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Global & Regional Studies

Global Studies Vol.4

Editors

Halil İbrahim Aydın, Magdalena Ziolo, Aniela Bălăcescu

ECONOMIC DEVELOPMENT
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Contents

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Introduction
Economic Development:
Global & Regional Studies

Halil İbrahim Aydın
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The phenomenon of globalization can be described as a gradual increase in the process and dependency level that combines people, society and countries from different economic, social and political aspects of the world. Development, which is a multidimensional concept such as globalization, is a concept that includes human values as well as economic, social, cultural, demographic and political dimensions. With the globalization process, a turn to use knowledge as a factor of production has been passed, and investing in people who use knowledge in production has become important. Investment in human capital leads to the importance of development concept.

The relationship of the development process with the different fields pioneered the preparation of scientific works in the context of globalization and regional studies. In this book "**Economic Development: Global and Regional Studies**", there are academicians who work in different universities of Turkey and the World and work in the field of development. The scientific ethics and responsibility of the works in the book belong to the authors / writers who own the department, of course, and we believe that the necessary sensitivity is shown in this issue. This book in your hand is made up of 15 chapters, and development in each chapter is analyzed from different angles.

We believe that the detailed content will contribute to economic development literature. We would like to thank all the authors whose paper published on this book. Our hope is to provide some ideas which can inspire academicians and students not only to understand different problems that the world is facing, but some solution as well.

Halil İbrahim Aydın
Magdalena Ziolo
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1 | Effects of the Globalization on Economic Growth: An Application on The G-7 and Selected Emerging Market Economies (1991-2015)

Halil İbrahim AYDIN
Ömer YALÇINKAYA

Abstract

In this study, the effects of globalization on the economic growth of G-7 countries and rapidly developing selected emerging market economies (Brazil, China, India, Indonesia, Mexico, Nigeria, Russia, South Africa and Turkey (EME-9) are analyzed econometrically within the scope of the new generation panel data methodology for the period of 1991-2015. From this aspect, it is aimed to evaluate the economic, political and social effects of the globalization process one by one on the long termed economic growth performances of economies in the groups of G-7 and EME-9 and differentiation of their development/income levels. It is determined at the end of the study that the effects of the indicators of globalization level on economic growth in defined models for G-7 and EME-9 groups are positively and mostly statistically significant. Besides, it is determined in this study that the size of the positively and statistically significant effects of general, economic, political and social globalization level indicators on the economic growth is much bigger for G-7 group in comparison with the group of EME-9. These results reveal that the economic, political and social globalization levels of countries in the groups of G-7 and EME-9 are more efficient than their physical-

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human capital accumulation on a differentiation of their development/income levels, in other words, their long termed economic growth performances.

Introduction

World economies live a globalization process that started through the system of Bretton Woods after Second World War, developed by the liberalization of economic policies in the later of 1970s and gradually becomes evident by the disintegration of the Soviet Union. Globalization in the most general sense means a process that increases the economic, political and social interaction between countries and being eliminated the restrictions on the international movement of production factors and goods and services (IMF, 2008: 2). The positive-negative effects in the subjects of economic, political and socio-cultural of globalization process gradually deepen while the globalization level of world economies rapidly increase. On the one hand, the globalization process affects the economic growth performances of countries by raising the international trade, financial integration, international labor movements and technological developments, on the other hand it can affect the economic growth performance (wealth level) of countries negatively by creating some breakdowns in social and environmental standards (Türedi, 2016: 692).

Therefore, a consensus could not be provided at present about the effects of the globalization process on the economic growth and the relations between globalization process and wealth level are explained by basically two different approaches. According to the followers of globalization, the globalization process enhances the wealth level of countries and reduce the differences of development/income level between the countries. In the meantime, according to the anti sides of globalization, the globalization process ease the being exploited of developing countries by the developed ones and also increases the available differences on development/income levels between countries (Hayaloğlu et al. 2015: 120). In this study, it is empirically analyzed the effects of globalization in G-7 countries and fast-growing selected emerging market economies

(Brazil, China, India, Indonesia, Mexico, Nigeria, Russia, South Africa and Turkey (EME-9)) on the economic growth for the period of 1991-2015. From this aspect, it is aimed to evaluate the economic, political and social effects of the globalization process on the long termed economic growth performances of economies in the groups of G-7 and EME-9 and differentiation of their development/income levels.

In this regard, the related literature is summarized with the broad outlines following the introduction and the status of the study in literature is explained. In the third part, the methodology of the survey is shortly described by the data set, and the long termed effects of the globalization on economic growth are analyzed econometrically. The fourth part completes this study includes the general assessments.

Summary of the Literature

It is seen when the related literature is reviewed that the effects of the globalization on the economic growth have been discussed for quite a long time in the theoretical frame, but being researched of these effects have just started. The restrictions to provide the indicators that are used on behalf globalization are influential along with the challenges in defining and measuring the globalization in the formation of this situation. Approved when the primary studies in literature at the empirical level are analyzed that some independent indicators[1] on behalf of globalization are used such as commercial openness, foreign direct investments, average custom tariff rates, etc., by writers or the indicators in the form of index[2] by several international organizations. At the same time, independent indicators only consider the economic dimension of globalization, the indicators in the shape of index can measure the economic, political and socio-cultural dimensions of globalization as a whole by being used a lot of different variables.

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[1] See for detailed studies: (Levine and Renelt (1992), Sachs and Warner (1995), Garrett (2001), Stiglitz (2004)).
[2] See for the studies within this context: (Dreher (2006), Heshmati and Lee (2010), Rao and Vadlamannati (2011), Chang et al., (2013)).

Therefore, the indicators in the form of index have been used in empirical studies to investigate the effects of the globalization on economic growth since 2000s[3].

The most frequently used indicator in the form of index is KOF Globalization Index that is calculated by KOF Swiss Economic Institute. KOF Globalization Index is regularly updated and contains a larger period and more countries in contrast with other globalization indexes. KOF Globalization Index is firstly occurred by Dreher in 2002, then it is updated by Dreher et al., (2008) and calculated as three sub-indexes as economic, social and political. Economic, political and social globalization indexes are individually occurred by being used 23 different indexes. The shares of economic, political and social globalization indexes in the general index (KOF Globalization Index) are calculated by being respectively given the weights as 36%, 27%, and 37%. Moreover, KOF and the sub-indexes are scaled so as to take the values between 1 and 100 and increment of values of an index means the globalization level increased (KOF Index of Globalization, 2016)[4]. Within this context, it is resulted with the help of the studies on several countries and country groups with different development/income levels by using panel data analysis and KOF Globalization Index that the economic, politic and social globalization have usually positively and statistically significant effect (Dreher (2006), Chang and Lee (2010), Sakyi (2011), Villaverde and Maza (2011), Ali and Imai (2013), Leitao (2013), Gurgul and Lach (2014), Samimi and Jenatabadi (2014) Ying (2014), Kılıç (2015), Suci et al., (2015), Hayaloğlu et al., (2015), Türedi (2016)). In addition to this, it is determined in some studies using KOF Globalization Index that some of the economic, political and social globalization indexes have negative and insignificant effect on the economic growth (Samimi and Jenatabadi (2014), Ying (2014), Kılıç (2015), Hayaloğlu et al., (2015)).

It is seen when the related literature in the aggregate that in a good part of studies were mostly actualized on developed and developing countries by being used the KOF

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[3]Some of these indicators in form of index on behalf of globalization are; Kearney Foreign Policy (KPF) Index, (Centre for the Study of Globalization and Regionalization) CSGR Globalization Index, and New Globalization Index (NGI)

[4]For more information on the coverage and calculation methods of the economic, political and social sub-indexes of the KOF Globalization Index, please see: KOF Index of Globalization, 2016.

Globalization Index. However, the development/income level differences of economies in state groups are not considered in large part of studies. In this study after the literature review, the effects of economic, political and social globalization on the economic growth are analyzed by being considered the differences of development level of selected emerging market economies EME-9 and G-7. Thus, it is aimed to review the effects of the economic, political and social globalization on economic growth of both of two country groups and analyze the results regarding development levels of country groups. In this respect, it is thought that the findings of this research will contribute to an improvement of the literature on this subject.

Data, Methodology, and Findings of the Research

In this part of the study, the effects of globalization in G-7 countries and selected emerging market economies EME-9 on the economic growth econometrically for the period of 1991-2015 on an annual basis.[5] In this study, the variables and sources in models that will be predicted to review the effects of KOF Globalization Indexes in countries in the groups of G-7 and EME-9 on the economic growth (per capita real Gross Domestic Product-GDP) are shown in Table 1[6].

The econometric model is shown in equation 1 which's different variations in logarithmic form with physical-human capital accumulation control variables will be predicted to analyze the long termed effects of globalization in G-7 and EME-9 groups on the economic growth. In this study, due to being used the time series data of G-7 and EME-9 countries together, the effects of globalization on the economic growth are analyzed by the panel data analysis, and it is aimed to determine the size/direction of long termed relations between the series. After all, the effects of economic, political and social globalization in G-7 and EME-9 groups on the economic growth are analyzed

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[5]Some data from WB database were provided in 1991. This situation become effective to start the inspection period by this year.
[6]PCRGDP variable is taken from related database in purchasing power parity. EI variable is calculated in per capita values based on the rates of average schooling year of active population in different education levels as primary education, secondary education and higher education.

with the help of different models to avoid the multicollinearity problem between the series in predictable patterns in the study[7].

Model: $PCRGDP_{it} = \alpha_{it} + \beta_1 RGFCF_{it} + \beta_2 EL_{it} + \beta_3 EI_{it} + \beta_4 Globalization_{it} + u_{it}$ (1)

Table 1. Sources and Variables in Model

Variables		Inspection Period: 1991-2015
Abridgment	**Explanation**	**Data Sources**
PCRGDP	Per Capita Real GDP 2011 (USD)	World Bank (WB) (World Development Indicators).
RGFCF	Real Fixed Capital Investments 2010 (USD)	
EL	Employee Labour	The Conference Board (Total Economy Database).
EI	Education Index	Penn World Table (Version 9.0).
KOF	KOF Globalization Index	KOF Index of Globalization
KOF$_{ECO}$	Economic Globalization Index	
KOF$_{POL}$	Political Globalization Index	
KOF$_{SOC}$	Social Globalization Index	
Note:	All the variables in table are used in analyses with their logarithmic values in related period range.	

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[7]Due to globalization is represented by 4 different variables in the study, 4 different variations of model defined in Equation 1 are predicted. The package programs of Stata 14.00 and Gauss 10.0 were used to predict the model defined in study.

The econometric model is shown in equation 1 which's different variations in logarithmic form with physical-human capital accumulation control variables will be predicted to analyze the long termed effects of globalization in G-7 and EME-9 groups on the economic growth. In this study, due to being used the time series data of G-7 and EME-9 countries together, the effects of globalization on the economic growth are analyzed by the panel data analysis, and it is aimed to determine the size/direction of long termed relations between the series. After all, the effects of economic, political and social globalization in G-7 and EME-9 groups on the economic growth are analyzed with the help of different models to avoid the multicollinearity problem between the series in predictable patterns in the study[8].

Model: $PCRGDP_{it} = \alpha_{it} + \beta_1 RGFCF_{it} + \beta_2 EL_{it} + \beta_3 EI_{it} + \beta_4 Globalization_{it} + u_{it}$ (1)

The symbols of (α), (β), (u) in model respectively represent the constant parameter, the slope parameter, the error term. The models described in the equation to analyze the long termed effects of economic, political and social globalization in G-7 and the EME-9 groups on the economic growth are investigated in this study by 4 phases respectively within the scope of the new generation panel data analysis.

Results of Cross Section Independence Test

In panel data analyses, stationary of the series are crucial; there could be found incoherent t, F tests and R2 values in the predictions of non-stationary series (Tatoğlu, 2013:199). Within this context, firstly the stationary condition of the series must be specified to be able to obtain unbiased results in panel data studies (Tatoğlu, 2013:199). The unit root tests for defining the permanent condition of the series are divided into two as first and second generation based on the existence of cross section dependence (CSD) between the units. It is assumed in first generation panel unit root tests that the cross section units are independent of each other and all the units are evenly affected from a shock that is happened only in one section in series. It is accepted that each unit is impacted at different levels from a shock happens in a section in series according to

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[8]Due to globalization is represented by 4 different variables in the study, 4 different variations of model defined in Equation 1 are predicted. The package programs of Stata 14.00 and Gauss 10.0 were used to predict the model defined in study.

the second generation panel unit root tests which are based on the assumption that asserts the cross section units are dependent on each other. That's why, the first generation panel unit root tests produce biased results in the case of being cross section dependence between the sections in panel (Hadri 2000; Levin et al., 2002; Im et al., 2003; Breitung 2005, etc.). Under this circumstance, the second generation panel unit root tests that allow for the cross section dependence between the series in panel could be used (Taylor and Sarno 1998; Breuer et al., 2002; Pesaran 2007; Hadri and Kurozumi, 2012, etc.). On that sense, it needed to be firstly determined the unit root and cointegration tests for analysis and reviewed the CDS in series and cointegration equation. Otherwise, the tests could be biased and produce inconsistent results.

On the other hand, it needs to be considered the dimension of time and section of the series simultaneously while the CSD is reviewed in panel data analysis. Breusch and Pagan (1980) CD-LM1 test could be used in case of being the time dimension of panel bigger than the section dimension (T>N); Pesaran (2004) CD-LM2 test could be used when the time dimension is equal to the section dimension (T=N) or time dimension is smaller than the section dimension (T<N). Breusch and Pagan (1980) CD-LM1 and Pesaran (2004) CD-LM2 tests may produce biased results while the unit average is different from zero and the group average is zero at the same time. Consequently, Pesaran et al., (2008) developed the test statistics that is also used in conditions when the individual average is different from zero by adding the average and variance of cross sections to test statistics as follows:

$$LM_{adj} = NLM^{**} = \sqrt{\frac{2T}{N(N-1)}} \left(\sum_{i=j}^{n-1} \sum_{j=i+1}^{n} \frac{(T-K)\breve{\rho}_{ij}^2 - \mu_{Tij}}{u_{Tij}} \right) \tag{2}$$

The primary hypothesis is described as 'there is no cross section dependence in series and model' in this trial that is called adjusted CD-LM test (CD-LM_{adj}). There is reached the end of the existence of CSD in the series and model in the case of being denied the primary hypothesis in the test has the characteristics of the asymptotically standard normal distribution (Pesaran et al., 2008:105-127). In our study, the existence of the cross section dependence in the cointegration equation and the variables in defined

models for the EME-9 and G-7 groups is analyzed via CD-LM$_{adj}$ test; the results are shown in Table 2.

Table 2. Results of Cross Section Independence Test

Variables	G-7			EME-9		
	CD-LM$_{adj}$ Statistics	P	T	CD-LM$_{adj}$ Statistics	P	T
PCRGDP	44.40* [0.000]	3	1	43.68* [0.000]	5	1
RGFCF	39.92* [0.000]	4	0	42.61* [0.000]	5	1
EL	50.47* [0.000]	3	0	76.00* [0.000]	2	0
EI	59.05*[0.000]	2	0	49.11* [0.000]	5	0
KOF	26.14* [0.000]	5	1	38.13* [0.000]	5	1
KOF$_{ECO}$	31.09 [0.000]	5	1	58.69* [0.000]	3	1
KOF$_{POL}$	20.13* [0.000]	5	1	40.10* [0.000]	4	0
KOF$_{SOC}$	48.24* [0.000]	2	0	31.60* [0.000]	4	1
Model-1	7.84* [0.000]	3	1	2.07** [0.016]	3	1
Model-2	6.00* [0.000]	3	1	1.77** [0.023]	3	1
Model-3	3.27*[0.000]	3	1	2.49** [0.000]	3	0
Model-4	9.34* [0.000]	3	0	1.96** [0.024]	3	1

Note: The marks of "*" and "**" before the CD-LMadj test statistics show that the existence of CSD at 1% and 5% significance level in cointegration equations in defined models of related variables. The number of '1' on 'T' column indicates that the related variable/model is predicted in a constant form and with the trend. The number of '0' indicates that the related variable/model is predicted in a constant form. 'P' column in the table shows the optimal delay lengths for the variables and cointegration equations based on Schwarz information criteria, and the values in square brackets indicate the probability values of CD-LM$_{adj}$ test statistics.

It is observed when the test results of CD-LM$_{adj}$ in Table 2 are analyzed for G-7, and EME-8 groups that all the variables in defined models and probability values belong to cointegration values are smaller than 0.05. Therefore, it needs to be denied the primary hypothesizes of variables and cointegration equations based on CD-LMadj tests; then the alternative hypothesis should be accepted. These results prove the existence of cross section dependence concerning cointegration equations and variables in defined models between the cross section units create the panel in two country groups. So, we can say by looking at these results that the test methods of new generation panel data methodology that consider the existence of CSB should be used in the next steps of analysis.

Results of Panel Unit Root Test

In this study, The permanent condition of series in defined models in two country groups is investigated by the CADF second generation panel unit root test (Cross-sectional Augmented Dickey-Fuller) by Pesaran (2007). Firstly, the CADF test statistics values are computed for all cross sections create the panel, immediately after CIPS (Cross-Sectionally Augmented IPS) statistics are found for the panel-wide by calculating the arithmetic mean of these values. CADF test statistics that can also produce in cases of N>T and N<T are calculated as below:

$$t(N,T) = \frac{\Delta y_i' \overline{M}_i y_{i-1}}{\overline{\sigma}^2 \left(\Delta y_{i-1}' \overline{M}_i y_{i-1} \right)^{1/2}} \tag{3}$$

After being computed the values of CADF test statistics as in Equation 3, CIPS statistics values are obtained by using the mean of these values as below:

$$CIPS = N^{-1} \sum_{i=1}^{n} t(N,T) \tag{4}$$

Table 3. Results of CIPS Panel Unit Root Test

Variables	G-7				EME-9			
	Level	1st Difference	P	T	Level	1st Difference	P	T
PCRGDP	-2.21	-3.36*	3	1	-2.37	-4.11*	5	1
RGFCF	-1.75	-2.98*	4	0	-2.10	-3.31*	5	1
EL	-1.88	-2.83*	3	0	-1.91	-4.51*	2	0
EI	-1.40	-5.94*	2	0	-2.11	-2.62*	5	0
KOF	-1.86	-3.36*	5	1	-2.52	-3.42*	5	1
KOF_{ECO}	-1.52	-3.28*	5	1	-2.53	-3.63*	3	1
KOF_{POL}	-1.48	-3.62*	5	1	-1.75	-2.93*	4	0
KOF_{SOC}	-0.98	-3.51*	2	0	-2.11	-4.23*	4	1
CIPS Critical Table Values			**0**		*-2.60*		*-2.34*	
			1		*-3.15*		*-2.88*	
					(% 1)		*(% 5)*	

Note: The mark of "*" before the CIPS statistics indicates that the variables are static at 1% significance level. The optimal delay lengths are determined based on Schwarz information criteria in CIPS test, and the critical table values of CIPS statistics are taken from the study of Pesaran (2007) in agreement with T and N conditions. Please see the explanations about "P" and "T" columns in Table 2.

It is seen when the results in Table 3 are analyzed that all variables in G-7 and EME-9 groups are non-stationary at 5% significance level. This situation is understood from being the statistics values of CIPS bigger than critical table values at 0.05 importance level as an absolute value. But, it is seen that all variables become stationary at 1% level when the first differences of series are taken in both two country groups. This condition is understood from being the statistics values of CIPS bigger than critical table values at 0.01% significance level as absolute value.

Results of Panel Cointegration Test

The first generation cointegration tests produce reliable results in models (Johansen 1988; Kao 1999; Pedroni 1999, etc.) which have no cross section dependence while these tests cannot give correct result if the cointegration equation has a cross section dependence. In such a case, test methods (Westerlund and Edgerton, 2007; Westerlund, 2008, etc.) of second generation panel cointegration that allow for cross section dependence between the series must be used. The Panel Cointegration test of Westerlund and Edgerton (2007) is based on the trial of Lagrange Multiplier (LM) and uses the bootstrap feature to allow the correlation (McCoskey and Kao (1998)). In this test, the existence of long termed cointegration relation between series is investigated by LM test statistics. The primary hypothesis (there is cointegration relation between cross-section series) is accepted if the test statistics bigger than 1.645 critical table value and the alternative hypothesis (there is no cointegration relationship between cross-section series) is rejected (Westerlund and Edgerton, 2007: 185-190). In the study, this existence of long termed cointegration relationships between variables in models defined for G-7 and EME-9 groups is analyzed by Panel Cointegration test of Westerlund-Edgerton (2007) and Table 4 shows the results.

It is discussed when the results of Westerlund-Edgerton test in Table 4 are analyzed that primarily hypothesizes in all models defined for G-7 and EME-9 groups are accepted as 1% significance level. This condition is understood from being the values of LM test statistics bigger than 1.645 critical table values. These outcomes indicate that variables in unexceptional all models defined in G-7 and EME-9 groups are in tendency to follow similar trends. After being specified the long termed relations in established models, the homogeneity status of slope coefficients in cointegration equation need to be determined by the Slope Homogeneity Tests. In this test, the condition of 'whether the slope coefficients differ based on the cross section units in co-integration equation' is analyzed by the alternative hypothesis called 'slope coefficients are not homogeneous' against the primary hypothesis called 'slope coefficients are homogeneous.' Decided that the main hypothesis is accepted as 1% significance level and the coefficients of cointegration are homogeneous in a case of being the probability values belong to ($\tilde{\Delta}_{adj}$) test statistics bigger than 0.01 (Pesaran and Yamagata, 2008: 50-93). ($\tilde{\Delta}_{adj}$) test analyzes the homogeneity of slope coefficients in cointegration equations of defined models for G-7 and EME-9 groups and Table 4 shows the results. It is

observed when the Results of Homogeneity Test in Table 4 are reviewed that the probability values of ($\tilde{\Delta}_{adj}$) test statistics in all models defined in two country groups are bigger than 0.01. These results prove that constant term and slope coefficients in cointegration equation of all models described for G-7 and EME-9 groups are homogeneous and the cointegration evaluations for panel-wide are valid and reliable as well.

Table 4. Results of Westerlund-Edgerton Panel Cointegration Test (2007)

	G-7		EME-9	
Test Statistics	**LM**	**$\tilde{\Delta}_{adj}$**	**LM**	**$\tilde{\Delta}_{adj}$**
Model-1	7.76* [1.000]	1.036* [0.150]	10.08* [0.843]	1.091* [0.138]
Model-2	7.91* [1.000]	0.964 * [0.168]	9.43* [0.964]	0.938* [0.174]
Model-3	8.56* [1.000]	0.650* [0.259]	9.91* [0.882]	1.108* [0.134]
Model-4	8.08* [0.999]	0.866* [0.193]	10.34* [0.909]	0.923* [0.178]

Note: The mark of "*" before LM test statistics means an existence of cointegration relation between series in a related model as 1% significance level. The probability values that are reported for LM test statistics came from the constancy+trendy form and 10.000 repetitive bootstrap distribution. The mark of "*" before $\tilde{\Delta}_{adj}$ test statistics shows that the slope coefficients belong to cointegration equations are homogeneous as 1% significance level. The numbers in square bracket show the probability values belong to test statistics.

Prediction of Long Termed Cointegration Coefficients

After being determined the long termed relations between series in models defined for G-7 and EME-9 groups by cointegration tests, it needs to specify how should the long termed coefficients belong to series be predicted. In this study, due to the existence of CSD in all models defined in two country groups, the size of long termed effects of explanatory variables in models must be determined by the estimators that consider CSD. One of these estimators is the technique of DSUR (Dynamic Seemingly Unrelated Cointegrating Regressions) that is developed by Mark et al., (2005). The technique of DSUR could be used in case of being the homogeneous or heterogeneous of the cointegrated vectors between the equations and predicts the multi cointegrated

regressions by a parametric method (Mark et al., 2005: 797-820). In this study, the models which are established to analyze the long termed effects of globalization in G-7 and EME-9 groups on the economic growth are predicted by DSUR method, and Table 5 shows the results.

It is seen when the results in Table 5 are evaluated for G-7 group that the coefficients of explanatory variables of RGFCF, EL, EI, KOF, KOF_{ECO}, KOF_{POL} and KOF_{SOC} are positive and statistically significant at 1% importance level in all models without any exceptions. These results reveal that the increments in human capital accumulation and general, economic, political and social globalization level in G-7 group effect the economic growth statistically significant and also positive when the physical capital accumulation and educational attainment are not considered. Followed when the results in Table 5 are analyzed one by one for models defined in the G-7 group that the size of long termed and positively effects of the indicators of physical-human capital and globalization level differentiate substantially. Indeed, it is seen in all defined models that the size of long termed effects of globalization level indicators on the economic growth is much in compare with the physical-human capital. On one hand, these results reveal that the effects of physical-human capital accumulation and globalization level indicators on economic growth are positive, on the other hand, indicate that the economic growth performances of G-7 countries mostly arisen from globalization level while the other conditions are stable.

It is seen when the results in Table 5 are evaluated for EME-9 group that, the coefficients of explanatory variables of RGFCF, EL, EI, KOF, KOF_{ECO}, KOF_{POL} and KOF_{SOC} are positive and statistically significant at 1% importance level in all models (except the variables of KOF_{ECO} and KOF_{SOC}). In the period of study, these results reveal that the increments in human capital accumulation and general and political globalization level effect the economic growth positively and statistically significant when the physical capital accumulation, educational attainment in EME-9 group are not considered. On the contrary, according to the results, the economic and social globalization level in the EME-9 group have not meaningful effects on the economic growth.

Table 5. Coefficients of Long Termed Cointegration: Results of Panel DSUR

	Dependent Variable: PCRGDP							
	G-7				EME-9			
	RGFCF	EL	EI	KOF	RGFCF	EL	EI	KOF
Model-1	0.369* (0.025) [0.000]	0.233* (0.028) [0.000]	0.353* (0.049) [0.000]	**0.836*** **(0.044)** [0.000]	0.538* (0.019) [0.000]	0.624* (0.018) [0.000]	0.721* (0.054) [0.000]	0.392* **(0.075)** [0.000]
	RGFCF	EL	EI	KOF$_{ECO}$	RGFCF	EL	EI	KOF$_{ECO}$
Model-2	0.338* (0.011) [0.000]	0.178* (0.019) [0.000]	0.378* (0.046) [0.000]	0.655* **(0.030)** [0.000]	0.623* (0.015) [0.000]	0.688* (0.018) [0.000]	0.692* (0.061) [0.000]	0.035 (0.049) [0.478]
	RGFCF	EL	EI	KOF$_{POL}$	RGFCF	EL	EI	KOF$_{POL}$
Model-3	0.318* (0.023) [0.000]	0.251* (0.029) [0.000]	0.706* (0.064) [0.000]	0.807* (0.075) [0.000]	0.567* (0.012) [0.000]	0.667* (0.012) [0.000]	0.813* (0.057) [0.000]	0.281* (0.046) [0.000]
	RGFCF	EL	EI	KOF$_{SOC}$	RGFCF	EL	EI	KOF$_{SOC}$
Model-4	0.394* (0.011) [0.000]	0.277* (0.018) [0.000]	0.261* (0.058) [0.000]	0.549* (0.032) [0.000]	0.634* (0.013) [0.000]	0.699* (0.017) [0.000]	0.686* (0.077) [0.000]	0.008 (0.053) [0.876]

Note: The "*" before the variables in models shows that t-statistics belong to coefficients are significant at 1% importance level. The values in '( )' indicate the standard errors belong to coefficients and the values in "[ ]" square brackets show the probability values of coefficients.

In the meantime, it is followed when the results in Table 5 are analyzed separately for models defined in the EME-9 group that, the size of long termed and positively effects of physical human capital accumulation with globalization level indicators on the economic growth differentiate substantially. In fact, the size of long termed effects of physical human capital of defined models on economic growth is much in compare with the globalization level indicators. These outcomes prove that the effects of physical

human capital accumulation and globalization level indicators in the EME-9 group on the economic growth are mostly positive while the economic growth performances of countries in EME-9 group mainly arise from physical and human capital accumulation if the other conditions are stable.

It is stated when the findings of the models that analyze the effects of globalization in G-7 (mostly composed of develop/high-income countries) and EME-9 (mostly middle income/developing countries) groups on the economic growth are evaluated as a whole that, it is possible to summary the results which are compatible with the theoretical and empirical literature as follows. It is confirmed that the effects of variables of human capital accumulation (EI/EL) on the economic growth are positively and statistically significant while the physical capital and education level are not considered in all models defined for G-7 and EME-9 groups. Moreover, it has resulted that the size of these positive effects of variables of physical and human capital accumulation on the economic growth are much more in the EME-9 group in compare with the group of G-7 as expected. On the contrary, the essential factors create the differentness between long termed effects of G-7 and EME-9 groups are the globalization level indicators (KOF, KOF_{ECO}, KOF_{POL} and KOF_{SOC}). Stated that the consequences of a level of globalization indicators in models defined for G-7 and EME-9 groups on the economic growth are positively and statistically significant (except KOF_{ECO} and KOF_{SOC} variables in EME-9 group) and the size of these positive effects are much in the G-7 group in compare with the group of EME-9.

These results introduce that the general, economic, political and social globalization level can stimulate the economic growth in countries of the G-7 group while the EME-9 group could be boosted by just general and political globalization level. Besides, we can easily say that the effectiveness of globalization level on economic growth is far more in G-7 group. All these results point that the political and social globalization level of countries in two state groups are more efficient than physical human capital accumulation on differentiating the development/income levels.

Conclusion

In this study, the effects of globalization in G-7 countries and selected emerging market economies on the economic growth is analyzed econometrically for the period of 1991-

2015. Aimed in this study to that to evaluate the economic, political and social effects of globalization process on differentiating the long termed economic growth and development levels of economies in G-7 and EME-9 groups. In this study, the different models that determine the long termed effects of the variables on economic growth are predicted within the scope of panel data methodology considers the cross section dependence. At the end of the research, it is possible to express the results that are obtained from the models defined for G-7 and EME-9 groups as follow:

Confirmed that the effects of the variables of human capital accumulation in all models set for G-7 and EME-9 groups on economic growth are positively and statistically significant while the physical capital and education level are considered/not considered. Furthermore, the size of these positive effects of the variables of physical and human capital accumulation in EME-9 group are far more than the group of G-7 as expected. On the contrary, determined that the essential factors create differentness between the effects of two country groups on the long termed economic growth are the political, economic and social indicators of globalization. Stated that the consequences of the indicators of globalization level in models defined for G-7 and EME-9 groups on the economic growth are positively and statistically significant (except economic and social globalization in EME-9 group) and the size of these benefits in G-7 group are a lot more than EME-9 group. Proved by these results that general, economic, political and social globalization level can stimulate the economic growth in G-7 countries while only general and political globalization level can stimulate the economic growth in EME-9 group. After all, we can state that the effectiveness of globalization level on economic growth is a lot more in G-7 group. All these results show that the economic, political and social globalization level of G-7 and EME-9 countries are more efficient than physical human capital accumulation on differentiating the performances of long termed economic growth.

In this connection, the policy makers of EME-9 countries need to develop and apply long-range strategies to improve the poor relations between economic growth and political, social and economic globalization level. So, it will be possible to benefit from the positive effects of globalization process in developing countries in the EME-9 group on economic growth/wealth level and reduce the differences of development/income level between two country groups. Otherwise, it is possible to foresee from today that the possible differences on development levels and the effects of economic, political and social globalization on the economic growth between two country groups will be similar

in the near future. Finally, in addition to all these, if the required data is available, being involved a greater number of countries by considering the development level for the next empirical studies to analyze the effects of globalization process on the economic growth will contribute to the improvement of this literature.

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2 | The Economic and Financial Crisis in the Era of Globalization: The Causes, Consequences and Prevention

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Abstract

Globalization is a well-known and internationally recognized phenomenon that attracts the globalist and antiglobalist at the same time. It is defined as a "process, interaction, or procedure of international integration arising from the interchange of world views, products, ideas, and other aspects of culture." Taking into account economic and financial aftermaths of globalization, questions about the linkage between globalization and crisis arise. Global markets, especially global capital markets in the era of globalization are met with new challenges and risks such as financialization. The sophisticated and in depth relations among capital markets and financial instruments among countries result not only in a growing amount of financial assets when compared to the GDP (Lane, Milesi-Ferretti 2001, 2007), but also new kinds of financial risk very difficult to control globally and prone to spill over. This manuscript deals with the problem of economic and financial crisis in the context of globalization. The aim here is to answer the question of the relationship between crisis and globalization, and based on economic theories and schools of economic thought about the main factors responsible for economic and financial crisis before and after the market became globalized.

Introduction

I n the past decades the relationships between countries and their economies have become tighter and their cooperation quite streamlined. This is mainly the result of the process of internationalization and globalization of the global markets and economies. There are consequences of duality as a result,– both pros and cons. The last crisis shows how interconnected the contemporary economy is, and how dangerous these interconnections may be for the local economies. The discussion is focused not only on the pros and cons of the global market, internationalization and cooperation of the markets, but also regarding federations like the European Union. It will also discuss more generally about the role of national economies in the global market, and the limits of their independence in the context of economic and financial stability.

The last crisis in 2008 showed how strictly and tightly contemporary states are dependent on each other, but also how economic and financial crises effect each other. Nowadays it is also much more obvious how enormous the financial sectors with their assets are and how dangerous it is for public finance and the budget to balance. In case global financial institutions are too big to fail and they control the question about the role of state in the economy is the crucial one.

Financial globalization means threats and the need for discussion about responsibility for economic and social consequences of this phenomenon. The last crisis proved that the taxpayers paid the costs of the crisis launched by financial globalization. After the crisis some of solutions and regulations had been proposed and implemented but the question about the efficiency of this instrument and mechanism is still open.

The rest of this paper is organized as follows: In section 2 the definitions of globalization and the main positive and negative outcomes will be discussed. Section 3 deals with the applicable category of economic crisis and the specific economic crisis in the light of the history of economic thought. Section 4 points out the financial crisis, its causes and consequences, with special stress on financialization as a phenomenon common for

globalized financial markets, and one of the risks of financial globalization. Section 5 presents concluding remarks.

Globalization as an Economic Phenomenon

Since American economist Theodore Levitt's (Levitt, 1983) publication in the Harvard Business Review encompassing the era of global consumer standard markets, globalization has become a much more widely recognized concept, and at the same time world trade has increased more than eight times (WTO 2011). Real income per capita, adjusted for inflation, has increased by more than 50 per cent in the same period, notwithstanding dramatic increases in the world population (Arpe et al., 2012: 7). The term "globe" comes from the 15th century (derived from the Latin term) and began to signify a spherical representation of the earth (Scholte, 2007, p. 1472, MWD, 2003; Robertson, 2001: 6254).

The adjective "global" was coined at the end of the seventeenth century and began entered more popular circulation signifying a "world scale" by the end of the nineteenth century, in addition to the earlier meaning of "spherical" (OED, 1989, VI: 582). "Globalism" appeared in glossaries as early as the 1940s (Scholte, 2007: 1472, Reiser and Davies, 1944, 212, 219). The word "globalization" as a process first appeared in English in 1959 and entered the dictionary two years later (Scholte, 2007: 1472, Schreiter, 1997: 5 and Webster, 1961: 965). The concept of "globality" as a condition began to circulate in the eighties (Scholte, 2007: 1472, Robertson, 1983).

In economics, the term globalization refers to a broad range of ideas. Globalization is a concept more dated that most may consider as Rodrik points out (1997), world is watching a truly global market yet again. The world economy was probably more integrated at the height of the gold standard in the 18th century (Kartasasmita, 2001: 1). The current round of globalization began after the Second World War and accelerated in the 1980s and 1990s, as governments for the very part sought to reduce political barriers to international trade and investment.

Globalization is a term that is interpreted based on its context and means different things for different stakeholders. There are many definitions of the phenomenon, old and new, complex and narrow. Some authors define globalization with positive connotations, pointing to the benefits and consequences of the process. One of the

general definitions is proposed by Kenichi Ohmae in 1992, which stated that globalization is the beginning of world-bound activity (Al-Rodhan, 2006: 2). One of the most general approaches to globalization describes the category as a process that includes the causes, the course and consequences of transnational and transcultural integration of human and non-human activities (Al-Rodhan, 2006: 2)

Globalization generally refers to the process by which different societies and particularly economies become more integrated (Nilson, 2010: 191, Irani, Noruzi, 2011: 216). Globalization is a collection of economic, political and cultural processes of interconnection and integration, global and regional. Economic globalization is based on the phenomenon of rapidly growing cross-border economic activity, leading to an increase in the share of economic activity among people from different countries. Cross-border activity may take various forms, including international trade, foreign direct investment and capital movements (Kartasasmita, 2001: XX). Very often globalization is interpreted as internationalization, liberalization, universalization, or an opening up of western estates or novel political spaces (Scholte, 2007).

One of the common types of globalization currently discussed is financial globalization, which is crucial in terms of to understanding financial flows and the financial crisis. Globalization or cross-border financial integration is a process rather than a state. One definition declares that financial globalization is a process by which financial markets and institutions become more closely intertwined and approach full integration, according to which the right of one price would be maintained (Gudmundsson: 9).

As Schmukler pointed out financial globalization is understood as the integration of the national financial system with international financial markets and institutions (Schmukler, 2004: 1) As Mundell (2000) states, the 1970s marked the beginning of a new era in the international financial system. As a result of the oil shocks and the breakdown of the Bretton Woods system, a new wave of globalization began. The potential benefits of financial globalization are likely to lead to financial links to the world and to deeper financial integration of developing countries into the international financial markets. Probably the main advantage of financial globalization for developing countries is the development of their financial system, which includes more complete, deeper, more stable and better regulated financial markets. As discussed in Levine (2001), a better functioning financial system is essential, as it is conducive to economic growth.

Financial globalization also carries risk. The risk is likely to occur in the short term when countries are open. One risk is that globalization can lead to financial crises. Examples of Asian and Russian crises in 1997-98, as well as Brazil 1999, Ecuador 2000, Turkey 2001, Argentina 2001 and Uruguay 2002 are just some examples (Schmukler, 2004: 1-28). Increasingly strong economic ties between nations have brought in a greater degree of risk within a few years. The Lehman Brothers bankruptcy, the insolvency of one firm led global financial markets to the most serious turmoil since the Great Depression, overcompensation of a small member of the eurozone Greece has triggered a debt crisis that threatens the very existence of the European monetary union as well as Gulf of Mexico oil spill and nuclear disaster in Japan have further warned the world of risk. The apparently insufficient global demand for energy (Arpe et al., 2012: 7).

The Concept of Economic Crisis

The word crisis in Greek means the breaking moment, which is to move away from the old models of behavior, modify them or adapt to the new ones. This definition is universal and it is used in individual situations in personal life, businesses but also in countries and their compounds or unions (e.g. migration crisis in the European Union). The term of crisis also finds its place in economics and is commonly treated as a synonymous of the word "recession" (Komorowski, 2013: 281). However, "moving back" (Latin Recessio) is not in opposition to "the breaking moment", which is in result associated with moving forward by corollary. Furthermore, the term of recession in economics is strictly determined, which is associated with a decrease in GDP in two consecutive quarters. In the past, the world has been affected by more than one economic crisis, and these were the breaking moments resulting in new theories of many schools of economics.

The starting point of the most popular economic thought was the theory of fluctuations, initiated by the doctor of medicine Clément Juglar in nineteenth century. Although the analysis of economic fluctuations was performed in 1810-1820, prior to the mentioned French economist and statistician's birth, business cycles were treated as a not significant phenomenon, generated by external, exogenous causes such as crops failures, wars, etc.

Juglar presented the first scientific studies that have indicated the endogenous causes, which were mainly the limits of credit in a period of the economic expansion. Juglar's cycle (called classical) lasts about 7-11 years and is characterized by low government intervention and the market mechanisms (Marciniak Ed., 2001: 449). This discovery was the basis of new theories developed by the largest schools of economics such as: neoclassical, Keynesian, Chicago (monetarism) or Austrian. This theory found a place even in the philosophy of Karl Marx.

Despite the occurrence of the common theoretical foundation, each school had identified different economic crises, causes, and ways of prevention. The main differences in the approach to the problem are based primarily on the range of the state's interventionism. Theory developed by J.M. Keynes is highly focused on state's interference in the economy. He observed a negative correlation between the unemployment rate and aggregate expenditures that occurred in the crisis of '30s. Keynes claimed that the total demand, which is the result of aggregate spending , is the most important determinant of unemployment rate and the investments are not dependent on savings (as in the theory of classical economics), but anticipated by entrepreneurs, capital efficiency (business expectations), and the interest rate (Księżyk, 2012: 388).

Keynes believed that a significant increase in wealth is associated with the reduction of the total demand, which is positively correlated with savings and negatively correlated with consumption. In other words, with the increase of unit's wealth, the level of consumption is reduced, and the level of savings is increased, which has a negative impact on economic growth. As said by Keynes the uncertainty of the economic situation is inevitable, because entrepreneurs make business decisions in a rather [animally] intuitional way than cold calculation and their expectations are highly changeable and capricious. The results are fluctuations in investment, and thus aggregate expenditures (Sanz Bas, 2014: 290-291). These reasons led Keynes to the thesis that the free market economy is unstable, and the level of the total demand will never be sufficient. According to him, in a capitalist economy there are no suitable mechanisms for ensuring adequate rate of employment. The recipe for the crisis is the increase in government expenditures and the expansionary monetary and fiscal policies (Sanz Bas, 2014: 291) (to improve the availability of credit), resulting in increased levels of investment and consumption.

The other paradigms close to Keynesian theory are concepts of Michal Kalecki, Post-Keynesian Economics, and the new Keynesian school (Neo-Keynesian economics). Michal Kalecki is associated as the progenitor of the Keynesian methodology. His reflections were close to Keynesian theory, but enriched with exogenous causes of the crisis such as the pressure of big capital holders. Kalecki argued that the policy of reducing the deficit run by the government is the result of pressure made by leading industrial companies in the period of significant, economic growth. The purpose of such pressure is to reduce the impact of strong trade unions, reduction of wages, and punishment of "recalcitrant" employees.

That kind of insistence, as Kalecki pointed out, is the source of the crises (Piech, 2002: 105-106). He also remarked (like Keynes) that the remedy for the economic failure is an expansionary policy of the government, which is also a result of the claims - but this time - by the masses. These claims force the authorities to cope with growing unemployment, stimulate economic growth by investing in public works, and increasing the budget deficit (Lubiński, 2002: 96-97).

The continuation of the theory of Keynes is Post-Keynesian Economics, formulated in 1974. This view (as in Keynes) concerns itself of instability of the capitalist economy and the lack of opportunities to achieve market balance without state's intervention. The core of this concept is based on six assumptions. Firstly, the level of employment and unemployment are the result of production, secondly, involuntary unemployment is caused by insufficient global demand. Thirdly, the savings result from the investment, never contrariwise (as assumed by classical school). Fourth, barter differs from the economics of money.

Money is not neutral in itself and it has an effect on - depending on the time horizon (Brzoza-Brzezina et al., 2002: 4-5) production and consumption. It also underlines the importance of debt. Fifth, the quantitative theory of money in cause-and-effect relationship between the amount of money in circulation and the level of prices is invalid due to endogeneity of money (i.e. a change in the money supply are not a reflection of the actions of the central bank, but of the real economy (Duwendag, et al, 1995: 145).

Finally, assumption applies to the investments that fluctuate by animal and changeable instincts of entrepreneurs, which lead to economic crisis (King, 1993: 327-337).

Hayman P. Minsky's (1982) model is a schematic formation of the crisis in the following way: after a period of economic recession, companies refrain from investments and behave in a conservative manner. Capital expenditures increase with the improvement of the economics, leads to an increase in hopes for higher profits by entrepreneurs and banks which decrease regulations in lending. The credit expansion and further increase at this level of investment consequently results in over-investment (Marczak, Piech, 2009: 21). To prevent or reduce a scale of crisis in post-keynesian theory is to use state interventionism to regulate the demand through income policy (Komorowski, 2013: 283).

As Keynesianism was a response to classical economic theory, Neo-Keynesian economics is a response to neo-classical concepts. New Keynesian schools accept some of the assumptions of classical and neoclassical economics, such as the acceptance of rational behavior of small businesses (Noga, 2016), which is the main object of criticism from the Post-Keynesians along with the ability to self-regulate in the long term. Neo-Keynesians do not agree with neoclassicals in terms of price and wage flexibility, considering them to be rigid in the short and medium term. Due to the slow process of restoring the economic balance, and thus adaptation of prices and wages, Neo-Keynesian economics assumes governmental interference (Próchnicki, 2014: 70-71). The causes of crises in this concept are supply and demand shocks. Anti-crisis policy should be based on the stimulation of the demand through monetary policy (Komorowski, 2013: 283).

On the other side of the economic theories dispute are the market self-regulating proponents. In this group there are monetary, neoclassical, real business cycle and the Austrian schools. They come from classical economics, their arguments are based on Say's law and are firmly opportunistic to the Keynesian claims. Monetarists place the greatest emphasis on the monetary policy. They believe that money is neutral and has no direct impact on the real values such as production or employment. The increased money supply results in higher inflation and the role of government is to focus on the appropriate monetary policy. According to the theory of the Chicago School, the desired state is stable and low inflation reaching 3-4% while the high monetary expansion leads to economic recession. In the monetarists' concept, manufacturers misled by inflation notice an increase in profitability of companies, bypassing the increase in costs. The profitability increment leads to an increased investment and employment. After some time, they come to the conclusion that their nominal wage

does not coincide with the real value of money and this leads to a reduction in the supply of employment (Marczak, Piech, 2009: 18).

Neoclassicals (A. Marshall) associate recession with excessive expansion of investment during the boom period (the theory of over-investment) and too rapid reduction in loans during the downturn. Accordingly, the anti-crisis policy should consist of two tools of economic policy: to prevent excessive lending during the boom and governmental insurance offering for businesses during the recession. The second solution can, however, effect negatively on market processes and mechanisms (Piech, 2002: 100). Real business cycle theory assumes that fluctuations in production and employment are caused by exogenous causes occurring in the form of supply shocks. Monetary factors are omitted, instead focusing primarily on real ones. Examples of these shocks are changes in the supply of raw materials, war, climate change, technological progress. An anti-crisis approach in this concept is complete lack of stability (Marczak, Piech, 2009: 18).

Austrian school, belonging to heterodoxy, is not part of the mainstream economy. The representatives of this concept are against state's intervention and Keynesian theory, but they share a negation of the 'theory of neutrality of money'. As the opponent to the other schools, Austrian thinkers stand out by not using the economic models, and by treating economics as the science of human action (praxeology). Economic occurrences in this school are marked as a dynamic, while the market balance is considered to be an ideal in theory, it is impossible to achieve in an uncertain (dynamic) world.

The school treats as the cause of any crisis the theory of over-investment, associated with the accumulation of errors in the economy (Rothbard, 2010: 6-10). Austrians believe that the boom is a period of incorrect decisions, which are resulting from falsified information through a bank loan (especially in fractional-reserve banking) and its inflationary effects. Businesses believe that the supply of saved funds by bank customers is higher than in reality. Therefore, entrepreneurs invest cash in longer production processes which are long term investments. In particular, they increase investment in goods that are more far away from customers (such as production machinery, buildings etc.), while decreasing it in consumer goods. They also believe that customers save their funds now in order to spend such money in the future. The increment of acquired tangible assets by entrepreneurs raises the price of capital and other production goods.

