>

World Tourism Travel Council. (2010). The World Travel & Tourism Council. Retrieved from www.wttc.org.

Yazdi, S. K., Khanalizadeh, B. Tourism demand: A panel data approach. *Current Issues in Tourism* 20, (2016): 787-800

Zortuk, M. Economic Impact of Tourism on Turkey's Economy: Evidence from Cointegration Tests, *International Research Journal of Finance and Economics*, Issue 25, (2009): 231-239