Additionally, new money penetrates the factors of production in the form of wages, profit and interest.

Table 1. Causes of economic crises and preventive measures according to the approaches of the different currents of economic

Economic School	Causes of crisis	Anti-crisis policy
Keynesians	Insufficient global demand;	Demands stimulation,expansionary monetary and fiscal policy, an increasement in government spendings;
Kalecki	The impact of large-scale industry on government policy;	Expansionary policy, growth of state's spendings;
Post-Keynesians	Changes in investment;	Regulation of demand;
Neo-Keynesians	Demand and supply shocks, recessions exacerbated by the rigidity of prices and wages;	Stimulating demand through monetary policy, the elimination of price and wage rigidity;
Monetarists (Chicago)	Excessive growth in money supply;	Stabilization policy;
Neoclassical	Excessive lending;	More restriction in lending during the boom; in the recession possibility of insurance the companies;
School of real business cycle	Exogenous factors (wars, climate change);	Lack of stabilization policy;
Austrian school	State intervention, excessive credit expansion;	Lack of government intervention, no interventionism;

Source: K. Piech, *Cykl koniunkturalny i kryzysy gospodarcze - przegląd keynesowskich i współczesnych teorii ekonomicznych*, Studia i Prace Kolegium Zarządzania i Finansów SGH, z. 27, SGH, Warszawa 2002, p. 105-106.

Revenues and expenditures on consumption and investment grow by the old proportions. Re-adjusting the proportions of time preference in the new conditions causes a drop in demand for goods of higher order and increase in consumer goods. The quantity of higher-order goods becomes too large and it leads to liquidation at a

discount, which has several negative economic effects. Prices of machines, securities and real estate fall. The crisis comes, which is the termination of the inflationary process after which comes the "cleansing" depression. Stimulating the consumption during the crisis only worsens the situation, delaying the depression in time. With declining levels of production, increasing bankruptcies and unemployment are inevitable. The lack of any intervention would result in quicker reduction of unemployment (Rothbard, 2010: 5).

In the twentieth century, it has developed a number of economic approaches, including many theories about the causes of the crisis and anti-crisis policies. A review of selected positions regarding to economic crises are shown in Table 1.

The Financial Crisis – Causes and Effects under the Conditions of Globalization

The experience of 2008 showed how economic crisis can arise from a financial crisis. According to the International Monetary Fund, the financial crisis is a situation where a large group of financial institutions have assets with a market value lower than their liabilities. This leads to runs, shifts in their portfolios or the collapse of some financial institutions with government intervention (Sundarajan, 1991: 3). Another definition says that the financial crisis is a situation when serious disturbances in the financial market occur and they appear as a significant decline in asset prices and the bankruptcy of many financial institutions and non-financial business entities (Mishkin, 1995: 223).

In the literature there are two approaches known in particular to the perception of financial crises (Mishkin, 1991: 1-2) in narrower scope formulated by monetarists and in wider scope initiated by Ch. Kindleberger and H. Minsky. Monetarists treat a financial crisis as a bank run that causes disruption of the money supply which leads to a decline in economic activity. In this scope a bank run is a mandatory requirement. If it doesn't exit, monetarist treats that kind of situation as a financial pseudo-crisis and it should not be supported by government assistance. Interventionism in monetarists thoughts lead to a decrease in the business efficiency. The endangered entities should fail or be acquired by better managed companies. The interventionism can also lead to excessive money supply and stimulate unwanted inflationary processes.

Wider perception of the financial crisis is defined as occurrence of one or a combination of several factors, such as falling asset prices and the bankruptcy of large financial

institutions, decrease in inflation or deflation existence, confusion in the foreign exchange market. In order to define the financial crisis authors created a model of the triad consisting of the three key concepts: information asymmetry, adverse selection and a moral hazard. The information asymmetry is the basis of this model and the creditor must have insufficient information about potential debtor intentions. The creditor with deficient information can perform a negative selection by taking investment or abandoning it. This ends the relationship and the creditor's risk. Undertaking the project may have a higher risk and may discourage entities with good condition to raise capital. The final element of the model is moral hazard, which occurs after the conclusion of the contract between the creditor and the debtor.

No precise information about the activities and intentions of the borrower, can lead in the form of misuse, increasing the risk of the creditor. Authors have listed the five factors enhancing the phenomenon of adverse selection, leading to financial crises. These are: 1) an increase in interest rates which affects changes in the amount of invested funds and the level of economic activity and investment; 2) a decline in share prices in stock exchanges - which provide protection against the consequences of adverse selection - can reduce the size of the offered resources and cause an effect similar to the case of rising interest rates; 3) an increase in the level of uncertainty caused by the bankruptcy of financial institution and well-known companies and can affect the share prices and weaken whole economic situation; 4) bank run which is also the result of information asymmetry, because often these entities are accounted for by the whole branch, not individually. Withdrawal of deposits also leads to a reduction in the possibility of allocation of resources; 5) reduction of inflation or the occurrence of deflation resulting in lower prices and the decrease in the book value of the entities (Iwanicz-Drozdowska, 2002: 35-39).

More often, particularly after the crisis 2008, one is able to hear about the dangers related to financialization, which is associated with an increasing influence of markets, institutions and the elites of the financial sector (Epstein, 2001: 1). Critics of this occurrence proclaim that financialization absorbs a large part of the financial surplus of enterprises causing their slower growth and weakening the economic growth at all (Gostomski. 2014: 308). It is related also in change of the orientation to maximizing the profits of financial services rather than production of the goods (Księżyk, 2011: 1). It causes a dangerous increment in dependence on the condition of businesses from the volatile situation in the financial markets, making more complicated way of doing

business outside the financial sector and to exercise control by the institutions of financial supervision. It results also in blurring the boundaries between different types of financial organizations and creation of large financial holding companies that are too big to fail. Financiaization is associated with more complexity in financial products and development of creative accounting techniques as well as financial engineering. Moreover, the increasing public debt addicts countries more to the financial institutions. They took on such importance that their fall is a significant threat to the economic stability of countries. Governments in fear of such a scenario are able to recapitalize on the financial giants (Marszałek, 2012: 226-227). These factors and conditions resulted in an increased moral hazard which constitutes a significant danger stability of countries and the global economy.

The global financial crisis of 2008 very quickly turned from the initial downturn in financial institutions to an economic crisis. This crisis through the bank channel had an influence on many areas of the real economy like world trade, production, investment, and employment. This impacted on the public finances of European countries. Although the effects are widely known and accepted, interpretation of the causes and the anti-crisis policy is varied. One side blames the liberalization of the law related to the further financial institutions' behavior and the lack of adequate states' prevention to intervention from the crisis. Others as a cause of the crisis show excessive interventionism. It can therefore be noted that the old economics dispute still continues.

Undeniably the main cause of the crisis were innovative subprime loans (Wague, 2009: 85), that did not require a documented ability. In 1999 the US Congress passed the Gramm-Leach-Bliley Financial Services Modernization Act, which abolished the ban on connecting the credit, insurance and investment institutions given by the Glass-Steagall Act in 1933. In the meantime, next to the banking sector, shadow banking was developing. By the 1970's it has grown to $10 billion, and equal to the commercial banking sector. At the same time as a result of the liberalization traditional banks formed large, complex financial institutions (LCFI), which engaged in various types of financial activities and invested the capital outside the banking sector.

In 1938 and in 1970 two enterprises supported by the government were established: Fannie Mae (Federal National Mortgage Association) and Freddie Mac (Federal Home Loan Mortgage Corporation). These institutions organized and developed the mortgage

market. Government support for these enterprises was based on lower taxes, favorable regulations and providing a line of credit. In 1975 and in 1977 two laws were passed: Home Mortgage Disclosure Act, (HMDA) about the disclosure of data on loans and Community Reinvestment Act (CRA), which improved the availability of mortgage loans to people with lower incomes and minorities. A Second Act was amended in 1995 and it allowed the securitization of loans, which initiated subprime loans and improved the availability of mortgage loans even for clients categorized to NINJA (no-income, no-job, no-assets) (Szymanowska, 2014: 35-37).

A key influence on the escalation of the crisis is the growth of the financial sector (financialization) and the level of innovation. These factors, through securitization significantly affected the level of information asymmetry and the phenomenon of adverse selection, leading to the increased moral hazard. Securitization was based on separation by the lender group of receivables (loans) and transferring them to new enterprises called Special Purpose Vehicles - SPV. This kind of company was grouping the individual receivables, and selling them to investors in the form of asset backed securities, called ABS. Securities backed by mortgage loans have been called MBS (mortgage backed securities), which were divided on Residential Mortgage Backed Securities (RMBS) and Commercial Mortgage Backed Securities (CMBS). Money received from the sale of these securities were transferred to the corporate parent of the conglomerate and were granted again and then afresh converted to ABS / MBS. The largest issuers of MBS were Government Sponsored Enterprises (GSE): Fannie Mae and Freddie Mac. Government support was a major factor in the occurrence of asymmetric information, increasing negative selection and moral hazard. The market was believed that safety of ABS/MBS is ensured by the richest country in the world - the United States. Financial conglomerates continued their activities and during the real estate boom (2004-2006) took over a majority participation in MBS market (Chart 1). In 2006, the biggest ABS/MBS holders were Lehman Brothers, Bear Stearns, Countrywide, Washington Mutual and Merrill Lynch (Baily, Litan and Johnson, 2008: 26).

Chart 1. Share in issuance of MBS in the United States in relation to the Purchase Price Index
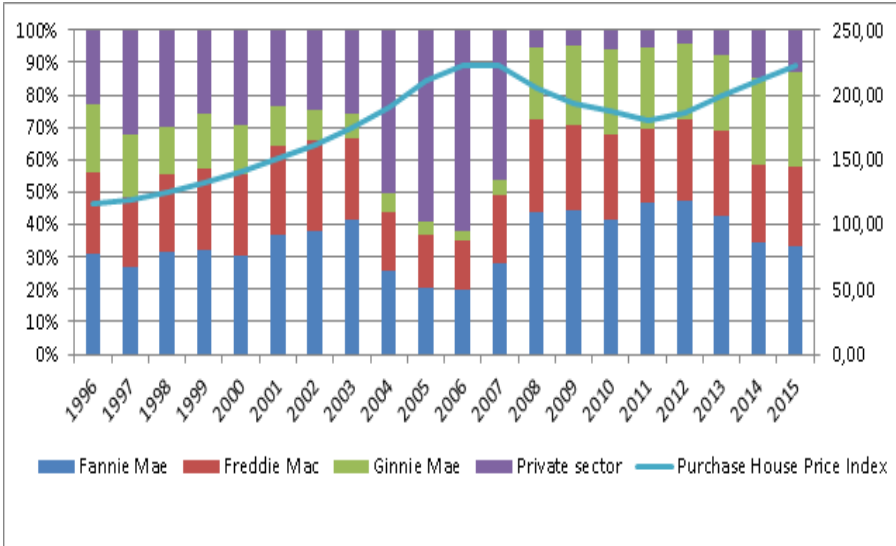
Moreover, the Gramm-Leach-Bliley Financial Services Modernization Act deregulated in 1999 has led to increased competition between financial institutions. Conglomerates need more leverage to extend credit expansion. For this purpose, they have used derivative instruments, in particular, credit default swaps (CDS).This instrument involves two parties: the seller and buyer, but its subject is debt. Seller warrants in return for a fixed fee, that in case of no repayment of the debt, it will cover the losses. This form of agreement gave purchasers an extra protection, what raised the ratings of these securities to "safe".

Although there was one commonly ignored fact, that these securities were sold on the OTC market and were not subject to any regulations. There were no guarantees of payment, whatsoever. The risk was also high due to the asymmetry of information

(because of complexity and no clear information about debts) and the general problem of estimating risk. An additional cause of the crisis were inflated assessment of major rating companies, which constituted an important factor in the decision-making by investors. These agencies granted very high ratings of MBS securities, assuming a continued rise in property prices and bypassing the declining quality of loans (Szymanowska, 2014: 38-41)

Another source of the crisis was the expansive monetary policy of the US central bank - the Fed - induced by dotcom bubble in 2001. The intervention in monetary policy that was associated with additional money supply, as well as special conditions granted to GSE are indicated as the main cause of the crisis by the proponents of the free market (Schiff, 2011: 56). The financial crisis of 2008 which beginning is considered with the collapse of Lehman Brothers, showed how strong is the dependence and connection of the financial sphere and the real economy. The crisis involved developed countries (USA and Western EU countries), whose share in world demand was about 50% and causing a negative impact on global demand, by generating the demand shock and restricted access to short-term financing (as according to Post-Keynesian theory). This led to a decline by 11% in the value of world exports in 2009. Significant decreases were recorded in the segment of intermediate and capital goods (high order goods), and lower depreciations in consumer goods, which is according to the theorists of the Austrian school of economics is an inherent part of a natural cleaning mechanism of the market from the inappropriate decisions.

Adverse economic events have led to a reduction in the sea, road and rail transport of goods (Mitręga-Niestrój, 2012: 160-161). The levels of production have decreased by 4.1% in the euro zone, 2.6% in the US and 6.3% in Japan. Enterprises have reduced expenditure on investments in tangible fixed assets in use and inventories. The reason was decline in demand, uncertainty about the future economic situation, low capacity utilization, reduced profit margins and tighter financing conditions of business. Furthermore, global unemployment increased by 30 million people. The most affected sector by the crisis was the automotive industry, which employs around 5% of global power, and its income was even bigger than the GDP of France. The industry is characterized by high capital intensity and a strong dependence on bank credit. The crisis has affected most strongly the US market in 2008-2009, followed by Western Europe (2008) and Eastern Europe (2009). Major corporations recorded huge declines in sales. Infamous leaders were Toyota (decrease in sales by 28%), General Motors (-

25%), Ford (-11%), BMW (-10.3%). The causes for the decrease in the level of income is seen in the credit crunch, the international economic recession and avoiding consumers from buying cars in a period of high uncertainty.

Preventing methods of the crisis from 2008 were based primarily on rescuing the economy based on state intervention. The US government has adopted a Paulson plan (Emergency Economic Stabilization Act of 2008 - ESSA), in which expenses reached $700 billion on the repurchase of the most risky debts of financial institutions. However, it is believed that to combat the crisis the United States spent up to $7.7 trillion (Pacuła, 2010, p. 110-113). The most important intervention of the US government may include the rescue of the bank Bear Stearns, which was acquired by J.P. Morgan, and the riskiest assets were purchased by the Fed. Fannie Mae and Freddie Mac were taken over by the Federal Agency for Construction Finance (FHFA). AIG Group was granted a loan in exchange for a 79.9% of shares and Citigroup was granted a guarantee of repayment of debts.

Furthermore, government has granted a total amount of $63 billion leading automotive companies like General Motors and Chrysler. Also the European countries have spent considerable sums in 2008 to rescue economies (mainly the banking system): Germany spent €515 billion, €364 billion - France, £37 billion - United Kingdom, 152 billion kr - Sweden, 6.3 billion Fr. - Switzerland. The Netherlands, Belgium and Luxembourg issued a total of €26.8 billion, while Portugal €20 billion. The global financial crisis turned into a banking crisis in the EU countries, revealed in lack of liquidity, the threat of banks' bankruptcy, deterioration of banks' portfolios due to the declining value of the US assets and the bonds of countries at risk of insolvency and reduced lending generating negative demand shock, resulted in as a crisis in the real economy. The banking crisis, transformed to crisis of public finances because of mentioned expenditures. Also this crisis was effected by the recession in the real economy, low demand and increased savings programs limiting state spending (Albiński, 2014: 33).

The result of this crisis was the huge debt that covered 68.5% GDP for the euro zone in 2008. A year later it increased to 78.3% and grew to 92% in 2014. In 2015, debt decreased to 90.7%. Unemployment increased to over 12% in 2013. Since 2014, the euro zone unemployment rate have decreased to 9.6% in December 2016. As a result of the existing deflation ended in July 2016, the European Central Bank applied for the unconventional monetary policy instrument for the first time: zero interest rates.

Despite the conducted interventions, the crisis causes of crisis are still being felt, including as an example, the UK declaration of Brexit.

Concluding Remarks

The market economy is being submitted to constant cyclical fluctuations. With the development of economic science, the number of schools and economic theories have grown. They differ primarily in the level of state intervention. One of them are trying to have impact on economic fluctuations, while the others are explaining them as a natural and necessary response. The crisis is an element of the business cycle, and it is viewed variously. It can be treated, especially by economists who trust in the mechanisms of the capitalist system, as a natural purifying tool of the market from accumulated errors. The proponents of state intervention are committed to actively counter the economic downturn by increasing the government expenditures and using expansionary policy of central banks. Despite that, the dispute theorists economies lasted for nearly a hundred years, and yet it is not possible to point out the end of the financial and economic crisis from 2008.

Views about the causes of the recent crisis are still divided. On the one hand, the mechanisms of the free market, greed of the participants, the financial globalization, liberalization of the law since 1999 and phenomenon of increased financialization are indicated as the main cause. Others point out the intervention of the Fed and US government guaranteed grants to certain enterprises as a primary threat to the economic stability of the world due to increased moral hazard.

The current anti-crisis policy focuses primarily on the states' interventionism. However, is this approach appropriate while after over 7 years the result still is not satisfactory? Does creation of the fiat money and increasing debt countries assure we will not trigger another crisis? Perhaps the world's markets need to be purified from bad investments by free market mechanisms? How cleansing would affect the situation of the society, and what would be the price of it? Undoubtedly, the fight against the crisis is a complex issue and difficult to solve, but regardless of the consequences, this crisis will bring new facts and conclusions and will provide another "breaking moment" in economic theory.

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3 | Effects of R&D and Innovation on High Technology Exports and Economic Growth: A Practice for Turkey

Efdal POLAT

Abstract

The purpose of this research is to analyze the effects of the research and development (R&D) expenditures and innovation on economic growth and high technology exports. The variables of the share of expenditures for R&D between the years of 1990-2014, the number of patents, high technology exports and the growth rate are used in this study applied for Turkey. There are two models in the study. It is analyzed in the first model that the relation of R&D/GDP between the number of patents; in the second model that the relationship of the same variables between high technology exports econometrically. Causality test of Toda-Yamamoto Granger and causality test of Hacker and Hatemi-J are used in both models. According to the test results, while there are not observed any causality relation between the growth rate and the share of expenses of R&D in national income in the first model, a one-way causality connection is determined from the number of patents to the growth. About the second model, according to the results of two both causality tests, a one-way causality relation is determined from high-tech exportation to the number of patents. There is not found any causality relationship between the high-technology exports and the share of the expenses of R&D in the national income.

Introduction

It is seen that the efforts of the countries for economic growth and the development increased by the process of globalization. Changes occurred in the structure of production has a role in economic growth and the development by especially increasing competition fact. Within this scope, the countries contributed to their economic growth by producing and the high technology exports have high added value, besides that these countries who aim to develop place importance on R&D expenditures and increase the number of patents, improve the human capital to enhance the quality and productivity of these products.

There are theories underlie being considered important of economic growth. The work of Adam Smith (1776) called 'The Wealth of Nations' leads for these theories. Smith (1776) tried to specify the effects of the work sharing on the economic growth in his research. Then, the studies of Robert Malthus (1798) and David Ricardo (1817) followed Smith. Malthus analyzed the impact of the population on the economic growth while Ricardo developed a growth model based on the diminishing returns and partition factors. In the early 1900s, Joseph Schumpeter (1913,1942), Alexandravich Feldman (1928), F. P. Ramsey (1928) contributed to the theories of economic growth. Schumpeter predominantly examined the effects of the innovation, technological progress and imperfect competition on the economic growth; Feldman analyzed the impacts of the priorities of investment on the economic growth (Ünsal, 2007: 26-27). Ramsey contributed to the growth theories by his work called "A Mathematical Theory of Saving" in 1928. Ramsey adapted the optimization decisions of the household to the growth theory and also answered the question of how much of the income needs to be provided from the national savings (Ateş, 1998: 9;Ramsey, 1928: 543). Harrod-Domar growth model came into prominence in the 1950s, then the growth model of Solow-Swan of Robert Solow (1956) and Tresor Swan (1956) that created the foundations of the Neoclassical growth models has emerged. This model hinges upon the total production function and accepts the technological change as exogenous. Moreover, the goal of the model is to maximize the growth rate in per capita outcome in a particular

time (Banarjee and Duflo, 2005: 475; Wickens, 2008: 41). In 1908s, the Endogenous Growth Models which interiorize the technological development and try to explain the economic growth by the concepts such as R&D, human capital, and innovation. The endogenous growth models consist of the theories developed by Lucas (1988), Romer (1986, 1990), Barro (1990), Grossman and Helpman (1991), Rebelo (1991), Aighon and Howitt (1992).

The models of economic growth explain the relation between R&D and the economic development can be seen in the studies of Romer (1986, 1990), Grossman and Helpman (1991) and Aghion and Howitt (1992). The innovation idea and the concepts of technological development that were gained to the literature of economic growth by Schumpeter underlie the basis of the theories based on R&D and the technological improvement. Schumpeter defined the innovation as being created new production function. This production function involves a new product as well as a new form of organization and being opened the new markets (Schumpeter, 1939: 84). Schumpeter who argues that the economic changing is continuous in the nature of capitalism mentioned that being developed the new production methods established businesses adapted to innovation built new transportations, created new national or foreign markets can destroy the old factors and the new ones will reveal instead of the old ones. This process called "creative destruction" underlies the development of the capitalism. Also, according to Schumpeter, a competition analysis which has not innovations will lose its capitalist feature. Schumpeter likens such an analysis to a game of Hamlet where the prince of Denmark is absent (Schumpeter, 1994: 83-86).

As is emphasized above, the studies of Schumpeter about the technological development and the innovation created the base of the theories of endogenous growth. Romer (1986, 1990) tried to explain the link between R&D and the technological development in his studies. Romer who accepts the technical changing as endogenous in opposition to the models of neoclassical growth assumes that the new information is a production of the research technology. It is stated that new information or invention by a company will create an endogeneity for the other companies. Romer mentioned that the information would provide an increasing return, increase the marginal good in other words (Romer, 1986: 1003). Also, Romer stated that the technological development could contribute to the development. That is to say, according to Romer, the technological improvement forms the base of the economic growth. Thus, the technological changing promotes the capital accumulation; both the technological

changing and the capital accumulation provide to increase the production (Romer, 1990: 72). As is seen, being obtained both the technological development and new knowledge will contribute to increase the production so that the economic growth will be supported.

The technological changing is accepted as endogenous in the models of Grossman and Helpman (1989, 1990). Grossman and Helpman endeavored to explain the relation between foreign trade and the economic growth by the help of the technological improvement and R&D. There are assumptions in the model of Grossman and Helpman (1989) such as the cost of researches, the obligation of actualizing R&D for the production of a new good and launching this commodity to the market when the profit possibility has occurred. In the light of these assumptions, Grossman and Helpman developed a dynamic, multiple countries general equilibrium model creates comparative advantages via R&D in international trade. Within the framework of this model, three basic production methods are defined. These are; traditional commodity produced under the competitive conditions, a modern industrial good and finally, the R&D provides to develop new industrial products by know-how (Grossman and Helpman, 1989: 1262-1264). The expenditures of R&D reserved for the intermediate goods in the manufacturing industry will provide the economic growth by affecting the structure of the economy and the policy of the economy (Grossman and Helpman, 1990: 814).

Finally, Aghion and Howitt (1992) also contributed to the theories try to explain the connection between R&D and the economic growth. Aghion and Howitt developed a model based on the idea of "creative destruction" of Shcumpeter and where the source of the development is the vertical innovation (Aghion and Howitt, 1992: 323-324). Due to this vertical growth occurred in the competitive research sector, better products are presented, and the old products become unfashionable. In this way, while old products are disappearing from the market, the better ones are replaced, and the process of creative destruction is being happened. Therefore, the endogenous technological innovations from the primary source of the development (Gürak, 2016: 124).

The economic growth models explain the link between R&D and the technological development are called as endogenously growth models. The result obtained from these models is the activities of R&D, and the innovations are the most important component of the economic growth. In other words, being attached importance to the innovations

based on the expenditures and the technological changing will affect the economic growth positively. R&D and the innovations have importance for developing countries such as Turkey. The purpose of this study is to research the effects of R&D expenditures and innovation on the high-tech exports and the economic growth. In this context, the theoretical framework is interpreted in the introductory section. The literature is presented in the next chapter; data, model and the method created the base of the research are explained in the third chapter. In the end, our study is completed by the conclusion part.

Empirical Literature

There are several locals, and foreign studies in literature explain the relation between R&D, innovation, high-tech exports and the economic growth. Some of these researches analyze the connection between the economic growth and R&D while some others review the relation between expenditures of R&D, the number of patents, high-tech exports and the economic growth.

Lichtenberg (1993) reviewed the link between R&D expenditures of the public-private sector and the economic growth in his study includes the years between 1964-1989 for 74 countries. It is obtained the result in the study that there is a relation between expenses of R&D of the private sector and the economic growth, but there is not a relationship between R&D of the public sector and the growth.

Goel and Ram (1994) tested the connection between economic growth and the R&D by multiple regression analysis for 53 countries between the years 1960-1985. Consequently, the existence of the relation between expenses of R&D and the economic growth is determined only in the high-income countries; but the direction of the relation could not be found.

Park (1995) tested the effect of the R&D investments of a public and private sector of 10 OECD countries on the economic growth by panel data analysis for the period of 1970-1987. According to the findings of the research, the investment of R&D of the local private sector is the more important determinant factor for the increment in both domestic and foreign factor productivity than the investment of public sector for R&D.

Freire-Serén (1999) reviewed the effect of R&D expenditures on the economic growth for 21 OECD countries by the method of section data analysis for the period of 1965-1990. It is confirmed at the end of the study that there is pretty significant positive relation between the expenses of R&D and the growth.

Sylwester (2001) analyzed the connection between R&D expenditures and the economic growth for 20 OECD and G-7 countries by the method of multivariate regression. It is observed at the end of the study that there is not any relationship between the expenditures of r&d and the growth in 20 OECD countries, on the contrary, the existence of a positive relation between these two variables is confirmed for G-7 countries.

Ülkü (2004) analyzed the relationship between R&D, innovation and the economic growth by the techniques of panel data for 20 OECD countries and 10 other countries nonmember of OECD for the period of 1981-1997. As a result of the research, it is seen that there is a definite link between GDP per capita and the innovation (number of patents) created by R&D sector in both OECD countries and the nonmembers.

Zachariadis (2004) reviewed the effect of increment inR&D expenditures on the economic growth by regression analysis for 13 OECD countries for the period of 1971-1995. It is observed at the end of the study that the increment in R&D expenditureseffects the growth rate in productivity and the increment at the output level positively.

Yu-Ming et al. (2007) analyzed the connection between the R&D expenditures and the GDP for China by the methods of cointegration and causality via the data of 1953-2004. It is observed at the end of the study that the R&D and GDP move together in the long run and the presence of a bidirectional causality relation between R&D and GDP is confirmed.

Altın and Kaya (2009) analyzed the relation between R&D expenditures in Turkey and the economic growth by VEC (Vector Error Correction) model in their research involves the time between 1990-2005. The study has resulted that there is not any relation between R&D expenditures and the economic growth in the short term; the expenses of R&D are the reason of economic growth at the same time.

Özer and Çiftçi (2009) reviewed the connection between the expenses of R&D and the overall export, export of information and communication technologies and the high-tech exports by the method of panel data for the period of 1990-2005. Being confirmed an active and high relation between R&D expenditures and the exportation is the result.

Samimi and Alerasoul (2009) reviewed the link between R&D expenditures and the economic growth by the panel data method in their research involves the period of 2000-2006 of 30 developing countries. It has resulted in the investigation that there is not any positive impact of the R&D expenditures on the economic growth.

Alene (2010) reviewed the effects of the costs of R&D on the productivity of agricultural production for 52 African countries for the period of 1970-2004. It is determined at the end of the research that the expenses of R&D have a positive and meaningful effect on the productivity of agricultural production.

Korkmaz (2010) reviewed the connection between R&D expenditures and economic growth in Turkey for the period of 1990-2008 by the cointegration method. It results in the research that there is a cointegration relation between two variables and these variables affect each other in the long term.

Horvath (2011) analyzed the relation between activities of R&D and the long termed economic growth. It is observed at the end of the research that the activities of R&D effect the long termed economic growth positively.

Güloglu and Tekin (2012) reviewed the causality relations between R&D expenditures, innovation and the economic growth in their research involves 1991-2007 period. As a result of the study, a bidirectional causality is confirmed for both between the R&D expenditures and the innovation (number of patents) and between the technological innovation and the economic growth.

Akıncı and Sevinç (2013) reviewed the relation between the R&D expenditures and the economic growth in their study contains 1990-2011 period. Johansen-Juseluis cointegration test is applied in this analysis actualized for Turkey. Granger causality analysis is used to specify the causality relations between the variables, and the findings obtained show that there is a one-way causality link from private, higher education and the total R&D expenditures to the economic growth. At the same time, least squares

estimation results indicate that private, higher education and the total R&D expenditures have positive and significant effects on the economic growth except for public R&D.

Göçer (2013) analyzed the effects of the R&D expenditures on thehigh-tech exports, information and communication technologies, total exportation and the economic growth and also the effects of the high-tech exports on the balance of foreign trade by the panel data analysis technique for 11 Asian countries via the data of 1996-2012 period. It is found at the end of the research that 1% increase in R&D expenditures enhances the high-tech exports by 6,5%, the economic growth 0,43% and the commutation-information technologies by 0,6%.

Taban and Şengür (2014) reviewed the relation between the economic development and the R&D expenditures for Turkey by Johansen cointegration and vector error correction models in their research in 1990-2012. It is observed at the end of the study that, R&D expenditures and the numbers of the full-time equivalent employee of R&D effect the economic growth positively, in addition to this, the numbers of a full-time equivalent employee of R&D creates a meaningful effect on the economic growth. But it is also confirmed that the R&D expenditures have not an impact like this.

Inekwe (2015) analyzed the link between R&D expenditures and the economic growth by GMM method in his study includes 22 developing countries between the years of 2000-2009. According to the results, the expenses of R&D have a positive impact on the economic growth in developing countries. Moreover, when the effect of R&D expenditures on the economic growth is insignificant for low-income countries, this same effect is significant for the medium income countries. But these effects differ in the short and long terms.

Sungur et al., (2016) reviewed the connection between R&D, innovation, export and the economic growth in Turkey in their research includes the years of 1990-2013. Two models were established in the research by being used the tests of Engle-Granger cointegration and Hatemi-J asymmetrical causality. According to the result of Granger causality test, there is determined a one-way causality relation from the number of patents to the growth for Model 1; the one-way causality relation from exportation to the share of R&D expenditures in national income, from number of patents to the exportation and from the number of employee in R&D to the export. According to the

result of Hatemi-J asymmetrical test, there is determined a one-way relation between the positive components from patent to growth, negative components from growth to patent and negative components from R&D to growth for Model 1 while a bidirectional relation is confirmed between positive components of number of employee in R&D and the export variables; and finally a relation is determined by the negative components from the number of employee in R&D to export and from export to the R&D.

Data, Model and the Method

In this research, the annual data involve the period of 1990-2014 in Turkey is included in the analysis. As the explanatory variables, the data of share of R&D expenditures from the national income is obtained from OECD database, the growth rate (GDP) and real high-tech exportation (RX) included in the analysis as the dependent variables and the data belong to the number of patents are obtained from the database of WorldBank. The data belong to the number of patents are included into the analysis in a logarithmic form. The series of high-tech exportation is made real by dividing to the GDP deflator (1998=100), then the model is established by being taken the logarithm. The models set;

$$GDP_t = \beta_0 + \beta_1 LPAT_t + \beta_2 R\&D_t + \varepsilon_t \tag{1}$$

$$RX_t = \beta_0 + \beta_1 LPAT_t + \beta_2 R\&D_t + \varepsilon_t \tag{2}$$

At the first stage of the research, the unit root tests of ADF and PP are applied to determine the stationarity levels of the series. In the second stage, the analysis of the cointegration relation between the series is tested by Engle-Granger cointegration test. At the third stage, the causality tests are conducted, and the causality tests of Toda-Yamamoto with Hacker and Hatemi are used within this framework.

The unit root tests are the tests need to be conducted to avoid the incorrect results for possible analysis of non-stationary series. Determining whether the series are unit rooted or not is the basis of the studies of time series. The most frequently used unit root tests in time series analyses are ADF (AugmentedDickey-Fuller) and PP (Phillips-Perron) unit root tests.

The variables in the study need to be stationary at the same level for determining the existence of cointegration relation. The cointegration relationship between the series is actualized with the help of Engle-Granger test. It is observed that there is a long termed relation between the series and the variables move together in the long run in case of determining the cointegration relation.

The existence of the cointegration relation does not inform about the existence of the causality link. That's why several tests were developed to analyze the causality relationships between the variables. Toda-Yamamoto test which tests the presence of the causality relations and Hacker and Hatemi (2006) causality test that is based on Toda-Yamamoto (1995) are used in the analysis of the research without being considered the stationarity degrees of the series.

Results of the Analysis

In this study, firstly, the unit root tests of ADF and PP are conducted to determine the relation between the numbers of patent and the share of R&D expenditures to the national income and also the connection between growth rate and the high-tech exports.

Table 2: Unit Root Test Results of ADF and PP

	Variables	ADF	PP		*Variables*	ADF	PP
	GDP	-5.54(0) [0.0001]*	-5.57(2) [0.0001]*		**GDP**	-8.37(0) [0.0000]*	-17.75(10) [0.0000]*
Constant	**LRX**	-3.17(0) [0.0346]**	-3.86(7) [0.0075]*		**LRX**	-1.26(7) [0.6206]	-4.22(1) [0.0035]*
	LPAT	0.65(8) [0.9864]	-1.19(1) [0.6582]		**LPAT**	-2.84(7) [0.0742]***	-3.59(2) [0.0141]**
	R&G	3.00(8) [1.0000]	0.25(0) [0.9705]		**R&G**	-6.18(0) [0.0000]*	-5.97(2) [0.0001]*
	GDP	-5.42(0) [0.0010]*	-5.45 (2) [0.0010]*		**GDP**	-3.47(5) [0.0725]***	-17.22(10) [0.0000]*
Constant+Trend	**LRX**	-1.18(0) [0.8913]	-0.91(10) [0.9376]		**LRX**	-1.080(7) [0.9004]	-6.89(10) [0.0001]*
	LPAT	-3.46(3) [0.0764]***	-1.87(1) [0.6355]		**LPAT**	-2.85(8) [0.2032]	-3.53 (2) [0.0590]***
	R&G	0.37(8) [0.9971]	-1.72(1) [0.7069]		**R&G**	-3.37(8) [0.0925]***	-7.04(1) [0.0000]*

(Left block row label: Levels; center vertical label between blocks: 1st Differences)

Note: The values of *, ** and *** respectively show the significance at 1%, 5%, and 10%. The values in parenthesis show the lag length for ADF based on the Akaike statistics information criteria; for PP based on the kernel method and bandwidth 'Newey-West bandwidth' method, It shows the Dickey-Fuller test in case of being the lag length zero. The values in square bracket indicate the probability values.

According to the results of ADF unit root test, the variables of LPAT and R&G in constant model and the variables of LRX and R&G in the constant+trend model are not stationary at the level values; they become stationary when their first differences are taken. LRX and GDP variables in constant model and GDP and LPAT variables in the constant+trend model are stationary at level values. According to the results of PP unit root test, LPAT and R&G variables in constant model and all variables out of LPAT in

the constant+trend model are not stationary at level values; all the variables become stationary when their first differences are taken.

Table 3. Results of Engle-Granger Cointegration Test			
Model 1		Model 2	
Variable	T Statistics	Variable	T Statistics
ε(0)	-5.27*	ε(7)	-2.49

Note: The values in parenthesis show the lag length based on the Akaike information criteria. The critical values are 4,84 for 1%, 4,11 for 5% and 3,73 for 10%.

According to Engle-Granger cointegration test, a long termed relation is determined in Model 1 due to being the t statistics value bigger than the critical value at 1% importance level. In Model 2, t statistics value is smaller than the critical value at 10% importance level, that's why the series are not cointegrated.

The causality tests can be researched in the case of being the cointegration relations or not. Therefore, the causality tests Toda-Yamamoto and Hacker and Hatemi-J are conducted.

Hypotheses	Lag Length $k + d_{max}$	X²Statistics
Table 4: Results of Toda-Yamamoto Granger Causality Test (Model 1)		
GDP ≠> LPAT	2	4.30 (0.1164)
LPAT ≠>GDP	2	6.44 (0.0339)**
GDP ≠> R&G	2	0.28 (0.8663)
R&G ≠> GDP	2	0.79 (0.6705)

Not: The marks of *, **, and *** show the causality relation between the variables at 1%, 5%, and 10% significance levels. The values of $k + d_{max}$ indicate the sum of the lag lengths selected based on the AIC criteria and the stationarity levels of the series.

According to the results of Toda-Yamamoto Granger causality test in Model 1, there is not observed any causality relation between the growth rate and the share of the R&D expenditures in the domestic income. The primary hypothesis called 'the growth rate of the number of the patent is not the reason of Granger' is denied at 5% significance level. In other words, there is found a one-way causality relation from the number of the patent to the growth.

According to the results of Toda-Yamamoto Granger causality test in Model 2, the primary hypothesis called 'high-tech exports is not the Granger reason of the numbers of patent' is denied at 1% significance level. In other words, a one-way causality relation is determined from high-tech exports to the number of patent. There is not found a causality link between the high-tech exports and the share of R&D expenditures in the national income.

Table 5: Results of Toda-Yamamoto Granger Causality Test (Model 2)

Hypotheses	Lag Length $k + d_{\max}$	X^2 Statistics
LRX≠> LPAT	2	11.63 (0.0030)*
LPAT ≠>LRX	2	2.38 (0.3034)
LRX≠> R&G	2	4.14 (0.1258)
R&G ≠>LRX	2	0.57 (0.7486)

Not: The values of *, ** and *** respectively show the causality relation between the variables at 1%, 5%, and 10% importance levels. The values $k + d_{\max}$ demonstrate the sum of the lag lengths selected based on the AIC criteria and the stationarity levels of the series. The values in parenthesis show the probability values distributed asymptotically

Table 6: Results of Hacker and Hatemi-J Causality Test (Model 1)

	Test Statistics	Critical Values		
		%1	%5	%10
GDP≠>LPAT	0.738	8.992	4.529	3.130
LPAT ≠>GDP	3.639***	8.561	4.482	3.046
GDP≠>R&G	0.148	8.430	4.515	3.074
R&G ≠> GDP	0.239	8.656	4.540	3.049

Not: The marks of *, **, and *** respectively indicate the presence of a causality relation between the first variable to the second one at 1%, 5%, and 10% importance levels. Bootstrap obtains the critical values with 10000 repetitive.

Table 7 : Results of Hacker and Hatemi-J Causality Test (Model 2)

	Test Statistics	Critical Values		
		%1	%5	%10
LRX≠>LPAT	12.323*	9.470	4.463	3.049
LPAT ≠>LRX	0.635	9.441	4.513	2.998
LRX≠>R&G	0.281	8.824	4.713	3.150
R&G ≠> LRX	0.239	8.560	4.565	3.147

Not: The marks of *, ** and *** respectively refer the presence of a causality relation between the first variable to the second one at 1%, 5%, and 10% significance levels. Bootstrap obtains the critical values with 10000 repetitive.

Hacker and Hatemi-J that is one of the more advanced tests is used by reason of being determined the one-way relation between the variables of estimated model or not. According to the results of Hacker and Hatemi-J causality test, the primary hypothesis called 'the number of patent is not the reason of growth rate' is denied at 10%

significance level. In another saying, there is found a one-way causality relation from the number of a patent to the growth. This result matches with the result of Toda-Yamamoto Granger causality test. When looking at the causality relationships between the other variables, there is not determined a causality link due to being the test statistic value smaller than the critical values; so the primary hypothesis is not denied.

According to results of Hacker and Hatemi-J causality test, the primary hypothesis called 'the high-tech exportation is not the reason for a number of patents' is denied at 1% importance level. In other words, there is found a one-way causality relation from high-tech exports to the number of the patent. This result matches with the result of Toda-Yamamoto Granger Causality test. When being looked at the causality relationships between the other variables, the causality relation is not determined due to the test statistic value is smaller than the critical values, so the primary hypothesis is not denied as well.

Conclusion

The relation between R&D, innovation, and high-tech exports and the economic growth are explained in the studies of Romer (1986, 1990), Grossman and Helpman (1991) and Aghion and Howitt (1992). It has resulted in the studies of these theoreticians that the R&D, innovation, and high-tech exports effect the economic growth positively. But these positive results can differ from country to country. The share reserved for the R&D expenditures, the share of the high-tech exports in the total amount of exportation and the production structure of the countries are the determinant factors about this circumstance.

The goal of this study is to analyze the effects of the R&D expenditures and the innovation (the number of a patent is accepted as the indicator of innovation), on the high-tech exports and the economic development. The variables of the share of R&D expenditures between 1990-2014 in GDP, the number of patent, high-tech exports and the growth rate are used in this research conducted for Turkey. We established two models in the study. In the first model, the relation of R&D/GDP and number of the patent with the growth is analyzed; the second model reviewed the connection between export of high-tech exports and the same variables econometrically.

In this study, firstly, the unit root tests of ADF and PP (frequently encountered in the literature of the economics) are conducted to determine the relation between the number of patents and the share of R&D expenditures to the national income with the export of high-tech. According to the results of ADF unit root test, the variables of LPAT and R&G in constant model and the variables of LRX and R&G in an constant+trend model are not stationary at the level values; they become stationary when their first differences are taken. LRX and GDP variables in constant model and GDP and LPAT variables in the constant+trend model are stationary at level values. According to the results of PP unit root test, LPAT and R&G variables in constant model and all variables out of LPAT in the constant+trend model are not stationary at level values; all the variables become stationary when their first differences are taken. Toda-Yamamoto Granger Causality test and Hacker and Hatemi-J causality test are used for the analysis of causality in both two tests. In the first model, while there is not found a causality relation between the growth rate and the share of the R&D expenditures in the national income based on the results of both Toda-Yamamoto Granger Causality test and Hacker and Hatemi-J causality test, a one-way causality relation is determined from the number of the patent to the growth. About the second model, according to the results of both Toda-Yamamoto Granger Causality test and Hacker and Hatemi-J causality test, a one-way causality relation is determined from the high-tech export to the number of the patent. There is not observed a causality link between the high-tech exports and the share of R&D expenditures in the national income.

It is seen when being evaluated the data of the high-tech export and the share of R&D expenditures in GDP in Turkey between the years of 1990-2014 that both the share of R&D expenditures in GDP and the share of high-tech export in the total amount of exportation correspond to approximately 1%. It can be easily said that these data match with the results of the analysis. Thus, Turkey should increase the incentives for the R&D expenditures and the production of high-techology products for providing a sustainable economic growth and enhance the competitiveness. At the same time, the required education investments need to be increased for being raised the qualified workforce for these fields as well.

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4 | Global Migration Phenomenon and Remittances: A Theoretical Analysis

Deniz ÖZYAKIŞIR

Abstract

In this study, firstly a theoretical frame for globalization phenemenon is drawn. With reference to this structure, it is analyzed that into how a phenomenon the globalization fact transformed in the global age. Later on, the global view of migration is discussed in detail by being presented remarkable data on the global extents of movement of migration. In the last part of the research, informed about the global scale of transfers of immigrant and emphasized the importance of these transfers in terms of the national economies. Moreover, also the comparing of these transfers with other inflow exchequers is a subject of this study. In brief, the general framework of the survey is to analyze the global extent of remittances resultant the movement of migration happened in globalization process.

Keywords: Globalization, Migration, Remittances

JEL Codes: F22, F24, O15

Introduction

The term of globalization shortly codes the neoliberal transformation of the world economy after the 1980s and the developments in communication and transportation technologies with this transformation. The economies are integrated with each other as trade, technology, finance and physical boundaries lost their importance within this new period. The mobilization of production factors notably the capital mobility and the obstacles for exceeding the national borders disappeared. Thus, a human mobility started by migration of international labor then continued with the migration of families revealed all over the world. It is possible to characterize this human mobility as the global migration phenomenon at present.

Especially the citizens of developing countries are in the tendency to migrate to the developed countries by breaking away from the repellent conditions of their countries, and this migration turned into a global fact in that sense. Immigrants migrate to the developed countries due to reasons such as making a healthy future for their families, solving the problems arising from poverty and distribution of income. Some immigrants who cannot bear the cost of migrating with the family have to migrate by themselves by leaving the families behind.

Such immigrants remit a substantial of their earnings to their country. These remittances of immigrants for their families make a huge contribution to the family economy to satisfy the consumption needs. These remittances recently reached higher amounts based on the globalization of the migration and started to contribute also to the macro economy of the country besides the family economy. This money transfers constitutive 1/3 of the GDP of some countries came to a condition competing with the exchequers such as direct investment and official aids. A number of remittances inflowed largely exceed official aids and private capital flows. These remittances which are stable in comparison with other sources of finance are likely to close even the trade deficits of some countries.

Conceptualizing the Globalization

The concept of globalization got off to a running start to the agenda with the neoliberal transformation living in the world economy since early of 1980s; hit the peak in 1990s while its historical process goes back a long way. The economic, social, cultural and

technological developments happened in the world within this period are shortly coded by the concept of globalization.

From this aspect, some people describe the globalization as a trendy idiom, even a key for the doors of past and the future or a magical word (Bauman, 2006:7) while some others mentioned that there is no political talk that does not touch on the globalization is not complete (Giddens, 2000:20).   The globalization involves economic, political and cultural integration process at the same time. Due to the globalization is a multidimensional historical process has much casuals and discrepancies, it could not be degraded any of these economic, political and cultural processes (Keyman 1999:79). On one hand, the globalization turns into an ideological rhetoric is defined as a world is closely linked with the trade and financial flows on the other hand as a prescription that all the developments happen militate in favor of everybody (Stalker, 1997:2).

The concept of globalization represents the technological developments and creativity of human being inferred the increasing consolidations in trade and financial areas shows itself as a process means labor and information flow internationally (IMF, 2000:12). Much as the globalization is defined as the production chains of worldwide economies and being integrated with each other via financial flows, the concept means the human and knowledge mobility ever-increasing throughout the international boundaries (Bhargava,2006:2).

In addition to this, the globalization is not only a technological progress but also a political and ideological period of change. Especially it is a global policy trend ongoing since the 1980s moves toward Laissez-faire economy policies and shaped by being removed the international obstacles for trade and capital flows. This period accelerated after being put deregulating the national and international economy on the agenda by the governments of Reagan and Thatcher in 1980s. This trend gathered, even more, speed by being destroyed the Berlin Wall and the market's win declaration. One of the other driving factors increased the trend was the growing press of Washington Consensus on the subjects like liberalization of the market, privatization, and regulation. In this way, mush as the globalization came to the fore with the technological improvement, this process has been directly affected by ideological shifts and political alternations, canalized and this alternation was in the direction of 'universalizing the western liberal democracy' with the words of Fukuyama (Fukuyama, 1992) around the world (Czaika and Haas, 2015:285).

Migration Phenomenon and Globalization

The migration phenomenon that could be defined as the movement of humans from a place to another location is an action of the members of homo sapiens make for avoiding from the disasters or foraging as long as homo sapiens existed (Vargas-Lundiu, et al., 2008:8). In short, it is the movement of the population on a particular geography as permanently or semi-permanently (Lee, 1996:16). The migration by a more comprehensive definition is a general name of the moving action from a specific settlement to another place as permanent or temporarily on the purpose of leading a better life by the effects of social, cultural economic, political and socio-cultural factors without noticing be voluntary or involuntary (Özyakışır, 2013:7).

The migration always is a part of a history of humanity and will continue to be. In the future, an awful lot of people will be in the opinion of migrating permanent or temporarily to seek new opportunities. The advancements in transportation network worldwide ease this migration while the internet enhances the knowledge of people about the life and job advertisements in other countries (Keeley, 2009:12).

The history of migration of individuals leave their places for any reason goes back a long way as well as the immigrants did not move voluntarily in the most of the biggest human actions of history according to Giddens. 15 million of people were taken from Africa as the slaves and carried to Brazil, Caribbean, and North America by ships in 17th and 18th centuries. Between 10 and 40 million contract workers were aggregately sent to the four corners of the world especially from China and India in the 19th century. The wars in the 20th century in Europe and Asia deterritorialized millions of people (Giddens, 2010:522).

So, the reasons for migration are complex and vary by the regions. The migration could also be stimulated by environmental degradation, conflicts or natural disasters besides the huge economic, demographic and social differentiations. About 200 millions of immigrants all over the world decide to migrate to get rid of the poverty without noticing their roots and reasons. Because the globalization and the migration rapidly transformed the field of activity of people (Vargas-Lundiu, et al., 2008:6). The globalization triggered the mass movement in all countries and enhanced the grassroots movement in developing countries from the countryside to urban regions (Iman & Mani, 2013:114-115).

For instance, the income inequality increased in the globalization process, and the fact of poverty based on this equality brought the migration waves with it. The labor factor shows mobilization within limits in this process emergent based on the capital mobility, and at this point, full-scale international migrations from the medium to the center or from the South to the North happened (Özyakışır, 2008:150). So, the people who escape from the repellent socio-economic conditions in their countries migrate to the developed countries have relatively attractive conditions. This is because the migration fact receives its share from the globalization and these two processes proceed each other draggingly day by day in fact. In other words, the globalization takes the migration a step further while the migration puts forward the globalization by draggingly with itself.

Indeed, the migration phenomenon continues with the new trends based on the developments happened in the globalization process. Much as a denominationalism is observed on freedom of international movement of the migration, the mobilization all segments increased at present. The capital owners and other elites joined this mobility as free, and the lower sections did as unfree at the same time (Erbaş, 2002;188). The necessary steps for liberalizing the foreign trade in the period after the II. World War, the role and the increasing importance of multinational corporations, the increasing effect of European Economic Community in the world economy and significant dimensions of labor migration to reach into western Europe are a few of developments contribute to accelerate the globalization process (Şenses,2004:9). This is a significant determination on how the migration speeds the globalization process up. In brief, the migration and globalization continue to be mentioned most often as two critical processes interacted and also supported each other.

The Global View of the Migration

The international migration underlies the globalization process, and the people migrate from their countries to find safer living places concerning the economic expectations. The migration has several different reasons as well as the safeness became the source of motivation of 3% of world population migrating. Since a large majority of immigrants tend towards to developed countries, the share of the international immigrants in these countries reached to 9,5% in 2005 (Kahanec & Zimmermann, 2008:2).

Migrating of people from underdeveloped countries to developed ones by the reasons of generating a higher income and having a better life quality is crucial in terms of

revealing the dynamics of international migration (İçduygu,2009:2). By being shifted the production fields to the different places of the world, especially underdeveloped countries have much raw material as a result of the economic globalization, the direction of the migration wave can change, and also an immigration wave occurs to the countries in question (Niessen, 2003:2). Much as the international migration is seen as a part of the globalization process in terms of volume, diversity, geographical extent and general complexness, mentioned that this idea remained as untested as well (Czaika & Haas, 2015:283). But yet it could be referred that the international migration defined as the movement of people throughout the boundaries became an international problem (Martin & Widgren, 2002:3) for the 21st century.

The deepening in income inequality for the country forms a basis for the international migration radically. 40% of the workers in low-income countries are employed in agricultural fields where their incomes lower than the average. These bottom wages encourage the employees and farmers to migrate to urban areas have better revenue and opportunities. Likewise, the migration in this sense is a reason of being exceeded the 50% of the urban share of world population first time in 2008 (Martin & Widgren, 2002:6). It is mentioned in a report published in 2010 that the foremost factors drive 61% of immigrants to migrate from Mexico to the US are economic facilities, high wages and more employment opportunities (Wainer, 2011:2). 200 million (3%) of the today's 6,8 billion world population lives in a different country than their country of birth, and the immigrant share in developed country populations doubled between the years of 1970 and 2000 (McCann, Poot & Sanderson, 2010:362).

At present, on the one hand, a vast majority of the world population lives in the country of birth, on the other hand, the numbers of them spoke up who want to be in a different country to work, train and even survive his/her retirement. This circumstance is not so different also in recent years as well. Even if the migration flows to developed countries decelerated immediately after the global crisis, the numbers of immigrant still higher-up in spite of the ongoing effects of the crisis. The numbers of immigrants were estimated as 191 million in 2005 and 214 million in 2010. It is seen when the number of domestic immigrants as 740 million guessingly is being considered that approximately 1 billion people (about 1/7 of world population) are immigrant-based (IOM, 2011:49).

Table 1. International Migrant Population and Migrant Share of Total Population, Top 25 Countries of Destination, 2015

AGG (INDEX)	Major area, region, country or area of destination	SUM(Total population)	SUM(Immigrants)	SUM(Immigrant share)
1	United States	321.774.000	46.627.000	14,5%
2	Germany	80.689.000	12.006.000	14,9%
3	Russian Federation	143.457.000	11.643.000	8,1%
4	Saudi Arabia	31.540.000	10.186.000	32,3%
5	United Kingdom	64.716.000	8.543.000	13,2%
6	United Arab Emirates	9.157.000	8.095.000	88,4%
7	Canada	35.940.000	7.836.000	21,8%
8	France	64.395.000	7.784.000	12,1%
9	Australia	23.969.000	6.764.000	28,2%
10	Spain	46.122.000	5.853.000	12,7%
11	Italy	59.798.000	5.789.000	9,7%
12	India	1.311.051.000	5.241.000	0,4%
13	Ukraine	44.824.000	4.835.000	10,8%
14	Thailand	67.959.000	3.913.000	5,8%
15	Pakistan	188.925.000	3.629.000	1,9%
16	Kazakhstan	17.625.000	3.547.000	20,1%
17	South Africa	54.490.000	3.143.000	5,8%
18	Jordan	7.595.000	3.112.000	41,0%
19	Turkey	78.666.000	2.965.000	3,8%
20	Kuwait	3.892.000	2.866.000	73,6%
21	China, Hong Kong SAR	7.288.000	2.839.000	38,9%
22	Iran	79.109.000	2.726.000	3,4%
23	Singapore	5.604.000	2.544.000	45,4%
24	Malaysia	30.331.000	2.514.000	8,3%
25	Switzerland	8.299.000	2.439.000	29,4%

Source: Migration Policy Institute (MPI) http://www.migrationpolicy.org/programs/data-hub/charts/top-25-destinations-international-migrants (20.02.2017)

According to the 2016 data of World Bank, more than 247 million of people or 3,4% of the world population does not live in the country of birth. The number of international immigrants was 175 million in 2000 and more than 247 million in 2013; it seems to exceed 251 million by 2015. If the number of 2015 actualized as it is

mentioned, the shares of immigrants would realize above the 3% of the world population in last 15 years. According to the same report, the largest immigrant corridor in the world was the Mexico-US corridor by 13 millions of immigrants in 2013. The Russia-Ukraine corridor is the second and Bangladesh-India corridor is the third. The most migration-receiving countries are respectively US, Saudi Arabia, Germany, Russian Federation, the United Arab Emirates, England, France, Canada, Spain and Australia (World Bank, 2016).

Since the 1960s, the countries are excluded whose total population is under 100.000 in this chart shows the numbers of international immigrants for 25 countries targeted (MPI, 2015). As is seen on Table, the developed countries lead the way for country choices of immigrants. There is seen an observable decreasing the numbers of immigrants towards the end of the table. Estimated when the migration flows for OECD countries are analyzed that approximately 5 million people migrated to these countries in 2015 (Figure 1).

It is observed when we look at the directions of the migrations that the share of the migration from South to the South is 38%, and the share of the migration of South-North is 34% in total migration stock. It is an important data of the report that the small countries are in a tendency to have high-qualified migration rates. In reference to the report that the number of refugees actualized as 14,4 million in 2014; the developing countries such as Turkey, Pakistan, Lebanon, Iran, Ethiopia, Jordan, Kenya, Chad, and Uganda do the honors for approximately 86% of these refugees. In fact, the refugees constitute 35% of the population of Lebanon. On the other hand, being Syria in the first place with respect to a source of migration is another remarkable point of a report (World Bank, 2016).

It is possible to say that developed countries are selected for migration. A better life and employment opportunities, high wages and a concern for a healthy future for the children motivate people to countries to make the dreams come true. The countries are in the lead in below table could be accepted as remarkable (Table 1).

Figure 1. Permanent migration flows to OECD countries, 2006-2015
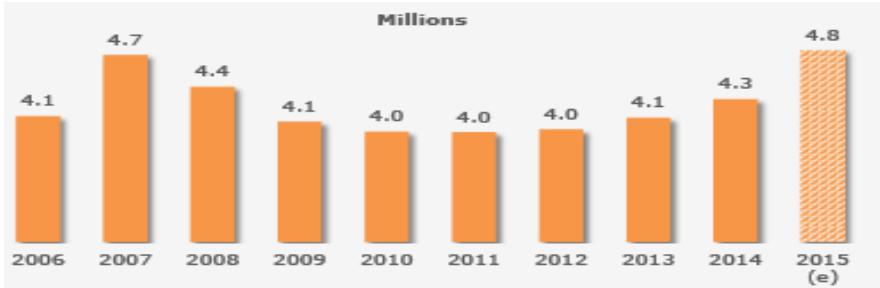
Source: OECD, International Migration Outlook 20016

Mainly three countries attract the attention when we analyze the immigrants preferred OECD countries (Graph 1).

Graph 1. Origin of asylum seekers into OECD countries in 2015
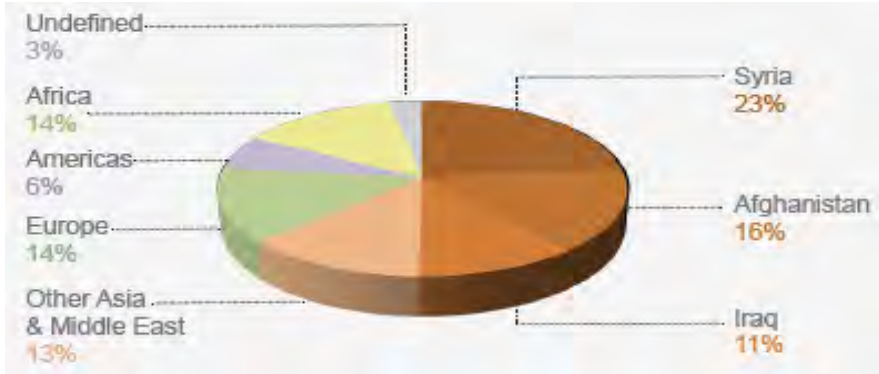
Source: OECD, International Migration Outlook 20016

As is seen by the graphic, half of the people who preferred OECD countries is composed of the citizens of Syria, Afghanistan, and Iraq (Graph 1).

Remittances as the Migration Gain

The remittances mean the earnings of immigrants that they send to their native land after earning in countries they immigrated to. These monies reach to high numbers in today's world where the labor becomes global. These remittances have the characteristics of lifeblood for developing countries seriously contribute not only for household but also state economies at the macroeconomic level.

This global extent of remittances has been discussed in a great many of studies, and the effects of these transfers are tried to reveal by several proofs via the experiences of countries. Thus, we can say that a considerable literature originated in this area. It is seen when examine some of these studies closely that few of them analyze the effects of remittances on the poverty of developing countries (Adams JR. & Page, 2003, Adams JR. & Page, 2005, Acosta, et al, 2008) while the others review these effects with the comparison of countries (Funkhouser, 1995) and also tested (Osili, 2007)the practice by the theory via the evidences of states such as Guyana (Agarwal & Horowitz, 2002), El Salvador (Edwards & Ureta, 2003) and Turkey (Tansel & Yaşar, 2010).

Moreover, there are studies underline the dimensions of regional development (Haas, 2006) and economic development (Le, 2011) beside the existence of studies examine whether the remittances are myth or real (Haas, 2005). However, the financial development (Gupta, et al., 2009, Aggarwal et al., 2011, Chowdhury, 2016), economic growth (Giuliano & Ruiz-Arranz, 2009) and social effects (Zotova & Cohen 2016) of remittances are also considered.

Due to this study focus on the global scale of remittances rather than the economic impacts, it is approved to express only one part of the relevant literature. In any case, the main point of the study is the number of remittances, ratios of these transfers in incomes of countries, ranking of states about this and comparing with other sources of finance.

The Global Scale of Remittances

It is seen in a lot of developing countries that these cash flows seem bigger than the direct or foreign aids in national accounts. For example, the remittances for Haiti were recorded as quadruple of foreign aids of the country and more than 100 times of foreign direct investments in 2003. Even in a country attracts the investment such as Mexico,

the remittances have exceeded 1/3 of foreign direct investments over the past decade. An extensive list of developing countries includes El Salvador, Eritrea, Jamaica, Jordan, Nicaragua, and Yemen could be accepted as the countries where the share of remittances equal to 10% or more of domestic income. This remittance spreads healthy to the economy of source country as opposed to the direct investments. In other respects, 15% of Philippine households and 34% of families in the Dominican Republic receive remittance from their family and friend work abroad. Determined that the remittances have a strong effect on reducing the poverty of receiver countries and increasing the aggregate consumption either. In here, we can mention the consequences of the immigrants from Singapore to China as a good example (Bhargava, 2006: 112,113).

Figure 2. Remittance Flows, Official Development Assistance (ODA), and Private Capital Flows
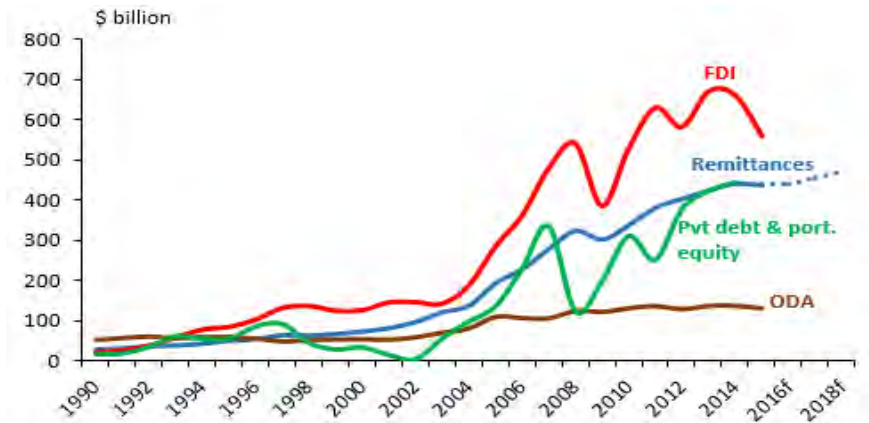
Source: World Bank, Trends in Remittances, 2016: A New Normal of Slow Growth

Moreover, these remittances create a reliable source of foreign exchange earnings and help to reduce the expenditures of household in tougher times. Being less volatile and more stable in contrast with other sources of finance is the other significant characteristic of the remittances (World Bank, 2016). The figure below can help us to make this comparison (Figure 2).

As is seen in the figure that the remittances show a more stable tendency than the direct investments, private capital flows and government aids. Thus, it could be said that the remittances are more consistent than official development assistances and private capital flows. This situation is clearly seen in another report of the World Bank (Table 2).

Table 2. Recorded remittances have grown faster than private capital flows and ODA, $ billions

	1995	2004
Workers' remittances	58	160
Foreign direct investment	107	166
Private debt and portfolio equity	170	136
Official development assistance	59	79

Source: World Bank, Global Economic Prospects 2006: Economic Implications of Remittances

The table is important in terms of showing how the increasing in remittances surpassed the private capital flows and official development aids over the past decade. Because these transfer flows recorded can be equal to approximately 6,7 % of importation of developing countries and 7,5% of the inward investment as well. Furthermore, these transfer flows which surpass the income of most important commodity exportation in 28 countries also higher than foreign direct investments in Mexico; tea exportation in Sri Lanka and tourism receipts in Morocco (World Bank, 2006:88). It is possible to see the course of transfer flows to developing countries since 2010 till today in a table below (Table 3).

Table 3. Estimates and Projections for Remittance Flows to Developing Countries

	2010	2013	2014	2015	2016e	2017f	2018f
				($ billions)			
Low and Middle Income	339.0	425.7	442.7	438.6	442.0	457.3	473.4
East Asia and Pacific	94.1	113.4	121.8	126.7	129.4	134.4	139.7
Europe and Central Asia	37.4	55.2	51.8	40.1	38.5	41.1	43.7
Latin America and Caribbean	56.5	61.8	64.1	68.3	72.6	75.3	78.1
Middle-East and North Africa	39.0	50.0	54.3	51.2	52.0	53.7	55.4
South Asia	82.0	110.8	115.8	117.7	115.0	117.6	120.3
Sub-Saharan Africa	30.1	34.5	34.9	34.6	34.4	35.3	36.1
World	462.1	574.0	596.6	580.6	585.1	606.4	628.8
Memo: Low and Middle Income (previous income classification)*	*332.9*	*418.3*	*434.3*	*431.2*	*435*	*449.8*	*465.3*
			(Growth rate, percent)				
Low and Middle Income	**11.4**	**5.2**	**4.0**	**-0.9**	**0.8**	**3.5**	**3.5**
East Asia and Pacific	20.0	6.8	7.4	4.1	2.1	3.8	4.0
Europe and Central Asia	5.1	18.0	-6.2	-22.5	-4.0	6.7	6.4
Latin America and Caribbean	2.6	2.2	3.8	6.5	6.3	3.7	3.8
Middle-East and North Africa	18.2	2.5	8.6	-5.7	1.5	3.3	3.2
South Asia	9.4	2.6	4.5	1.6	-2.3	2.2	2.3
Sub-Saharan Africa	9.6	0.4	1.0	-0.8	-0.5	2.5	2.3
World	**8.5**	**5.3**	**3.9**	**-2.7**	**0.8**	**3.6**	**3.7**

Source: World Bank, Trends in Remittances, 2016: A New Normal of Slow Growth
*This group excludes Equatorial Guinea, the Russian Federation, Venezuela and Argentina which were classified as High Income.

Estimated that the transfer flow to low and middle-income countries in 2016 will reach to 442 billion dollars with an increase of 0.8% over 2015. Besides, it could be understood via the data of the table that 462.1 billion dollars of transfer flow in 2010 around the world will increase to 585,1 billion dollars in 2016 guessingly. Alright, from which countries the immigrants transfer this much money? The answer to this question is in the report of the World Bank.

According to the report, the main source of remittances is high-income countries. Indeed, US was the first by 56,3 billion dollars remittance; the Saudi Arabia was the second in 2014. Other countries respectively were Russia, Switzerland, Germany,

United Arab Emirates and Kuwait (World Bank, 2016). On the other hand, the remittances sent from above countries have a significant share of the GDP of the countries. For instance, the proportion of the remittances was 42% in Tajikistan, 30% in Kirghizia and 29% in Nepal (World Bank, 2016). The below figure is extremely important in terms of showing the amounts of remittances in 2016 and the ratios in GDP in 2015 (Figure 3).

Figure 3. Top Recipients of Remittances
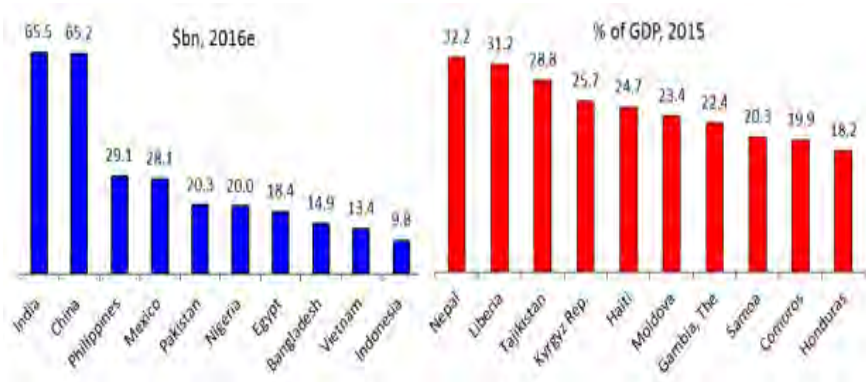
Source: World Bank, Trends in Remittances, 2016: A New Normal of Slow Growth
Accordingly, we can state that India takes place on the top by receiving roughly 65.5 billion dollars of remittance in 2016 and the China follows by a narrow margin. Nepal is the first in terms of shares of remittances in GDP, Liberia is the second (Figure 3).

Conclusion

Developing the communication and transportation technology by globalization process renders the boundaries between countries meaningless and the concept of distance slowly lose its importance as well. Covering the distance of people by technological developments got easy and their desires to see new places and learn about the opportunities increase day by day. This new circumstance brought the chances of people to reach better life standards for both themselves and their families with it. These opportunities and desires become the source of motivation for people in developing countries to take the migration decision. Consequently, the citizens of developing

countries move by these reasons become the leading actors of the global migration adventure either with themselves or with families.

On this path for a better future, the immigrants gained high profits and contributed families in a native land by remitting these earnings. These contributions increased the consumption volume of the household economy. The increasing remittances in time reached to a scale for contributing to the country economy by overreaching the family economy. It is seen as far as reflecting the reports of the World Bank that these transfers have the one-third share in GDP of some countries such as Nepal and Liberia. It does not escape the attention that there is more than approximately 65 billion dollars transfer flow to countries like India and China in 2016. The remittances were 58 billion dollars in 1995 and 160 billion dollars in 2004. In the same period, the direct investments could barely reach from 107 billion dollars to 166 billion dollars. This situation indicates that the migration fact that creates a negative perception at the start could also be evaluated a quite useful process.

In a nutshell, the movement of migration accelerated by the globalization process and took a global character. The increasing remittances by the global migration fact reached to a scale can contribute to the country economies. This circumstance is a clear evidence of how the migration movements, which can be considered as a disadvantage in many countries, can be turned into an advantage in the future.

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5 | The Relation between Education and Development in the Context of Globalization: An Analysis on OECD Countries

Mehmet Vahit EREN

Abstract

The relation between human capital and the development is the principal subject has been researched in economy literature in recent years. Development is a qualitative fact different from the growth which is a quantitative concept. The human capital contributes to the development level of countries. Being the individuals healthy and educated increase the productivity in production by enhancing their qualifications and ultimately contributes to the development. Thus, the education and the health are accepted as the two significant factors affect the human capital concerning the quality. This study focuses on the development and the education. Progressing the education level is one of the most important factors affect the life standard, economic and social development levels of the countries. Therefore, the expenses for the education are crucial. The purpose of the study is to search the connection between the expenses for the education of OECD countries and the development for the period of 2002-2011. The panel data analysis was applied in the study as the method. According to the results obtained from the survey that there is a long termed and bidirectional causality relation between the education and the development.

Keywords: Human Capital, Education, Development, OECD.

JEL Codes: I22, I25, O15

Introduction

Education has a place in our life as a process for bringing the ability and knowledge to the individual in and providing the adaptation him to the society. All the studies conducted for creating and improving the knowledge, attitude, body, ethical and mental abilities, thinking, problem-solving and applying powers of individuals are defined as the education. The education in broad terms means each kind of learning and training; it also means in the strict sense that the information given in schools. The economic importance of the education must be considered in terms of showing how the educational qualifications are used in production and what do they also actualize (Öztürk, 2005:30).

There is not only one definition of the economic development accepted in the literature. The conceptual development means being changed and developed the social, economic and cultural structure by the income increment per capita and production (Aydın and Şimşek, 2016:190). Much as the economic growth and development are interrelated, they are different from each other. The economic growth is the fundamental of the development and just focuses on the revenue growth. Due to the development tries to find a solution for the socio-economic problems by distributing the sources obtained from the economic growth so as to satisfy the needs of the society, it is a full fact (Eren and Aydın, 2016:211; Ersungur et al., 2016:305). The economic development means the changes in economic structure and output distribution (reducing the share of the agriculture in the national income, increasing the proportion of the industry and service sector in the national income at the same time, being an increment in education and skills of the manpower) (Polat, 2016:59). That's why the basis of the social development depends on the human capital also means 'qualified labor' or 'qualified workforce' (Altay, 2016:235). Being developed the educational opportunities at every level and increased the knowledge and abilities of the workforce contribute to the economic growth and development by enhancing the reproductivity. On the other hand, it is expected that being the educated individuals conscious and responsive to the health issue in comparison with the others increase their productivity and effect the economic growth positively in a roundabout way regarding reducing the workforce loss (Taban and Kar, 2014:134-135).

Being the development takes into consideration the human factor differently from the growth causes to gain importance of the investments made for the human capital. The

fundamental goal known of the development is being provided not only creating a quantitative richness but also ensuring the sustainability of this wealth by raising qualified workforce. The expenses of education, health and nourishment underlie the basis of the human capital investments. The efficiency will be gotten from the human capital is going to be higher in the case of complementing these three expenses each other and being spent balanced (Han and Kaya, 2012:113). The importance of the education expenditures among the investments made for the human capital is different. It needs to be enabled for the education at the required level for being increased the efficiency of the education expenditures. It is important to determine the training structure improper to the economic and social structure by being specified the factors of the available system of education cause to the failure of improvement of the country. In this way, it will get easy to determine the direction and amount of the money to spend for the education by also the effect of the long termed development plans (Kaynak, 2011:344-345).

The most prominent and the active contribution of the education on the growth (development) is the Lucas (1988). In this model, the output level is the function of the human capital stock. Developing the human capital is an increase of the fund of knowledge rather than the skills acquired via education (Temple, 2001:59). The education affects the economic growth by being enhanced the quality of the human capital. It also affects both the innovation for the sectoral researches increased demand and the requisitions by influencing the wages and the disposable earnings (Saviotti et al., 2016:67). The education is one of the vital cogs in the development wheel. Being the precious natural resources of a country make suitable for the production can occur by the educated workforce. In developed economies, the education is the key to faster and more significant economic growth. Being used the advanced training in the fields of research and technology will be helpful for the development under the favor of the good education of the society in an occupational sense (Büyükaslan, 1995:8). The history of the thoughts about the well educated qualified workforce is a capital type as efficient as the real capital in the economic development is based on the classical economists. The economists such as Petty, Fisher, List, Walras, Smith, Marshall and Engel referred to the importance of the human investment as a factor that increases the productivity in the production process by emphasizing that the definition of the capital includes the person itself or the abilities he gained later (Ak and Bingül, 2011:163).

The knowledge-based society occurred, and an increment is observed in the economy of knowledge because of the works of the companies to provide their citizens to reach the information quickly. The incentives of the countries in education field increase the training possibilities of the individuals and contribute for the talented people take part in real economy on a global scale. Increasing the education level upgrades the opportunities of the well-educated people in employment area and also improves the economic conditions of the people. The human capital is one of the significant indicators of the human development level and being determined the development standards of the countries. Being the educational attainment high in a country creates qualified workforce and effects the development positively regarding economic and social results (Fırat et al., 2015:879). Education is one of the areas where the countries have to invest in. The source reserved for the education is a pretty essential and even most profitable investment instrument for the countries, not an expense. Education that mediates for being developed the human resources always remain on the agenda of the developed countries. It is thought in England that the best economic policy owned is the education and it will play a significant role to provide regional development strategies, new activities and the abilities for future. The other scale of the education for the country development is rendering the information learned marketable and usable (Çakmak, 2008:38).

United Nations Development Program (UNDP) improves the Human Development Index (HDI) and it is an indicator of life quality, multi-directional variable includes both economic and social development and also measures the wealth and developmental levels of countries. The human development index helps individuals and governments to specify their policy priorities and makes being compared the experiences of different countries with each other possible by creating an alternative to the real GNP for inter-country wealth comparing as a result of measuring the relative socio-economic developments of countries within time (Keskin, 2011:129). The Human Development Index has three main components. These principal components are health, education and the income level. Analyzed in this index that the dimensions of financial possibilities required for being have a long and healthy life, qualified workforce and satisfying life standards (Aydın, 2016:18). The Human Development Index is computed by being used the life expectancy at birth as the health indicator, schooling year expected with the average schooling year as the education indicator and the income per capita as the revenue indicator (Eren and Mete, 2014:329).

The chief goal of this study is to investigate the existence and direction of the relation between education expenses and development of 25 OECD countries selected by the data of 2002-2011 period. In this study, firstly the relationship between education and development is explained theoretically, then the previous empirical studies about this subject are summarized. After, it is informed by the data, model and the method used in the analysis. This study ends with the conclusion part up by expressing the results obtained from studies.

Literature

There are several studies research the relation between education and development. The primary hypothesis of these studies argues that there is a positive association between education and growth (development). Whether the education expenses have a positive effect on the income distribution was searched by Sylwester (2002); according to the results that the education expenditures cause a significant reduce in the level of income equality. Francis and Iyare (2006) used cointegration and error correction models to analyze the relation between education and development for Barbados, Jamaica, and Trinidad and Tobago by using annual data for the period of 1964-1998. According to the results of the study that there is a bidirectional causality relation in the short term in Jamaica, but other countries have not a relation like this. Afşar (2009) searched the connection between education investments and the growth for Turkey by the help of the data of 1980-1997 period via Granger causality test and observed that there is a unidirectional causality relation from education to economic growth. Özpolat and Yıldırım (2009) analyzed the effect of woman education on the economic growth in developing countries and observed that there is a positive relation between woman education and income per capita. Kaur and Nanda (2010) tested the connection between humane development and economic growth for the period of 1981-2011 by the data belong 12 critical regions of Punjab; according to the results, the human development affected the education as negative and significant, the lifetime as positive and insignificant. Akçacı (2013) analyzed the relation between education and economic growth for Turkey by Toda-Yamamoto causality test via the data belong to 1998Q1-2012Q3 period. According to the results of the analysis, there is a unidirectional causality relationship from education expenses to the economic growth. Eriçok and Yılancı (2013) aimed to test the relation between economic growth and education expenditures for Turkey via the data belong to the period of 1968-2005. The results obtained from ARDL board test indicated that there is a significant relation between

the variables in the short term. Zivengwa et al.2013 analyzed the connection between education and economic growth in Zimbabwe via Pairwise Granger Causality test and VAR model for the period of 1980-2008. The results of the analysis confirm the existence of a <u>unidirectional</u> causality relation from education and economic growth. Mehrara and Musai (2013) tested the cointegration relation between education and economic growth in developing countries for the period of 1970-2010 and determined that there is a dominant causality from economic growth to the education.

Yardımcıoğlu et al. (2014) tested the long termed relation between education and economic growth by the data belong to 25 OECD countries and the period of 1980-2008. Pedroni and Kaoi, Pedroni DOLS and FMOLS tests and Canning were used for cointegration analyses; just Pedroni was used for causality. According to the tests conducted that there is a long termed and bidirectional causality relation between the variables. Pamuk and Bektaş (2014) investigated the role of the education expenses on the economic growth for Turkey by monthly data for the period of 1998:01-2013:02 via ARDL board test approach and Granger causality test. The findings obtained show that there is not a cointegration relation between two variables mentioned; according to Granger causality test that there is a <u>unidirectional</u> causality relation from economic growth to the education. Kızılkaya and Koçak (2014) aimed to research the relation of public education expenses and the economic growth in 11 OECD countries for the period of 1990-2009 by the panel data analysis method. According to findings obtained from the analysis that the education expenses affect the economic growth positively. Islam (2014) targeted to analyze the short and long-term relation between education and economic growth in Bagladesh with the help of the annual data for the period of 1973-2010. As regards to the result of research that the education expenses in short and the long term have a positive and significant effect on the economic growth. Mekdad et al. (2014) analyzed the relation between education and the economic growth in Algeria for the period of 1974-2012 via cointegration and causality tests. According to the findings obtained that the education expenses affect the economic growth positively. Vries (2015) aimed to research the short and long termed relation between education expenditures and economic growth for 11 OECD countries via the data belong to the period of 1971-2011. Determined at the end of the study that there is a short and long termed relation between variables. Yakubu and Akanegbu (2015) benefited from cointegration and causality tests when analyzing the effect of the education expenses on the economic growth in Nigeria via the data belong to the years between 1981-2010. The long termed relation was determined between the variables but any causality

relation was not. Uçan and Yeşilyurt (2016) searched the connection of economic growth and education expenses in Turkey for the period of 2006: Q1-2015: Q4 via quarterly data and observed the existence of a long termed relation between the variables. It is reached to the result with the help of the error correction model that the fluctuations in the short term will converge to the average of the long-term within about six years. Moreover, it is found a bidirectional relation between growth and education expenses based on Granger causality test.

It is seen when looking at the workshops that there is a generally positive relationship between education and the development.

Data, Model, and Method

In the research, the countries have reachable data were chosen in the 2002-2011 period and the application is limited to 25 OECD[1] countries. The ratio of the education expenditures to the national income was used as the education indicator within the scope of panel data analysis, obtained from World Bank database. The Human Development Index used in literature (Bedir and Yılmaz, 2016; Hafner and Foulkes, 2013; Hafner and Mayer, 2012) as the development indicator and explained by UNDP was attached to the analysis. The education expenditures were defined as a function of the development. The model established for the analysis;

$$HDI_t = \beta_0 + \beta_1 EDEX_t + \varepsilon_t \tag{1}$$

Some of the studies suggest the unit root test in panel data models as follows: Levin, Lin and Chu (2002), Breitung (2000), Im, Pesaran and Shin (2003), ADF-Fisher Chi-square and PP-Fisher Chi-square. The unit root tests were conducted to check the stationarity of the variables of development (HDI) and education expenditures (EDEX). The units included the analysis in can be different regarding being stationary or not. The results of the study will not be reliable in case of being such a difference.

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[1] USA, Austria, Belgium, Czech Republic, Denmark, Finland, France, Netherlands, England, Ireland, Spain, Israel, Sweden, Switzerland, Italy, Iceland, Hungary, Mexico, Norway, Poland, Portugal, Slovakia, Slovenia, Chile, New Zealand.

Therefore, the variables must be stable at the same level to be able to actualize the cointegration test.

The cointegration analysis is conducted after being the unit root tests done. The cointegration analysis research the existence of a long termed relation between the variables. In this respect, Pedroni and Kao cointegration analyses were used. It is found that there is a long termed relationship between the variables and the variables move together in the long run in case of being determined the cointegration relation.

The existence of the cointegration relation does not inform about the existence of causality relation. For this reason, various tests were developed to analyze the causality relations. Panel Granger causality test was used in the analysis of the research to investigate the existence and the direction of the causality relations between the series.

Results of the Analysis

The unit root tests in Table 1 were conducted to determine whether the variables of HDI and EDEX used in the research with unit rooted and the results are shown below.

The series of Human Development Index are stationary at the level value in models except without constancy and trend model of ADF-fisher chi-square and PP-fisher chi-square tests and also stable in all models of other unit root tests. It becomes stationary in all models of unit root tests except constancy and with model of Im, Pesaran&Shin test when the first difference of the same variable is received. The variable of the ratio of the education expenditures to the national income does not include unit root at a level value in all models of PP-fisher chi-square test, modals and tests except the constancy and model with trend of Breitung and Im, Pesaran&Shin test. It is stationary on all models of the unit root tests applied when the first difference of the variable mentioned is received. Indeed, the variables are stationary when their level and first differences are obtained.

Table 1. Results of Unit Root Test			Constancy	Constancy and with trend	Without constancy and trend
HDI	Level		Levin, Lin&Chu	-11.46(0.0000)*	-14.44(0.0000)*	-1.30(0.0956)***
			Breitung	-	-13.97(0.0000)*	-
			Im, Pesaran&Shin	-4.33(0.0000)*	-1.82(0.0338)**	-
			ADF-Fisher Chi-square	99.98(0.0000)*	93.58(0.0002)*	29.60(0.9904)
			PP-Fisher Chi-square	108.07(0.0000)*	185.16(0.0000)*	44.54(0.6913)
	I(1)		Levin, Lin&Chu	-18.34(0.0000)*	-14.86(0.0000)*	-20.52(0.0000)*
			Breitung	-	-10.81(0.0000)*	-
			Im, Pesaran&Shin	-7.19(0.0000)*	-1.26(0.1025)	-
			ADF-Fisher Chi-square	162.18(0.0000)*	83.66(0.0020)*	285.47(0.0000)*
			PP-Fisher Chi-square	327.76(0.0000)*	222.78(0.0000)*	436.59(0.0000)*
EDEX	Level		Levin, Lin&Chu	-4.51(0.0000)*	-11.48(0.0000)*	-2.54(0.0054)*
			Breitung	-	-1.33(0.0908)	-
			Im, Pesaran&Shin	-1.35(0.0873)***	-1.14(0.1251)	-
			ADF-Fisher Chi-square	66.38(0.0602)***	72.25(0.0214)**	47.73(0.5648)
			PP-Fisher Chi-square	60.03(0.1566)	58.37(0.1946)	43.51(0.7295)
	I(1)		Levin, Lin&Chu	-10.06(0.0000)*	-10.99(0.0000)*	-13.80(0.0000)*
			Breitung	-	-4.14(0.0000)*	-
			Im, Pesaran&Shin	-4.81(0.000)*	-1.58(0.0560)***	-
			ADF-Fisher Chi-square	115.19(0.0000)*	91.76(0.0003)*	226.85(0.0000)*
			PP-Fisher Chi-square	142.83(0.0000)*	146.94(0.0000)*	237.43(0.0000)*

Note: The Schwarz information criteria was used. The marks of *, ** and *** respectively indicate the significances at 1%, 5% and 10%. The values in paranthesis mean the probability values

Being the variables used in the research stationary at the same level is enough to investigate an existence of a long termed relation between the variables. For this purpose, cointegration tests of Pedroni and Kao were conducted, Table 2 and Table 3 show the results.

Table 2. Results of Pedroni Cointegration Test				
	Constancy		Constancy and with trend	
	t statistics	*Probability Value*	*t statistics*	*Probability Value*
Panel v-Statistic	-2.711900	0.9967	-6.129226	1.0000
Panel rho-Statistic	-1.465082	0.0714***	1.618036	0.9472
Panel PP-Statistic	-9.979177	0.0000*	-25.66258	0.0000*
Panel ADF-Statistic	-8.979229	0.0000*	-15.79913	0.0000*
Group rho-Statistic	1.101647	0.8647	3.607422	0.9998
Group PP-Statistic	-13.59782	0.0000*	-26.83847	0.0000*
Group ADF-Statistic	-9.850348	0.0000*	-15.31468	0.0000*
Not: The Schwarz information criteria was used. The marks of *, ** and *** respectively indicate the significancies at 1%, 5% and 10%.				

The primary hypothesis called 'there is not a cointegration relation between HDI and EDEX' is denied based on the results of cointegration test. According to the results of Pedroni cointegration test, the primary hypothesis is denied. The Panel rho-statistics is statistically significant at 10% level, Panel PP-Statistics, Panel ADF-Statistics, Group PP-Statistics with Group ADF-Statistics are statistically significant at 1% level as well. These results also show the existence of the cointegration relation. Other statistics are not statistically significant. Panel PP-Statistics, Panel ADF-Statistics, Group PP-Statistics with Group ADF-Statistics from the test results of constancy and with trend are statistically significant at 1% level and also show the existence of cointegration relation. Other statistics are not statistically significant. The results of Pedroni cointegration tests indicate the existence of a cointegration relationship between the variables.

Table 3. Results of Kao Cointegration Test		
	t statistics	*Probability Value*
ADF	-4.668327	0.0000*
Residual Variance	0.002373	
HAC Variance	0.000874	
Not: The Schwarz information criteria was used. The marks of *, ** and *** respectively indicate the significances at 1%, 5% and 10%.		

According to Kao cointegration test, the primary hypothesis called 'there is not a cointegration relation between the variables' is denied. Thus, the existence of the

cointegration relation between the series has alternative hypothesis accepted at 1% significance level. Within this scope, it can be stated that there is a meaningful connection between the education expenditures and the variables of development in the long term. Thus, it is discussed a comovement between the education expenditures and development among the OECD countries.

Being determined a long termed relation as a result of Pedroni and Kao cointegration test does not inform about the causality relation between the variables. By this reason, Panel Granger causality test was applied to search the existence and the direction of the causality relation.

Table 4. Results of Panel Granger Causality Test		
Direction of the Causality	**t statistics**	**Probability Value**
EDEX≠>HDI	11.22370	0.0037*
HDI≠>EDEX	38.88982	0.0000*
Not: The marks of *, ** and *** respectively indicate the significance at 1%, 5% and 10%		

The causality link between the education and the development was researched by using the Panel Granger Causality test. The same basic hypothesis is denied in the analysis done. In other words, there is determined a bidirectional causality relation between the variables at 1% significance level based on the results of panel causality test.

Conclusion

In this study, the relation between education and development is searched for the period of 2002-2011 by using the data of 25 OECD countries. According to the findings obtained from the unit root tests, the variables are stationary at level values and from the first degree. The level values are used to being the numbers of observation high and give better results. It was possible to actualize the cointegration tests by being the variables of HDI and EDEX stationary at the same level. Pedroni and Kao cointegration tests were applied to check the long run relation between the series analyzed. The results of the cointegration tests show the existence of a connection between the training and the development. Since being a long termed relation between the variables does not inform on the causality relation, the Panel Granger causality test was applied, and the bidirectional causality relation was found.

Consequently, there is a positive link between the training expenses and the development as expected. The education level of the society that is one of the components of Human Development Index increases by reaching the share reserved from the national income for the education, accordingly this condition affects the development. Improving the development causes for being placed emphasis for the education and increase the share reserved from the national income for the education sector. There is not the shadow of a doubt that extending such a relation over a long time depends on being kept the education issue on the agenda by the countries which want to develop.

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6 | The Interaction Between Globalization, Urbanization and Economic Development

Türker ŞİMŞEK
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Abstract

Globalization affects all societies economically as well as political, administrative and social life. In the process of globalization, many radical transformations in the socio-economic sense live primarily in urban areas. As a center of mental and spatial transformation many cities, especially with the trade advantage, come to the forefront and are beginning to be remembered more than states. In this case, the nation state is now an inadequate organization, with the debate that the future dominant administrative spaces will be cities. Urbanization, in which globalization has become increasingly important, also contributes to economic development of the country since it is subject to different market and production activities in economic terms. In addition, cities and urbanization are important because cities are places where international capital is gathered and where there are internal and external migration flows. In this context, globalization, urbanization and economic development are in close interaction with each other. This study aims to analyze the relation between globalization, urbanization and economic development by using VAR method. It is thought that the results of the analysis will provide policy makers with policies to shed light on the achievement of economic development goals in the globalized and rapidly urbanized world.

Key Words: *Globalization, Urbanization, Economic Development, VAR Analysis*

JEL Codes: *O10, F63, O18*

Introduction

The transformation of human society after the industrial revolution can be summarized by three concepts: industrialization, urbanization and globalization. These three concepts are closely interrelated. Industrialization increases the production in the economy by improving labor specialization and stimulating the non-agricultural sector. Especially in developing countries and new industrialized countries, developments experienced in the industry accelerate a strong urbanization process. Looking at historical facts and statistics, it is seen that the urbanization level and the level of GDP per capita are at a high level in almost all developed countries. Many studies in the literature have found a significant relationship between the level of urbanization and per capita GDP (Chenery and Taylor, 1968; Henderson, 2003). It is generally accepted that economic development increases modern industrialization and urban population. Similarly, urbanization encourages economic development. For this reason, various programs aimed at rapid urbanization and rapid economic development have been launched in many developing countries. Policies aiming at positive urbanization in order to increase economic development are widespread in developing countries (Pugh, 1995: 382; Hope, 1998; Friedmann, 2006).

With the expansion of transportation opportunities, the transition from a closed economy to a market economy and the realization of mechanization in agriculture, the surplus labor force in the rural areas has increased the urban population by migrating to cities (Tutar et al., 2012: 110). These developments brought about changes in the economic and social structure as well as in the content of development. The transition from the agricultural society to the industrial society has accelerated, raising the standard of living of the individual (Eren, 2016: 451).

The urbanization of the world is changing rapidly and this change is increasing rapidly in the last 30 years compared to previous years. Scholars interested in this issue recently said that more than half of the world's population will live in urban areas (Bloom et al., 2008). We can see that the world has entered the urban era and that the rapidly developing country China has achieved a level of urbanization of 50%. The focus of

world urbanization is shifting from developed countries to developing countries (Normile, 2008:740; Chen et al., 2013).

Globalization affects all societies economically as well as political, administrative and social life. In the process of globalization, many radical transformations in the socio-economic sense live primarily in urban areas. As a center of mental and spatial transformation many cities, especially with the trade advantage, come to the forefront and are beginning to be remembered more than states. In this case, the nation state is now an inadequate organization, with the debate that the future dominant administrative spaces will be cities (Keyder, 1993: 91). Urbanization, in which globalization has become increasingly important, also contributes to economic development of the country since it is subject to different market and production activities in economic terms (Moomaw et al., 1993, 1996). In addition, cities and urbanization are important because cities are places where international capital is gathered and where there are internal and external migration flows (Short, 1999: 53).

Cities created by urbanization play an important role in the generation and transmission of innovations. Cities also allow conditions for diversification of economic structure which includes access to scientific-technical knowledge and proximity to markets. These can be seen as a necessary condition for economic growth and development. Empirical studies show that urbanization constitutes the necessary conditions for all aspects of modernization and for development (Moomaw and Shatter, 1996; Bradshaw and Schafer,2000; Njoh, 2003; Sharma, 2003). Cities serve as a center for information and modernization, which brings the efficiency of infrastructure investments to the highest level and organizes the space economy. Cities are the main concentrations of purchasing power as they are the places where production is organized and where exchanges are coordinated in the economic system. The urban-industrial relationship and economic development can not be fully realized without city services (United Nations, 1971:12). In addition, cities provide talented workers with expertise in terms of knowledge, skills and management. They can achieve the economies of scale, agglomeration and urbanization (UN-Habitat, 2011: 1).

Urban areas should not be seen only as income generating areas. At the same time it is the essential elements of interdependence between urban and rural areas, especially in third world cities. As the empirical studies support, the income generating capacity of cities for people is higher than in rural areas (Squire, 1981; Oberai, 1989: 8-9).

In addition to all these explanations, there are also scholars who point out that there is no evidence that the level of urbanization affects the rate of economic development (Bloom et al., 2008). Turok and McGranahan argue that economic development is not encouraged by urbanization or city size, but by infrastructure and institutions (Turok and McGranahan, 2013). All these ideas push us to re-examine the relationship between urbanization and economic development, which is increasingly popular.

The relationship between urbanization and economic development is of scientific significance because it affects the vast majority of the world's population and affects the sustainable development of the global economy.

While reviewing the relevant literature to reveal the interaction between globalization, urbanization and economic development, several studies draw attention: In the study prepared by Lo (2010), the relationship between urbanization and economic growth and the direction of relationship for 28 countries within the period of 1950-2000 were investigated. Findings show that there is a long-term relationship between urbanization and economic growth, and in contrast to developed countries, urbanization is a reason of economic growth in developing countries. Zhao and Wang (2015) analyzed in their research the relationship between urbanization, economic growth, and energy consumption in China given in the 1980-2012 period. The results of the study indicate that there is a one-way causality relation from economic growth to urbanization. Omolade et al. (2013) examined the relationship between globalization and economic development in Nigeria for the period of 1980-2011. According to the results of the research, there is a one-way causality relation from economic development to globalization. Marmara and Usman (2015) explored the relationship between urbanization and economic growth in China in the period of 1986-2013. The study found that there is a bi-directional causality relation between urbanization and economic growth. Çelik and Erkan (2010) also tested the relationship between globalization and development for 88 countries in the study they prepared for the period of 1990-2005. The results of the study show that globalization affects development positively.

In this section, the relevant literature is summarized and the place of the study within the literature is tried to be revealed. In the next section, the data set and methodology of the study are briefly explained and the interaction between globalization,

urbanization, and development is examined by using of econometric approach. The study is completed with the final section in which the general evaluations take place.

Data and Methodology

The VAR model handles all selected variables together and examines them in a system. Certainly there is no internal or external variables. In the process of shaping the econometric model, the existence of a rigid economic theory that influences the formation of the model is not accepted. It is not permissible for the restrictions and assumptions that economic theory suggests to distort the model definition. There is no preliminary limit on the relationships between variables. Thus, the adverse effects of the assumptions that economists have had to do at the time of model building have largely ceased to exist. Statistical and econometric tests of various hypotheses suggested by the economic theory are made by using numerical economic data (Özgen and Güloğlu, 2004: 95).

VAR models are used primarily to examine the relationship between macroeconomic variables and to examine the dynamic impact of random shocks on the system of variables.According to many economists, unconstrained VAR yields better results than classical structural model for forecasting.Determining inter-variable relationships with non-structural techniques sometimes yields better results, since the internal variables are located on both the right and left sides of the model's equations, making it difficult to deduce an estimate of the relationship being examined(Greene, 1993: 553).

Three-variable VAR model, the standard form can be expressed as follows:

$$y_t = a_1 + \sum_{i=1}^{p} b_{1i} y_{t-i} + \sum_{i=1}^{p} b_{2i} x_{t-i} + v_{1t}$$

$$x_t = c_1 + \sum_{i=1}^{p} d_{1i} y_{t-i} + \sum_{i=1}^{p} d_{2i} x_{t-i} + v_{2t}$$

$$z_t = e_1 + \sum_{i=1}^{p} f_{1i} y_{t-i} + \sum_{i=1}^{p} f_{2i} x_{t-i} + v_{3t}$$

In the above model, p represents the lag length and v represents the random error terms (zero mean, covariance with its delayed values zero, variance constant and normal distribution). The assumption that error terms in the VAR model are unrelated to their delayed values does not impose any restriction on the model. Because the delay length of the variables is increased, the problem of autocorrelation is overcome. If the error terms are related each other at a certain point in time, that is, if the correlation between them is different from zero, the change in one of the error terms will affect the others at a certain point in time. In addition, error terms are not related to all variables to the right of the model. On the right side of the model, it is not confused with the question of synchronicity, since only the lagged values of the internal variables take place. In this case, each equation in the model can be predicted using the classical least squares method. The optimal delay lengths in the VAR model are Akaike, Schwartz, Hannan-Quinn and so on. Can be determined by criteria (Özgen and Güloğlu, 2004: 96).

VAR models can be applied in two ways as restricted and unrestricted VAR models. "F tests showing Granger causality", "variance decomposition showing the interaction between variables" and "impulse-response functions" are the methods used to get results in VAR analysis.

Granger Causality in VAR

In 1969, Granger introduced concepts of causality and externality (Granger, 1969: 553-560). Thus, if the addition of information of the variable x contributes to the prediction of the variable y, the variable x is the cause of the variable y.

The Granger causality test for the two-variable model is performed as follows:

If the following H_1 hypothesis is accepted, x is not the cause of y.

H_1: $b_{21} = b_{22} = ... = b_{2p} = 0$

If the H_2 hypothesis is accepted, y is not the cause of x.

H_2: $d_{11} = d_{12} = ... = d_{1\rho} = 0$

If both H_1 and H_2 hypotheses are rejected, then between x and y. It is understood that there is bilateral causality. In this case feedback effect. The above hypothesis tests can be tested with the Wald test:

$$F = \frac{(RSS - URSS)/r}{URSS/(n - k)}$$

Where RSS denotes the sum of error squares of the restricted model, URSS denotes the sum of error squares of the unrestricted model, r denotes the number of constraints, n denotes the number of observations and k denotes the number of modeled parameters. If the calculated F value is greater than the F value of the table, the H_1 and H_2 hypotheses are rejected (Lomax, 2007: 10).

Impulse-Response Functions

Impulse-response functions reflect the effect of a standard deviation shock in random error terms on the present and future values of the internal variables. In the VAR analysis, impact-response functions have a large share in determining the dynamic interaction between the variables studied and identifying symmetric relationships. While the most effective variable on a macroeconomic variable is determined by variance decomposition, the effective use of this variable as a policy tool is determined by looking at impulse-response functions.One of the most widely used methods of obtaining impulse response coefficients from the standard VAR model is the verticalization of errors using Cholesky decomposition and the diagonalization of the resulting variance-covariance matrix.Therefore, it should be noted that changing the order of the variables in turn may lead to very large changes in the impulse response functions (Hamilton, 1994: 323).

Furthermore, since the impulse-responses are a non-linear function of the coefficients of the VAR model, their actual values can not be calculated. However, the actual values of the impulse-response functions fall within the confidence intervals with a certain probability. Analytical methods used to calculate the confidence intervals of the coefficients of impulse-response functions have therefore been the subject of criticism in recent times. In this context, Monte Carlo and bootstrap methods are frequently

used (Kilian and Chang, 2000). In this study Monte Carlo technique is used to calculate the standard errors of impact-response functions.

Variance Decomposition

The variance decomposition divides the variation in one of the internal variables into separate shocks that affect all the internal variables. In this sense, variance decomposition gives information about the dynamic structure of the system. The purpose of variance decomposition is to reveal the effect of each prediction on the error variance for each future period. The error variance of prediction can be expressed as the contribution to the error variance of each variable for a period of length h.Each variance obtained in this way is then weighted relative to the total variance, in relative weight percent. Interpretation of the results obtained from the variance decomposition is also important. A shock in the error term can be regarded as x external variable if the prediction error of x does not affect the error variance regardless of the length of the forecast period. Because x is acting independently of y. On the contrary, if a shock in the error term affects the error variance entirely (or significantly) of the prediction of x, x is treated as an internal variable. In the variance decomposition, the order of the variables also affects the results (Özgen and Güloğlu, 2004: 98).

Data Set

In the study, seasonally adjusted annual data including the 1970-2013 period in which there was no problem in data provision were used for 154 countries. All series are percentages in the analysis. The data used for unrestricted VAR analysis are: Economic Development (ECOD), Globalization (GLOBAL) and Urbanization (URBAN).While economic development and urbanization data are obtained from the World Bank database, globalization data are taken from globalization indices prepared by the KOF Swiss Economic Institute.

According to the opinion widely used in the VAR literature, it is necessary to ensure the stationary of the series used in the examination so that the results are reliable.The overall stationary of the model can be understood by looking at the inverse roots of the characteristic polynomial obtained from the model (Banerjee et al., 1993: 141). If roots are all contained within the unit circle, VAR process is stationary.

Inverse Roots of AR Characteristic Polynomial
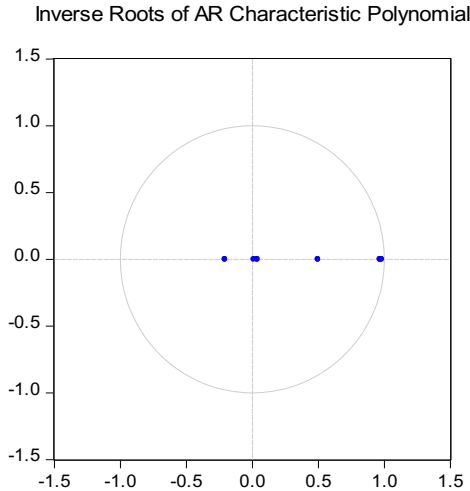
When we look at the graph above, it is seen that the roots are in the unit circle. Therefore we can say that the series is stationary. Stationarity results from modern econometric methods, such as the Augmented Dickey-Fuller unit root tests, confirm that all of the series are stationary at $\alpha = 0.01$ significance level[1]. Table 1 shows the results of the unit root test of the variables belonging to the models with individual effects.

Table 1. Augmented Dickey-Fuller Unit Root Tests

Variables	t-Statistic	Prob.
ECOD	-32.12577	0.0000***
GLOBAL	-11.70447	0.0000***
URBAN	-9.371405	0.0000***

MacKinnon (1996) one-sided p-values.

Note: Lag lengths are automatically determined considering the Akaike criteria.

*** sign indicates variables that are significant at level 1% significance.

---

[1] The series are also confirmed by the Levin Lin & Chu and Im, Pesaran and Shin tests.

A total of three unconstrained VAR models can be estimated in the study. The VAR analysis was started with 12 lags and it was determined that the optimal lag length was seven by looking at the LR, FPE, AIC, SC and HQ criteria[2]. These VAR models can be written as:

$$
VAR\ 1 \quad : \quad ECOD_t
$$
$$
= a_1
$$
$$
+ \sum_{i=1}^{p} b_{1i} ECOD_{t-i}
$$
$$
+ \sum_{i=1}^{p} b_{2i} GLOBAL_{t-i} + \sum_{i=1}^{p} b_{3i} URBAN_{t-i} + v_{1t}
$$

$$
VAR\ 2 \quad : \quad GLOBAL_t
$$
$$
= c_1
$$
$$
+ \sum_{i=1}^{p} d_{1i} GLOBAL_{t-i}
$$
$$
+ \sum_{i=1}^{p} d_{2i} ECOD_{t-i} + \sum_{i=1}^{p} d_{3i} URBAN_{t-i} + v_{2t}
$$

$$
VAR\ 3 \quad : \quad URBAN_t
$$
$$
= e_1
$$
$$
+ \sum_{i=1}^{p} f_{1i} URBAN_{t-i}
$$
$$
+ \sum_{i=1}^{p} f_{2i} GLOBAL_{t-i} + \sum_{i=1}^{p} f_{3i} ECOD_{t-i} + v_{3t}
$$

---

[2] LR: sequential modified LR test statistic (each test at 5% level), FPE: Final prediction error, AIC: Akaike information criterion, SC: Schwarz information criterion HQ: Hannan-Quinn information criterion.

Causality Analysis Results

The Granger causality test results using the Block Exogeneity Wald test for the three predicted VAR models are tabulated below.

Table 2. VAR Granger Causality/Block Exogeneity Wald Tests

Dependent variable: ECOD

Excluded	Chi-sq	df	Prob.
GLOBAL	2.224859	2	0.3288
URBAN	2.098916	2	0.3501
All	8.346475	4	0.0797

Dependent variable: GLOBAL

Excluded	Chi-sq	df	Prob.
ECOD	1.551684	2	0.4603
URBAN	4.845464	2	0.0887
All	6.307479	4	0.1773

Dependent variable: URBAN

Excluded	Chi-sq	df	Prob.
ECOD	2.050522	2	0.3587
GLOBAL	11.74897	2	0.0028
All	14.04705	4	0.0071

It is seen that there is a one-sided causality relation from globalization to urbanization when the results of causality tests are examined. In other words, GLOBAL (lag 1 and lag 2) can cause URBAN.

Results of Impulse-Response Functions Analysis

Whether or not any variable is effective over a macroeconomic indicators is measured primarily by causality tests. Then, the availability of the effective variable as a policy tool is determined by impulse-response functions. And the effect level is determined by variance decomposition. In this section, graphs of impulse-response functions are included to reinforce the results obtained from causality tests.

Response to Cholesky One S.D. Innovations ± 2 S.E.
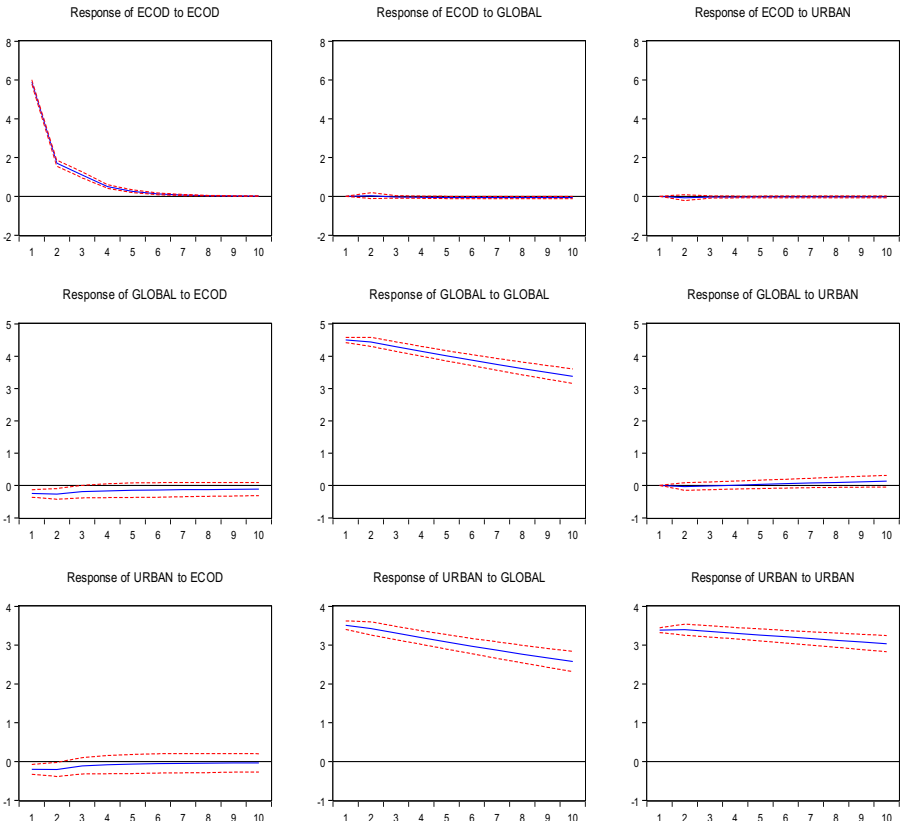
As a result, impulse-response functions confirm causality tests. It is determined that the relationship between GLOBAL and URBAN is not a one-sided relationship but a mutual causality relation.

Variance Decomposition Results

In the sections up to this point, Granger causality test results and impulse-response graphs obtained from VAR models are interpreted. In this section, we will search for the most influential variable or variables on a dependent variable and we will perform variance decomposition for this purpose. The results of the variance decomposition are given in Table 3.

Table 3. The Results of Variance Decomposition

| Period | S.E. | Variance Decomposition of ECOD: | | |
		ECOD	GLOBAL	URBAN
1	5.904837	100.0000	0.000000	0.000000
		(0.00000)	(0.00000)	(0.00000)
2	6.147768	99.98206	0.003218	0.014720
		(0.04726)	(0.02952)	(0.04037)
3	6.246404	99.97585	0.005890	0.018263
		(0.05146)	(0.02826)	(0.04577)
4	6.266524	99.96676	0.012109	0.021134
		(0.05556)	(0.02872)	(0.04942)
5	6.272248	99.95555	0.021222	0.023230
		(0.05990)	(0.03245)	(0.05137)
6	6.273925	99.94358	0.031373	0.025049
		(0.06537)	(0.03873)	(0.05287)
7	6.274638	99.93156	0.041729	0.026711
		(0.07179)	(0.04639)	(0.05418)
8	6.275092	99.91989	0.051820	0.028293
		(0.07879)	(0.05454)	(0.05545)
9	6.275466	99.90873	0.061442	0.029827
		(0.08608)	(0.06271)	(0.05675)
10	6.275805	99.89815	0.070516	0.031329
		(0.09342)	(0.07065)	(0.05809)
11	6.276121	99.88817	0.079028	0.032807
		(0.10067)	(0.07826)	(0.05947)

12	6.276418	99.87875	0.086988	0.034264
		(0.10773)	(0.08549)	(0.06089)

		Variance Decomposition of GLOBAL:		
Period	S.E.	ECOD	GLOBAL	URBAN
1	4.507775	0.299441	99.70056	0.000000
		(0.13733)	(0.13733)	(0.00000)
2	6.333261	0.324695	99.67243	0.002878
		(0.15568)	(0.15513)	(0.01375)
3	7.654125	0.282921	99.71490	0.002178
		(0.15421)	(0.15425)	(0.01621)
4	8.708742	0.253971	99.74414	0.001889
		(0.16020)	(0.16084)	(0.01623)
5	9.589403	0.232660	99.76443	0.002914
		(0.16723)	(0.16844)	(0.01629)
6	10.34436	0.217078	99.77739	0.005536
		(0.17381)	(0.17559)	(0.01757)
7	11.00276	0.205347	99.78480	0.009851
		(0.17948)	(0.18186)	(0.02060)
8	11.58394	0.196291	99.78782	0.015885
		(0.18425)	(0.18733)	(0.02538)
9	12.10159	0.189127	99.78725	0.023625
		(0.18824)	(0.19222)	(0.03172)
10	12.56587	0.183337	99.78362	0.033045
		(0.19159)	(0.19676)	(0.03943)
11	12.98459	0.178567	99.77733	0.044103
		(0.19443)	(0.20119)	(0.04838)
12	13.36392	0.174574	99.76867	0.056753
		(0.19685)	(0.20572)	(0.05848)

		Variance Decomposition of URBAN:		
Period	S.E.	ECOD	GLOBAL	URBAN
1	4.883151	0.171344	51.75506	48.07360
		(0.09983)	(0.87926)	(0.88230)
2	6.868465	0.176031	51.06761	48.75636
		(0.11052)	(1.15002)	(1.15612)
3	8.329193	0.137986	50.50668	49.35534

		(0.10631)	(1.31658)	(1.32365)
4	9.513906	0.113354	49.98213	49.90451
		(0.10811)	(1.41088)	(1.41792)
5	10.51898	0.096311	49.47300	50.43069
		(0.11134)	(1.47865)	(1.48520)
6	11.39442	0.084199	48.97540	50.94040
		(0.11470)	(1.53706)	(1.54299)
7	12.17033	0.075216	48.48823	51.43655
		(0.11767)	(1.59332)	(1.59860)
8	12.86657	0.068318	48.01125	51.92043
		(0.12012)	(1.65054)	(1.65519)
9	13.49714	0.062862	47.54445	52.39269
		(0.12210)	(1.70998)	(1.71404)
10	14.07237	0.058437	47.08783	52.85373
		(0.12366)	(1.77197)	(1.77549)
11	14.60016	0.054775	46.64142	53.30381
		(0.12488)	(1.83640)	(1.83942)
12	15.08674	0.051690	46.20519	53.74312
		(0.12583)	(1.90294)	(1.90552)

Cholesky Ordering: ECOD GLOBAL URBAN
Standard Errors: Monte Carlo (100 repetitions)

Given the results of ECOD variance decomposition, the variable with the greatest share of error variances of ECOD for coming periods is GLOBAL in the long term while it is URBAN in the short term. Looking at the variance decomposition of GLOBAL, ECOD is the largest share of forecast error variance of GLOBAL for future periods in the short term and long term. But over time the effect of ECOD is diminishing. Finally, when looking at the variance decomposition of URBAN, GLOBAL is the largest share of forecast error variance of URBAN for future periods. Globalization has a share of about 51% in the short term.

Conclusion

Globalization has accelerated urbanization by attracting foreign investment and capital industries to cities. The capitalist system produced high-tech industries such as communications, technology, finance and banking in cities. High industry increase the

concentration of cities, that is, urbanization. economic facts such as employment, investment and development are concentrated in the cities. Therefore, those who can not find jobs, those who are excluded from private property rights, and those who are seeking economic opportunities, migrate towards cities. Urbanization also provides the necessary conditions for development as it provides diversification of economic structure including scientific and technical knowledge, the possibility of getting a good education and proximity to markets. There are also studies suggesting that urbanization has no effect on economic development (Bloom et al., 2008; Turok and McGranahan, 2013). As a result of our analysis, the effect of urbanization and globalization on economic development is less. We can say that the effect of globalization on economic development is greater than urbanization. The underlying reason for this is that the impact of infrastructure and institutions on economic development is more important than globalization and urbanization. But there is an interaction between globalization, urbanization and economic development by looking at the results of variance decomposition. Especially, globalization is the largest share of urbanization forecast error variance (%51). As a result, it is important for policy makers to make policy decisions, taking into account the short and long-term interaction between urbanization-globalization and economic development.

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7 | The Impact of Globalisation on Women

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Melike Atay POLAT

Abstract

This paper examines the effects of globalisation on women in the world regions Which grouped by United Nations as developed countries, developing countries, Southern Europe, Eastern Europe, Central Asia, Oceania, Western Asia, Southern-East Asia, Eastern Asia, Northern Africa, Sub-Saharan Africa. The effect of globalisation on women was evaluated through labour force participation, employment structure, educational attainment, health status and political power. Although the global vision has been presented as a borderless world, in which all countries are integrated into a unified order, the findings of the research have indicated that women status differs widely in world regions. Women in developing regions generally have negative effects of globalisation.

Introduction

Globalisation is the international integration process arising from the interchange of products, ideas, views. The countries have become more integrated and interdependence as the globalisation process led similar standards and rules in every aspect of life such as law, education, health etc. There are three important developments which lead globalisation. The first development is the advances in transportation, such as the invention of steam locomotive, steam ship and jet engine. The second development is the advances in information and communication technologies. The last development is foreign direct investments, especially made by multinational corporations all over the world.

Globalisation has positive and negative effects on individuals, firms, and countries. As globalisation generally has negative effects on women and children in the developing countries, some authors argue that 'globalisation is a man' (Horgan, 2001:1). According to this view, women suffer from IMF and World Bank policies as public services for sick, older relatives and disabled people are cut and women are forced to care these people. Another disadvantage of globalisation which was pointed out that women in developing countries generally are employed as low paid workers by multinational firms as a result of foreign direct investments to these countries. Globalisation is also criticized by some feminist authors as it threatens working women's rights to have children.

However, globalisation has also some positive effects on women. The globalisation pushed millions of women into workforce who had traditionally been dependent on husbands or other family members. This development brought economic freedom and power to women, especially in developing countries.

The aim of this study is to examine the effects of globalisation on women's status in the world's regions by using the classification done by United Nations (UN) as developed countries, developing countries, Southern Europe, Eastern Europe, Central Asia, Oceania, Western Asia, Southern-East Asia, Eastern Asia, Northern Africa, Sub-Saharan Africa[1]. This study may differ from the earlier studies in two ways. Firstly, the effects of globalisation on women will be observed in world's regions instead of some countries. By comparing women's status in world's regions, it will be clarified whether the globalisation has helped the regions to catch up with each other in terms of women development. Secondly, women status in these regions will also be compared with that of men.

This chapter is divided into five sections. In the first section, studies which explores the effects of globalisation on women are presented under literature review. The second section examines the changes related with labour force participation of women and employment structure of women. The third section is devoted to the changes on educational attainment of women. Chapter four explains the effects of globalisation on women's health. Chapter five discusses the roles of globalisation on political power of women. The paper ends with conclusion.

Literature Review

The effects of globalisation on women have been examined in the literature especially for developing countries with high women population. One of these countries with high population is India. Subhalakshmi (2012) examined the positive and negative effects of globalisation on Indian women. New job opportunities and equality between sexes are the two important positive impacts of globalisation on Indian women. Globalisation has opened up communication lines and attracted foreign companies and organisations into India. These companies provided new job opportunities and higher wages, which raised self-confidence for women, and, in turn, promoted equality between women and men.

Subhalakshmi also observed the negative effects of globalisation on Indian women. Globalisation could not provide better job opportunities for all Indian women. 96 % of Indian women were in the unorganised sector. It was also highlighted in the article that humiliation, harassment and exploitation of women have been more widespread in India with globalisation (Subhalakhmi, 2012: 3).

Gosain (2015) also assessed the adverse effects of globalisation in the lives of Indian women and highlighted two important developments as a result of globalisation. Firstly, globalisation has strengthened patriarchy in India and has set up new push backs for women's struggle. Secondly, as a result of globalisation Indian women employed in hazardous conditions and paid lower wages than men. Changes in economic policies in order to attract foreign direct investment led to relegation of women to the low paid sectors.

The impact of globalisation on women's paid labour force was examined in 10 Asian countries by Cheng in 1999. As a result of the research, it was argued that globalisation

opened up certain opportunities for elite women in Asian countries. However, globalisation also drove many women, who were not well educated, into destitution in these countries (Cheng, 1999: 228).

Richard and Gelleny (2007) examined the relationship between women's status and economic globalisation using data on 130 countries from 1982 to 2003. Their findings demonstrated three important results. First, women's status in a country was associated with the country's integration to the world economy. Second, the relationship between economic globalisation and women's status were different by type of globalisation (economic globalisation, financial globalisation…), type of status, and era. Third, they found support for the request that economic globalisation should improve women's status (Richard and Gelleny, 2007: 873).

Metcalfe (2008) explored the relationship between women, management and globalisation in the Middle East. It was shown that women face social and organisational barriers in the labour market. It was also highlighted that women have some restrictions which limit training and career choice options in Arab societies (Metcalfe, 2008: 97).

Labour Force Participation and Sectoral Employment

Women's participation of labour force is increasing all over the world as a result of their advancing educational level, better working conditions, and legal regulations. After, 1980s, more and more girls are attending primary, secondary and tertiary education comparatively with the earlier decades. Well-educated women generally have higher carrier positions in both developed and developing countries. Additionally, better working conditions, especially presented by services and information sectors in the post-industrial societies, motivated women labour force to join the workforce. In contrast to industrial societies, women workforce is generally employed in services and information sectors, which needs mental and intellectual power in the post-industrial societies.

Table 1. Labour Force Participation Rate, Persons Aged 15+ Years, by Sex and Region (1995 and 2015)

REGIONS	1995	2015
Southern Europe (Women)	37,7	45,5
(Men)	64,3	62,4
Eastern Europe (Women)	52,6	53,6
(Men)	68,7	68,2
Other Developed	53,0	54,6
Regions(Women)	72,5	68,1
(Men)		
Central Asia (Women)	55.1	56.5
(Men)	74.0	76.3
Oceania (Women)	64.2	65.7
(Men)	73.1	74.0
Western Asia (Women)	23.6	24.4
(Men)	76.9	74.8
Southern-East Asia (Women)	58.8	59.1
(Men)	82.8	82.0
Eastern Asia (Women)	71.2	63.5
(Men)	84.3	78.3
Northern Africa (Women)	20.4	22.9
(Men)	75.6	74.5
Sub-Saharan Africa (Women)	60.3	63.9
(Men)	78.4	76.8

Source: United Nations, 2015. The World's Women 2015: Trends and Statistics. New York: United Nations, Department of Economic and Social Affairs, Statistics Division.

Table 1 presents the following observations:

I. Except Eastern Asia, labour force participation rate of women has increased in all country groups between 1995 and 2015. While labour force participation rate of women in Eastern Asia was 72.2 % in 1995, which was the highest rate, it decreased to 63.5 % in 2015, which was the third highest share.

II.   In 2015, the highest labour force participation rate of women is in Oceania with 65.7 %. However, this rate is very low in Northern Africa (22.9 %) and Western Asia (24.4 %).

III.   In 2015, the highest labour force participation rate of men is in Southern-East Asia (82.0 %) and the lowest participation rate of men is in Southern-Europe (62.4 %).

IV.   Women has never had the same or higher labour force participation rate than men.

As a result of these observations, it can be argued that women have never had equal labour force participation rate with men, although labour force participation rate of women has increased all over the world.

Table 2 presents distribution of employed persons by economic sectors, by sex and region. It can be observed that women have two diverse employment structure within the world regions (See Table 2). Although women in most regions have highest employment rate in services sector, women in Sub-Saharan Africa and Oceania have highest employment rate in agriculture. In developed regions, the highest share of women is employed in services sector and the lowest share of women in agriculture. In 2015, employment rate of women in services sector was 88.7 % in developed countries, whereas this rate was 30.2 % in Oceania and 31.8 % in Sub-Saharan Africa. In fact, this diverse employment structure can also be observed for men between developed and developing regions.

Table 2. Distribution of Employed Persons by Economic Sectors, by Sex and Region (2015)

REGIONS	Agriculture	Industry	Services
Developed Countries (Women)	1.4	9.9	88.7
(Men)	2.7	30.4	66.9
Central Asia (Women)	36.5	11.8	51.6
(Men)	30.7	27.3	41.9
Oceania (Women)	63.3	6.5	30.2
(Men)	57.4	9.3	33.3
Western Asia (Women)	29.5	10.0	60.5
(Men)	12.3	28.6	59.1
Southern-East Asia (Women)	37.2	16.0	46.8
(Men)	37.3	23.5	39.1
Eastern Asia (Women)	25.9	30.1	44.0
(Men)	28.7	34.4	36.9
Northern Africa (Women)	29.7	12.2	58.1
(Men)	20.8	29.3	49.9
Sub-Saharan Africa (Women)	62.2	6.0	31.8
(Men)	59.6	11.0	29.4

Source: United Nations, 2015. The World's Women 2015: Trends and Statistics. New York: United Nations, Department of Economic and Social Affairs, Statistics Division.

Educational Attainment

Education is a fundamental human right according to Universal Declaration of Human Rights (UN, 1948). Educational attainment of women is very important for the well-being of families and countries by two ways. Firstly, educated women will have a more access for a getting better position in the labour market and increase the output of the nation. Secondly, educated mothers will help the children to have better education. Some studies also show that increasing educational level of women lowers fertility rate and raises female's labour force participation. (İnce, 2010: 639). In addition to decreasing fertility rate, education also increase contraceptive use, and promotes reproductive health practices (Samarakoon and Parinduri, 2014: 428).

However, literacy rate of women in most developing countries is very low comparatively with developed world. Average 15+ years adult literacy rate in Afghanistan for 2005-2012 period was 17.6 % for women and was 45.4 % for men, while the rates were 100 %, or 98 % for developed countries for both women and men (UN, 2015).

Participation in primary education is more than 90 % in most regions, except Oceania and Sub-Saharan Africa. Women's participation in primary education is 86 % in Oceania and 75 % in Sub-Saharan Africa (See Table 3). Participation in primary education is nearly universal. The enrolment of girls in primary education has increased faster than that of boys all over the world (UN, 2015, 63).

Table 3. Primary Adjusted Net Enrolment Rates by Sex and Region
(1990, 2000 and 2012)

REGIONS	1990	2000	2012
Developed Countries (Women)	96	97	97
(Men)	96	97	96
Developing Countries (Women)	74	80	89
(Men)	85	87	91
Central Asia (Women)	-	95	94
(Men)	-	95	95
Oceania (Women)	64	-	86
(Men)	73	-	91
Western Asia (Women)	79	81	91
(Men)	88	91	96
Southern-East Asia (Women)	92	92	94
(Men)	95	93	94
Eastern Asia (Women)	94	96	97
(Men)	100	96	97
Northern Africa (Women)	72	86	98
(Men)	88	93	100
Sub-Saharan Africa (Women)	48	57	75
(Men)	58	64	81

Source: United Nations, 2015. The World's Women 2015: Trends and Statistics. New York: United Nations, Department of Economic and Social Affairs, Statistics Division.

Table 4. Secondary Gross Enrolment Ratios by Sex and Region
(1990, 2000 and 2012)

REGIONS	1990	2000	2012
Developed Countries (Women)	94	98	100
(Men)	93	97	100
Developing (Women)	36	50	68
(Men)	46	56	70
Central Asia (Women)	91	86	97
(Men)	93	87	100
Oceania (Women)	23	33	45
(Men)	27	37	52
Western Asia (Women)	41	54	73
(Men)	62	71	79
Southern-East Asia (Women)	40	55	74
(Men)	44	57	73
Eastern Asia (Women)	34	57	90
(Men)	46	61	88
Northern Africa (Women)	52	69	86
(Men)	67	73	87
Sub-Saharan Africa (Women)	20	23	38
(Men)	26	29	45

Source: United Nations, 2015. The World's Women 2015: Trends and Statistics.
New York: United Nations, Department of Economic and Social Affairs, Statistics
Division.

There is a huge gap in secondary gross enrolment ratio between developed and
developing countries. For both women and men, secondary enrolment ratio is 100 %
in developed countries, whereas this ratio is 68 % and 70 % respectively in developing
countries (Table 4). Secondary enrolment ratio of women in Oceania and Sub-Saharan
Africa is lower than 50 %. These enrolment rates indicate that enrolment in secondary
education is not universal as much as primary education throughout the world regions.

Table 5. Tertiary Gross Enrolment Ratios by Sex and Region (1990, 2000 and 2012)

REGIONS	1990	2000	2012
Developed Countries (Women)	45.87	60.32	85.18
(Men)	41.58	49.81	66.34
Developing (Women)	5.99	11.26	25.49
(Men)	8.64	13.27	25.62
Central Asia (Women)	24.39	21.08	24.22
(Men)	24.76	21.64	22.53
Oceania (Women)	2.63	3.42	-
(Men)	4.35	4.06	-
Western Asia (Women)	9.95	16.94	39.16
(Men)	15.68	21.93	41.04
Southern-East Asia (Women)	9.86	18.30	31.38
(Men)	10.72	17.79	28.12
Eastern Asia (Women)	2.92	8.82	30.23
(Men)	5.92	12.70	27.87
Northern Africa (Women)	9.45	20.72	30.77
(Men)	14.55	25.03	27.58
Sub-Saharan Africa (Women)	2.20	3.53	6.40
(Men)	4.22	5.24	9.99

Source: United Nations, 2015. The World's Women 2015: Trends and Statistics. New York: United Nations, Department of Economic and Social Affairs, Statistics Division.

Tertiary enrolment rate is increasing in the US and other advanced economies in recent years. The reason for this development is that employment in the services and information sectors, which have the highest shares in the post-industrial society, generally needs a university degree. According to the US statistics, women age 25 to 29

have had higher attainment rates than male counterparts since 1996 (Bauman, 2016: 1). Labour force participation rate of women is very high when they graduated from a higher education. This result is not only related with developed countries, but also related with developing countries. For example, empirical evidence for Turkey indicates that there is an increasing trend in the labour force participation of women who are graduated from higher education (İnce, 2010: 639). Empirical analysis for the city of Isfahan in Iran also indicated that higher education plays an important role in the employment of women (Yousefy and Baratali, 2011, 3861).

There is a huge gap in tertiary enrolment rates between developed and developing world. This gap is wider for women than men. In developing world, enrolment rate in tertiary education for both women and men was nearly 26 % in 2012, which was 25.49 % and 25.62 % respectively. However, for developed countries, this rate was 85.18 % for women and 66.34 for men in the same year (See Table 5). In Central Asia and in Sub-Saharan Africa, enrolment rate in tertiary education was even under the average enrolment rate of developing countries. While enrolment rate of women in tertiary education was 24.22 % in Central Asia, it was only 6.40 % in Sub-Saharan Africa in 2012.

Health Status

Good health is a necessary precondition for individual and societal development. World Health Organisation defines health as a state of complete physical, mental and societal well-being (UN, 2015: 27). The differences in the health of women and men are determined by development, biology and gender (UN, 2015: 27).

One indicator of health status of a society is life expectancy at birth. It is derived from age specific mortality rates and shows the average number of years a new born child can expect to live. Life expectancy from 1990 to 2015 for both women and men in all regions given in Table 6. Although there are large disparities between regions, life expectancy for women is longer than men throughout the world. While the highest life expectancy for women is in developed countries with 81 years, the lowest life expectancy for women is in Sub-Saharan Africa for 57 years during the period between 2010-2015. Except Oceania and Sub-Saharan Africa, average life expectancy for women is more than 70 years old for the period 2010-2015.

Table 6. Life Expectancy at Birth by Region and Sex (1990-1995 to 2010-2015)

REGIONS	1990-1995	1995-2000	2000-2005	2005-2010	2010-2015
Developed Countries (Women)	78	79	79	80	81
(Men)	70	71	72	73	74
Central Asia (Women)	69	69	71	72	72
(Men)	61	61	63	64	64
Oceania (Women)	62	63	65	67	67
(Men)	57	59	61	62	63
Western Asia (Women)	70	72	73	75	76
(Men)	65	67	68	69	71
Southern-East Asia (Women)	69	70	72	73	74
(Men)	63	65	66	68	69
Eastern Asia (Women)	72	73	75	76	77
(Men)	68	69	72	73	74
Northern Africa (Women)	68	70	72	72	74
(Men)	64	66	67	68	69
Sub-Saharan Africa (Women)	51	51	51	54	57
(Men)	48	48	49	52	55

Source: United Nations, 2015. The World's Women 2015: Trends and Statistics. New York: United Nations, Department of Economic and Social Affairs, Statistics Division.

Non-communicable diseases have the largest share in the causes of death in 2012. One exception of this was Sub-Saharan Africa. In this part of the world, communicable diseases are in the first place as the causes of death, which was 46.7 % for women and 45.4 % for men (see Table 7). Oceania was the second place in the share of communicable diseases. An interesting point observed from Table 7 is that the share of injures for men was higher than that of women.

Table 7. Percentage Distribution of Deaths by Major Categories of Causes of Death, Sex and Region (2012)

REGIONS	Non-Communicable	Communicable Diseases	Injuries	Neonatal Conditions	Maternal Conditions	Nutritional Deficiencies
Developed Countries (Women)	90.5	5.1	3.9	0.3	0.0	0.2
(Men)	85.5	6.0	8.1	0.3	0.0	0.1
Central Asia (Women)	86.3	5.6	4.2	3.6	0.2	0.2
(Men)	76.9	7.7	10.9	4.4	0.0	0.2
Oceania (Women)	49.5	32.5	7.3	7.3	1.7	1.7
(Men)	46.9	33.3	11.2	7.5	0.0	1.2
Western Asia (Women)	73.4	12.1	7.6	5.5	0.8	0.0
(Men)	64.8	9.7	20.6	4.6	0.5	0.3
Southern-East Asia (Women)	71.8	17.4	6.0	3.3	0.9	0.6
(Men)	66.3	18.8	10.8	3.7	0.0	0.4
Eastern Asia (Women)	87.7	4.0	6.9	1.1	0.1	0.2
(Men)	85.9	4.2	8.4	1.3	0.0	0.1
Northern Africa (Women)	83.5	7.7	3.7	3.7	0.6	0.8
(Men)	78.7	8.2	8.2	4.2	0.0	0.6
Sub-Saharan Africa (Women)	29.4	46.7	6.9	9.0	3.9	4.0
(Men)	27.8	45.4	12.4	10.9	0.0	3.5

Source: United Nations, 2015. The World's Women 2015: Trends and Statistics. New York: United Nations, Department of Economic and Social Affairs, Statistics Division.

Smoking prevalence is higher for men in comparison with women in all regions presented in Table 8. For the first time, Sub-Saharan Africa has better smoking prevalence within the world regions. Women in developed world (22.1 %) and in Oceania (20.4 %) smoke more than the women in other parts of the world.

Table 8. Smoking Prevalence Among Persons Aged 15 or Over, by Sex and Region (2011)

REGIONS	2011
Developed Countries (Women)	22.1
(Men)	35.9
Central Asia (Women)	3.3
(Men)	40.5
Oceania (Women)	20.4
(Men)	50.6
Western Asia (Women)	6.0
(Men)	34.5
Southern-East Asia (Women)	4.1
(Men)	45.1
Eastern Asia (Women)	4.0
(Men)	47.5
Northern Africa (Women)	3.4
(Men)	40.6
Sub-Saharan Africa (Women)	4.1
(Men)	21.5

Source: United Nations, 2015. The World's Women 2015: Trends and Statistics. New York: United Nations, Department of Economic and Social Affairs, Statistics Division.

Globalisation and Political Power

All over the world, men generally hold most positions of power and decision-making. Although advances over the last two decades are visible, women still continue to be underrepresented in national parliaments. According to United Nations data, women's representation in parliament has increased, however, globally, only about one in five members of parliament are female (UN, 2015: 121). Women are seldom the leaders of political parties, and only a minority of elected women are appointed as ministers.

Table 9. Proportion of Seats Held by Women in Single or Lower Houses of
Parliament

REGIONS	1990	2000	2010	2015
Developed Countries	16	16	23	26
Developing	12	12	18	21
Central Asia	-	7	15	18
Oceania	1	4	3	4
Western Asia	4	4	9	12
Southern-East Asia	10	12	19	18
Eastern Asia	20	20	20	22
Northern Africa	2	4	11	25
Sub-Saharan Africa	10	13	18	23

Source: United Nations, 2015. The World's Women 2015: Trends and Statistics. New York:
United Nations, Department of Economic and Social Affairs, Statistics Division.

Table 9, which contains the proportion of seats in the parliament held by women in the
world regions, presents the following observations:

i)The proportion of seats in the parliament held by women has increased in all regions
from 1990 to 2015.

ii) Although Developed countries (26 %) and Northern Africa (% 25) have the highest
shares in 2015, still 75 (%) of seats in parliaments represented by men.

iii)In 2015, Oceania (4 %) and Western Asia (12 %) have the lowest shares in terms of
seats held by women in the national parliaments.

iv)Unexpectedly, women in Sub-Saharan Africa has a good proportion (23 %)
comparatively with other regions. This is the only indicator which Sub-Saharan women
have closed the gap with the women in developed world. The reason of this is that some
Sub-Saharan African countries show an impressive representation of women in
parliaments. For example, women in Mozambique account for more than 20 % of
parliamentary seats between 1990 and 2001 (Yoon, 2004: 447). Another research done
by Yoon (2001) on Africa showed that the countries that have proportional
representation systems tend to have higher women's representation in parliament than
the countries with majority system (Yoon, 2001: 169).

Table 10. Share of Women Among Ministers by Region (2005 to 2015)

REGIONS	2005	2008	2010	2012	2014	2015
Developed Countries	19.8	22.1	22.8	21.5	23.9	25.4
Developing	12.7	14.4	14.4	15.4	15.4	15.8
Central Asia	9.9	8.6	5.8	9.6	11.4	9.2
Oceania	4.7	6.4	7.3	6.6	8.4	8.8
Western Asia	7.1	7.0	7.5	6.4	7.1	7.2
Southern-East Asia	7.4	8.2	9.9	9.5	7.9	10.4
Eastern Asia	5.9	6.8	8.8	10.9	11.9	9.8
Northern Africa	7.5	9.3	6.5	6.3	9.7	14.9
Sub-Saharan Africa	15.7	18.2	19.0	19.9	20.0	19.5

Source: United Nations, 2015. The World's Women 2015: Trends and Statistics. New York: United Nations, Department of Economic and Social Affairs, Statistics Division.

Share of women ministers has also increased between 2005 and 2015 in the world regions (See Table 10). However, nearly 75 %-80 % of ministers in the world is men. Globalisation has not helped in closing the gap between men and women in the world. The gap among the women is also wide. While the share of women in ministers was 25.4 % in developed world, this share is only 7.2 % in Western Asia.

Conclusion

Globalisation had some positive and negative effects on women, by creating a global economy. Developed countries and some developing countries had its positive effects, such as increasing labour force participation rate, increasing educational attainment and increasing income. However, women in developing regions of the world, such as Sub-Saharan Africa and Oceania did not receive these positive effects of globalisation.

In fact, world's women are in diverse sides in terms of education, employment structure, health status and political power. The reason of this separation is related with the countries' and regions' involvement in the global economy. If the integration of the country or the region is high with the world, then, the positive effects of the globalisation will appear. Especially, advancement in educational attainment of women will help increasing integration to the world economy.

It was observed that women have two diverse employment structure within the world regions. Although women in most regions have highest employment rate in services sector, women in Sub-Saharan Africa and Oceania have highest employment rate in agriculture. In developed regions, the highest share of women is employed in services sector and the lowest share of women in agriculture. This finding is consistent with the finding of educational attainment of women. Women in highly educated regions, have employment opportunities in services sectors.

Health status widely differs between the regions. Women in Sub-Saharan Africa, nearly lives 25 years shorter in comparison with the women in developed countries. Globalisation neither helped African women to become more educated nor helped to live longer.

Notes

1.   This classification of the countries is obtained from the United Nations, 2015, *The Wold's Women 2015: Trends and Statistics*. New York: United Nations Department of Economic and Social Affairs Statistic Division.

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8 | European Integration and Convergence in Government Expenditures

Dilek DURUSU-ÇİFTÇİ

Abstract

In the growing globalization process, the European Union member states have applied a series of harmonization measures in order to satisfy a more integrated economy. The most important one is the Maastricht Treaty which consists of various criteria for entrance to the European Monetary Union (EMU). One of the core requirement of the monetary unification is the convergence of fiscal policies. Although the fiscal convergence by means of budget deficits and debt-to-GDP ratios inside the EU has been studied by various papers, there are a quiet few work on convergence of government expenditures. On the other hand, a target on public deficit also requires a strong commitment on the government spending and revenues. Accordingly, this study was built on the issue of convergence in government expenditures by functions and provide a new evidence for the period 1995-2014. We collect the government expenditure on education and health (% of GDP) data and employ first conventional approaches and then recently developed time series procedures which account structural breaks. The findings indicate that the conventional unit root test which does not account for any structural breaks supports a strong evidence on divergence for both education and health expenditures, while the structural break tests that assume sharp shift process provide a strong evidence on convergence for health and slightly less evidence for education expenditures. Finally the structural break tests that assume gradual shift process supports the evidence on

divergence among the EU members. The striking result is that the government expenditures converge to the average in the majority of the countries which have not yet been a member of the monetary union. On the other hand, divergence appears mostly in currently EMU members.

Keywords: *fiscal policy, national government expenditures, Europe*

JEL Codes: *E62, H5, N14*

Introduction

During the 19ᵗʰ century, the first era of the globalization began with the rapid increase in international trade among European Imperial countries. However, this process was severely interrupted due to the World Wars I and II. The pace of globalization has picked up again by the establishment of international economic institutions such as World Bank, International Monetary Fund, World Trade Organization (successor of General Agreement on Trade and Tariffs) and regional trade agreements. Postwar regional integration was centered in the western side of the Europe. After the World War II, the main objective of the European countries was creating a single European identity and a single market. For this purpose, six founding countries were set up the European Coal and Steel Community in 1951 as a first step in the federation of Europe. After six years, the European Economic Community (EEC) was born with the signing of the Treaty of Rome by the original six members and a customs union was established.

In the 1970s and 1980s EEC has both increased the level of cooperation between member countries and has included new members. However, as the largest, oldest and most integrated regional agreements, the European Union (EU) was formally established when the Maastricht Treaty came into force in 1993. As the last step towards the path of realizing the economic and monetary union, the treaty established three pillars of the EU. While the first two of these pillars are related to the Common Foreign and Security Policy (CFSP) and the Justice and Home Affairs (JHA), the third pillar directly aimed at creation of a monetary union and a common currency under control of a European Central Bank. In this context, some economic criteria which are also known as "euro convergence criteria" have been set for the member states. To harmonize not only monetary policies but also fiscal policies in preparation for the single currency, these five goals are defined in the treaty:

1. Applicant countries should control over inflation and reduce it to less than 1.5 percent above the average of the three best performing member states.
2. They should have maintained currency within the exchange-rate mechanism (ERM) band for two consecutive years and should not have devalue its currency during the period.
3. The nominal long-term interest rate must not be more than 2 percentage points higher than in the three lowest inflation member states.
4. The ratio of government deficits to gross domestic product (GDP) should be reduced to less than 3 percent.
5. The ratio of government debt to GDP should be reduced to less than 60 percent.

The last two criteria of the Maastricht Treaty specifically give weight to private market activity and implicitly impose member states to reduce fiscal policies –in particular government spending– in macroeconomic policy. Clearly, this approach is consistent with the neoclassical argument that the fiscal policy has no role on economic growth in the long-run. However; following the pioneering contributions of Barro (1990), King and Rebelo (1990), Lucas (1990) and Rebelo (1991), it was challenged by the endogenous growth theory which argues that fiscal policies may have a long run effect on the economic growth. In this respect, government expenditures are classified according to whether or not it participates in the production function. If an expenditure is included in the private production function and have a direct effect on the growth rate, these are called productive government expenditures and others are non-productive government expenditures (Barro, 1990). While expenditures on general public service, defense, education, health, housing and transportation and telecommunication are treated as productive, expenditures on social security, recreation and economic services are treated as unproductive expenditures (see Barro and Sala-i Martin, 1995 and Devarajan et al, 1996). In recent decades, the hypothesis of productive government expenditures can foster economic growth was also supported by many empirical evidence (e.g. Easterly and Rebelo; 1993, Devarajan et al. 1996, Kneller et al. 1999).

Over time, this approach was considered to be right in the European Union by the Stability and Growth Pact and the Lisbon Strategy. The pressures of rising globalization and ageing populations has led the EU to reassess its fiscal framework. Especially, the quality of public finances have been emphasized in many occasional papers of the

European Commission (e.g. Deroose and Kastrop, 2008; Barrios et al, 2009). In these studies, it is concluded that the composition of the public expenditures matters for long-run economic growth and particularly, reallocating total spending towards infrastructure and education expenditures can be growth enhancing.

While the main purpose of the Maastricht Treaty is to establish a monetary union among the EU members, another aim is to achieve a convergence in fiscal policy. In this respect, the EU members are obliged to comply with the fiscal constraints on the ratios of government deficit to GDP and government debt to GDP. Empirically, the fiscal convergence by means of budget deficit and debt-to-GDP ratios inside the EU has been studied by various papers (e.g. Bandt and Mongelli, 2000; Esteve et al. 2000; Blot and Serranito, 2006; Kocenda et al. 2008; Delgado and Presno, 2011 and Ayala and Blazsek, 2012), there are a quiet few work on convergence of the government expenditures. On the other hand, as Bertarelli et al. (2014) argued that a target on public deficit also requires a strong commitment on the government spending and revenues. Thus, such a commitment has an effect on the convergence of total expenditure and revenue and likely their composition at the same time.

The study of Afxentiou and Serlatis (1996) is the first empirical contribution for the government expenditure convergence in the European Union. They examined the presence of convergence in 16 EU countries by adopting time-varying parameter (Kalman filter) analysis to Barro-type test for the period 1961-1991. In this study, the convergence is tested by regressing a country's per capita government expenditure differential with Germany on a constant and the differential between Germany and the United States.[1] Within this framework, it is postulated that if convergence with Germany has occurred, it would be expected over time the constant term (α_t) convergence toward a constant and the time varying parameter (β_t) which measures a country's temporal relationship with Germany and the United States converge towards zero. The tests are carried out for government consumption expenditures, transfers and subsidies and the summation of these three. The findings indicate that except for some cases there was a general absence of convergence. More recently, Apergis et al. (2013) investigate the convergence of government expenditures to GDP ratio of EU member states over the period 1990 to 2012. Utilizing the Phillips and Sul (2007) clustering

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[1] This model is formulated as follows: $[X_{GE} - X_i]_t = \alpha_t + \beta_t[X_{GE} - X_{US}]_t + \varepsilon_t$ where X_i denoted the per capita government expenditure of country i, ε is the error term and t is the time period.

procedure, they tested whether convergence clubs exist for various categories of public expenditures. Although the results for total public expenditures provide a quiet uniform convergence group, for disaggregated public expenditures the empirical findings display a non-convergence picture.

This study takes a fresh look to the issue of convergence by examining the government expenditure convergence for the EU member states with utilizing time series unit root analysis. Given limited studies on government expenditures convergence for the EU countries, this article attempts to provide empirical evidence to the fiscal convergence debate. Empirical approach of this study differs from earlier contributions in two main aspects. Firstly, our analysis focus on the stochastic convergence tests which seek whether the log of functional components of total government expenditures to GDP in one EU member relative to that of the EU average as a whole is stationary or not. Secondly, we provide a comprehensive perspective on economic convergence using different time series techniques. Although most of the EU countries were seriously affected both from the early 2000s recession and the 2007 global financial crisis, as far as we know, structural breaks were not considered in the empirical literature on public expenditures convergence. Since ignoring the structural breaks may distort the econometric results, we employ first conventional approaches and then recently developed time series procedures which account structural breaks. In one of them, the structural breaks are modelled as sharp process with the unit root tests that uses the dummy variable approach. In another, the structural shifts are captured as gradual process with a Fourier approximation.

At a glance, the conventional unit root test which does not account for any structural breaks supports a strong evidence on divergence for both education and health expenditures, on the other hand the structural break tests that assume sharp shift process provide a strong evidence on convergence for health and slightly less evidence for education expenditures. Finally the structural break tests that assume gradual shift process supports the evidence on divergence among the EU members. The remaining part of this study is organized as follows. In Section 2, we present a brief overview of the European Union government expenditures data. In Section 3, we outline the empirical methodology, perform the unit root analysis and discuss the empirical findings. Finally, Section 4 gives a summary and concludes the study.

Data: A General Overview

Before empirical analysis, lets take a brief look to the general government expenditure in the EU. Figure 1 shows average general government expenditure as a percentage of GDP by functional classification. Accordingly, most of the public expenditures in the EU are directed towards social protection. Although, the share of economic affairs and general public expenditures were relatively higher than the others in the late 1990s, they have been progressing at almost the same level as education and health expenditures since 2000s. On the other hand, enviromental protection and housing & community amenities have been the two least expenditure categories for the governments.

Figure 1. General government expenditure by function in the EU
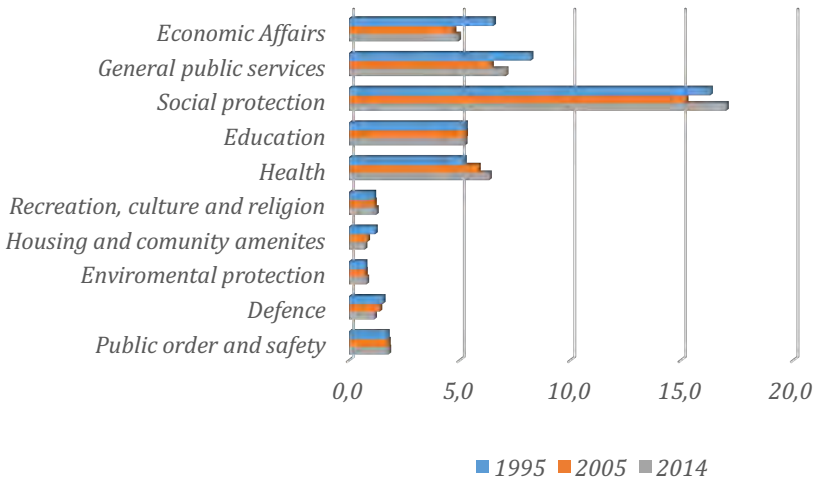
Source: European Commission AMECO database.
*These indicators are measured as a percentage of GDP.

Figure 2 provides us an opportunity to look more closely at the two fiscal variables which are the subject of the empirical analysis part of this study. The gap between health and education expenditures to GDP ratios began to open with the 2000s. While

the ratio of health expenditures to GDP tended to increase until 2009 in general, the ratio of education expenditures to GDP fluctuated in the same period. After the global financial crisis, it can be clearly seen that, there has been a slight decrease in the first one and a more serious decrease in the second. These observations indicate that the spending in both types of expenditures were gradually decreased by the governments after the first two post-crisis years but the ratio of education expenditures to GDP was reduced more rapidly in the transition to normalization phase of the economy.

Figure 2. Health and Education Expenditure as a percentage of GDP in the EU
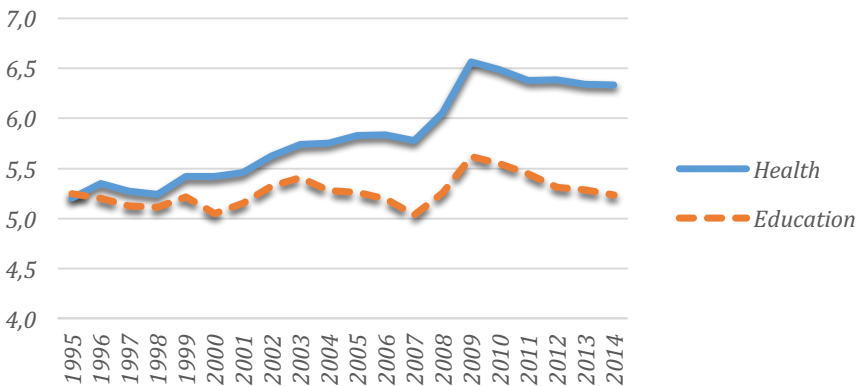
Source: European Commission AMECO database.

There are significant differences in these two fiscal variables among member states of the European Union. Table 1 shows that France, Denmark and Finland have been consistently in the top 5 countries with the highest government health expenditures to GDP ratios. On the other hand, Cyprus, Romania and Slovakia have been steadily the least health spending countries. Among these countries, while Romania is not included in the monetary union, Cyprus and Slovakia were acceded in 2008 and 2009, respectively.

Table 1 provides us another important information in terms of health expenditures. From 1995 to 2014, while the average of the five countries with the highest health spending increased from 6.6 to 8.3 percent, the average of the five countries with the

lowest spending increased just from 2.7 to 3.4 percent. This situation reveals that although the member states in both groups have increased their share of health expenditures, the gap between the two did not close.

Table 1. EU member states with the highest and lowest government health and education expenditures

Health						Education					
1995		2005		2014		1995		2005		2014	
Five highest						*Five highest*					
France	7.1	France	7.6	Denmark	8.7	Estonia	8.0	Portugal	7.1	Denmark	7.2
Denmark	6.8	Austria	7.5	Finland	8.3	Sweden	7.0	Sweden	6.7	Sweden	6.6
Austria	6.7	Portugal	7.3	France	8.2	Finland	6.9	Slovenia	6.6	Finland	6.4
Czech Rep.	6.2	Denmark	7.2	Netherlands	8.2	Denmark	6.4	Denmark	6.4	Belgium	6.3
Finland	6.2	Finland	6.8	Belgium	8.1	Norway	6.1	Finland	6.1	Portugal	6.2
Average	6.6		7.3		8.3		6.9		6.6		6.5
Five lowest						*Five lowest*					
Bulgaria	3.5	Estonia	4.1	Poland	4.5	Spain	4.3	Germany	4.1	Bulgaria	4.1
Latvia	3.1	Latvia	4.1	Romania	4.0	Cyprus	3.7	Greece	4.0	Italy	4.1
Slovakia	2.8	Cyprus	2.8	Latvia	3.8	Bulgaria	3.4	Spain	3.9	Slovakia	4.1
Romania	2.4	Romania	2.6	Cyprus	2.7	Slovakia	3.4	Slovakia	3.7	Spain	4.1
Cyprus	1.7	Slovakia	1.6	Slovakia	1.9	Romania	3.3	Romania	3.6	Romania	3.0
Average	2.7		3.0		3.4		3.6		3.9		3.9

Source: European Commission AMECO database.

Table 1 also indicates that while the government education expenditure to GDP ratio has been permanently higher in Sweden, Denmark and Finland, it has been consistently lower in Spain, Romania and Slovakia. Obviously, the country groups with the lowest and highest health and education expenditures to GDP ratios are similar. However, a different circumstance draws attention in terms of the change in the rate of education expenditures to GDP over the years. From 1995 to 2014, the average of the top 5

countries that recorded highest ratios for education decreased from 6.9 to 6.5 percent, while the average of the 5 countries with the lowest ratios increased slightly from 3.6 to 3.9 percent. Therefore, it is observed that the difference between the two groups of countries in the education expenditures is reduced in comparison with the health expenditures.

Eventhough the member states of the EU try to implement various policies in order to have a similar fiscal structure, the individual countries still seem to differ in terms of public expenditures. Countries with reatively more government spending –e.g. Finland, Belgium, Denmark- are generally more developed economies and they have been a member of the EU more earlier. On the other hand, countries such as Bulgaria, Slovakia, Romania and Cyprus from the other group are both economically less developed and they have been more recent members. The former members of the union, such as Italy, Spain and Greece affected mostly from the global crisis and they are in the classification of the countries that have to take more fiscal precautions. As a result, the variety of economic dynamics within the union leads to a differentiation in terms of public expenditures among countries. Along with all these differences, the EU members have taken concrete steps to have a similar fiscal structure- as mentioned in the first part of this study. Whether these steps lead to convergence in government expenditures in the EU will be examined in the empirical part of this study.

As already mentioned, this study focuses on two types of productive government expenditures, namely health and education. The data are collected from the Eurostat Statistics Database of the European Commission over the period 1995-2014. Since 1999, 19 EU member states -The Euro Area members- adopted the euro as their currency. Besides, there are 7 of 9 EU countries (Bulgaria, Czech Republic, Croatia, Hungary, Poland, Romania and Sweden) which have not yet adopted the single currency.[2] However, considering that the ultimate objective of the European Union is

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[2] Denmark and the United Kingdom gave notification that they would not participate in Euro Area. Moreover, the United Kingdom withdrew from the European Union by the Brexit referendum in 2016.

to demonstrate a common economic behavior, this study covers all member states of the European Union during the period under review.[3]

Methodology and Findings

Although studies on fiscal convergence is quiet limited in the literature, convergence in per capita income has taken considerable attention since the seminal paper of Solow (1956). The traditional approaches to measure convergence have been absolute and conditional convergence (Barro and Sala-i Martin, 1991, 1992, 1995). The former implies that poorer economies grow faster than richer ones and the level of per capita income of those countries approach a common steady state. The latter implies that each country is converging to its own steady state based on cross-section differences. Although the cross-sectional analysis have found strong evidence for conditional convergence, it has been criticized particularly because of misspecification errors, heterogeneity, and non-linearity (e.g. Quah, 1993; Evans, 1996). These criticisms have led to researchers to use panel and time series methodological concepts for testing the convergence hypothesis.

The empirical studies which use the time series modelling framework examine the long-run behavior of per capita income deviations from the sample average or a benchmark country by focusing on whether the relative per capita income has a long-run steady state equilibrium. In this sense, time series analysis of convergence utilize unit root and cointegration tests which are known to have more power using data over a long time period (Li and Papell, 1999). Campbell and Mankiw (1989) and Bernard and Durlauf (1995) define stochastic convergence as cointegration between two such series. Alternatively, Carlino and Mills (1993) define stochastic convergence as an evidence for the income convergence if the relative per capita income is trend stationary. In other words, if shocks to income of country "i" relative to the average income is temporary, incomes converge.

In this study we follow Carlino and Mills (1993) in a fiscal point of view and define the stochastic convergence model in a unit root framework. We first start with the conventional augmented form of Dickey-Fuller (DF) test developed by Dickey and

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[3] The data on education and health expenditures act in concert for the Euro Area and EU averages.

Fuller (1979) to investigate the existence of unit roots in relative government expenditures and estimate the regression model

$$\Delta GE_t = \mu + \beta t + \alpha GE_{t-1} + \sum_{j=1}^{k} c_j \Delta GE_{t-1} + \varepsilon_t \tag{1}$$

where GE_t is the log of relative government expenditure on health (or education) as percentage of GDP at time t, the deterministic terms consist of constant and trend terms and ε_t is the error term which has assumed to be independently and identically distributed with zero mean and finite variance. We test the null of unit root ($\alpha = 0$) which implies divergence against the alternative hypothesis of stationarity ($\alpha < 0$). Under the null hypothesis, the t-ratio corresponds to GE_{t-1} does not follow the asymptotic t-distribution and therefore the critical values are used.

In the standard Augmented Dickey Fuller (ADF) approach, the deterministic term is assumed not to have any structural changes. It is well known, however, that ignoring an existing structural break leads to a bias that reduces the ability to reject a false unit root null hypothesis (Perron, 1989). In order to handle this problem, Zivot and Andrews (1992) developed one-break ADF test which allow for one exogenous structural break in the ADF test. To account for a break in both intercept and trend in equation one, we estimate the following equation:

$$\Delta GE_t = \mu + \beta t + \mu_1 DU_{1t} + \beta_1 DT_{1t} + \alpha GE_{t-1} + \sum_{j=1}^{k} c_j \Delta GE_{t-1} + \varepsilon_t \tag{2}$$

where $DU_{1t} = 0$ for $t \leqslant T_B$ and 1 otherwise and $DT_{1t} = 0$ for $t \leqslant T_B$ and $t - T_B$ otherwise that T_B denotes the break date. Narayan and Popp (2010) extend this model by testing for a unit root in the presence of two endogenous breaks. Then, following Narayan and Pop (2010), we estimate the following equation:

$$\Delta GE_t = \mu + \beta t + \mu_1 DU_{1t} + \mu_2 DU_{2t} + \beta_1 DT_{1t} + \beta_2 DT_{2t} + \alpha GE_{t-1} + \sum_{j=1}^{k} c_j \Delta GE_{t-1} + \varepsilon_t \tag{3}$$

Where $DU_{it} = 0$ for $t \leqslant T_{Bi}$ and 1 otherwise and $DT_{it} = 0$ for $t \leqslant T_{Bi}$ and $t - T_{Bi}$ otherwise and T_{Bi} ($i = 1,2$) shows the break dates.[4]

These types of unit root tests assumes that there is one or two sharp, instantaneous break in series. However, economic series may contain multiple smooth breaks at unknown dates. More recently, Enders and Lee (2012) proposed a new Dickey-Fuller type unit root test with a Fourier function in the deterministic term. This method does not require selecting specific break dates, the number of breaks and the form of the breaks. Lastly, following Enders and Lee (2012), we estimate the following equation:

$$\Delta GE_t = \mu + \beta t + \gamma \sin\left(\frac{2\pi kt}{T}\right) + \varphi \cos\left(\frac{2\pi kt}{T}\right) \alpha GE_{t-1} + \sum_{j=1}^{k} c_j \Delta GE_{t-1} + \varepsilon_t \quad (4)$$

where k represents an integer frequency and T is the number of observations. The test statistic is again described as in the ADF test, but its distribution now depends on k that requires using the critical values for different values of the Fourier frequency.

The empirical results for government expenditures on health are reported in Table 2. The standard ADF test- hereafter no shift model- shows that, the unit root null can be rejected for only 4 of 28 countries. Thus, no shift model provides evidence for strong divergence among the EU member states. While the structural shifts are ignored in the no shift model, these results might be misleading. It is quite obvious that, after the relatively mild 1990s, the EU countries were affected from the early 2000s recession. But more seriously, they have experienced fiscal crisis as a consequences of the 2007 global financial crisis. In fact, some of the Euro Zone member states (Greece, Portugal, Ireland, Spain and Cyprus) were unable to repay their government debt. Furthermore, the Fiscal Stability Treaty which requires a stronger commitment to rigorous government policies signed in 2012.

In order to take into account for structural shifts, we first consider the unit root methods which control the breaks as a sharp process by Zivot and Andrews (1992) and Narayan and Popp (2010). Results of employing the one-break ADF unit root test of Zivot and Andrews (1992) show that 15 log relative expenditure on health series reject the unit root null. Controlling structural shifts with two breaks instead of one induced an even

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[4] τ statistic with structural shifts does not follow the asymptotic t-distribution and hence the simulated critical values are used.

more change on convergence results. The Narayan and Popp (2010) unit root test with two sharp structural break indicates that the null of unit root is rejected for 20 countries. Although the breaking dates vary among countries, it is seen that sharp break unit root testing procedure seems to be able to capture the effects of both the early 2000s recession and global financial crisis.

Table 2. Results for Government Expenditure on Health

Country	No structural shift $t-ratio$		One-break sharp structural shift $t-ratio$		T_B	Two-break sharp structural shift $t-ratio$		T_{B1}	T_{B2}	Gradual shift $t-ratio$		k
Austria	-4.669	***	-5.067	*	2007	-6.219	***	2002	2007	-4.7882	***	2
Belgium	-2.037		-3.652		2007	-4.884	*	2001	2007	-2.9497		1
Bulgaria	-2.038		-3.638		2004	-3.538		2001	2007	-2.8891		2
Croatia	-2.593		-4.439		2003	-5.49	**	2004	2007	-5.2531	***	1
Cyprus	-1.742		-3.594		2002	-5.574	**	2001	2006	-2.0989		2
Czech Rep.	-1.577		-3.593		2006	-5.634	**	2001	2006	-3.2656		1
Denmark	-2.373		-8.681	***	2005	-8.354	***	2004	2007	-4.3938	**	1
Estonia	-1.644		-3.889		2003	-5.907	**	2002	2006	-2.8219		1
Finland	-1.440		-3.377		2007	-4.494		2001	2006	-2.6729		1
France	-3.036		-5.368	**	2004	-5.293	**	2002	2005	-5.9913	***	3
Germany	-1.161		-5.367	**	2011	-4.215		2002	2007	-5.018	***	1
Greece	1.177		-3.922		2011	-2.445		2001	2007	-2.8579		1
Hungary	-2.292		-4.074		2005	-4.243		2002	2005	-2.4924		3
Ireland	-2.314		-5.751	***	2009	-3.321		2003	2006	-3.8822	*	2
Italy	-2.104		-12.516	***	2004	-8.076	***	2001	2004	-3.8276		1
Latvia	-3.221	*	-6.245	***	2003	-8.236	***	2002	2006	-4.0006		1
Lithuania	-3.840	**	-5.025	*	2005	-4.019		2002	2007	-3.3584		3
Luxembourg	-2.908		-7.818	***	2001	-4.643		2002	2007	-4.0266	*	2
Malta	-1.974		-2.723		2006	-6.162	***	2004	2007	-3.1992		2
Netherlands	-3.003		-6.748	***	2004	-7.774	***	2001	2004	-4.3702	**	1
Poland	-2.973		-6.8	***	2011	-8.894	***	2002	2006	-4.8761	**	1
Portugal	-0.683		-3.395		2002	-6.589	***	2004	2007	-3.4687		1
Romania	-3.094		-10.778	***	2005	-7.627	***	2002	2005	-4.3923	**	2
Slovakia	-1.118		-6.452	***	2001	-6.115	***	2001	2007	-3.6517		1
Slovenia	-3.095		-3.623		2004	-9.436	***	2001	2005	-2.6979		3
Spain	-1.719		-1.975		2007	-5.363	**	2002	2007	-3.2801		1
Sweden	-3.274	*	-7.501	***	2007	-8.775	***	2004	2007	-5.3739	***	2
UK	-3.145		-6.371	***	2007	-7.951	***	2002	2007	-2.2794		1

A different result, however, emerges when the structural changes in the series are considered as smooth/gradual process. The findings of gradual shift model show that the null of unit root is rejected for 11 countries which implies there is more divergence than convergence on health expenditures among the EU members. While 4 of these countries (Croatia, Poland, Romania and Sweden) have not been included in the

monetary union yet, all the rest of them (Austria, Denmark, France, Germany, Ireland, Luxembourg and the Netherlands) have been a member of the monetary union since 1999. Moreover, the rate of health expenditure to GDP ratio have been relatively high in these countries.

Table 3. Results for Government Expenditure on Education

Country	No structural shift $t-ratio$		One-break sharp structural shift $t-ratio$		T_B	Two-break sharp structural shift $t-ratio$		T_{B1}	T_{B2}	Gradual shift $t-ratio$		k
Austria	-0.223		-4.322		2002	-6.538	***	2002	2007	-3.803		1
Belgium	1.383		-3.218		2007	-7.571	***	2003	2007	-2.306		1
Bulgaria	-3.206	*	-3.661		2001	-4.220		2001	2005	-5.948	***	1
Cyprus	-1.338		-4.243		2001	-5.338	**	2003	2007	-2.450		1
Czech Rep.	-4.243	**	-5.184	**	2006	-5.040	*	2003	2006	-4.519	***	3
Denmark	-0.853		-6.254	***	2009	-6.848	***	2003	2006	-3.309		1
Estonia	-2.380		-5.396	**	2003	-5.526	**	2001	2006	-3.691		2
Finland	-1.890		-3.380		2006	-6.450	***	2002	2006	-1.929		3
France	-1.494		-12.758	***	2009	-4.767		2001	2007	-4.007		1
Germany	-0.238		-5.366	**	2007	-8.139	***	2003	2006	-3.153		1
Hungary	-3.047		-3.751		2001	-3.299		2001	2006	-3.060		3
Ireland	-2.209		-3.190		2011	-3.219		2001	2006	0.101		3
Italy	-2.446		-4.590		2009	-8.032	***	2002	2005	-3.058		1
Latvia	-3.469	*	-4.135		2006	-8.571	***	2001	2006	-4.933	***	2
Lithuania	-3.398	*	-3.564		2006	-2.825		2001	2006	-3.239		3
Luxembourg	-3.016		-5.568	**	2010	-4.184		2001	2004	-3.271		3
Malta	-2.415		-3.983		2006	-5.754	**	2001	2006	-5.594	***	1
Netherlands	-2.931		-5.127	**	2008	-3.229		2001	2006	-2.882		2
Poland	-2.971		-6.009	***	2003	-8.604	***	2003	2007	-4.601	**	1
Portugal	-3.117		-7.733	***	2009	-3.744		2001	2006	-2.463		1
Romania	-3.174		-5.666	***	2006	-6.180	***	2003	2006	-5.179	***	1
Slovakia	-2.851		-7.096	***	2006	-7.011	***	2003	2006	-2.800		1
Spain	-1.789		-2.830		2005	-4.202		2001	2007	-3.180		1
Sweden	-1.644		-8.561	***	2008	-4.737		2002	2005	-3.222		1
UK	-0.199		-3.170		2007	-4.041		2004	2007	-4.274	*	1

The findings for education expenditures seem to be similar with the health expenditures (Table 3). While the no shift model indicates a strong divergence with the rejection of 4 of 25 countries, one-break structural shift model (12 of 25) and two-break structural shift model (14 of 25) provide some evidence for convergence. On the other hand, the gradual shift model shows that the null hypothesis of unit root is rejected for 7 member states, indicating that the education expenditures in 18 remainder countries divergence from the EU averages. 4 out of 7 countries (Bulgaria, Czech Republic, Poland and Romania) with convergence in education expenditures have not been included in the monetary union yet. The other three are Malta, Latvia and the UK. While the UK has

never been a member of the monetary union, Latvia has yet adopted its currency to Euro in 2014.

Conclusion

In the growing and globalizing world, the European Union has become the largest integrated market in the world. At the beginning, the main goal of the European countries was to create a single market for goods, services, labor and capital. Later on, with the singing of the Maastricht Treaty, countries have taken decisions on implementing common macroeconomic policies in the future. The third pillar of the treaty directly aimed at creation of a monetary union and a common currency under control of a European Central Bank. In this context, some economic criteria which is also known as "euro convergence criteria" have been set for member states. These criteria include both the monetary and fiscal requirements.

Although the fiscal convergence by means of budget deficits and debt-to-GDP ratios inside the EU has been studied by various papers, the empirical literature on government expenditures convergence at the EU subnational level is quiet limited. However, the fiscal deficit target requires a stronger commitment to rigorous government policies both on the spending and revenue side. Hence, this study concern about the fiscal policy side of the European Union members and particularly focus on the two productive government expenditures. In the empirical analysis part of this study we examined whether there is a convergence in the education and health expenditures to GDP ratio in the EU.

We first employ the conventional ADF test which does not account for structural breaks and then utilize its extensions to which accounting structural breaks as a sharp process based on dummy variables approach or a gradual process based on a Fourier approximation. The EU countries were affected from the early 2000s recession and more seriously, they have experienced fiscal crisis as a consequences of the 2007 global financial crisis. For this reason, taking into account the structural breaks become crucial to get efficient results. In addition to this, modelling structural breaks with different approximations may also lead to different findings. Considering all these possibilities, we have reached the following findings (i) the no-shift model supports a strong evidence on divergence for both government education and health expenditures, (ii) the one break and two breaks models which assume a sharp shift process provide a strong

evidence on convergence for health and slightly less evidence for education expenditures, (iii) the gradual shift model which assumes a smooth shift process supports the evidence on divergence among the EU members. The empirical analysis thereby implies that while controlling for structural shifts plays an important role, modelling breaks with different approximation also leads to changes in inferences.

The descriptive analysis of the data shows us there are still significant differences among member states. In general, the government expenditures to GDP ratio is much higher for economically more developed and pre-existing members. Moreover, it is observed that the gap between the countries which have the least and the highest rates especially in health expenditures does not close over time. The gradual-shift model consistently indicates that only 11(7) countries convergence to the average in health (education) expenditures. The striking result here is that the converging countries in education expenditures are either not included in the monetary union or are newly included. In health expenditure, while some of the converging countries are not members of the monetary union, the remainder have been members from the very beginning and have relatively high rates of health expenditures. Therefore, the results of the gradual-shift model show that the government expenditures converge to the average in the majority of the countries which have not been a member of the monetary union. On the other hand, divergence appears mostly in currently EMU members. While the main purpose of the Maastricht Treaty is to establish a monetary union among the EU members, another aim is to achieve a convergence in fiscal policy. In this sense, the policies on public expenditures should be reassessed in the European Union.

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9 | Beyond the Globalisation: Income, Inequality and Poverty

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Abstract

The purpose of this section is to investigate the effects of globalisation on the income inequality and poverty in the context of Kuznets and Greenwood-Jovanovic inverted-U shaped hypotheses and trickle-down/up mechanism in the EU member countries in the period from 1995 to 2015. First of all, the income threshold values are determined. And then, the linkages between income, inequality and poverty are analysed by using the dynamic panel threshold analysis. The findings show that the increasing income level is to be positively related to inequality and poverty up to the estimated threshold point, while the effect of income on the inequality and poverty turns negative beyond the estimated threshold point. The results imply that the rising income level is an important factor to ease inequality and poverty, suggesting the validity of Kuznets hypothesis. On the other hand, the findings indicating the inefficiency of financial development on inequality and poverty do not support the Greenwood-Jovanovic hypothesis. In addition, inequality and poverty are found as interdependent variables, indicating that a rise in poverty level increases the inequality, while a rise in the level of inequality also increases poverty. Moreover, it is found that an increase in income of the rich raises the inequality and poverty, while an increase in incomes of the poor decreases them. Because the absolute size of coefficients of rich is more dominant than

that of poor, the existence of trickle up mechanism can be claimed. In addition, governments can be successful in using economic policy tools to alleviate inequality and poverty which are deteriorated by globalisation. Consequently, waiting for the solutions for easing inequality and poverty from market economy may be inefficient, time-consuming and harmful.

Keywords: *Globalization, Inequality, Poverty, Dynamic Threshold Analysis.*

JEL Codes: *D63, I32, C34*

Introduction

The "globalisation" concept, which seems to be an inevitable result of economy polities of the countries and is one of the most tangible realities of today's world, is defined as the economic, politic, and sociocultural convergence as a result of the removal of international commercial barriers between the countries, especially those on commodities and services. Even though this definition is correct, it is also uncomplete without the capital movements, which constitute the most important pillars of globalisation, and the information technology movements, which is also known as know-how. From this aspect, the technology and capital movements constitute an important part of the global economic activities. Thus, by adding the capital, information, and technology to the commodities and services in classic definition, a more accurate definition is obtained.

Besides that, the advanced level of relationships between the continents and regions, and the movements based on the money, labour, capital, knowledge, and technology made the differences between the countries more obvious and caused the classification of those differences. Based on these differences, the countries were classified into developed, developing, and underdeveloped country classes, and then this categorization played an important role in the relationship of countries with each other. As a result of the categorization among the countries, the global-scaled distances (especially the economic and social distances) were gradually closed, and the interdependencies between the countries gradually increased. Thus, the decrease-decline of time and space and the increase-acceleration of connections, which are stated by the globalisation theoreticians, emerged. In conclusion, the concept of globalisation became a universal phenomenon, and narrowed the geographical borders (Brenner, 1999: 43; Duman, 2011: 668-669).

On the other hand, while almost all of the developed, developing, and underdeveloped countries could contribute to the commodity and service movements at the level of their own scale or manufacturing capacity in classical or basic meaning, it is clear that mainly the developed countries are capable of contributing to the capital and information movements. Thus, it is known that the developed countries contribute more to the globalisation process and also benefits more from its advantages. It is emphasized that the developing and underdeveloped countries benefit at lower levels and in indirect manner. From this aspect, alongside the theory of classical economics that the open and developed countries would reach at higher level of manufacturing and consumption, the globalisation pave the way for higher level of production and consumption, while it might also increase the sensitivity and vulnerabilities of especially the developing countries. As an inevitable result of this, the globalisation also has some negative effects on the poverty and income distribution in undeveloped countries. It especially leads the poor segment in developing and underdeveloped countries, which have high level of economic sensitivity and vulnerabilities, to suffer more, as well as it may further increase the income inequality (Dollar and Kraay, 2001:3; Yanar and Şahbaz, 2013: 56). The thesis of Singer-Prebisch (1950) attempting to explain the abovementioned sensitivities and vulnerabilities based on the production of agricultural products states that the underdeveloped countries would suffer more from the terms of trade in the course of enlarging commercial relations. Moreover, it is also attention-grabbing that this would gradually increase or become heavier.

The neo-Marxists, who are named Structuralists and consider the globalisation as an important tool of imperialist countries for increasing their growth and developments, are anti-globalist. They consider the globalisation as the globalisation of capitalist system, and see it as an advanced form of capitalist system. Moreover, they emphasize that the globalisation accelerates the social inequality and would further increase the social inequality. Within this context, the authors called anti-globalist or sceptical such as Anthony Giddens, Naomi Klein, Noreena Hertz, Roland Robertson, Immemauel Wallerstein, Paul Hirst, Joseph Stiglitz, and Graham Thompson focus on the disadvantages of globalisation more than its advantages (Kose et al., 2006: 2). The common idea of those authors is that the thesis that the poverty and the income inequality would be eliminated through the globalisation and the differences between the developed and underdeveloped countries would become smaller is a deception in fact. Namely, the income difference and consequently the income inequality between the poorest and richest countries in 1950s significantly accelerated in 1980s, when the

globalisation gained speed. Moreover, in this period, also the poverty became one of the most fundamental problems of humanity, and they state that this has been also contributed by the globalisation. Thus, the anti-globalist thoughts emphasize that the globalisation would enlarge the size of gap between the countries (Kürkçü, 2013: 5-8).

On the contrary with anti-globalist ideas and speeches, many pro-globalists argue that the globalisation might eliminate the social and economic development differences between the countries, which occurred as a result of socioeconomic, cultural, historical, etc. factors. From this aspect, the neo-liberal economics states that the significant decreases occurred in poverty and income inequality especially in last 20 years under favour of increased intensity of economic integrations alongside the globalisation. It is especially stressed that the capital- and technology-based globalisation wave might further increase the wealth of developing economies and the income inequality between the citizens of those countries might decrease to lower levels with this last globalisation wave (Wade, 2004: 567). Based on the fundamental notion of "laissez faire, laissez passer", the neo-liberalist school degrades the freedom perception of the nations to the freedom perception of individuals. Thus, it advocates that free international commercial relationships would bring an increase to the individuals' income level in those countries and eliminate the inequalities in the income distribution. It is also emphasized that the international commercial relationships gained speed within the process of globalisation and it might have positive effects on struggling with the poverty (Asteriou et al., 2014: 593). According to Lucas's (2000) expression, the income inequality, which left its mark on 20th century, would tend to decrease in 21st century. Lucas states that the globalisation would continue directing all of the countries (from rich countries to poor ones) to the similar production technologies and finally an economic resemblance and convergence would occur.

All of these theories and suggestions indicate that the effects of globalisation on the poverty and income distribution are very controversial. While the relatively older thoughts focused on the negative effects in last 50 years, the thoughts in last 20 years dwelled mainly on the positive effects of globalisation (Basu, 2006: 1362). Moreover, even though it is not clear if the globalisation has positive effect on the poor countries' income or it has no net effect, it becomes clearer in recent studies (Bergh and Nilsson, 2014: 42). Those arguing that the globalisation had negative effects on poverty and income distribution especially after 1980 strengthen their arguments by using the human poverty definition of United Nations Development Programme. On the other hand, those arguing that the globalisation decreases the poverty attempt to certify their

argument by using the absolute poverty definition of World Bank (Memiş, 2014: 158). From this aspect, in order to reveal the effects of globalisation on poverty and income inequality, it can be stated that the economic perspectives and thoughts suggestions make pro-globalisation and anti-globalisation expressions in order to reveal the effects of globalisation on poverty and inequality and also make conclusions in this parallel.

In this study, the effects of globalisation, which seems to be an inevitable result of the international mobility of commodity, service, labour, capital, money, information, communication, and technology factors, on the poverty and inequality in EU-member countries between 1995 and 2015 by using dynamic panel threshold model. Following the introduction section, where the globalisation is defined and its effects on poverty and inequality are presented in general, in second section, the globalisation-income distribution-poverty relationships are presented based on the theories in literature. In third section, the datasets and variables of implementation part are presented, while the econometric model and basic model are discussed in fourth section. Then the paper ends with the conclusion section, where a general interpretation is performed.

Theoretical Background

In previous section, under the lights of both theoretical and applied studies, it was clearly stated that the effects of globalisation on the poverty and inequality and the relationships between them couldn't achieve a clear position. Form this aspect, this process which leads to tension and conflictions that are against the globalisation under certain circumstances and to bilateral pro-globalisation connections and dependencies under some other circumstances, deepened the relationships between the nations and made it more complex. As a result of that, the concept of globalisation became a multidimensional phenomenon that has to cover not only the economic and politic events but also the military and sociocultural reality (Duman. 2011: 668-669).

Thus, the multidimensionality of the relationship between globalization and poverty requires the systematisation of this relationship. The figure 1 below started to be widely used as a mechanism for revealing the globalisation and poverty relationship defined by Bourguignon (2003). In Figure 1, the causality relationship from globalisation to poverty and the channels, through which the globalisation might influence the poverty, are expressed via various tools and opinions. Namely, the mentioned mechanisms might influence the poverty through 2 ways. The first one (upper part of Figure 1) represents

the effects through the channel of growth. Based on the horizontal and vertical inequalities depending on the direct winner and direct loser classes created by globalisation concept, the second mechanism (lower part of Figure 1) shows its effects via the income channel. The specific connections shown in Figure I come up in the course of a process from commercial openness to growth and income inequality, the bilateral interactions between growth and inequality, from growth process to poverty, and from income distribution to poverty. Moreover, the growth and income distribution mechanisms, which are 2 main channels of globalisation, lay the foundation of emergence of a triangular relationship between growth, inequality, and poverty (Nissanke and Thorbecke, 2010: 798).

Figure 1. The Linkages between Globalization, Inequality and Poverty
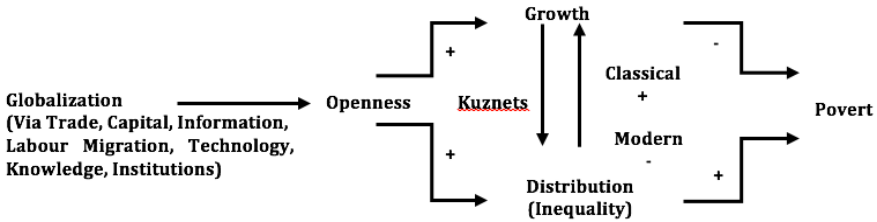
On the other hand, as seen in figure, the theories discussing the relationship between globalisation, growth, income distribution, and poverty can, in general, be classified into classical- and modern-based ones based on the Kuznets and Greenwood-Jovanovic Inverted-U hypotheses and trickle-down mechanisms. From a general perspective, the classical-based globalisation is explained in introduction section discussing the globalisation, growth, income distribution, and poverty relationship. Thus, in this point, the theories focusing on Kuznets and Greenwood-Jovanovic Inverted-U Hypotheses, trickle-down mechanism, and modern-based globalisation-growth-poverty relationship are discussed.

Kuznets Inverted U Hypothesis; It is an important theory, which is considered to be the main reference for revealing the globalisation-growth-poverty relationship in literature. According to Kuznets (1955), deterioration starts at the beginning of economic growth and development, thus the poverty increases. As a result of the continuity of growth, the first phase ends and an improvement is seen through the decrease in deterioration

of income distribution, thus the poverty decreases. The mentioned changes occur in form of inverted-U (Deininger and Squire, 1998: 275).

In literature, there are various studies in parallel with Kuznets' hypothesis determining the firstly increasing and then decreasing relationships between the globalisation, growth and poverty-income inequality. The studies of authors such as Campano and Salvatore (1988), Ram (1989), Bourguignon and Morrison (1990), Milanovic (1995), Ravilion (1997), Rodrik (1997), Stewart (2000), Thornton (2001), Agenor (2004), Dollar (2005), Dreher (2006), Kose et al., (2006), Ligon (2006), Beck et al., (2007), Kalwij and Verschoor (2007), Rodriguez-Poze (2012), Wu and Hsu (2012), Ezcurra and Rodriguez-Poze (2013), Bergh and Nilsson (2014), and Yüce Akıncı and Akıncı (2016) are the studies that achieved the results in parallel with those of Kuznets hypothesis. On the other hand, the relationship mentioned by Kuznets received criticism that it has wrong or incomplete because of the period it covers and the fact that it included the developed countries such as USA, Germany, and England into the analysis (Deininger and Squire, 1998: 275). In this parallel, there are also some studies indicating that the globalisation increased the income inequalities and consequently the increasing income inequalities accelerated the poverty, thus the hypothesis of Kuznets is not accurate. The authors such as Deininger and Squire (1998), Cornia and Kiiski (2001), Quah (2002), Besley and Burges (2003), Dağdemir (2008), Dreher and Gaston (2008), OECD (2008), Shahbaz (2010), Shin (2012), and Memiş (2014) argued that the inverted-U hypothesis is not accurate and the globalisation increases the poverty and income inequality.

The *Greenwood-Jovanovic Inverted-U Hypothesis* that provided the opinion grounded by Kuznets with a further form and expressing the globalisation-income distribution through the financial development has an important place among the modern theories. From this aspect, Greenwood and Jovanovic (1990) offered a new model integrating both hypotheses degrading and enlarging the income inequality. According to the mentioned model, the dynamics of development process are expressed in parallel with Kuznets hypothesis. Namely, in first periods of globalisation, the financial development is likely to occur at lower levels. Thus, the low level of financial development increases the inequality and poverty. In further phases, development of financial intermediation system through the increasing globalisation movements and the rapidly enlarging economy via the integration of higher number of financial institutions into the sector eliminate the income inequality and decrease the poverty. In conclusion, the

relationship between financial development and income inequality emerging as a result of globalisation takes the form of inverted U (Topuz and Dağdemir, 2016; 23). In literature, there are many studies corroborating the hypothesis of Greenwood-Jovanovic. Among the mentioned studies, those carried out by Banerjee and Newman (1993), Galor and Zeira (1993), Levine (1997), Zhicheng (2006), Bittencourt (2010), Kappel (2010), Law and Tan (2009), Baligh and Pirace (2012), Hoi and Hoi (2012), and Kanberoğlu and Arvas (2014) reveal the positive effect of financial development on decreasing the poverty.

Another modern theory discussing the relationship of globalisation and poverty through the wealth accumulation is the theory named *Trickle Down-Up*. From this aspect, the idea that the rapid economic growth process originating from the wealth accumulation would decrease the poverty lays the foundation of fundamental mechanism of *Trickle-Down* theory. This mechanism is based on the borrowing/loaning transactions in enlarging capital markets. Especially depending on the increasing level of savings and wealth, the faster the capital accumulation is made, the more the funds can be transferred to poor segment of the population. This process enabling the development by enriching the poor population constitutes the main element of *trickle-down* effect. The theory is based on the suggestion that the economic enlargement originating from the wealth accumulation would lead to *trickle-down* effect and consequently the use of wealth by poor population through various transfer mechanisms and, depending on this process, the welfare distribution balance under the optimum capital stock level. Together with the *trickle-down* effect seen in economic system, the theory suggests that the efficient policies would emerge in order to improve the long-term wealth distribution, and it is stated that not only the efficient distribution of sources but also the best policy implementations would be ensured through this mechanism. The theory claiming that the efficient distribution of wealth would ensure the optimum production level of *trickle-down* mechanism asserts that, as a result of the distribution of wealth and welfare, the high level of cost of borrowing for poor population for the investment purposes would decrease and thus the level of incentives ensuring the maximum level of profitability would accelerate. Thus, depending on the proper execution of wealth redistribution process, the economic efficiency is ensured via the equality of opportunity and the *trickle-down* process is triggered. Otherwise, the *Trickle-Up* effect representing the upwards transfer of increasing income level of poor population to rich segment via various transfer mechanisms occurs. In conclusion, while the *trickle-down* effect from rich segment to poor one decreases the poverty, te *trickle-up* effect from poor segment

to rich one increases the poverty and consequently the unfairness in income distribution (Akıncı, 2015: 196).

In literature, there are many studies on measuring the effect of economic growth and wealth distribution on poverty. Among these studies, *Trickle Down* effect was discussed in studies of Hirsch (1980), Aghion and Bolton (1997), Jililian and Kirkpatrick (2002), Norton (2002), Bhanumurthy and Mitra (2004), and Melamed et al. (2011), while the *Trickle-up* effect was discussed by Thornton et al. (1978), Newman and Thomson (1989), and Akıncı (2015, 2017).

Data Set and Variables

In this section, the role of threshold value of income level on the income inequality and poverty is discussed by using the dynamic panel threshold analysis that is based on an unbalanced panel data set of the EU member countries for the period of 1995-2015.

In economic literature, the main argument asserting the idea that the growth leads to inequality or *vice versa* is generally discussed, especially given the EU example. But so far, the literature has not provided a conclusive answer to the phenomenon. Therefore, much writing on the income inequality is the centre of interest on the process of economic growth and globalisation in the EU. Since its establishment, the expansions of the EU have increased income inequality. In the light of the Gini index, European regional integration process can be thought as the origin of income inequality (Beckfield, 2006). In addition, as Alderson and Nielsen (2002) noted earlier, the process of globalisation enhances interdependency relationships among nations as seen in the EU member countries via foreign trade, technology, finance, working conditions and economic policies. Therefore, this process is expected to result in increasing income inequality and poverty. In order to answer the question of whether globalisation increases inequality and poverty, the EU, which is one of the more powerful and stabilized economic integration processes of the world, is taken into consideration. Regarding the reason of this paper to focus on EU member countries, there are two important factors. First of all, the abundance and availability of the data set provided by Eurostat allow us to investigate the causes of inequality and poverty in the context of growth, finance, integration, globalisation and crises in detail. Second, the fact that the EU member countries are integrated in a process of economic and political cohesion, the determination of the EU-wide income inequality and poverty levels are

crucial for both academic curiosity and the policy-making process of the Union. Besides, in order to examine and assess the impact of the globalisation on inequality and poverty, it is important to take the largest supranational entity into account.

For this purpose, to measure the income inequality the Gini coefficient of equivalised disposable income is used. Besides, the people who are at risk of poverty as a percentage of total population is taken into account to describe the level of poverty. In addition, the per-capita GDP and the annual percentage change of per-capita GDP in constant prices are also used as the proxies for income level and economic growth process, respectively.

As well as determining the main indicators, it is also important to introduce some control variables that can affect the inequality and poverty and are used in the analysis. In order to determine the effects of social classes on inequality and poverty, the rich are described as the social class who hold the top 20 percent of the income distribution and the poor are described as the other social class who hold the bottom 20 percent of the income distribution. The data set are based on the percentage shares by quintile. Besides, following Beckfield (2006), we try to investigate the effects of the economic integration process of the EU on the inequality and poverty. The export level measured as the share of exports by the member state to the EU countries is used as a proxy for the economic integration variable. Under the light of this, it can be said that the process of economic integration increases if the level of trade between the countries within the union increases as a proportion of their total trade and *vice versa*. In addition, following Afonso et al. (2010), we test the impact of economic/financial crisis on the income inequality and poverty by using a dummy variable, which indicates the situation of the economy, "crisis" or "normal". For this purpose, economic/financial crisis is used as a dummy variable that takes the value of "1" if a financial/economic crisis exists in the starting and the following year of the crisis, and takes the value of "0" in other situation. The other important variable effecting inequality and poverty is the financial development process. Because of its wide concept, it is difficult to determine how to measure the financial progress. In this study, the value of domestic credits to private sector by banks as a percentage of GDP is taken into consideration as a proxy variable for financial depth. Although there are some other variables for measuring the financial development process such as the ratio of broad measure of money to GDP, the ratio of total bank deposits to GDP and the ratio of financial system deposits to GDP, the studies focusing on the linkages between finance, inequality and poverty generally use the domestic credits as a proxy of financial development. As Clarke et al. (2006) noted

this indicator seems a good proxy variable for the extent to which private sector agents have access to financial intermediation or access to loans. Following the studies of Clarke et al. (2006), Beck et al. (2007), Ang (2010), Yüce Akıncı et al. (2014), and Park and Shin (2015), the domestic credits to private sector by banks as a percentage of GDP is used as the proxy of financial development. In order to estimate the effect of globalisation on inequality and poverty, KOF Index of Globalisation is utilized. This index consists of three dimensions that are defined as economic, political and social globalisation. Three different kinds of globalisation index are translated into an overall globalisation index on a scale of 1 to 100, where 1 indicates the minimum and 100 represents the maximum level. Therefore, it can be said that the higher the value is, the greater the degree of globalisation becomes. Finally, to examine the impacts of government sector and market economy on inequality and poverty government expenditures as a percentage of GDP constituted the independent variable of the model. Besides, the measure of economic freedom is based on 10 quantitative and qualitative factors that are gathered in four categories as rule of law, limited government, regulatory efficiency and open markets. Each of the ten economic freedom indicators within these categories is marked on a scale of 0 to 100. The overall economic freedom score of a country is calculated by averaging 10 economic freedom indicators. If a country's score comes closer to 100, it is said that the economic freedom level of the country gets higher and *vice versa*. The data set is collected from the official web page of Eurostat, Swiss Federal Institute of Technology and Heritage Foundation.

Econometric Methodology and Model

In order to alleviate inequality and poverty, governments generally change their economic policies and other factors combining with government's policies such as economic crises, integration process, business cycles, stock market bubbles and globalisation bring about breaks in time series. Therefore, the breaks can change the linear structure of the econometric model into non-linear structure. In this sense, the need for new estimation techniques for analysing the non-linear models representing the regime switches has come in sight.

Dynamic panel threshold analysis introduced by Hansen (1999) and developed by Caner and Hansen (2004) and Kremer et al. (2013) is one of the most popular econometric methods for estimating the non-linear linkages between the variables. As Greene (2003) noted earlier, in both the fixed and random effects settings used in static

panel data analysis, the difficulty is that the lagged dependent variable can be correlated with the disturbance term. Such a linkage between lagged dependent variable and disturbance term makes the findings and estimators obtained from the fixed and random effect models inconsistent and spurious. Therefore, the relationship between lagged values of dependent variable and disturbance term can be detached by using the dynamic panel data analysis and such a process makes the analysis more robust. Following Hansen (1999), Caner and Hansen (2004) and Kremer et al. (2013), the econometric methodology of dynamic panel threshold estimation is used in this study. Since we are trying to analyse the effects of income thresholds with the help of two different models in the linkages between income, inequality and poverty, the endogenous regressors are defined as initial inequality $\left(inequality_{it-1}\right)$ and initial poverty $\left(poverty_{it-1}\right)$. The model used in the paper follows the cross-sectional threshold analysis of Caner and Hansen (2004: 815-816) and Kremer et al. (2013: 864) in which Generalized Method of Moments (GMM) estimation procedure is utilized to stand for endogeneity. In this context, a general form of panel threshold model can be defined as follows:

$$y_{it} = \mu_i + \beta_1' z_{it} I\left(q_{it} \leq \gamma\right) + \beta_2' z_{it} I\left(q_{it} > \gamma\right) + \varepsilon_{it} \tag{1}$$

where $i\left(i = 1,...,N\right)$ shows the country and $t\left(t = 1,...,T\right)$ represent the time. y_{it} indicates the dependent variable, μ_i is based on the country-specific fixed effect and ε_{it} is the error term. The indicator function, $I\left(.\right)$, presents the regime behaviours represented by the threshold variable of q_{it}. γ indicates the threshold level and z_{it} consists of a set of independent variables that is based on *m*-dimensional vector. It is also possible that the explanatory variables can contain lagged values of the dependent regressor.

The first step of the estimation method is to dispose of the country-specific effects, μ_i, by means of a fixed effect transformation procedure. For this purpose, this study uses the forwards orthogonal deviations transformation introduced by Arellano and Bover (1995) to dispose of the country-specific fixed effects. The forward orthogonal deviations transformation can be calculated using the following equation numbered (2):

$$\varepsilon_{it}^{*} = \sqrt{\frac{T-t}{T-t+1}\left[\varepsilon_{it} - \frac{1}{T-t}\left(\varepsilon_{i(t+1)} + \ldots + \varepsilon_{iT}\right)\right]} \tag{2}$$

As Kremer et al. (2013) noted, the striking feature of the transformation process is that serial correlation of the transformed error terms can be avoided. This procedure allows us to transform a cross sectional model into a dynamic panel threshold regression as shown in equation numbered (1).

The second step of the estimation process is to perform Two Stage Least Squares (2SLS) method to determine the income threshold level. Following Caner and Hansen (2004: 818) and Kremer et al. (2013: 865), a reduced form of the regression for the independent variables of z_{it} as a function of the instrumental variants of x_{it} is estimated in the first phase. Then, the estimated values of independent variables of $\hat{z}_{it}$ are substituted in the structural model for the independent variables of z_{it}. In the second phase, by using predicted values of independent variables of $\hat{z}_{it}$, the regression equation numbered (1) is estimated with the help of Ordinary Least Squares method for a fixed threshold level of γ. Let $S(\gamma)$ define the sum of the squared residuals of least squares, this procedure is repeated until finding a suitable threshold value of γ that has the smallest sum of squared residuals. In other words, γ is called the threshold estimator that minimizes the sum of squared error terms:

$$\hat{\gamma} = \arg\min S(\gamma) \tag{3}$$

In order to determine the critical values for income threshold, the 95% confidence interval needs to be computed. Hansen (1999), Caner and Hansen (2004) and Kremer et al. (2013) suggest a constraint process which should be applied to find the optimal confidence values:

$$\Gamma = \left\{\gamma : LR(\gamma) \le C(\alpha)\right\} \tag{4}$$

where, $LR(\gamma)$ is the asymptotic distribution of the likelihood ratio and $C(\alpha)$ is the 95% percentile concerning the distribution process. When the optimal threshold value $(\hat{\gamma})$ is determined, the slope coefficients can be predicted by applying GMM estimation process. To analyse the effect of income level on long-term inequality and poverty in the EU member countries, the following dynamic panel threshold models are performed:

$$ineq_{it} = \mu_i + \beta_1 gdp_{it} I\left(gdp_{it} \leq \gamma\right) + \delta_1 I\left(gdp_{it} \leq \gamma\right) + \beta_2 gdp_{it} I\left(gdp_{it} > \gamma\right) + \phi z_{it} + \varepsilon_{it} \quad (5)$$

$$pov_{it} = \mu_i + \beta_1 gdp_{it} I\left(gdp_{it} \leq \gamma\right) + \delta_1 I\left(gdp_{it} \leq \gamma\right) + \beta_2 gdp_{it} I\left(gdp_{it} > \gamma\right) + \phi z_{it} + \varepsilon_{it} \quad (6)$$

where, income level $\left(gdp_{it}\right)$ represents both the threshold values and regime-dependent regressors for two different kinds of regime, δ_1 shows regime intercepts and z_{it} implies control variables or else regime-independent regressors. Following Bick (2010) and Kremer et al. (2013), initial inequality $\left(inequality_{it-1}\right)$ and initial poverty $\left(poverty_{it-1}\right)$ are considered as the endogenous regressors. Besides, in accordance with Arellano and Bover (1995), we take into account all lags of the dependent variable as instrumental variables to reach the optimal findings which can be based on some number of instruments.

Empirical Findings

The relationship between income, inequality and poverty is investigated by using dynamic panel threshold analysis for an unbalanced panel of the EU member countries through the period from 1995-2015. For this purpose, the findings of the empirical linkages are presented in Table 1. The upper panel of table indicates the predicted values of income thresholds and the 95% confidence bounds relating to the thresholds. Besides that, the middle panel exhibits the regime-dependent regressors of income level. In other words, this panel shows the marginal effects of income on inequality and poverty in the light of low and high income regimes. Finally, the lower panel of the table denotes

the regime-independent regressors which represent the impact of control variables on inequality and poverty.

Table 1. Income Thresholds, Inequality and Poverty

	Inequality	Poverty
Estimated Value of Income Threshold and Confidence Intervals		
$\hat{\gamma}$	€33.100***	€26.600***
95% Confidence Intervals	[€27.168, €36.553]	[€19.202, €29.881]
Regime-Dependent Regressors (Impact of Income Level)		
$\hat{\beta}_1$	0.139*** (0.000)	0.075*** (0.000)
$\hat{\beta}_2$	-0.088* (0.095)	-0.072** (0.036)
Regime-Independent Regressors (Impact of Control Variables)		
$\hat{\delta}_1$	-1.566*** (0.000)	-0.991* (0.055)
Inequality$_{t-1}$	0.208** (0.030)	
Inequality		0.275** (0.038)
Poverty$_{t-1}$		0.583** (0.026)
Poverty	0.307* (0.081)	
Economic Growth	0.077** (0.031)	0.070*** (0.004)
Rich	0.964*** (0.028)	0.358* (0.063)
Poor	-0.684*** (0.004)	-0.355*** (0.000)
Economic Integration	-0.299*** (0.000)	0.730 (0.129)
Financial Development	0.009 (0.742)	-0.039 (0.150)
Globalization	0.190*** (0.002)	0.575*** (0.001)
Government	-0.213*** (0.001)	-0.066* (0.091)
Market Economy	0.019 (0.173)	0.172 (0.337)
Economic/Financial Crises	0.550*** (0.004)	0.611*** (0.000)
Statistics of the Models		
R^2	0.518	0.573
F-Statistic (Prob)	7.317*** (0.002)	5.112*** (0.008)
DW	1.973	2.113
Observations	441	441
Cross-Sections	28	28

Notes: Probabilities are given in parentheses. ***, ** and * indicates the 1%, 5% and 10% significance levels. 500 bootstrap replications are used to obtain the p-values to test for the number of thresholds.

Table 1 shows the findings of the two-regime dynamic panel threshold models between income, inequality and poverty. The income threshold levels are estimated as €33.100 and €26.600 for inequality and poverty, respectively. Since the 95% confidence intervals include the income threshold values, it is possible to say that the threshold levels are significant. Moreover, both of regime-dependent coefficients of income are significant and reasonably signed. If the income levels are below the thresholds, they are positively correlated with inequality (0.139) and poverty (0.075), while the opposite directions are valid for inequality (-0.088) and poverty (-0.072) in the presence of higher income levels. In other words, in the early phase of development, the increasing income level is to be positively related to inequality and poverty, but when a threshold point of income level is achieved, the relationship between income, inequality and poverty turns negative. In addition, the absolute sizes of income coefficients indicate that the effect of income level on inequality is stronger than that of poverty. It means that any rise in income level worsens inequality more than poverty up to the threshold point and a rise in income level eases inequality more than poverty after the threshold point. It is possible to say that our results support the hypothesis that income inequality and poverty widens in the early phase of economic growth process, it remains stable for a while and narrows in the later stage of growth as suggested by Kuznets. Therefore, the findings reported in Table 1 point out that the linkage between income, inequality and poverty displays a quadratic form which is similar to the Kuznets inverted-U hypothesis. The regime-intercept coefficient of $\hat{\delta}_1$ is also significant.

Additionally, our analysis goes further by attempting to investigate the possible effects of regime-independent variables on inequality and poverty. It can be observed that the inequality and poverty are interdependent variables, indicating that a rise in poverty level increases inequality and a rise in inequality level increases poverty. Besides, the process of economic growth deteriorates inequality more than poverty. Moreover, it is said that 1 unit increase in income of the rich is associated with about 0.964 unit increases in inequality, while 1 unit increase in income of the poor is associated with about 0.684 unit decreases in inequality. Similar findings are obtained in the regression equation of poverty. Under the light of these results, it can be claimed that there is statistically strong evidence of the existence of trickle up mechanism in the EU member countries. In addition, as Beckfield (2006) noted earlier, the higher the level of economic integration the lower the level of inequality. Since the EU is one of the most powerful and stabilized regional integration processes of the world, it is highly possible to decrease inequality level with the help of more integrated Europe as it can be seen in

Table 1. However, the findings do not corroborate the similar idea that more advanced regional integration process decreases poverty. The statistically insignificant effect of integration on poverty makes the evaluation process difficult to find the true macroeconomic policies to alleviate poverty. The results of analysis indicating the inefficiency of financial development on inequality and poverty do not support the Greenwood-Jovanovic hypothesis. Therefore, Lucas (1988) and Chandavarkar (1992) might be right by asserting the idea that finance cannot be taken as a factor in development economics. It is possible to assert that governments can be successful in using economic policy tools to ease inequality and poverty which are deteriorated by globalisation. Consequently, waiting the solutions for alleviating inequality and poverty from market economy may be inefficient, time-consuming and harmful. In accordance with expectations, in the time of economic/financial crises inequality and poverty widens.

Conclusions

The purpose of this section is to investigate the effects of globalisation on the income inequality and poverty in the context of Kuznets and Greenwood-Jovanovic inverted-U shaped hypotheses and trickle-down/up mechanism in the EU member countries in the period from 1995 to 2015. More specifically, the paper tries to establish empirical evidence to help answer the policy questions of which factors contribute to the aim of income inequality and poverty reduction in the EU member countries.

First of all, income threshold values are determined and after that the linkages between income, inequality and poverty are examined using dynamic panel threshold analysis. The income threshold levels are estimated as €33.100 and €26.600 for the regression equations of inequality and poverty, respectively. The regime-dependent coefficients of income show that if income levels are below the thresholds, they are positively correlated with the inequality and poverty, while they are above the threshold the effects of income on inequality and poverty turns negative. Therefore, it is possible to say that our results support the hypothesis that the income inequality and poverty widen in the early phase of economic growth process, it remains stable for a while and then narrows in the later stage of growth as suggested by Kuznets. In addition, the absolute sizes of income coefficients indicate that the effect of income level on inequality is stronger than that of poverty. It means that the inequality leads poverty follows up to and after the income cut-off level. The policy implication of this process can be explained as follows:

Inequality is the more important problem that needs to be solved in the early stage of economic growth process; however economic policies focusing on reducing poverty takes the precedence in the later phase of growth. Furthermore, since the inequality and poverty are interdependent variables, macroeconomic policies need to base on alleviating both inequality and poverty, simultaneously. Furthermore, it can be stated that an increase in income of the rich raises inequality and poverty, while an increase in incomes of the poor decreases inequality and poverty. Because the absolute size of coefficients of rich is more dominant than that of poor, the existence of trickle up mechanism can be claimed. Moreover, findings of the analysis show the existence of reducing effect of economic integration process on inequality, but the similar results cannot be asserted for poverty. In order to fight against poverty, the poor should be provided to benefit more from the economic integration process. Besides that, it is possible to assert that the governments might be successful in using economic policy tools to ease inequality and poverty, which are deteriorated by globalisation.

Although a comprehensive literature review indicates that economic growth accelerates inequality and poverty, it does not mean that economic growth does not help to reduce income inequality and poverty. The experiences of the real world have shown that most of the population in countries has failed to reach benefits from income growth. In many countries economic growth has been accompanied by rising inequality and poverty which are associated with widening disparities, the rich peoples get richer and the poor ones get poorer. To eliminate the process of ruthless growth, the economic growth itself may be important, but the quality of growth is the undoubted way to reduce the income disparities. In the process of redistribution with growth (RWG), the gains from economic growth need to be redistributed to improve the income distribution gradually. As Gillis et al. (1992) indicated earlier, with the help of economic policies based on RWG employment of unskilled labour can be encouraged, the assets of the poor can be directed to the productive investment and the development of financial markets can be achieved to reduce income inequality. Although the results of analysis emphasize the inefficiency of financial development on inequality and poverty, financial markets combined into an efficient growth policy package might improve the income distribution and both the poor and the rich may receive benefits equally from the process of economic growth. Therefore, more empirical researches are needed to provide this phenomenon. Accordingly, to alleviate the income inequality governments have to accelerate income level and undertake essential measures to strengthen the long-run relationship between income, inequality and poverty. Besides that, the central implication of this paper is that the process of economic integration has an important

role in decreasing the income inequality. Because of the heterogeneity bias in the light of inequality in the EU, it can be argued that the higher the heterogeneity bias, the more fragile is the enlargement process of the economic integration. As seen in the findings shown in Table 1, there is a negative impact of integration on inequality, suggesting that the income inequality decreases at the higher level of integration. Since in the time of economic/financial crises inequality and poverty widens, the destructive effects of economic crises on income distribution and poverty may be alleviated by using optimum economic and financial policies. Besides that, waiting the solutions for alleviating inequality and poverty from market economy may be inefficient, time-consuming, and harmful. In this context, the EU member countries should take more measures to improve the quality of economic growth process, which distribute funds efficiently, ease inequality and fight against poverty.

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10 | Does Globalization Make People Happier?: Evidence from Public Perceptions

Didem PEKKURNAZ

Abstract

The relationship between globalization and life satisfaction has received a great deal of attention by several studies in the literature. Globalization has at least three dimensions: economic, social and political. The economic aspect of it has been generally represented by macro level proxies such as trade opennes, import tariffs, and several indeces. However, globalization has a deeper effect on individuals which can not captured by these macro level measures. This study aims to investigate the relationship between globalization and life satisfaction at micro level. In this context, globalization is assessed at the individual level by considering public perceptions. For this purpose, the effects of demographics as well as perception of globalization variables are investigated on life satisfaction by using micro level data from the Pew Research Center's Global Attitudes Survey for the year 2014. Results show that individuals who are optimistic about globalization are found to be highly satisfied with their lives and to have thriving lives.

Keywords: Globalization, Life Satisfaction, Public Perception

Jel Codes: C20, C25, F15, I31

Introduction

Globalization refers to the process by which different economies and societies become more closely interconnected. It is a process of integration which involves growing multidirectional flows of people, goods, culture, ideas, technology and information (e.g., Tsai et al. 2012; Perrons 2004; Ritzer 2010; Sirgy et al., 2004, Bordo, 2002; Levitt, 1983). With increasing worldwide globalization, a complex form of interdependence and interaction between various countries gives rise to an elimination of trade barriers, development of technology, improved communications and transportation, global products and services and global competition (e.g., Sirgy et al., 2004; Hill, 1997; Levitt, 1983; Yip, 1989). Therefore, the borders between different parts and regions vanishes and the world is becoming a global village (Modebadze, 2012). As globalization intensifies, transnational activities and connections between populations also reflect a social integration among societies across countries.

Globalization is not purely an economic phenomenon. It has at least three different aspects. *Economic* globalization reflects the flows of goods, capital, services, and market information across countries, *political* globalization implies the transmission and integration of government policies, and *social* globalization refers to the interaction between countries in terms of spreading norms and cultural values (e.g., Dreher, 2006; Dreher et al., 2008; Merino and Vargas, 2013; Held et al., 1999; Bergh and Nilsson, 2010; Arribas et al., 2009).

It is well-documented in the literature that the phenomenon of globalization is a twin-faced one, having both advantages and disadvantages. It is demonstrated that it creates positive and negative consequences simultaneously (e.g., Glatzer, 2012; Henderson, 2002; Camfield, 2004; Tsai et al., 2012; Held and McGrew, 2000; Hirst and Thompson, 1999; Petras and Veltmeyer, 2001; Sklair, 2002; Stiglitz, 2002). As Tsakiri (2010) mentiones in detail, the positive ones regard the economic development and a reduction in poverty, mainly in countries which have been integrated into the globalization process. These positive outcomes come from increased efficiency, resultant greater benefits in terms of macroeconomic performance (Dreher, 2006) and increasing product variety (Broda and Weinstein, 2006) as it is mentioned in Hessami (2011). In another study by Tsai et al. (2012), it is stated that harmful outcomes of globalization stem from the fact that it creates increasing social and income inequality and systemic instability. In the same study, Tsakiri (2010) also reviews the negative consequences. It

says that globalization creates enormous inequalities emerging within and between individuals and states, the worsening of working conditions, causing problems such as uncertainty and fear of losing employment which threaten the worker's safety and health, the overuse of the natural environment creating serious impediments to the normal function of the ecosystems and so on.

Trends of globalization such as migration, economic integration and interdependence, exchange of goods and services and culture are undoubtedly bringing people closer together. But do they also cause the levels of satisfaction to converge? How does the public perceive globalization? Individuals' subjective evaluation of the outcome of the globalization depends on their perception of both the process itself and the fairness of the processes (Bjørnskov et al., 2008). It is important to understand the debate on the impact of globalization on the quality of life of a country. But first, it may be quite helpful to provide a brief background discussion about quality of life. As Tsakiri (2010) argues, the notion of quality of life seems to be interchangeable with several similar notions, such as 'life satisfaction', 'well-being', 'social well-being', and 'happiness' (e.g., Rojas, 2007; Bowling, 2004; Hagberg, 2002; Bowling and Windsor, 2001; Diener and Suh, 1997) in the relevant literature. The objective criteria in use about what is a good or bad quality of life, refer to the conditions of life of a country where people live and work (Veenhoven, 1999; Bowling, 2004). The subjective ones, depends on individuals' personalities and experiences (Diener and Suh, 1997; Bowling and Windsor, 2001; Bowling, 2004). In this well-written review, Tsakiri (2010) emphasizes that the assessment of life satisfaction remains complex, due to the wide range of its several aspects.

Researchers have long studied the factors contributing to the strong disparities in life satisfaction both across and within the nations as a result of globalization. As Tsakiri (2010) states, just a few studies refer to the impact of globalization, considering it as a whole, upon all aspects of life satisfaction, while, most of the relevant works explore the influence of a specific aspect of the first on a specific one of the second. Several limitations arising from both subjects, deter researchers from undertaking the assessment of the impact of globalization, considered as a whole, on all dimensions of life satisfaction. Specifically, most of the works focus on the impact of some 'economic' aspects of globalization upon some aspects of life satisfaction which have a kind of material nature (Tsakiri, 2009). However, in recent years, it started to be argued that apart from the economic conditions, factors such as income inequality, employment

conditions and insecurity, health expenditure, corruption and public debt should also be taken into account in the assessment of life satisfaction (e.g., Mitchel, 1999; Clarke, 2003; Rojas, 2007; Sandıkçı et al., 2015; Kilbourne, 2004).

This kind of structure of the studies mentioned above, raises some limits on the extraction of some accurate results as whether the impact of globalization on life satisfaction is positive or negative. As Sirgy et al. (2004) discuss, some studies argue that globalization has a *negative impact* on quality of life. They argue that globalization eliminates many jobs, especially in the manufacturing sector (Scott, 2001). These "hyperglobalists" in Sirgy et al. (2004)'s own words, argue that globalization is creating a new era of human history in which nation-states and governments in general are powerless to improve the quality of life of their citizens. They claim that global capitalism is now a great threat to "open society". Thus, there are many who paint a gloomy picture for a truly global world. Furthermore, the study by Glatzer (2012) suggests that the doubts grew that increasing GDP at a high level could not contribute to increasing quality of life. He argues that conventions about national accounts are developed worldwide for measuring economic activities and wealth, but this is not the same for measuring quality of life. Nevertheless, a number of different concepts for defining and measuring quality of life in objective as well as in subjective terms are now available.

In contrast, many others argue that globalization has a *positive* influence on quality of life (e.g., Thorbecke and Eigen-Zucchi, 2002). These pro-globalists as Sirgy et al.(2004) name it, view trade liberalization and increased marketing integration as an opportunity to increase productivity and wages, thus improving quality of life of workers. It also has been argued that the negative impact of globalization, such as elimination of manufacturing jobs, has been dramatically overstated (Thorbecke and Eigen-Zucchi, 2002; Fligstein, 2001; Krugman, 1996).

All the above argument suggests that the empirical literature on the association between globalization and life satisfaction has yielded contradictory findings creating further confusion. There is a limited understanding of how globalization affects the quality of life. Therefore, how globalization functions, influences, and changes the life satisfaction of ordinary people remains among the most significant issues for further and systematic research. In order to contribute to this debate, in this study it is attempted to evaluate the influences of globalization in people's subjective well-being and how individual-level effects together with the country-level dimensions act as the different outcomes of

globalization. To explore this issue, the effects of demographics are quantified as well as perception of globalization variables on an individual's life satisfaction by pooling micro level data from the Pew Research Center's Global Attitudes Survey for the year 2014.

Data

The data set comes from the Pew Research Center's Global Attitudes Survey for the year 2014. 48643 individuals in 44 nations in total are included in the survey. For the analysis, individual level data is used from 43 nations: Argentina, Bangladesh, Brazil, Chile, China, Colombia, Egypt, El Salvador, France, Germany, Ghana, Greece, India, Indonesia, Israel, Italy, Japan, Jordan, Kenya, Malaysia, Mexico, Nicaragua, Nigeria, Pakistan, Palestinian territories, Peru, Phillippines, Poland, Russia, Senegal, South Africa, South Korea, Spain, Tanzania, Thailand, Tunisia, Turkey, Uganda, Ukraine, United Kingdom, United States, Venezuela and Vietnam.

Two types of life satisfaction variables are derived from the survey questions. One of the 0-10 scale survey questions is that "Let's suppose the top of the ladder represents the best possible life for you; and the bottom, the worst possible life for you. On which step of the ladder do you feel you personally stand at the present time?". The three-category life satisfaction 1 variable is defined: low, medium and high. Low level of life satisfaction takes value of 1 if an individual's answer to the question above lies in between 0 and 3. An answer from 4 to 6 is defined as medium level life satisfaction for which the variable takes value of 2. If the answer is at least 7, it is defined as high level of life satisfaction and the life satisfaction variable takes value of 3. Another 0-10 scale question asks about the evaluation of future: "Which step do you think you will stand in the future, say five years from now?". Using these current and future life evaluation questions, another variable is created (life satisfaction 2) based on the Gallup-Healthways Life Evaluation Index classification for only 33 nations (France, Germany, Greece, Israel, Italy, Japan, South Korea, Spain, United Kingdom and United States are excluded because of the data unavailability). If a person rates his current life as at least 7 and his future life as at least 8, that person is called "thriving". Individuals who evaluate their both current and future lives from 0 to 4 are called "suffering". All other combinations are called "struggling". Hence, life satisfaction 2 takes value of 1, 2 and 3 for suffering, struggling and thriving categories respectively.

Table 1. Summary Statistics

	Mean	Standard deviation
Life satisfaction 1 (Low level)	0.094	0.292
Life satisfaction 1 (Medium level)	0.418	0.493
Life satisfaction 1 (High level)	0.488	0.500
Life satisfaction 2 (Suffering)	0.063	0.243
Life satisfaction 2 (Struggling)	0.550	0.498
Life satisfaction 2 (Thriving)	0.387	0.487
Age≤18	0.025	0.156
19≤Age≤29	0.270	0.444
30≤Age≤39	0.231	0.422
40≤Age≤49	0.193	0.394
50≤Age≤59	0.143	0.350
Age≥60	0.139	0.345
Female	0.476	0.499
Married	0.602	0.490
Employed	0.559	0.496
Household size is 1, 2 or 3	0.424	0.494
Household size is 4 or 5	0.340	0.474
Household size is at least 6	0.236	0.424
1≤Years of schooling≤12	0.034	0.182
No schooling	0.612	0.487
Years of schooling≥13	0.353	0.478
Income group 1	0.206	0.404
Income group 2	0.197	0.398
Income group 3	0.211	0.408
Income group 4	0.191	0.393
Income group 5	0.195	0.396
Growing trade is good for the country.	0.858	0.349
It is good that foreign companies buy national ones.	0.508	0.500
Most people are better off in a free market economy.	0.707	0.455
Trade increases wages in the country.	0.508	0.500
Trade decreases wages in the country.	0.249	0.432
Trade has no effect on wages in the country.	0.244	0.429
Trade creates jobs in the country.	0.596	0.491
Trade destroys jobs in the country.	0.227	0.419
Trade has no effect on jobs in the country.	0.177	0.381
Trade increases prices in the country.	0.487	0.500
Trade decreases prices in the country.	0.300	0.458
Trade has no effect on prices in the country.	0.214	0.410

Notes: Sample size is 26510 for all variables except for life satisfaction 2. Sample size for life satisfaction 2 is 19811.

Demographic variables are six age groups (age≤18, 19≤age≤29, 30≤age≤39, 40≤age≤49, 50≤age≤59 and age≥60), sex, marital status (married or not), employment status (employed or not), three groups of household size (between 1 and 3, between 4 and 5 and at least 6), three categories of years of schooling completed (no schooling, between 1 and 12 and at least 13 years) and five income groups (1 represents lowest income quintile and 5 represents highest income quintile). Six types of globalization perception questions are included in the analysis. They are (1) whether growing trade and business ties between the survey country and other countries is good (i.e., very good or somewhat good) or bad (i.e., very bad or somewhat bad) for the survey country, (2) whether it is good (i.e., very good or somewhat good) or bad (i.e., very bad or somewhat bad) that foreign companies buy national ones, (3) agree (i.e., completely or mostly) or disagree (i.e., completely or mostly) with the statement that most people are better off in a free market economy, even though some people are rich and some people are poor, (4) trade with other countries increases, decreases or does not affect wages in the survey country, (5) trade with other countries leads to job creation, job loses or does not affect jobs in the survey country and (6) trade with other countries increases, decreases or does not affect prices in the survey country. Summary statistics for all variables are available in Table 1.

Methodology

Ordered logit models are applied to investigate the effects of globalization perceptions and demographics on life satisfaction. The structural model for the continuous unmeasured latent variable Y^* for life satisfaction is defined below:

$$Y^*_{ic} = \gamma + \alpha X_{ic} + \beta G_{ic} + \lambda_c + \varepsilon_{ic} \tag{1}$$

where i and c represent individuals and countries respectively, X is a vector of demographics, G is a vector of globalization variables, α and β are the vectors of corresponding regression coefficients, γ is the constant term, λ represents country dummies and ε is a random error term with a logistic distribution.

Observed subjective life satisfaction variable from the survey takes three values 1, 2 and 3 as defined previously. Equation (2) shows how the observed life satisfaction variable takes these values when the unobserved latent variable hits a particular threshold denoted by κ.

$$Y_{ic} = \begin{cases} 1 \text{ if } Y_{ic}^{*} \leq \kappa_1 \\ 2 \text{ if } \kappa_1 < Y_{ic}^{*} \leq \kappa_2 \\ 3 \text{ if } \kappa_2 < Y_{ic}^{*} \end{cases} \qquad (2)$$

To be able to interpret the magnitudes of the effects of the variables average marginal effects are estimated after running ordinal logit models for the two types of life satisfaction variables defined in data section.

Results

Average marginal effects for the life satisfaction models are shown in Table 2. All of the demographics are statistically significant for life satisfaction 1 variable. All age groups are less likely to be highly satisfied with their lives compared to youngest age group. On the other hand, probabilities of medium level and low level of life satisfaction increase for older age groups relative to the youngest age group. Females are 4.5% points more likely to be highly satisfied with their lives than males while they are almost 3% points and 2% points respectively less likely to have medium level and low level of life satisfaction than males. Almost the same results hold true for married individuals. Employed people are 3.4% points more likely to be highly satisfied with their lives whereas they have lower probabilities of medium level (2.1% points) and low level (1.3% points) of life satisfaction. Smaller household sizes (i.e., less than 6) lead to higher probability of high level of life satisfaction while individuals are less likely to have medium level and low level of life satisfaction with household sizes less than 6. Individuals with any level of schooling relative to individuals with no schooling are less (more) likely to have high level (medium level and low level) of life satisfaction. People from all income groups relative group 1 are more likely to be highly satisfied with their lives whereas they are less likely to have medium level and low level of life satisfaction. Effects of demographic variables on the categories of life satisfaction 2 are very similar

to that for the life satisfaction 1. The only difference is that the first household size group is not a significant determinant of this life satisfaction variable.

Individuals who think that growing trade is good for the country and it is good that foreign companies buy national ones are 3% points and 5% points respectively more likely to be highly satisfied with their lives than individuals with pessimistic beliefs on these variables. On the other hand, those individuals with optimistic views on the first (second) globalization statement are almost 2% points (3% points) and 1% points (2% points) respectively less likely to be medium level and low level satisfied with their lives. Individuals with the belief that most people are better off in a free market economy are 4.3% points more likely to be highly satisfied with their lives but probabilities of medium level and low level of life satisfaction are almost 3% points and 2% points less than that for the individuals with pessimistic beliefs on this globalization variable. People who believe that trade with other countries increases the wages in the survey country are 2% (1%) points more (less) likely to be highly (medium level and low level) satisfied with their lives than people with the beliefs that trade does not have any effect on wages in the country. All other globalization variables are not statistically significant.

Similar findings can also be drawn for life satisfaction 2. Individuals with optimistic views about the globalization (i.e. individuals who believe that growing trade is good for the country, it is good that foreign companies buy national ones, most people are better off in a free market economy and trade with other countries increases the wages in the survey country) are significantly more likely to be thriving in their lives. On the other hand, they are less likely to be struggling and suffering compared to individuals with more pessimistic beliefs about globalization. Unlike the case for life satisfaction 1 variable, people who think that trade with other countries creates jobs and decreases prices in the survey country are 2.4% points more likely to be thriving while they are 1.7% points and 0.7% points respectively less likely to be struggling and suffering relative to individuals with the beliefs that trade with other countries has no effect on jobs and prices in the survey country.

Table 2. Average marginal effects for ordered logit models for life satisfaction

	Life Satisfaction 1			Life Satisfaction 2		
	High	Medium	Low	Thriving	Struggling	Suffering
19≤Age≤29	-0.075*** (0.017)	0.052*** (0.012)	0.023*** (0.005)	-0.054*** (0.019)	0.042** (0.015)	0.012** (0.004)
30≤Age≤39	-0.108*** (0.018)	0.072*** (0.013)	0.036*** (0.005)	-0.087*** (0.019)	0.067*** (0.015)	0.021*** (0.004)
40≤Age≤49	-0.108*** (0.018)	0.073*** (0.013)	0.036*** (0.005)	-0.094*** (0.020)	0.071*** (0.016)	0.022*** (0.004)
50≤Age≤59	-0.120*** (0.018)	0.080*** (0.013)	0.041*** (0.006)	-0.107*** (0.020)	0.080*** (0.016)	0.026*** (0.004)
Age≥60	-0.084*** (0.019)	0.057*** (0.013)	0.027*** (0.005)	-0.116*** (0.021)	0.087*** (0.016)	0.029*** (0.005)
Female	0.045*** (0.006)	-0.028*** (0.03)	-0.017*** (0.002)	0.047*** (0.006)	-0.034*** (0.005)	-0.013*** (0.002)
Married	0.040*** (0.006)	-0.025*** (0.004)	-0.015*** (0.002)	0.025*** (0.007)	-0.018*** (0.005)	-0.007*** (0.002)
Employed	0.034*** (0.006)	-0.021*** (0.004)	-0.013*** (0.002)	0.035*** (0.007)	-0.025*** (0.005)	-0.010*** (0.002)
Household size is 1, 2 or 3	0.024*** (0.008)	-0.015*** (0.005)	-0.009*** (0.003)	0.007 (0.008)	-0.005 (0.006)	-0.002 (0.002)
Household size is 4 or 5	0.014* (0.008)	-0.008* (0.005)	-0.005* (0.003)	0.015* (0.008)	-0.011* (0.006)	-0.004* (0.002)
1≤Years of schooling≤12	-0.093*** (0.016)	0.057*** (0.009)	0.036*** (0.007)	-0.070*** (0.016)	0.051*** (0.012)	0.019*** (0.005)
Years of schooling≥13	-0.053*** (0.006)	0.034*** (0.004)	0.019*** (0.002)	-0.056*** (0.007)	0.041*** (0.006)	0.015*** (0.002)
Income group 2	0.053*** (0.008)	-0.029*** (0.004)	-0.024*** (0.004)	0.048*** (0.009)	-0.031*** (0.006)	-0.017*** (0.003)
Income group 3	0.107*** (0.008)	-0.062*** (0.005)	-0.045*** (0.004)	0.090*** (0.009)	-0.061*** (0.006)	-0.029*** (0.003)

Income group 4	0.140***	-	-	0.119***	-0.083***	-
	(0.009)	0.085***	0.055***	(0.009)	(0.007)	0.035***
		(0.005)	(0.004)			(0.003)
Income group 5	0.180***	-	-	0.150***	-0.108***	-
	(0.009)	0.113***	0.067***	(0.010)	(0.007)	0.042***
		(0.006)	(0.003)			(0.003)
Growing trade is good for the country.	0.030***	-	-	0.032***	-0.023***	-
	(0.008)	0.019***	0.012***	(0.009)	(0.006)	0.009***
		(0.005)	(0.003)			(0.003)
It is good that foreign companies buy national ones.	0.050***	-	-	0.046***	-0.033***	-
	(0.006)	0.031***	0.019***	(0.006)	(0.004)	0.013***
		(0.004)	(0.002)			(0.002)
Most people are better off in a free market economy.	0.043***	-	-	0.043***	-0.030***	-
	(0.006)	0.027***	0.016***	(0.007)	(0.005)	0.012***
		(0.004)	(0.002)			(0.002)
Trade increases wages in the country.	0.020***	-	-	0.017**	-0.012**	-0.005**
	(0.008)	0.013***	0.008***	(0.008)	(0.006)	(0.002)
		(0.005)	(0.003)			
Trade decreases wages in the country.	-0.003	0.002	0.001	-0.012	0.009	0.004
	(0.008)	(0.005)	(0.003)	(0.010)	(0.007)	(0.003)
Trade creates jobs in the country.	0.005	-0.003	-0.002	0.024**	-0.017***	-0.007**
	(0.008)	(0.005)	(0.003)	(0.009)	(0.007)	(0.003)
Trade destroys jobs in the country.	-0.013	0.008	0.005	-0.000	0.000	0.000
	(0.009)	(0.006)	(0.003)	(0.011)	(0.008)	(0.003)
Trade increases prices in the country.	0.005	-0.003	-0.002	0.012	-0.009	-0.004
	(0.007)	(0.005)	(0.003)	(0.008)	(0.006)	(0.002)
Trade decreases prices in the country.	0.010	-0.006	-0.004	0.024**	-0.017**	-0.007**
	(0.008)	(0.005)	(0.003)	(0.009)	(0.007)	(0.003)
Sample size	26510			19811		

Notes: Country dummies are included in the main ordinary logit regressions. Omitted categories are age≤18, household size is at least 6, Years of schooling≥13, income group 1, trade has no effect on wages in the country, trade has no effect on jobs in the country, trade has no effect on prices in the country. Significance levels: * 10%, ** 5% and *** 1%.

Conclusion

This study attempts to assess the impacts of globalization in life satisfaction. It is well known that there are differences in individual attitudes toward globalization within a country as well as across countries. Here the effects of demographic variables and perceptions of people about globalization on their evaluation of life satisfaction are

analyzed. With regards to demographic variables, it is found that females, married younger and employed individuals are all highly satisfied with their lives as well as they are more likely to have a thriving life. People with high income are also more likely to have a high level of satisfaction and thriving life. Moreover, a smaller household size is associated with high level satisfaction in life satisfaction 1 but it does not have a significant impact on the second dependent variable (life satisfaction 2). People who believe that growing trade is good, most people are better off in a free market economy and trade with other countries increases the wages within the country and the ones thinking that that it is good that foreign companies buy national ones seem to be more satisfied with their lives. Similar globalization perceptions are also significant for the second dependent variable (life satisfaction 2). Furthermore, people who think that trade with other countries creates jobs and decreases prices in the survey country are more likely to have a thriving life.

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11 | Comparative Analysis of Turkey and Eastern European Countries in terms of Development Indicators

Dilek ŞAHİN

Abstract

Among the issues countries place importance on, development comes the first. In the economic literature, development is defined as a quantitative increase in the real income of societies as well as entailing a happier, healthier and better quality environment in society. The development process in fact reflects the developments and changes in the social, economic, cultural and political areas, as well as structural changes and transformations in society and the economy. The purpose of this study is to examine the Eastern European countries with the aid of development indicators. One of the multivariate statistical methods, cluster analysis was used in the study, taking into account the years 2005 and 2014. According to the hierarchical cluster analysis in which 31 socio-economic variables for 23 countries were used, it was seen that these countries were grouped differently for both 2005 and 2014. Among these clusters, Turkey is located in the 5th cluster. In the 5th cluster there are Turkey and Poland. This shows that Turkey is at a similar level of development with Poland.

Keywords: *Development, Eastern European Countries, Cluster Analysis.*

Jel Code: *O1, O10*

Introduction

Economic growth, by definition, is higher production levels of countries thanks to an increase in the amount of scarce resources and improvements in production technology. Economic development, in addition to economic growth, involves improvements in the economic and social structure. In other words, economic development means increasing production and per capita income, as well as structural changes and technical and institutional arrangements, changes in production structure, and resource allocation among sectors. While economic development is important for all countries, it is more important for countries with low levels of development, because these countries can overcome poverty, unemployment and backwardness only through economic development. On the other hand, development is necessary for developed countries to sustain the available growth rates. In fact, economic development efforts aim at increasing the standard of living; economic, political and social freedoms and maintaining a peaceful living environment. Economic development has many indicators. These can be enumerated as the change in the quality and quantity of production factors, the increase in the share of the industrial sector in national income and employment, demographic structure, income distribution, saving tendency, demand structure, urbanization rate, changes in trade structure, level of literacy, average life span and infant mortality rates, changes in productivity and quantity of production factors, demographic structure, income distribution. These factors taken into consideration, it is seen that development is a process involving quantitative and qualitative changes of a society in general.

The aim of this study is to identify Turkey and Eastern European countries through cluster analysis using 31 socio-economic variables. The analysis includes 23 eastern European countries. The study is important in that it aims at determining the group in which Turkey takes place among Eastern European countries in terms of socio-economic variables. In comparing countries, 31 different socio-economic development indicators such as economic, demographic, health, education, information and communication technologies were used. The data belonging to the years 2005 and 2014 were used while the cluster analysis was being carried out. The main reason for dealing with two years is to find out whether there has been a change in cluster membership over the years which are handled herein. The study consists of six parts. In the second part following the introduction section, literature on cluster analysis is given. The third part consists of the cluster method; the fourth part consists of the data set

and method used in the study. In the fifth section, findings and evaluations are given. The final part is the conclusion part.

Literature Review

Some studies about clustering analysis in the literature can be listed as follows: Turanlı et al. (2006) used cluster analysis in their studies, one of the multivariate statistical methods, to illustrate the similarities between the 25 EU member states and four candidate countries in terms of basic macroeconomic indicators for the year 2004. As a result of the study, it was seen that the countries covered are collected in two clusters. The first group includes Belgium, Denmark, Germany, Spain, France, Ireland, Italy, the Netherlands, Luxembourg, Austria, Finland, Sweden and the United Kingdom; while the second group includes Czech Republic, Estonia, Greece, Cyprus, Malta, Lithuania, Latvia, Hungary, Poland, Portugal, Slovenia, Slovakia, Bulgaria, Romania, Croatia and Turkey.

In Erkekoğlu (2007), in which the relative level of development of Turkey in relation to Romania, Bulgaria and twenty-five EU countries was examined, 39 variables that consisted of demographic, education, health, information and communication technologies and economic indicators were used. As a result of the study, countries were divided into five groups. Turkey was found to be in the same group as Lithuania, Latvia, Poland, Bulgaria and Romania. That is, Turkey has the same level of development as these five countries.

Ersöz (2009) conducted a cluster analysis of the OECD member countries using the health indicators of 2004. The ratio of total health expenditures to gross domestic product, per capita health expenditure, life expectancy at birth, and the number of infant deaths per 1000 births were the variables used in the study. In the clustering process, a comparison was made using the hierarchical cluster method and non-hierarchical K-means cluster and Medoid cluster methods. As a result of the cluster analysis, Turkey is in the same group as OECD countries Poland, Slovakia, Czech Republic Hungary, Mexico and Korea Republic when hierarchical cluster method was used; and it was in the same group as Portugal, Poland, Slovakia, Hungary, Czech Republic, Mexico, Korea Republic when non-hierarchical cluster method was used; Turkey was in the same group as Mexico when medoid cluster method was used.

Ada (2011) examined the sustainable development level of Turkey versus the Member States of the European Union. In the study clustering analysis, one of the multivariate statistical methods, was used taking the year 2008 as the basis. As a result, Turkey has been seen to have a similar level of sustainable development to the countries involved.

Girginer (2013) examined the position of Turkey against the EU countries in terms of health indicators, revealing differences and similarities between them. The data about 27 EU countries and Turkey obtained from 2010 World Health report was applied multidimensional scaling analysis and non-hierarchical cluster analysis. As a result of the multivariate analysis of the health indicators covered, it was seen that countries formed three different groups in two dimensional space. Turkey was seen to be in the same cluster as Estonia, Hungary, Lithuania, Slovakia, Poland, Romania, Latvia and Bulgaria. As a result of the non-hierarchical cluster analysis, countries in terms of health indicators gathered in 4 clusters. Turkey is in the same cluster as Romania, Bulgaria, Poland, Latvia, Lithuania, Estonia and Hungary. The countries show similarities in the clusters formed by both techniques.

Özbek and Atik (2013) attempted to determine Turkey's position among the European Union countries, using 13 innovation indicators. In the study clustering analysis, one of the multivariate statistical methods, was applied based on the year 2010. As a result, these countries were grouped into 4 clusters. Among these clusters, Turkey is in the 3rd cluster. It has been seen that Turkey has a similar indicator of innovation by being in the same cluster as Bulgaria and Romania, two countries which joined the EU in 2007 as the late stones.

Kangallı et al. (2014) conducted a cluster analysis for the year 2011 in their studies which classified OECD member countries according to economic freedoms index. As a result of the analyzes based on K-means and Ward approach, a three-cluster economic freedom and development for the three OECD countries was reached.

Alptekin and Yeşilaydın (2015) categorized OECD countries in terms of health indicators using fuzzy cluster analysis. Fuzzy c-averages cluster analysis was carried out with ten variables thought to affect health directly or indirectly by taking into consideration 34 countries belonging to OECD. The analysis results showed that the optimal number of clusters was five. Turkey is in the fourth cluster among these clusters.

Estonia, Hungary, Mexico, Poland and Chile were found to be in the same cluster as Turkey.

Tekin (2015) grouped 81 provinces in Turkey in terms of 16 different health indicators for 2013 and compared them using previous socio-economic development rankings and health development level studies. With the Ward method, the cities were collected in 21, 13, 11, 7 and 5 clusters. The most significant of these were identified as clusters of 11, 7 and 5. When the clusters were examined, it was seen that the geographically closest cities were gathered in the same cluster. As a result, the difference in development between eastern and western countries stems from health variables.

Boz et al. (2016) analyzed the similarities and differences of OECD countries in terms of health indicators selected on a basis of Turkey. The results of the analysis showed that Turkey is similar in terms of health indicators with Mexico, Chile and the Republic of Korea and formed a subgroup among OECD countries. It has been seen that Turkey does not show similarity in terms of health indicators with the OECD countries the USA, Greece, Switzerland, Portugal, Australia, Spain and Japan. In addition, one year growth rate in health expenditures and neonatal infant mortality rate are the most important health indicators that distinguish Turkey from other countries.

Ertaş and Atik (2016) investigated the relative level of development of Turkey against the OECD countries for the year 2015. Of the multivariate statistical methods, cluster analysis was used in the analysis and 27 socio-economic variables were included. As a result of the analysis, at least three clusters and at most seven clusters were obtained. Turkey was in the same cluster as Mexico in cluster groupings. As a result, the finding that Turkey is socioeconomically similar with Mexico among OECD countries has been established.

Ertaş and Atik (2016) analyzed the relative level of development of Turkey against the European Union countries using 57 socio-economic indicators for the years 2003 and 2014. Cluster analysis, one of the multivariate statistical methods, was used in the study. The hypothesis that "Turkey has a similar socio-economic performance to Romania, Bulgaria and Croatia which subsequently joined the European Union" was tested in the study. The results of the analysis showed that Turkey was not at a similar level of development with any member of the European Union.

Turan et al. (2016) investigated whether the economic structures of the Middle East countries and Turkey between 1980 and 2013 were similar to each other, and whether these similar structures changed as a result of the political events that occurred. The period covered in the study was classified as1980: 01-2003: 12 and 2003 : 01-2010: 12, 2010: 01-2013: 12. Among the countries included in the analysis were Bahrain, Iraq, Iran, Israel, Kuwait, Libya, Lebanon, Egypt, Syria, Saudi Arabia, Turkey, Oman, Jordan and Yemen. To examine similar and dissimilar countries, the indicators of export, import, inflation, national gross domestic product deflator, national gross domestic product, gross domestic income, gross saving, net foreign income, exchange rate, population growth and total population were used. As a result of the analyzes, while it was seen that countries with periodic variability were few in the first two clusters, they increased in the last period.

Cluster Analysis

Cluster analysis is a method that enables a researcher to collect and classify certain groups according to the similarities between the units, and put forward general definitions about these classes by revealing the common characteristics of the units. Variables included in the analysis in the cluster analysis are not separated as dependent and independent variables. The main purpose of cluster analysis is to provide the researcher with suitable and useful information by classifying ungrouped data according to similarities. Clustering analysis method can be classified into hierarchical cluster and non-hierarchical cluster within itself.

Hierarchical Cluster Methods

Hierarchical cluster analysis is process of concatenating clusters. In this analysis, once a group is combined with the other, it is absolutely inseparable in later steps. Hierarchical clustering techniques are analyzed in two groups, which are collection and separation techniques. Information about collection techniques and types is given here.

The collection techniques start with a calculation of a similarity or distance matrix between $\left\{ \frac{1}{2}\left[n\left(n-1\right) \right] \right\}$ possible observation pairs. At the beginning, each observation is a cluster and the closest two clusters are combined according to the similarity or distance matrix. Then, the similarity matrix is reconstructed by reducing the number

of the clusters by one, and n units are sequentially placed in the cluster n, (n-1), (n-2), ..., (n-r), ..., 3, Here, information will be given about"Single Connection Technique, Full Connection Technique, Average Connection Technique and Ward Technique" within the collection techniques.

Single Connection Technique: It is a technique that combines the objects or individuals closest to each other using the distance matrix. In this technique, two units closest to each other are first placed in a cluster. Then, the closest distance is determined and this observation is added to the first formed cluster or a new cluster consisting of two observations is created. This process continues until all observations are placed in a cluster.

In this method, if the units in the i and j orders are combined, the relation of the connected set to the kth set is expressed as the distance measure as followsin the equation(1):

$$dk_{i,j} = \min(d_{ki}, d_{kj}) \tag{1}$$

In this equation; $d_{k(i,j)}$ refers to the distance of kth set to Ith and jthclusters that was previously formed; d_{kj} refers to the distance from kth cluster to jth cluster and d_{ki} refers to the distance from k cluster to ith.

Full Connection Technique: This method is also known as the farthest neighborhood. The difference from the single connection technique is about handling the maximum distance between pairs of elements in each cluster. This technique is represented as follows in theequation (2) :

$$d_{k(i,j)} = \max(d_{ki}, d_{kj}) \tag{2}$$

Average Connection Technique: This technique is first started as in single connection and full connection techniques. However, as a clustering criterion the average distances between the units in one set and the units in the other set are used. In this technique, the clusters are interconnected by small variances.

Ward Technique: The main purpose of this technique is to minimize the variance within the clusters. For this reason, formula (3) is used regarding the sum of error squares:

$$ESS = \sum_{i=1}^{n} X_i^2 - \frac{\left(\sum_{i=1}^{n} X_i\right)^2}{n} \qquad (3)$$

In this equation Xi is the score of ith observation and n is the data number. In the first stage of the cluster analysis, ESS equals zero because each unit itself is a cluster. The Ward technique continues with the acquisition of groups resulting in a minimum increase in ESS.

Non-Hierarchical Cluster Techniques

There is preliminary information on the number of clusters in non-hierarchical clustering techniques. Non-hierarchical techniques are used in larger data sets than in hierarchical techniques. Here information has been given about the K-averages technique most commonly used in non-hierarchical techniques.

K-means technique: In this method, the number of clusters is determined to be at least two or equal to and the number of observations at most or is equal less than that. In this technique, the following steps are taken: First, the units are divided into k numbered clusters. The process continues by assigning units to the closest cluster in terms of value. The distance is usually determined as "Euclidean distance". The units are then calculated and the new value of the cluster is determined.

Determination of Cluster Count

While the number of clusters in hierarchical clustering methods is being determined by the results of clustering analysis, the number of clusters in non-hierarchical clustering methods is predetermined by the investigator. As a result of the cluster analysis, the number of clusters can vary from 1 to n. In order to obtain healthy results from the cluster analysis, the choice of variables and determining the number of clusters are

important. In order to determine the number of clusters in small samples, equation (4) is frequently used:

$$k = \left(n \big/ 2 \right)^{1/2} \tag{4}$$

In the method suggested by Mariot;

$$M = k^2 |W| \tag{5}$$

Here, the number of sets giving the smallest M value is the actual number of sets. W is the matrix of sums of intra-group squares.

In the method developed by Calinsky and Harabasz;

$$C = \left[iz(B) / k - 1 \right] / \left[iz(W)(n = k) \right] \tag{6}$$

The k-valueis the cluster number that makes the equation the biggest. Here B and W are inter-group and intra-group squares summation matrices, respectively.

Distance Measurements in Clustering Analysis

The basis of the clustering analysis is to determine similarities or distances between observed individuals or objects. In clustering analysis, a number of distance measures have been developed in order to calculate the distance between units relative to the p variable. These measurements differ from the measurement unit of the variables in the data matrix.

It is possible to examine some of the distance measures used in cluster analysis under the following headings:

Euclidean and Quadratic Euclidean distance calculation formula: In this distance measurement which is preferred in distance measurement in numerical data, Euclidean

and Quadratic Euclidean distances for two data indices x and y in the d-dimensional observation space are calculated as in equation (7):

$$d_{seuc}(x,y) = d_{euc}(x,y)^2 = \sum_{j=1}^{d}(x_j - y_j)^2 = (x-y)(-y)^T \tag{7}$$

$$(x,y) = \left[\sum_{j=1}^{d}(x_j - y_j)^2\right]^{1/2} = \left[(x-y)(x-y)^T\right]^{\frac{1}{2}} \tag{8}$$

Mahalanobis distance calculation formula: Mahalanobis distance refers to the distance between the center and the data point. This distance is a special form of Euclidean distance and is the same asR^2 in regression analysis. This distance is calculated as shown in equation (9):

$$d_{mah(x,y)} = \sqrt{(x-y)S^{-1}(x-y)^T} \tag{9}$$

Manhattan distance calculation formula: Named as the segregated block distance, Manhattan distance measurement calculates the sum of the absolute distances between the units, and is calculated as shown in equation (10):

$$d_{mah(x,y)} = \sum_{k=1}^{d}\left|x_j - y_j\right| \tag{10}$$

Minkowski distance calculation formula: This distance formula is used when the formula data set consists of segregated or compressed clusters. The distance formula is calculated as shown in equation (11):

$$d_{mah(x,y)} = \left(\sum_{j=1}^{d}\left|x_j - y_j\right|^r\right)^{\frac{1}{r}}, \quad r \geq 1 \tag{11}$$

When r, 2 and 1 values are taken, the distances of Euclid and Manhattan are obtained, respectively.

Data Set and Method

In this analysis, 23 Eastern European countries were categorized for 2005 and 2014 using development indicators. Hierarchical cluster analysis was used to identify the similarities and differences between the countries involved in the study and to separate them into homogeneous groups. In the cluster method, the Ward method, one of the hierarchical cluster methods, is used. The variables were analyzed according to the euclidean square distances. The variables used in the study are listed in Table 1.

Table 1. Development Indicators Used in Analysis

Variables	Variable Description	Variables	Variable Description
X_1	Rough birth rate (in 1000 persons)	X_{17}	Gross fixed capital formation (% of GDP)
X_2	Rough death rate (in 1000 persons)	X_{18}	Export of information and communication technology products (% of total goods exports)
X_3	Fertility rate per woman Rate of erogenous fertility (number of deliveries per 1000 females aged 15-19)	X_{19}	Rate of adolescent fertility (number of deliveries per 1000 females aged 15-19)
X_4	Health expenditure per capita (dollars)	X_{20}	Elderly dependency ratio (% of working population)
X_5	% Share of public health expenditures in total health expenditures	X_{21}	Urban population growth (% annual)
X_6	Share of total health expenditures in GDP	X_{22}	Labor force participation rate in the 15-24 age range (%)
X_7	Life expectancy at birth (years) Population density (persons per km2)	X_{23}	Population density (persons per km2)
X_8	Infant mortality rate (per 1000 live births)	X_{24}	Unemployment (%)
X_9	The incidence of tuberculosis (10,000 people)	X_{25}	Internet usage (per 100 people)
X_{10}	Maternal mortality rate (per 100 000 live births)	X_{26}	Mobile phone subscription (per 100 people)
X_{11}	Inflation (GDP deflator (%))	X_{27}	Pre-school education (year-duration)
X_{12}	Exports of goods and services ($)	X_{28}	Compulsory education period (years)
X_{13}	Population aged 15-64 (% of total)	X_{29}	The development of water resources in rural areas (% of rural access population)
X_{14}	GDP share of domestic savings	X_{30}	Arable land (total land%)
X_{15}	GDP per capita (% increase)	X_{31}	Crop planting area (hectare)
X_{16}	Industrial sector value added (GDP%)		

Source: World Bank, World Development Indicators.

Findings and Assessment

In this section, clustering analysis was conducted for the development indicators handled for the years 2005 and 2014 and the analysis results were compared.

Cluster Analysis Conducted for the Year 2005

In this study, Ward Method was used as mentioned before. Table 2 shows the agglomeration schedule obtained as a result processing the data of the development indicators through the cluster analysis. The first stage in the Agglomeration Schedule in Table 2 shows the stages of the clustering analysis.

Under the Unified Cluster heading, 8th observation/country (Georgia) at stage 1 and 13th observation/country (Macedonia) are the observations that are closest to one another. It is seen that the distance between the observations is 7444735,399. This coefficient is known as the Euclidean Distance. The last stage column shows at which stage the two observations on that line came together as a cluster. It is seen that the next phase is the fifth stage. That is, the 8th (Georgia) and 13th (Macedonia) countries in this line form the first cluster in the 5th stage, by the merger of another country. When we move on to the fifth stage, it appears that a new cluster is formed when the 1st (Albania) country merges with the 8th (Georgia) and 13th (Macedonia) countries.

In the second stage, the countries closest to one another are the 7th (Armenia) and 14th (Moldova) countries. In this case, another country will be joined to the cluster at the 6th stage. In the 6th stage, it is seen that the 10th country (Montenegro) joined themand formed a second cluster. The clustering continues until the 22nd time following this pattern.

The distance between the countries towards the last stages has increased andall the countries have merged under a single cluster. When the agglomeration schedule table is examined, it appears that the distance between the observations (countries) in the column "Coefficients" is gradually increasing. For example, in the first stage, while the distance between countries 8 and 13 is 7444735,399, this distance gradually increases in the last stage and the distance between the 1st and 6thcountries in the last stage is 3,921e + 11. Observations and interpretations mentioned in Table 2 can be seen in the dendogram (tree graph) in Figure 1. This tree graph is read from left to right.

Table 2. Agglomeration Schedule (Ward Method)

Stage	Unified Cluster		Coefficients	Last Stage
	Cluster 1	Cluster 2		
1	8	13	7444735,399	5
2	7	14	65734998,68	6
3	3	9	174979114,9	13
4	15	20	372498653,2	19
5	1	8	575957871,0	9
6	7	10	881275231,7	9
7	18	21	1294522769	15
8	2	17	1900109076	14
9	1	7	2753380897	12
10	5	23	3896898716	14
11	11	16	5108122845	18
12	1	4	6500211905	20
13	3	19	8930313285	17
14	2	5	1,188e+10	17
15	18	22	1,711e+10	18
16	6	12	2,413e+10	19
17	2	3	3,703e+10	20
18	11	18	5,306e+10	21
19	6	15	7,748e+10	21
20	1	2	1,072e+11	22
21	6	11	1,920e+11	22
22	1	6	3,921e+11	0

In the study, firstly cluster analysis was performed using the Ward method. Firstly, the analysis was made without specifying the number of clusters, and it was determined that the number of clusters is at least 2 and at most 6. The analysis was then repeated with the number of clusters specified. If the Dendogram (tree chart) is read from left to right, it can be seen that Turkey and Eastern European countries are divided into five basic clusters.

Figure 1. Dendogram of the Ward Method
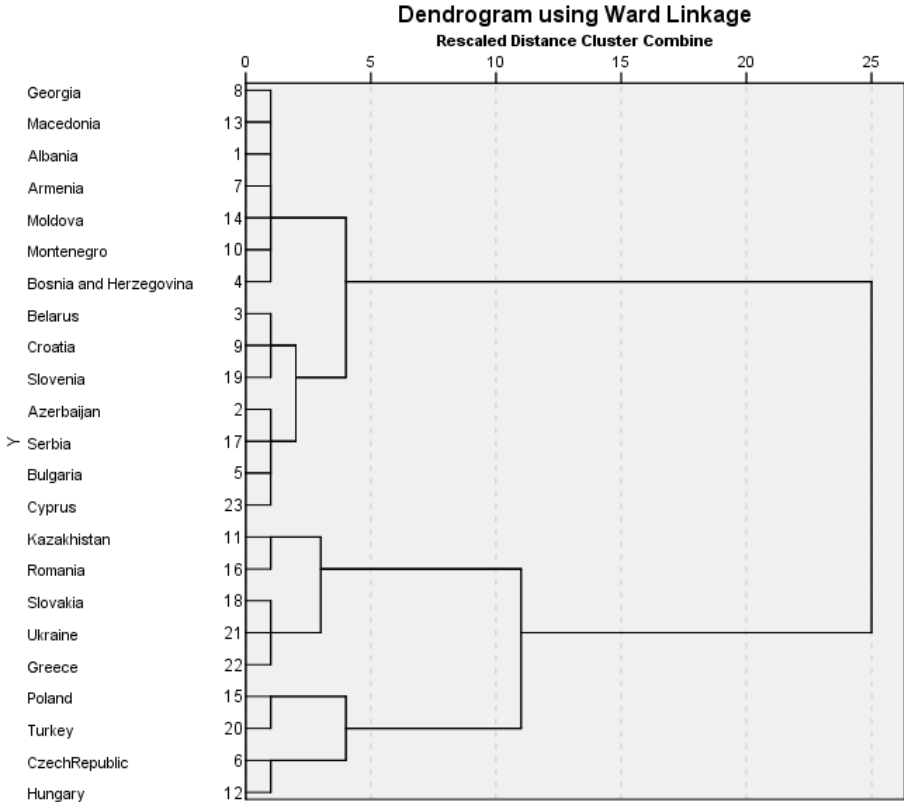
When the above table 3 is examined closely, it is seen that the most heterogeneous distribution is in the "if there are 5 clusters" distribution. This suggests that the ideal number of clusters is 5. In addition, the agglomeration schedule and the dendogram show consistency in this cluster.

Table 3. Assignment of Observations by Cluster Number

Clusters	If there are 6 clusters	If there are 5 clusters	If there are 4 clusters	If there are 3 clusters	If there are 2 clusters
1.Albania	1	1	1	1	1
2.Azerbaijan	2	2	2	1	1
3.Belarus	2	2	2	1	1
4.Bosnia and Herzegovina	1	1	1	1	1
5.Bulgaria	2	2	2	1	1
6.Czech-Republic	3	3	3	2	2
7.Armenia	1	1	1	1	1
8.Georgia	1	1	1	1	1
9. Croatia	2	2	2	1	1
10.Montenegro	1	1	1	1	1
11. Kazakhistan	4	4	4	3	2
12. Hungary	3	3	3	2	2
13. Macedonia	1	1	1	1	1
14.Moldova	1	1	1	1	1
15.Poland	5	5	3	2	2
16. Romania	4	4	4	3	2
17. Serbia	2	2	2	1	1
18. Slovakia	6	4	4	3	2
19. Slovenia	2	2	2	1	1
20.Turkey	5	5	3	2	2
21. Ukraine	6	4	4	3	2
22.Greece	6	4	4	3	2
23.Cyprus	2	2	2	1	1

As can be seen from Table 4,the 1st cluster includes Albania, Bosnia and Herzegovina, Armenia, Georgia, Montenegro, Macedonia, Moldova;the 2nd cluster includes the Azerbaijan, Belarus, Bulgaria, Croatia, Serbia, Slovenia, Cyprus; the 3rd cluster includes Czech Republic, Hungary; the 4th cluster includes Kazakhstan, Romania, Slovakia, Ukraine, Greece; the 5th cluster includes Poland and Turkey. This in fact indicates that Eastern European countries do not have integrality in terms of development indicators

within themselves, that is, they have differences in terms of development indicators. Turkey, on the other hand, is similar to Poland in terms of development indicators.

Table 4. Cluster Table

Cluster Number	Cluster Elements
1	Albania, Bosnia and Herzegovina, Armenia, Georgia, Montenegro, Macedonia, Moldova
2	Azerbaijan, Belarus, Bulgaria, Croatia, Serbia, Slovenia, Cyprus
3	Czech Republic, Hungary
4	Kazakhstan, Romania, Slovakia, Ukraine, Greece
5	Poland, Turkey

Cluster Analysis for the Year 2014

Table 5 shows the agglomeration schedule of the data for development indicators processed through cluster analysis for the year 2014. The first stage in the Agglomeration Schedule in Table 5 shows the phases of the cluster analysis.

Under the unified cluster title, 7th observation / country (Armenia) and 14th observation (Moldova) are the closest observations to one another at stage 1. It is seen that the distance between the observations is 459747,457. This coefficient is known as the Euclidean Distance. The last stage column shows at what stage the two observations on that line came together as a cluster. It is seen that the next phase is the second stage. In other words, the 7th (Armenia) and the 14th (Moldovan) countries in this line form the first cluster in the second stage by the merger of another country. When we move on to the second stage, it is seen that a cluster has been formed through the joining of the 1st country (Albania) to 7th (Armenia) and 14th (Moldova) countries. In the second stage, the countries closest to one another are the 1st (Albania) and 7th (Armenia) countries. Another country will join to this pair at the 6th stage and a cluster will be formed. In the 6th stage, it is seen that the 10th country (Montenegro) joined themand formed a second cluster. The clustering continues this way until the 22nd time following this pattern.

The distance between the countries towards the last stages has increased and all the countries have merged under a single cluster. When the agglomeration schedule table is examined, it appears that the distance between the observations (countries) in the column "Coefficients" is gradually increasing. For example,while in the first stage the distance between 7th and 14th countries is 459747,457, this distance gradually increases in the last stage and the distance between the 1st and 6th countries in the last stage is 8,170e + 11. Observations and interpretations mentioned in Table 5 can be seen in the dendogram (tree graph) in Figure 2. This tree graph is read from left to right.

Table 5. Agglomeration Schedule (using Ward method)

Stage	Unified Cluster		Coefficients	Final stage
	Cluster 1	Cluster 2		
1	7	14	459747,457	2
2	1	7	277702286,3	6
3	4	8	682397885,2	5
4	5	19	1158933525	9
5	4	13	1870324456	10
6	1	10	3010649506	10
7	17	23	5351091361	13
8	11	16	7818120981	11
9	2	5	1,086e+10	12
10	1	4	1,512e+10	19
11	11	18	1,954e+10	15
12	2	3	2,432e+10	17
13	9	17	2,994e+10	17
14	21	22	3,587e+10	15
15	11	21	4,931e+10	20
16	15	20	6,766e+10	21
17	2	9	8,973e+10	19
18	6	12	1,138e+11	20
19	1	2	1,810e+11	22
20	6	11	2,519e+11	21
21	6	15	4,305e+11	22
22	1	6	8,170e+11	0

Figure 2. Dendogram of the Ward Method
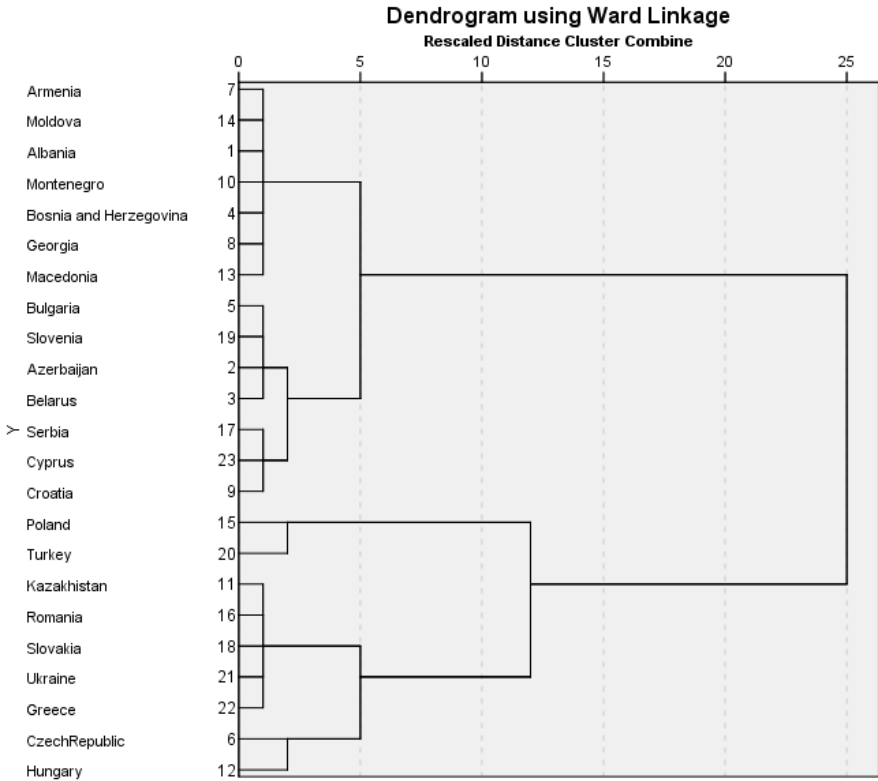
In the study, cluster analysis was performed using the Ward method. Firstly, the number of clusters was analyzed without specifying the number of clusters, and it was determined that the number of clusters is at least 2 and at most 6. The analysis was then repeated with the number of clusters specified. If the Dendogram (tree chart) is read from left to right, it can be seen that the countries of Turkey and Eastern Europe are divided into five basic clusters.

Table 6. Assignment of Observations to Cluster Number

Clusters	If there are 6 clusters	If there are 5 clusters	If there are 4 clusters	If there are 3 clusters	If there are 2 clusters
1.Albania	1	1	1	1	1
2. Azerbaijan	2	2	1	1	1
3.Belarus	2	2	1	1	1
4. Bosnia and Herzegovina	1	1	1	1	1
5.Bulgaria	2	2	1	1	1
6. Czech Republic	3	3	2	2	2
7.Armenia	1	1	1	1	1
8. Georgia	1	1	1	1	1
9. Croatia	2	2	1	1	1
10. Montenegro	1	1	1	1	1
11. Kazakhistan	4	4	3	2	2
12. Hungary	5	3	2	2	2
13. Macedonia	1	1	1	1	1
14.Moldova	1	1	1	1	1
15.Poland	6	5	4	3	2
16. Romania	4	4	3	2	2
17. Serbia	2	2	1	1	1
18. Slovakia	4	4	3	2	2
19. Slovenia	2	2	1	1	1
20.Turkey	6	5	4	3	2
21. Ukraine	4	4	3	2	2
22. Greece	4	4	3	2	2
23. Cyprus	2	2	1	1	1

When the above table 6 is examined closely, it is seen that the most heterogeneous distribution is in the "if there are 5 clusters" distribution. This suggests that the ideal number of clusters is 5. In addition, the agglomeration schedule and the dendogram show consistency in this cluster.

As can be seen in Table 7, the 1st cluster includes Albania, Bosnia and Herzegovina, Armenia, Georgia, Montenegro, Macedonia, Moldova; the 2nd cluster includes Azerbaijan, Belarus, Bulgaria, Croatia, Serbia, Slovenia, Cyprus; the 3rd cluster includes Czech Republic, Hungary; Kazakhstan, Romania, Slovakia, Ukraine, Greece; and

Turkey and Poland are in the 5th cluster. This in fact indicates that Eastern European countries do not have an integrality in terms of development indicators within themselves, that is, they have differences in terms of development indicators. Turkey, on the other hand, is similar to Poland in terms of development indicators.

Table 7. Cluster Table

Cluster Number	Cluster Elements
1	Albania, Bosnia and Herzegovina, Armenia, Georgia, Montenegro, Macedonia, Moldova
2	Azerbaijan, Belarus, Bulgaria, Croatia, Serbia, Slovenia, Cyprus
3	Czech Republic, Hungary
4	Kazakhstan, Romania, Slovakia, Ukraine, Greece
5	Poland, Turkey

Finally, when Table 4 and Table 7 are compared, Eastern European countries appear to have formed 5 clusters in terms of development indicators. When we look at the "Cluster Elements" tables that are obtained as a result of the analysis made, it is seen that for both the years 2005 and 2014 Turkey is in the same cluster as Poland. Therefore, the conclusion can be reached that Turkey shows similarity with Poland in terms of selected development indicators.

Conclusion

Economic development can be defined as a set of activities aimed at making underdeveloped countries reachto a higher standard of living by increasing their level of income. At this point, it can be said that economic development refers not only to developments in the field of economy but also to the whole structural change in social, political and cultural fields The main objective of economic development, a phenomenon related to underdeveloped countries, is to raise the income level of underdeveloped countries and provide them with a higher standard of living.

In this study in which Turkey and Eastern European countries were analyzed in terms of 31 socio-economic variables, cluster analysis which is one of the multivariate

statistical methods was used in this study. In the study, homogeneous country groups were determined through cluster analysis and what place Turkey occupied within these clusters was analyzed. In the study, the results from the analysis made for the years 2005 and 2014 were compared. As a result of the analysismade for the years 2005 and 2014, at least two and at most six clusters were obtained. The ideal number of clusters was found to be five in the cluster classification and the conclusion that Turkey and Poland are in the same cluster was reached. In fact, this indicates that Turkey is at a similar level of development with Poland.

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12 | The Link between Globalization and Environmental Concern: Evidence from Micro Level Data

Zeynep ELİTAŞ

Abstract

It is quite debatable in the literature whether the individuals living in a more globalized countries concern more about environmental issues. It is argued that economic globalization may lead to environmental benefits but also it may create some environmental harms. Therefore, beliefs about the impact of globalization on environment differ between individuals. This study aims to examine environmental concerns of individuals to evaluate their perceptions about the link between globalization and environmental problems. A micro level data set from a survey conducted by the Chicago Council on Global Affairs and WorldPublicOpinion.org together with polling organizations in 18 countries and the Palestinian Territories for 2007 is used to analyze the demographic determinants of public attitudes toward environmental effects of globalization. The likelihood of a belief that trade is good for the environment is relatively higher for females and individuals who are at least 50 years old. On the other hand, individuals with high level of education and medium level of income are less likely to believe that trade is good for the environment. Furthermore, older age, high level of education and medium level of income groups are more likely to support the minimum standards for the environment protection.

Keywords: *Globalization; Environmental concern; Public Perception*

Jel Codes: *F61; F64; C20; C25*

Introduction

Globalization is a term for a complex mutual interaction of a variety of factors that refers to economic integration through trade, investment and capital flows, political interaction, information and information technology and culture (Panayotou, 2000). As the world's economies become more integrated and the global economy subsequently grows, there is increasing concern regarding how the dimensions of globalization affect the environment. Since the mid-1990s, international community recognize the fact that environmental issues cannot be isolated from sustainable development. Therefore, environmental protection is endorsed as an essential pillar of developmental path for all countries. With increasing awareness of the environmental aspects of sustainable development, nations have become more and more concerned about its efficacy. Furthermore, it has received great attention whether increasing globalization, industrialization and higher levels of openness improve or degrade the environment.

The relationship between globalization and the environment has largely been investigated in the literature although there remain many outstanding questions. In his influential study, Panayotou (2000) states that globalization impacts the environment in a wide variety of ways and through various channels. According to him, globalization contributes to economic growth and hence affects the environment in many of the same ways that economic growth does: adversely in some stages of development, favorably at others. He investigates the effects of trade, capital flows and foreign investment and technology-different dimensions of globalization- on the environment.

The relationship between the trade and the environment has become an increasingly controversial issue (e.g., Baek et al., 2009; Copeland and Taylor, 1994, 2004; Copeland, 2005; Gallagher, 2009; Mishra, 2016). Proponents of free trade argue that free trade would lead to economic growth and that once nations reached a certain level of income they would begin to reduce negative impacts on the environment (Gallagher, 2009; World Bank, 1992). Thus, free trade provides a win–win situation in the sense that it improves both environment and economy. Opponents of globalization, on the other hand, defend that if production techniques do not change, then environmental quality must deteriorate as trade increases (Baek et al., 2009). Furthermore, free trade would lead to a mass migration of pollution-intensive firms to nations with weaker

environmental laws. This would lead to increases in pollution in the developing world and put downward pressure on environmental regulations in nations with stringent norms (Gallagher, 2009). Trade–induced environmental effects of globalization which are also called as "indirect effects", are oftenly classified under three categories: the scale, composition and technology effects (e.g., Grossman and Krueger, 1993; Farazmand and Moradi, 2015; McAusland, 2008; Mishra, 2016; Panayotou, 2000; Baek et al., 2009; Gallagher, 2009). The scale effect refers to the increase in the size of an economic activity resulting from openness and how that increased scale is likely to increase pollution. If the nature of that activity is unchanged but the scale is growing, then pollution and resource depletion will increase along with output. Composition effect occurs when increased trade leads economy to specialize in the sectors in which they enjoy a comparative advantage. When comparative advantage is derived from differences in environmental tightness, then the composition effect of trade will deepen existing environmental problems in the countries with relatively lax regulations. Therefore, trade liberalization between a developed and a developing nation when the developed nation has more stringent regulations may lead to an expansion in pollution-intensive economic activity in the developing country with the weaker regulations (Gallagher, 2009; Farazmand and Moradi, 2015; Panayotou, 2000). Technology effect refers to the positive environmental consequences of changes in production methods. Indeed, free trade induces higher income that causes people to increase their demand for a cleaner environment and stricter environmental regulations, encourages firms to adopt cleaner production processes (Gallagher, 2009; Farazmand and Moradi, 2015; Panayotou, 2000). The literature on these three effects has become quite large. For example, Lucas et al. (1992) find that among rapidly growing economies, increased trade openness reduces the growth rate of toxic intensity of output (Baek et al., 2009). Copeland and Taylor (1994) argues that free trade increases world pollution. Gale and Mendez (1998) analyze the relationship between trade and the environment; they find that an increase in income has a detrimental effect on environmental quality, but effect of trade liberalization on pollution is not significant. The studies of Wheeler (2000), Tisdell (2001) and Dinda (2008) supports the role of globalization for increasing environmental quality (Mishra, 2016). Antweiler et al. (2001) brought a substantial improvement to the work of Grossman and Krueger (1993) by constructing a theoretical model to decompose the impact of trade on pollution into scale, technique and composition effects (Farazmand and Moradi, 2015). More recently, Frankel and Rose (2005) estimate the effect of trade on the environment for a given level of income per capita; they conclude that there is little evidence that trade openness causes

significant environmental degradation (Baek et al., 2009). Liang (2006) brings out the fact that trade can influence environmental outcome by increasing per capita income (Mishra, 2016). The empirical literature of the effects of free trade on the environment has been reviewed by Grossman and Krueger's pioneering work (1993). This study led to a growing literature on the Environmental Kuznets Curve (EKC), that is an inverse U-shaped relationship between growth and environmental quality (Liang, 2006; Farazmand and Moradi, 2015). There are also some "direct effects" of trade on the environment which has drawn relatively less attention. These include emissions and environmental damage associated with the physical movement of goods between exporters and importers. This includes emissions from fossil fuel use, oil spills, and introductions of exotic species (Farazmand and Moradi, 2015; Gallagher, 2009).

The relationship between capital flows, foreign investment, technology and the environment has also been investigated. "Pollution haven" hypothesis that foreign investment gravitates toward countries with lower environmental standards or lax enforcement and "race to the bottom" hypothesis that capital mobility results in lower environmental standards as governments compete with each other to attract scarce investment by lowering environmental standards below efficient levels have been argued in this context. Bhagwati and Srinivasan (1997) discuss that capital mobility does not lead to a "race for the bottom" if the economy is competitive. Weaker environmental standards may attract additional foreign investment but this will neither benefit nor harm the country since firms subject to an optimal tax fully and efficiently compensate the country for any environmental cost associated with their investment (Panayotou, 2000). Panayotou (2000) argues that, there is a growing evidence that foreign-owned firms or joint ventures tend to be cleaner than local firms but still the overall net effects of a foreign direct investment and capital flows on the environment could be positive or negative. The environment is profoundly affected by the rate and direction of technological change. New technologies may create or facilitate increased pollution, or may diminish or replace existing polluting activities (Jaffe et al., 2000). Panayotou (2000) mentions that the aggregate resource use and pollution levels continue to rise as the scale effect of global output growth outweighs the structural and technological change effects. He provides a list of selected technological innovations with significant (positive) environmental impacts, which have been widely adopted in recent years and are spreading throughout the developing world.

More recently, research focuses on people's concern about the environmental effects of globalization although studies on the subject is relatively limited. Lo (2014) emphasizes

that the notion that people's concern about the environment increases with income and that members of advanced industrial societies are more concerned about environmental problems is a conventional belief in the environmental economics literature (e.g., Diekmann and Franzen, 1999; Franzen and Meyer, 2010; Scott and Willits, 1994; Shen and Saijo, 2008; Smyth et al., 2008). He mentions that, on the other hand, there is a growing body of literature showing that environmental concern does not increase, or even declines with income (e.g., Baldassare and Katz, 1992; Brechin, 1999; Dunlap and Mertig, 1995; Knight and Messer, 2012). The study demonstrates that income has a negative effect on the perception of long-term environmental risks using a cross-national social survey involving 36 countries worldwide. In another study, White and Hunter (2009) criticize the fact that the majority of research on public environmental perception has explored these issues within developed economies. They interpret public perceptions of environmental conditions in a developing country setting by using household and individual data from the survey with residents of coastal Ghana. Hao (2016) also evaluates the contribution of globalization to the change in environmental concern. He has tested several hypotheses such as whether countries' economic wealth, level of ecological degradation, level of integration into the world polity and economic globalization has a positive association with their public environmental concern.

This study aims to contribute to this relatively neglected strand of the literature on public concern of environmental issues. The objective is to examine environmental concerns of individuals to evaluate their perceptions about the link between globalization and environmental problems. Important socio-demographic correlates of individual attitudes toward environmental effects of globalization are identified in this context.

Data

Individual level data set from a public opinion survey conducted by the Chicago Council on Global Affairs and WorldPublicOpinion.org together with polling organizations in 18 countries and the Palestinian Territories for 2007 is used in this paper. Countries having variables for the econometric analysis are Armenia, China, India, Mexico, Poland, Russia, South Korea and United States. Two questions regarding individuals' beliefs about the relationship between globalization and its effect on environment are used to create dependent variables. One question asks whether the international trade is good or bad for the environment. This first dependent variable

(called 'international trade and environment') takes 1 if an individual's answer is good and 0 if the answer is bad. Other question asks whether the countries that are part of international trade agreements should or should not be required to maintain minimum standards for environment protection. This dependent variable (called 'protection of environment') gets value of 1 if the answer is should be required and 0 if the answer is should not be required. For both questions, if the answer is 'not sure/decline' or 'depends', those observations are excluded from the analysis.

Explanatory variables are demographic variables and a general globalization question. Gender, three age groups (16≤age≤29, 30≤age≤49 and age≥50), three education groups (high, medium and low) and three income groups (high, medium and low) are the demographic variables. A general globalization question asks whether the globalization, especially the increasing connections of the survey country with others around the world, is mostly good or mostly bad for the survey country. The answer 'mostly good' is coded as 1 and the answer 'mostly bad' is coded as 0. Observations with answers 'not sure/decline' and 'depends' are not included in the analysis. Descriptive statistics of the variables are shown in Table 1.

Methodology

Logit models are used in order to analyze the relationship between demographics, general attitude toward globalization variable and dependent variables mentioned in data section. Each dependent variable is a binary variable taking only two values: 0 and 1.

Table 1. Descriptive Statistics

	Mean	Standard Deviation	Observations
Demographics			
16≤age≤29	0.262	0.440	7532
30≤Age≤49	0.452	0.498	7532
Age≥50	0.286	0.452	7532
Female	0.425	0.494	7532
Low level education	0.266	0.442	7532
Medium level education	0.365	0.481	7532
High level education	0.369	0.483	7532
Low level income	0.267	0.442	7532
Medium level income	0.490	0.500	7532
High level income	0.243	0.429	7532
Globalization			
Globalization is good	0.740	0.439	7532
Dependent variables			
International trade and environment	0.542	0.498	7532
Protection of environment	0.861	0.346	6528

Notes: International trade and environment' dependent variable is whether international trade is good (1) or bad (0) for the environment. 'Protection of environment' dependent variable is whether countries that are part of international trade agreements should (1) or should not (0) be required to maintain minimum standards for protection of environment. 'Globalization is good' variable is whether the globalization, especially the increasing connections of the survey country with others around the world is mostly good (1) or mostly bad (0) for the survey country.

Hence probability that the dependent variable takes 1 is a function of the linear combination of all the explanatory variables and regression coefficients as shown below:

$$P(Y = 1 \mid X) = G(X\beta) = \frac{\exp(X\beta)}{1 + \exp(X\beta)} \tag{1}$$

where Y is an Nx1 vector representing the dependent variable, β represents Kx1 vector of regression coefficients and explanatory variables are denoted by X which is an NxK matrix. G(.) is the cumulative logistic distribution function as shown in (1).

Three different models are estimated for each dependent variable. In Model 1, country dummies and their interactions with the general globalization question are included. Model 2 includes country dummies, interactions of gender and education levels with the general globalization question. Model 3 includes country region indicators and their interactions with the general globalization question. Three country groups are defined: Americas (Mexico, USA), Europe (Armenia, Poland, Russia) and Asia-Pacific (China, India, South Korea). Average marginal effects (AMEs) are estimated to be able to interpret the magnitude of the regression coefficients.

Results

Table 2 shows AMEs for the logit models estimated for dependent variables 'International trade and environment' and 'protection of environment'. Based on Model 1 for 'International trade and environment' dependent variable, individuals who are at least 50 years old are 4.5% points more likely than people whose ages are between 16 and 29 to state that international trade is good for the environment. Similarly, females are 3.8% points more likely than males to believe that international trade is good for the environment. On the other hand, people who have medium level of income are 3.8% points less likely than people with low level of income to state that trade is good for the environment. Although education categories have negative effects like income categories, they are not statistically significant. China, India, Mexico and Poland are statistically significantly more likely than Armenia to support the idea that international trade is good for the environment while Russia is less likely than Armenia to support this idea. People who believe that globalization is good for the survey country are also 18.2% points more likely to think that trade is good for the environment. Among interaction effects, interaction of globalization question with the country indicator for Armenia is the smallest while interaction effect for USA is the largest. Armenian people (Americans) who think that globalization is good for the country are 9.2% (28.5% points) points more likely than Armenians (Americans) who think that globalization is not good for the country to believe that international trade is good for the environment.

In Model 2, age≥50 category has smaller effect (3.9% points) than its effect in Model 1 while AME for females (4.1% points) are larger than its effect in Model 1. People with medium level of income are 3.6% points less likely than people with low level of income to believe that trade is good for the environment. Country indicators show similar patterns across Model 1 and Model 2. AME for the general globalization variable (18.5% points) is very close to Model 1 result. AME for the interaction effect of female

is larger than that for males. Females who think that globalization is good for the country are 22.6% points more likely than females who believe that globalization is not good for the country to believe that trade is good for the environment. Interaction effect of low education category has the largest AME compared to other education categories. People who have low level of education and think that globalization is good for the country are 23.9% points more likely to state that trade is good for the environment. AMEs for age≥50 category and female decrease in Model 3 compared to other models while AME for medium level of income increases to -4.6% points. Likelihood of the belief that international trade is good for the environment is 4.2% points lower for people with high level of education relative to people with low level of education. AME for globalization question decreases to 17.2% points in Model 3. Countries from Americas (Europe) group are 7% (10.3%) points less likely than countries from Asia-Pacific group to believe that international trade is good for the environment. Americas group countries with the belief that globalization is good for the country are 26.8% points more likely to state that trade is good for the environment. AMEs for the interaction effects for Europe and Asia-Pacific groups are 24.3% points and 10.7% points respectively.

Based on Models 1, 2 and 3 people who are at least 50 years old are 3.6% points, 4% points and 5% points respectively more likely than people who are in the age group '16≤age≤29' to believe that minimum standards for the protection of environment should be required for countries that are part of international trade agreements. In models 1 and 2, AME for the high level of education is 2.9% points while its impact disappears in Model 3. Unlike the result for the other dependent variable, gender does not have any significant effect and medium level of income has positive impact. In all models, people with medium level of income are almost 2% points more likely than people with low level of income to think that countries that are part of international trade agreements should be required to maintain minimum standards for the protection of environment. All country dummies but for China are statistically significant in Models 1 and 2. In both models, compared to Armenia, India and Mexico are less likely to state that minimum protection standards for environment should be required while country indicators for Poland and USA have positive effects. AME for the general globalization question ranges from 15% points to 21% points. Contrary to the finding for the other dependent variable, country group indicators have positive impact on 'protection of environment' dependent variable. Americas (Europe) group is 11.5% (13.9%) points more likely than Asia-Pacific group to state that minimum standards

for the protection of environment should be required.

People from China, India, Mexico and USA who believe that globalization is good for the country are 22% points, 34.3% points, 5.8% points and 4.9% points, respectively, more likely to think that countries that are part of international trade agreements should be required to maintain minimum standards for the protection of environment. AMEs for the interaction effects for genders are smaller compared to Model 2 for the other dependent variable but AME for female interaction is still larger than that for males. AMEs for the interaction effects of education categories are 16.6% points, 15.6% points and 14.3% points for low, medium and high level of education respectively. People from Asia-Pacific countries with the belief that globalization is good for the country are 36.5% points more likely to state that minimum environment protection standards should be required. On the other hand, likelihood of this statement is only 5.2% points higher for people from Americas group who believe that globalization is good relative to people who believe that globalization is bad.

Table 2. Average Marginal Effects (AMEs) for the Logit Models

	International trade and environment			Protection of environment		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Demographics						
30≤Age≤49	0.003	-0.000	-0.002	0.011	0.013	0.013
	(0.014)	(0.014)	(0.014)	(0.010)	(0.010)	(0.010)
Age≥50	0.045***	0.039**	0.029*	0.036***	0.040***	0.050***
	(0.016)	(0.016)	(0.016)	(0.011)	(0.012)	(0.011)
Female	0.038***	0.041***	0.030***	-0.012	-0.013	0.006
	(0.012)	(0.012)	(0.012)	(0.009)	(0.009)	(0.008)
Medium level education	-0.018	-0.022	-0.023	0.011	0.013	-0.003
	(0.015)	(0.015)	(0.015)	(0.011)	(0.011)	(0.010)
High level education	-0.019	-0.018	-0.042***	0.029***	0.029***	0.001
	(0.016)	(0.016)	(0.015)	(0.011)	(0.011)	(0.011)
Medium level income	-0.038***	-0.036***	-0.046***	0.021**	0.019**	0.020**
	(0.014)	(0.014)	(0.014)	(0.010)	(0.010)	(0.010)
High level income	-0.022	-0.018	-0.021	-0.009	-0.013	0.016
	(0.017)	(0.017)	(0.017)	(0.013)	(0.013)	(0.012)

Table 2. Continue

Country dummies						
China	0.120***	0.118***		-0.023	-0.001	
	(0.026)	(0.024)		(0.017)	(0.014)	
India	0.112***	0.124***		-0.168***	-0.171***	
	(0.023)	(0.023)		(0.015)	(0.016)	
Mexico	0.060*	0.065**		-0.048***	-0.037**	
	(0.033)	(0.033)		(0.017)	(0.016)	
Poland	0.135***	0.139***		0.081***	0.086***	
	(0.031)	(0.031)		(0.013)	(0.013)	
Russia	-0.112***	-0.122***				
	(0.028)	(0.027)				
South Korea	-0.032	-0.025				
	(0.026)	(0.025)				
USA	0.006	0.002		0.053***	0.059***	
	(0.025)	(0.025)		(0.013)	(0.013)	
Globalization						
Globalization is good	0.182***	0.185***	0.172***	0.167***	0.154***	0.207***
	(0.015)	(0.014)	(0.013)	(0.014)	(0.011)	(0.011)
Country groups						
Americas			-0.070***			0.115***
			(0.015)			(0.010)
Europe			-0.103***			0.139***
			(0.015)			(0.010)
Interactions						
Armenia*Globalization is good	0.092*			0.028		
	(0.047)			(0.028)		
China*Globalization is good	0.170***			0.220***		
	(0.050)			(0.044)		
India*Globalization is good	0.081***			0.343***		
	(0.025)			(0.023)		
Mexico*Globalization is good	0.203***			0.058**		
	(0.054)			(0.028)		
Poland*Globalization is good	0.284***			-0.011		
	(0.054)			(0.011)		
Russia*Globalization is good	0.272***					
	(0.034)					
South Korea*Globalization is good	0.200***					
	(0.045)					

| USA*Globalization is good | 0.285*** (0.029) | | | 0.049*** (0.015) | | |

	International trade and environment			Protection of environment		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Male*Globalization is good		0.155*** (0.017)			0.150*** (0.012)	
Female*Globalization is good		0.226*** (0.021)			0.161*** (0.012)	
Low level education*Globalization is good		0.239*** (0.024)			0.166*** (0.013)	
Medium level education*Globalization is good		0.181*** (0.022)			0.156*** (0.012)	
High level education*Globalization is good		0.150*** (0.022)			0.143*** (0.012)	
Americas*Globalization is good			0.268*** (0.025)			0.052*** (0.015)
Europe*Globalization is good			0.243*** (0.025)			0.006 (0.017)
Asia-Pacific*Globalization is good			0.107*** (0.019)			0.365*** (0.019)
Observations	7,352	7,352	7,352	6,528	6,528	6,528

Notes: 'International trade and environment' dependent variable is whether international trade is good (1) or bad (0) for the environment. 'Protection of environment' dependent variable is whether countries that are part of international trade agreements should (1) or should not (0) be required to maintain minimum standards for protection of environment. Omitted categories are 16≤age≤29, low level education, low level income, Armenia and Asia-Pacific group. 'Protection of environment' dependent variable is missing for Russia and South Korea. All models except for Model 2 for 'Protection of environment' dependent variable include interaction terms in the original logit estimations. Based on LR and Wald test results, parsimonious model without interaction terms are preferred for Model 2 for 'Protection of environment' dependent variable. Significance levels: * 10%, ** 5% and *** 1%.

Conclusion

The connection between globalization and environmental concern has recently become an increasingly critical subject. This study analyzes socio-demographic determinants of environmental concerns brought by globalization using an individual data. Results indicate that old people and females are more likely to think that trade is good for the environment. However, there is no gender effect on the belief that minimum environment protection standards should be required for trading countries while age effect still holds. On the other hand, individuals with high level of education and medium level of income are less likely to believe that trade is good for the environment.

These education and income groups support minimum standards for protection of environment. Furthermore, proponents of globalization are more likely to believe that trade is good for the environment and environment protection standards should be required.

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13 | Rising Environmental Risk Assessment Factor in Globalization Process: Technological Effect and E-wastes

Güller ŞAHİN

Abstract

Currently, countries are facing problems related to e-waste, which is a serious environmental risk factor as a result of spreading of technologies due to globalization. The speedy evolution of technology leads to emergence of new devices, new areas of use and increased rate of aging as well as creation a habit of "consuming more". More production and more consumption, in return, lead to exhaustion of natural resources and accumulation of more e-waste. Global data indicates that 41. 8 million tons of e-waste has been produced within the year of 2014, which means approximately 25% more waste than the year 2010. Relevant statistics highlights the magnitude and importance of the problem and points out the fundamental difficulties about the technological risks. The objective of this study is to investigate the e-waste problem at the regional and global scale in this context that has accelerated parallel to the shortening of product lives as a result of technological developments. The main outcomes of the study revealed the existence of three problematic areas of e-waste, which requires urgent solutions. The first of these problem areas is the acceleration of the production volume within the last years. The second major problem area is the transnational flowing of e-wastes from developed countries to the developing ones and the worrisome dimension effects on the environment and human health in the developing countries. The third problem is the very low level of recycling and reuse of e-waste.

Introduction

The globalization defines integration in economies, technologies, policy and socio-culture as well as being evaluated as a transformation process of a fact about local or regional environmental issues to a fact worldwide (Baykal and Baykal, 2008: 2).

At present, any fundamental issues frequently are at the top of the agenda as the global environmental matters. These global scaled environmental issues that aroused in the 20th century and intensified in the 21st century are; climate change, ozone layer depletion, loss of biodiversity, increase the persistent organic pollutants and the hazardous wastes include the growing worries on the electronic wastes (Hu, 2016: 60).

As a result of the developing technology, the societies cause negative changings by the processes raise the complexity of the environmental risks in the ecosystem such as growing energy demands, ozone layer depletion, restriction of oxygen oscillation, air and soil contamination of acid rains, electromagnetic pollution, radioactivity effect, electronic waste (e-waste). Moreover, the technological progress enhances the quantity and intenseness of the relevant changings by spreading with globalization. The renewal reflexes of existed products of users spike up due to the rapidly technological improvements particularly in the fields of informatics and consumer electronics. The products used in an industrial area such as raw material, supplies, maintenance wastes are in place beside the consumer products rapidly consumed and transformed to waste. And consequently, the e-waste has become fastest-growing production waste in today's world. Collecting, recycling and bringing these wastes into a raw-material market, so into the economy gained importance extremely.

Within this scope, the purpose of this study is to analyse at the global and regional scale the problem of e-waste at a global and local level that is gained momentum as a result of shortening product life based on the advancing technology. In line with this purpose, the titles of technology as an environmental risk element; definition and categories of e-waste; chain of e-waste recycling and economic added value created; a problem of e-

waste at the global scale; regional e-waste statistics are given as the subchapters of the study. The study is completed by the parts of conclusion and policy suggestions. It could be clearly seen that the fastest growing type of waste is the e-waste by comparison with the other types of wastes and this circumstance shows the importance of the study.

The Technology as an Environmental Risk Element

The technology-based environmental risks which reached to the serious dimensions by threatening the human health and excited the large masses especially in developed countries are not the new problems. The new one is the worrisome aspects of this pollution all over the world and starting the countries to comprehend of these risks.

The evaluation of ecocentric approaches relating to technology is based on the thought of coupling of human nature in the interaction between environment and the society. A critical perspective on technology is presented in the approach. In ecocentric theories, it is cool towards to technology to the degree that being an instrument alienates the human to nature as the methods of dominating the environment. The technology with its usages that do not consider the physical boundaries of the environment extends the possibilities of exploitation and destruction is ranked among the reasons of environmental risks. (Keleş et al., 2015: 52).

The electrical and electronic devices revolutionized in the life of human since the 1990s. The fast evolution of technology and becoming rapidly old of electrical and electronic devices that are unique tools of our daily lives made various products non-functional and caused to be launched the new models of them to the markets as well. Due to buying a new device is mostly easier and cheaper than repairing consumers rarely send their goods to the repair shops. For instance, the average life of a computer decreased from 4 or 5 years to 2 years (Puckett et al., 2002: 13).

The consumption habits change dramatically by technological innovations and developments; accordingly, new kinds of wastes are formed. One of these wastes is the e-wastes. Our electronic devices become out of function, or the repair is more expensive than buying a new one within 1-6 years while varying by the intended purpose owing to the current production tendencies which consistently commercialized as more productive, faster, dressier and more economical. Thus, the electronic devices go to waste, and the waste type called e-waste emerges (Çiftlik et al., 2009: 2).

The electronic industry of present-day has become the biggest and fastest-growing manufacturing of the world. The improvement of this industry substantially based on obtaining the increasing physical resources. Several market requirements lead to grow the categories of electrical and electronic devices rapidly, shorten their lifetime and finally be changed. Increasing the consumption of these devices also increases the ratio of e-waste. The annual global calculations indicate that the ratio of e-waste is 8.8% between 2004 and 2011, and 17.6% between 2011 and 2016. These numbers refer to the basic challenges about e-wastes concerning the technological risks. For example, it is estimated that the production of old computers in developing countries will exceed the ratios of developed countries between the years of 2016 and 2018; and double up the production of developed countries till 2030 (Alzate, 2016: 113 & Gu et al., 2016: 331).

The global growth, reproducing the electrical and electronic devices, tendencies occurred in technological changing will play a crucial role to formalize the future of the e-wastes. The technical changing will enhance the number of materials used in these devices and complexity of the process of being joined these materials. The consumers will demand the high-performance devices when being assumed the technological progress is going to continue. The consumers will pay more for the devices have more functionality if the sympathy for consumer richness and developed technology continue based on increasing the world population. When the effect of growing complexity on the e-wastes separates the parts and the materials, a bigger challenge will come to light. In this way, the evolution of the devices will bring along the dynamism of usage (Williams, 2012: 251-252).

Categories and Definition of E-waste

The wastes which completed the lifetime or being replaced with the new one before ended the life and became unused are called the waste of electrical and electronic equipment (WEEE) or electronic waste (Haykır Hobikoğlu, 2014: 58). The e-wastes are the residuals which have the characteristics of a secondary product and no economic benefit. Table 1 reflects a general look on definitions selected for the e-wastes.

Table 1. Overview of Selected E-waste Definitions

Reference	Definition
OECD (2001)	"Any appliance using an electric power supply that has reached its end-of-life."
EU Directive on WEEE (2002/96/EC)	"Electrical or electronic equipment which is waste… including all components, sub-assemblies and consumables, which are part of the product at the time of discarding."
Basel Action Network (2002)	"E-waste encompasses a broad and growing range of electronic devices ranging from large household devices such as refrigerators, air conditioners, cell phones, personal stereos, and consumer electronics to computers which have been discarded by their users."
StEP (2005)	E-waste refers to "…the reverse supply chain which collects products no longer desired by a given consumer and refurbishes for other consumers, recycles, or otherwise processes wastes."
UNEP (2007)	"E-waste is a generic term encompassing various forms of electrical and electronic equipment (EEE) that are old, end-of-life electronic appliances and have ceased to be of any value to their owners."

Source: Bandyopadhyay, 2010: 794 & Sinha-Khetriwal et al., 2006: 28.

According to the definitions in the Directive 2002/96/EC of the European Parliament and of the Council (27 January 2003) on e-waste, e-waste consists of the ten categories listed in Table 2.

The proportional distribution of total e-waste volume produced in categories defined in Table 2 as follows; large HH 42,1%, ICT 33,9%, CE 13,7%, small HH 4,7% and 5,6% of the other products category (Niranjani, 2012: 86).

Table 2. E-waste Categories According to the EU Directive on E-waste

Category	Label
1. Large household appliances	Large HH
2. Small household appliances	Small HH
3. IT and telecommunications equipment	ICT
4. Consumer equipment	CE
5. Lighting equipment	Lighting
6. Electrical and electronic tools (with the exception of large-scale stationary industrial tools)	E & E tools
7. Toys, leisure and sports equipment	Toys
8. Medical devices (with the exception of all implanted and infected products)	Medical equipment
9. Monitoring and control instruments	M & C
10. Automatic dispensers	Dispensers

Source: Widmer et al., 2005: 439.

According to another classification, the e-wastes are separated into three broad groups as white goods (air conditioners, dishwashers, refrigerators, etc.), brown goods (camcorders, TVs, cameras, etc.) and grey goods (computers, printers, scanners, etc.). The grey goods are in the e-waste class which is the most dangerous and most difficult to recycle (Deval et al., 2015: 1).

The reasons for reaching the problem of e-waste to the worrisome dimensions could be aligned as below (Puckett et al., 2002: 5 & Deval et al., 2015: 1):

- The e-wastes involve more than 1000 different materials which are mostly toxics and create severe pollution.

- The assumption of the e-wastes has much production volume in comparison with the other consumption goods, and the increment of this production capacity will continue.

- The policies of management of e-waste of several countries are weak.

- The e-wastes compose 5%-8% of the solid wastes of a municipality which grow three times more than other solid wastes.

The Problem of E-waste on a Global Scale

The problem of e-waste is commonly discussed within the scope of two different approaches as on the global and regional scales. The scale economy and low costs are in the forefront among the factors militate for the global approach. The factors which show the importance of regional approaches are reducing the cost of transportation, decreasing the emissions of CO_2 and preventing the problems of purifying capacity. From the perspective of e-waste flow, the controllability of the wastes will be increased and the illegal applications and unnecessary carrying will be decreased by a regional approach. But this condition may cause high initial costs due to investments and plant infrastructure requirements (Zoeteman et al., 2009: 3).

Carrying the e-wastes at a global level is defined as the cross-border movement of e-wastes by reason of the toxics of these wastes (Tong, 2004: 204). In vast amounts of e-waste are produced as a result of the rapidly-expanding market of electronic devices and the fast decrease of their lifetime as well. Moreover, the growth in electronic sector and fast evolution of technology mean the consumers change more devices more frequent (Nnorom and Osibanjo, 2010: 329).

The subject of e-waste became a global problem because of the environmental impairment towards to the transnational flows. The transboundary actions of e-wastes are directed by two factors: the first one is the necessity for low-value-added and labour intensive operations to remove the end-of-life equipment; the second one is the possibility of following the environmental regulations increase the costs of destroying the wastes (Tong and Wang, 2004: 590).

In the market of e-waste around the world, there is observed an increment in every year between 5%-8%. It is estimated by the United Nations Environment Programme (UNEP) that the e-wastes between 20 and 50 tone are formed annually when the all sources of e-waste are computed. And this is equal to the 5% of annual waste around the world (Button, 2016).

According to the data in Global E-waste Monitor report by United Nations University (UNU), about 41,8 million tons e-waste were produced in 2014. This ratio means approximately 25% more e-waste in comparison with the rate in 2010 (Table 3). The statistical data show that about 4 billion people among from the world population of

7.1 are in the scope of the legislation of e-waste. This number guessingly equals to 4 people from every 7 people. Based on the nation's laws, about 6.5 million tons e-waste officially operated were reported by the National retrieval systems. But all of the laws of e-waste are not on the same field with the scoped defined in the report. Totally 0.7 million tons of e-waste are thrown to the waste bins in 28 countries of European Union. This number is 8% of the total amount of e-waste of EU-28. Besides, it is assumed that there are gaps between the e-wastes produced, collected formally and in the wastes (Baldé et al., 2015: 22).

Table 3. Global Quantity of E-waste Generated

Year	E-waste generated (Mt)	Population (billion)	E-waste generated (kg/inh.)
2010	33.8	6.8	5.0
2011	35.8	6.9	5.2
2012	37.8	6.9	5.4
2013	39.8	7.0	5.7
2014	41.8	7.1	5.9
2015	*43.8*	*7.2*	*6.1*
2016	*45.7*	*7.3*	*6.3*
2017	*47.8*	*7.4*	*6.5*
2018	*49.8*	*7.4*	*6.7*
Note: Data 2015 onwards are forecasts			

Source: Baldé et al., 2015: 24.

It is seen when Table 3 is analysed that the trend amounting to global e-waste produced between the years of 2010-2014 seems to be in the direction of increase. The future scenario of e-wastes between 2015 and 2018 also indicates that this increase will continue.

Chief Economist of the World Bank, Larry Summers mentioned the economic meaning of exporting the wastes to developing countries (Widmer et al., 2005: 437). The official data for the transboundary movement of the e-wastes from developed countries to developing ones are usually not reachable, and this circumstance makes to measure the volume of cross-border flows of e-wastes difficult. The studies show that approximately at a rate of 80% of e-waste are sent to the developing countries from the developed ones for being recycled by hundreds and thousands of informally workers via unlawful means

(Lundgren, 2012: 5). The developed countries cause e-waste problems significantly in developing ones although these e-wastes are not only produced by developed countries. For example, Ghana has an unlimited and unadjusted import regime for second hand electrical and electronic devices. Determined that 70% of the electrical and electronic devices importation to Ghana in 2009 composed of the second-hand products, but a significant part of this import has quickly become a waste because the value of the benefit is little or none (Heacock et al., 2016: 551). Furthermore, the analysis of the statistical data shows that the trade of e-waste is not only between the developing countries and developed ones but also between each other of developed countries (Lundgren, 2012: 14). Figure 1 shows the primary source and places of an arrival of the e-waste trade.

Figure 1. Export of E-waste

Source: Lundgren, 2012: 15.

It is undoubted that the developing countries are defenceless against the waste-sourced pollutants for the e-wastes exported. The production of e-waste occasionally grows at the rate of 500% and poses serious risks to the environment and the health of society (Afiukwa, 2015: 1).

The sales revenues have been higher in developed countries than the developing ones for many years, and this trend will probably continue until reaching to a particular saturation point. The population largeness of the developing countries means that the world will dominate the production of end-of-life electronic in the end. When being considered the heterogeneity of the richness and growth in developing countries, it is expected that richer developing countries create more junk and probably demand second-hand equipment less and generate a way for exportation to other nations have lower labour costs and higher demand (Williams, 2012: 251-252).

Regional E-waste Statistics: Africa, US, Asia, Europa, Oceania

6 million products including personal computers, cell phones, and fun technology were produced in Western Europe in 1998; and 500 million products were also produced in the US between the years of 1997 and 2007. Environmental Protection Agency (EPA) reported that 1.9-2.2 million tons of e-wastes occurred in the US in 2005 and just 12.5 of these e-wastes were collected for recycling. In 2007, it was determined that 41.9 million computers were thrown and only 18% of them were recycled, the rest of them were sent to storage space or burned. The data of 2005 show that the e-wastes between 8.3 and 9.1 million tons were produced in Europe. Australian Bureau of Statistics estimates that there are 22 electrical devices for each household in Australia, most of the 9 millions of computers, 5 millions of printers and 2 millions of scanners will be changed in next two years (Deval et al., 2015: 1 & UNEP, 2005).

Table 4. Five Topmost Countries in E-waste Generation

| Ranking	Country
1	US
2	China
3	Japanese
4	Germany
5	India

Source: Kaur, 2016: 255.

With reference to the report of United Nations, approximately 258.2 million of computers, monitors, television and cell phones were produced in the US in 2010. It is roughly predicted in the assumptions from 2007 to 2020 that the e-wastes of old computers will reach the level of 400% in China, 500% in India; moreover, the thrown

e-wastes of cell phones will be higher at 7 times in China and 18 times in India. The data of global e-waste of UNU in 2014 reports that the US and China are the top producers of e-wastes by the rate of 32%. Japanese, Germany, and India are respectively following US and China (Table 4) (Kaur, 2016: 255).

According to the year of 2014 data of the report by UNU, most of the e-wastes were produced in Asia by 16 million tons. Based on this data, 3.7 kg of e-waste is apportioned per inhabitant. The highest e-waste amount for per inhabitant was produced in Europe (15.6 kg/inch). 11.6 million tons of production was actualized in the region. Moreover, the e-wastes are located in the fastest-growing waste category by annually increasing the rates of 2.5% and %2.7% in Europe. The Oceania has the lowest e-waste production rate by 0.6 million tons. But the individual numbers are close to the Europe (15.2 kg/inch). The least amount of e-waste was produced in Africa by 1.7 kg per inhabitant. The total amount of e-waste in the region is 1.9 million tons. In the region of America, totally 11.7 million tons of e-waste was produced; 7.9 million tons of it belongs to the North America; 1.1 million tons of it belongs to the Central America and finally 2.7 million tons of it belongs to the South America. The amount of e-waste per inhabitant is 12.2 kg (Figure 3) (Baldé et al., 2015: 25).

Figure 3. E-Waste Generated By Country (2014)
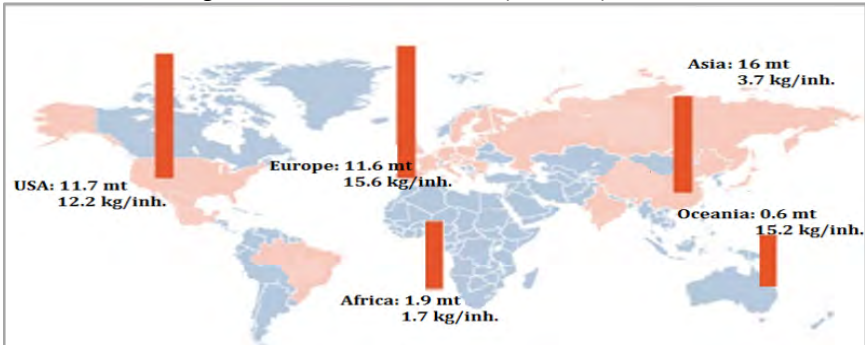
Source: Arranged based on the data of UNU Global E-waste Monitor Report (2014)

E-waste Recycling Chain and Created Economic Value Added

The recycling has been known as an eco-friendly strategy and a suitable method to manage the flows of e-wastes. The secondary sources recycled from the e-wastes can potentially replace the material that is needed to be produced from the primary sources (Gu et al., 2016: 331). The recycling of e-waste gains importance for environmental protection because of rapid increase in the consumption of a good and the shortening of its lifetime (Tong, 2004: 204).

The goal of the recycling is to avoid the unnecessary use of the resources and reduce the amount of waste garbage by being separated the wastes in their sources. Recycling and reutilize the materials like iron, steel, copper, lead, paper, plastic, rubber, glass, electronic wastes will prevent the depletion of the natural sources. In this direction, the amount of foreign exchange for the imported junk material decreases, and it will majorly economize energy consumption.

The e-waste recycling chain is divided into three main stages such as collecting, pre-processing (separation/removal), and final processing. There are expert operators and facilities for each of these steps. The effectiveness of the e-waste recycling chain based on the efficiency of each stage and how well managed of the interfaces between the phases (Schluep et al., 2009: 12).

Approximately the whole of the e-wastes consist of plastics, metals, and glasses have the characteristics of recyclable while the ratio of the available recycling equals to the 40% of the e-wastes. Mixing the e-wastes occurred to the streams by the illegal methods creates threats to the environment and the human health severely. UNEP (2015) mentioned that the amount of global e-waste worth 19 billion US dollars is thrown or trafficked in at a rate of 90%. As a matter of fact, about 50% of the e-wastes of the Africa come from the Europe (ERP, 2017).

The e-wastes constitute 2% of all solid wastes while representing approximately 70% of hazardous waste in the storage area (ERP, 2017). Only 12.5% of the total e-waste amount is recycled. Estimated that just 29% of the global e-wastes will be handled by the best recycling channels accepted (Button, 2016).

The year 2010's numbers of EPA show us about 350.000 cell phones got out of hand every day. This indicator means being thrown more than 152 million of cell phones in a year (Button, 2016). The last report of EPA refers that 9000 kg of copper, 9 kg of palladium, 250 kg silver and 24 kg of gold could be produced by recycling of the 1 million of cell phones. Recycling or reutilizing the e-wastes can lead to created 300 new jobs in a year for every 10,000 tons of computer garbage collected alone (ERP, 2017). 1 million notebooks can provide the energy saving that equals to the electricity used in 3.657 houses in a year. If the rates of recycling for gold (15%), silver (15%) and platinum (5%) to 100%, financial and natural capital benefits that worth $12 billion will be actualized in the sector of electronics. For instance, the plastics in e-waste could be transformed into the garden furniture; the battery components are also used for other batteries; the metals could be transformed as the jewels and parts of automotive (Button, 2016). US showed a significant growth in the industry of e-waste recycling, approximately 4.4 million tonnes e-waste were processes to produce the goods such as steel and copper (Diaz et al., 2016: 236).

It is argued that the working logic of recycling system differs in the developed and developing countries. The recycling in developed countries showed an increase in recent years by the reasons of increasing the destruction costs, not to recycle the wastes enhance the worries on the environmental effects, a general perception about the recycling may cause for protecting the natural sources. In developing countries, mostly the economic reasons provided to enhance the ratio of the recycling. According to the 'Pollution Heaven' hypotheses, the increased destruction costs due to the disciplined environmental planning directs the pollution industries in these countries to the underdeveloped countries need less destruction requirement (Tong, 2004: 205).

The method of actualizing a low-cost and eco-friendly recycling for developing countries by the institutions in the attempt of Solving the E-waste Problem (StEP). The foundation of the method based on using the cooperation between global substructure networks for local separating processes and refining the materials. It is stated by this method that the purification facilities can be successful for offering the recycling solutions for different materials and different processing stages via the way of global 'reverse supply chain'. It is aimed at this model called Best-of-2-Worlds (Bo2W) that integrating the technical and logistics sides of the best applications for the international final process facilities. Dismantling is a highly effective method to separate the material and components from the e-wastes. It is also economically best-fit due to the low labour

costs and the need for less equipment. The e-wastes such as circuit boards and batteries necessitate high technology processes which the developing countries do not have. These wastes are safely and productively refined by the model of Bo2W and sent to the global facilities for being destructed. In addition, the model establishes the connection between the best pre-processing (separating/removal) and best final processing (purifying/disposal) in global networks (Kuehr and Wang, 2015).

The most certain and existed environmental risk on the subject of e-wastes is the informal recycling in developing countries. The informal recycling is the most critical environmental challenge for the e-scrap. Based on this circumstance, international reuse must be conceived as the first development struggle. The manufacturing of electronic can create a lot of business area; the industry of renewal and reuse can create business opportunities even in emerging countries (Williams, 2012: 254).

Recycling the wastes is significant in terms of maximizing the profit economically. First of all, the production must be planned so as to manufacture the optimal amount of waste for being continued the relation between the concepts of recycling and sustainable economic growth systematically and flowingly. In the next phase, it needs to be regained the wastes to the economy in the facilities established by the recycling investments (Haykır Hobikoğlu, 2014: 58).

Being perceived the wastes as recyclable by the society is directly related to the consumption behaviours. Building the waste recycling facilities and emerging an idle market at this point are directly associated with being evaluated the attitudes and behaviours of consumers have the e-waste for being converted the heavy increase in the added value. The socio-economic analysis of the preferences and behaviours of the consumers on recycling of e-waste are the two essential elements of mutual interaction about creating added value. The consumer behaviours about the recycling of e-waste formalize the risk perception of recycling investment. A new sector will be generated by being financed the recycling facility investments and a vast amount of employment will be provided either. Recycling investments will be an indicator of an economic activity in terms of providing employment (Haykır Hobikoğlu, 2014: 58).

Conclusion and Policy Suggestions

The evolution of the technology caused to transitivising of the possible environmental risks or become more active and emerge new environmental hazards. The mandatory of handling the environmental risks in a global scale result from the boundless feature of the environmental issues and becoming these problems more common depends upon the technological development. The mobilization (liquidity) and the transitivity of the boundaries based on globalization and technology also increase the intensity of the environmental risks for the societies. Moreover, the globalization fact and technological progress also change the environmental risk types and the qualification of the reactions for these risks at national and international levels.

At present, there are three major problem areas where must be found a way out on the subject of e-wastes. First of them is the production volume of e-wastes that are gained momentum in every year and produced approximately 40 million tons in a year (Table 3). The second major problem area is the transnational flowing of e-wastes from developed countries to the developing ones (Figure 1) and the worrisome dimension effects on the environment and human health in the developing countries. The final and third one is the rates of reuse and recycling at extra low levels. The e-wastes have the potential to create high economic added value if the correct techniques regain them, but they also can carry serious environmental risks as a result of being implemented the wrong methods.

It is seen that there are promoter trends at national and international levels for reducing the e-wastes and increasing the controllability. Accordingly, the Basel Contract is a remarkable development that entered into force in 1992 to abolish the hazards based on the cross-border transportation of dangerous and other wastes eliminating and recycling of them at the same time (MFA, 2017). The attempt of the StEP works to be the pioneer for the subjects like collecting the e-wastes, recycling and avoiding via the global management. In the Declaration of Bali in 2008, it was called for being promoted the public and private sector investments, strengthen the political cooperation for a waste management technology that is safety and environment-friendly (Heacock et al., 2016: 552). Besides, the European Union evaluated the Directive of WEEE after the application. The arguments of reuse increased in policy processes; critical investments are actualized for the studies of green electronics in some countries such as Japanese and Switzerland (Williams, 2012: 252). It is so hard to say that these developments are

enough when the data obtained from the statistical analyses are considered. The results of the literature review on e-wastes by Pérez-Belis et al. (2015) also support our inference. For this research, the subjects like e-waste management, generation, characterization, social aspects of e-waste, re-use of EEE or economic aspects of e-waste were analysed in 307 articles published in scientific journals between 1992 and August 2014.

Recently, it is seen that the strategies on the management of e-waste are developed. Focused on these strategies are the tools such as Material Flow Analysis (MFA), Multi-Criteria Analysis (MCA), and Life Cycle Assessment (LCA). MFA and MCA are applied in specially developed countries for estimating the amount of e-waste; provide to be taken the environmental decisions to solve the problems at multi-dimension about wastes. LCA is used in several studies to evaluate the environmental effects of e-wastes. The studies of LCA show that the recycling in waste management is more suitable when being compared with the storing or burning. Also, developing the proper and optimal recycling methods for preventing the pollution, reducing the toxicity of the reagents and time-consuming reactions became one of the most important subjects for the studies of e-waste management (Alzate, 2016: 114).

The comprehensive, realist and practicable policies must be realized and put into force right away to minimize the production of e-waste, keep under control avoid the unhealthy destruction processes. Including the risk perspective into different policy options, comparatively discussing the benefits and costs of sustainability at macro level must be a simple idea. In this context, the studies should target to determine the heuristics that are promoter for reuse. A simpler modular design must ease the repair processes. The scope of the performance variability is to enhance the durability of the devices. The role of governments in recycling processes for new materials and high risk long termed solutions must be emphasized even it is expected from the industry to undertake most of the technological developments. The multi-shareholder structure must be considered in the policy-making processes; the policy makers must also be open to new ideas (Williams, 2012: 252).

As it is valid in the waste management, the most critical point for e-wastes is being reduced the production volume of e-wastes. Repairing, modification and reuse by remanufacturing are seen as the best choice for decrease the e-wastes. The reuse, recycling and renew of the e-wastes will be the powerful factor of the sustainable

development by providing to minimize the input amount and the production of hazardous waste. The developing countries, especially the ones become prominent as the hot spots of e-waste should be supported for the issues of initial investment and operational costs for the reproduction and recycling technologies. The electronics must devise the electronic design application for the environment by RoHS Directive of toxic materials and similar instructions (Nnorom and Osibanjo, 2010: 329 & Afiukwa, 2015: 4). The components of e-wastes must be used in the industry of electronics by being discussed within the scope of developing eco-design, extended/individual responsibility system, and sustainable supply chain management. Thus, it will be possible to obtain the self-sufficiency of sources by using the secondary sources that are recycled by the e-wastes (Gu et al., 2016: 332).

The importation of electronic devices and the trade of materials used in devices must be actualized based on the policy and laws of the country. Laws must obligate the control of the inputs used in goods such as technology products, cables, and toys. The number of the waste areas should be increased for being collected and classified the wastes by the consumers. The producers and consumers must be encouraged by way of both financially and being applied the relevant rules and policies. The public must be informed about the hazards of harmful wastes and the effects on health (Afiukwa, 2015: 4). The informing educations will provide the awareness by creating a conscious for both consumers and producers. The increment in awakening level will lead to change the models of production and consumption; the consumers and producers will direct their preferences to the goods produced by correct technologies.

The exponential growth of the electronic market and accelerating production of e-wastes increase the need for the technologies to recycle the end-of-life electronic devices. In this direction, the solution for reducing the e-wastes arise out of the developed technology must be searched in scientific findings and technology again. It can be possible to purify and render the wastes harmless via technological precautions (Diaz et al., 2016: 236). Especially, it must be aimed to 'set the balance of protect-use' for the technical goods; the principle of 'use by protecting, protect by developing' must be adopted as well (Baykal and Baykal, 2008: 15). The new production and environment-friendly post-consumption technologies should be improved, and the area of utilization of these technologies must be upgraded. There must be focused on the use of the product post-consumption, and new markets must be created by the technologies which will be developed for providing the recovery of the wastes.

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14 | Urbanization in Turkey in terms of Globalization and Environmental Problems

Cenap SANCAR

Abstract

Today, on one hand, globalization and urbanization have become interdependent, the process of globalization is getting deeper and this interdependence is gradually becoming more complex. In a world rapidly globalized by consumption, financial transactions, labour force and capital, the process of urbanization has accelerated especially in the developing countries. According to the population projections for 2015 and 2050, 53.9% of the world's population will be in urban places and these figures will rise to 67.2% in 2050, with a 7.2% increase rate. While the ratio of urban population within the whole population in Turkey was 43.8% in 1980, in 2015, this ratio was 72.36%. Such an immense increase in urban population of Turkey brought about the problem of "ruralisation of urbans", rather than the urbanization of the people living in urban areas. The increase in the ratio of urbanization in Turkey has important effects on environmental management. While on one hand, the increase in question has a rising effect in terms of the pressure on natural resources and assets, on the other hand, it is a hindrance for the urban services to be performed as required. When we have a look at what the environmental problems are in cities in Turkey, it is seen that 32 cities have water pollution, 27 cities have air pollution, 19 cities have waste issues, 2 cities have noise pollution, and 1 city has erosion problems with a high priority. Turkey is in favour of many environmental friendly agreements that target the preservation of natural

resources and biological diversity. In Turkey, it is a must to revise and reorganise the current institutional structure so that an efficient system can be created in the field of environmental management. Another reason of the environment management problems in Turkey does not result either from the lack of legal regulations or from being insufficient – but because they are not practiced appropriately. For this reason, all government bodies, NGOs, and the society should give more importance and should contribute in adapting the legal regulations related to urbanisation and environment and in fighting against the problems related to environment. In the legal regulations, the awareness in public concerning both the practice of penalties anticipated for the guilt against environment and concerning that there will be enforcements for guilt against environment must be spread.

Keywords: *Globalization, Industrialisation, Urbanization, Environmental Problems*

**Jel Codes:** *F64, Q53, R10*

Introduction

Globalisation is defined as a structure where there are economic, cultural, political, legal, and international dimensions; where local cultures and social bounds lose their importance; where arbiter position of nation countries decrease; and where qualifications of nation countries change (Held, 1995:190) as well as a process where social relationships across the world get denser (Giddens, 1990: 64).

Globalisation leads to the expansion of regional and even national spatial units to the global level (Sassen, 2005:2). This new system that the globalisation emerged necessitated the rescaling of strategical regions. The fact that capital, which became dense especially in central countries, started moving in the world scale and that basic production units started moving towards world scale instead of becoming dense in some places occur synchronically. Thus, apart from the new developments, the capital that showed a condensation in the big cities of developed countries started moving from micro scale to macro scale; from limited area to the global area (Marcuse and Kempen, 2000:18). These developments led to the emergence of changes on the economic, political, social and cultural features of cities and the fact that opportunities for geographical disintegration and location based expertise increase have given the space more importance (Yaylı, 2012:338). In addition to these, the concept of globalisation was in the centre of environmental incidents before its spatial, economic, cultural, political, social, and legal dimensions. Because, global environmental problems are

beyond border processes that ecological processes do not respect national boundaries (Najam et al., 2007:1).

Figure 1: Globalization and Global Changes

Increases in interpolation connectivity and increases in scale and intensity of action and impact
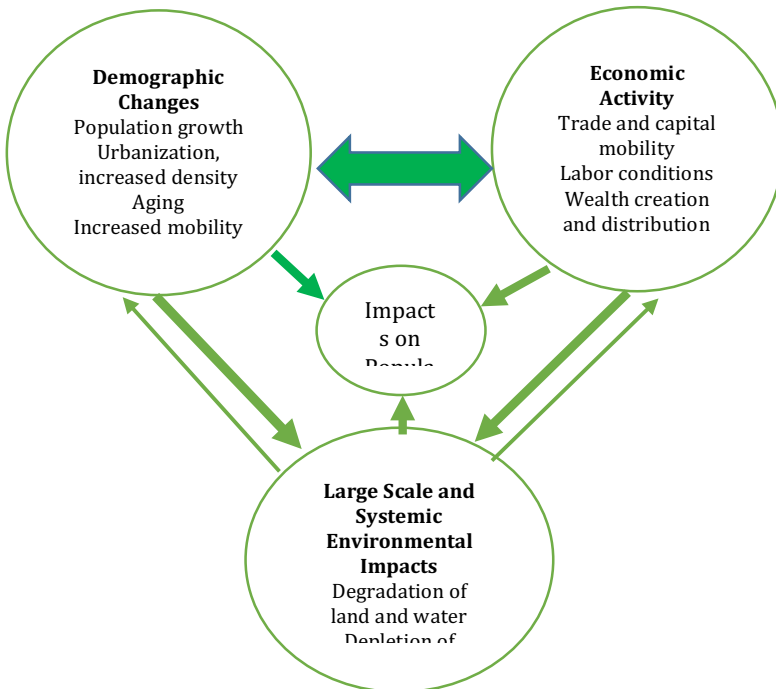
Source: (Anthony & McMichael, 2013:1336).

Figure 1 represents a scheme of three important aspects globalisation influences (social-economic and environmental) and includes the globalisation processes as well as changes

In Figure 1, three components globalisation influences have a bilateral relationship. Population size, distribution, movement, levels of economic activities and types, capital and workforce flow, and the increase of greenhouse gas emissions bear consequences for environment.

Theorists who carry out studies on globalisation defines environmental problems as an indefinite black box of globalized environment. Globalisation contributed to the fact that environmental pollution was taken to a significant dimension; meanwhile, climate change contributed to the fact that disadvantages of globalisation was taken to the agenda and that it was debated from various dimensions. Although environmental pollution and climate change are in close connection with each other scientifically and culturally, resource use of climate change and the effect of resources on optimal use stand out a lot in local economic and political debates. Climate change poses importance in terms of determining the mechanisms of globalisation, sizes of the problems it led to, and therefore, determining the potential (Malone, 2002:143). Academics and activists at the same time deal with the environmental effects of globalisation and diminishing the climate change. Many analysts suggest that solution to the both issues can be local limitations at regional and country scale (Barkin, 2003:8).

In this section, the globalisation process, urbanisation, and environmental effects that the world have faced were assessed in terms of Turkey with respect to the environmental, social, and economic effects in the 21st century and policy instruments that are used to fight the environmental problems were addressed.

Globalisation and Urbanisation in Turkey

Globalisation contributes to the spatial assignation of resources and creates spatial effects. Therefore, globalisation is of great importance for urbanisation and urbanised economic growth. Factors emerged from general population growth and distribution, distribution of population among big and small cities, communication and other technologies, scale economies of cities and differences are the factors that alternate the comparative advantages of cities, and that influences the income increase and distribution, and resource assignation (Lim, 2005: 2).

In a narrow sense, urbanisation denotes to the increase of the number of cities and to the increase in the population of people living in them. However, urbanisation is not a demographic phenomenon only; meanwhile it is a statement of an economic, social,

political and cultural process. Urbanisation is not a process for people to be attracted to the places so called "cities" but it also means that they adopt the life style of cities. Urbanisation, expressing an economic, social, political and cultural change and transformation, is the evolutionary process of urbanised spaces and social practices (Keleş, 2002:105; Keleş, 2010:20).

Since the internationalisation of production, capital, and services are more condensed urban areas particularly, benefits and risks of globalisation are more centred in fewer large cities. From this perspective, globalisation is implicitly related to globalisation and governments role, functions, and urbanised local bodies make the change compulsory. Urbanised growth following globalisation is identified with the change and growth in urban population as well as with the change of ratios in manufacturing and services sectors (Narayana, 2010:93).

Also in our country, mainly in urbanised areas, most of the transformations experienced partly in rural areas show reflections of globalisation process on spaces. This is a known feature of globalisation. The phenomenon that the inequality increases in the distribution of international income is experienced in urban areas explicitly. The most evident socio-mechanic feature of urbanised cities is increasing inequality and dual urbanised organisations created by the exploitation in the urban spaces (Kiper, 2006:91). The reflections of urban poverty can easily be seen in the socio-physical spaces of urban places in developing countries, like ours, where the priority was given to the rapid urbanisation process. The urban poor tend to solve the accommodation problem with approaches like slums and illegal constructions.

Cities can be identified in various respects such as population size, population density, administrative and political boundaries and economic function. Places classified as urban in one country may be classified as rural in another. For example, while residential areas having a population of more than 2000 are called urban in Angola, Argentina, and Ethiopia, residential areas having a population of more than 10,000 people are called urban areas in Turkey. In some cases, the city classification is done by taking various economic and social indicators such as population size and population density. For instance, residential units having a population of more than 5000 people and where 75% of the economic activities are from non-agricultural activities are accepted as cities in Botswana (Cohen, 2006:66).

Today, as urbanisation and globalisation have become more interwoven, the process of globalisation is getting deeper and this mutual dependence is becoming more complex. In a world rapidly globalized by consumption, financial transactions, labour force and capital, the process of urbanization has accelerated especially in the developing countries. Globalisation created explicit effects on urbanisation in developing countries. Among these effects are domination of bigger cities in national city hierarchy, spatial polarisation, and emergence of mega cities, internationalisation of cities, and restructuring of cities.

According to the report titled "World Population Prospects: The 2012 Revision" and published by the United Nations (UN), as far as the projections for 2015 and 2050 are concerned, while 53.9% of the world's population would be in urban areas, this rate will raise to %67.2 with a positive increase curve at a ratio of 7.2%. In developed countries in 2050, urban population will take place of the 85.9% of the all population, where in developing countries, this rate will rise to 64.1% in 2050, with an increasing curve at a ratio of 31.6%. When the UN's projections concerning the urban population rates of 2015 and 2050 are studied, while the urban population make up the 75.1% of all the population in 2015, this rate is expected to raise to 87.3% in 2050, with an increase of 16.2%. It is a striking result for our country that is expected to have a rate of 85.9%, 1.3% more than developed countries for 2050 (TOBB, 2013:10). Generally speaking, urbanisation in Turkey looks like the urbanisation processes in less developed and developing countries. The population movements from rural areas to urban areas make up the basic dynamics of urbanisation and they also shape the social and economic structure of countries.

Expansion Ways of Urbanisation in Turkey

Globalisation and the economic activities that it brought with it led to the rapid and uncontrolled urbanisation that has been experienced in developing and in developed countries. Globalisation, industrialisation, and urbanisation often support each other. Because, globalisation and urbanisation are universal phenomena in which emphasis in production and employment moves to industry and services sectors. As can be seen in Figure 2, the processes of industrialisation and urbanisation moved together in Turkey. Despite the fact that agriculture lost its ratio in GDP in the period between 1985-2015, the ratio of services and industry sector increased. With the acceleration of the process of urbanisation and globalisation, the ratio of industry and services sectors within the

employment rates also showed an increase. As can be seen in Figure 1, the processes of industrialisation and urbanisation in Turkey moved together.

**Figure 1.** Urbanisation and Industrialisation (1985-2015)
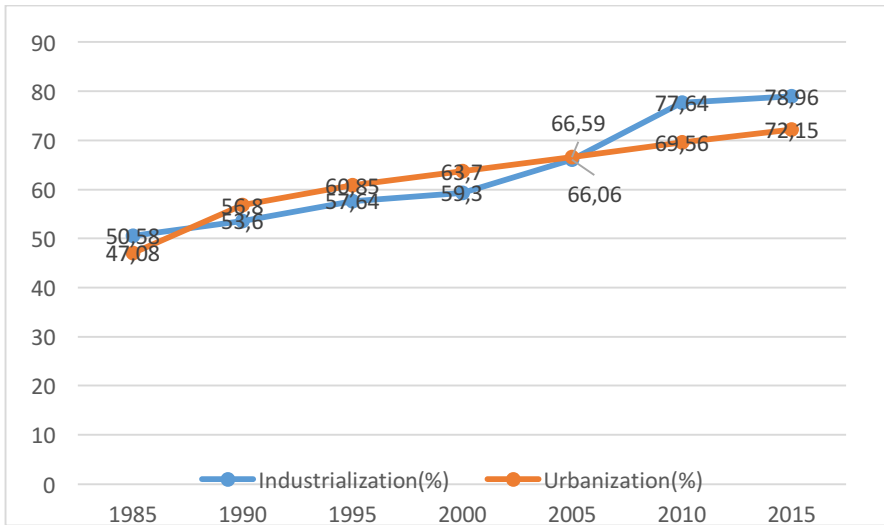
Source: It was created by the author by taking means of 5 years from the World Bank database. Note: Industrialisation expresses the total rate of manufacturing industry and services industry within the total employment rate.

While the urbanisation level in Turkey between 1980-1985 was approximately 47.8%, this rate reached to 72.15% in the period between 2010-2015. The fact that economic structure shifted from agriculture sector to services and industry sector has an immense effect on this rapid urbanisation level in Turkey. Whereas the employment rate was 45% in the agriculture sector in 1985, this rate became 19.7% in 2015. The ratio of agriculture sector within GDP was 20.3% in 1985. The ratio of agriculture sector within GDP shrinked to 8.5% in 2015.

Migration movements in the last fifty years have been in a huge change in term of both quality and quantity features and in an unpreventable and unforeseeable way. Since

migration provides labour from places where marginal efficiency is low to the places where marginal efficiency is high, it is a positive process from economic point of view. The transition from agriculture society to industry society in Turkey necessitated a sector based shift and this was made possible by the migration. The phenomenon of migration in Turkey accelerated in 1950s thanks to the effect of industrialisation and advent of urbanisation. The effect of the shift from agriculture revolution to industrial revolution has influenced people and lives of them. Unemployed agriculture labourers started to migrate to cities because of the new job opportunities emerged in cities. The most important reason of population difference in residential areas is the migration from villages to cities. In the last couple of decades, there is a positive population movement towards big cities due to inner and outer migration based on regional uneasiness. While the rate of migrating population among residential areas was 9.34% in 1980, this rate became 8.67% in 1985, and 10.81% in 1990, 11% in 2000, and 45.57% in 2014.

Figure 2. The rate of urbanisation, industrialisation, and economic activities in GDP (1985-2015)
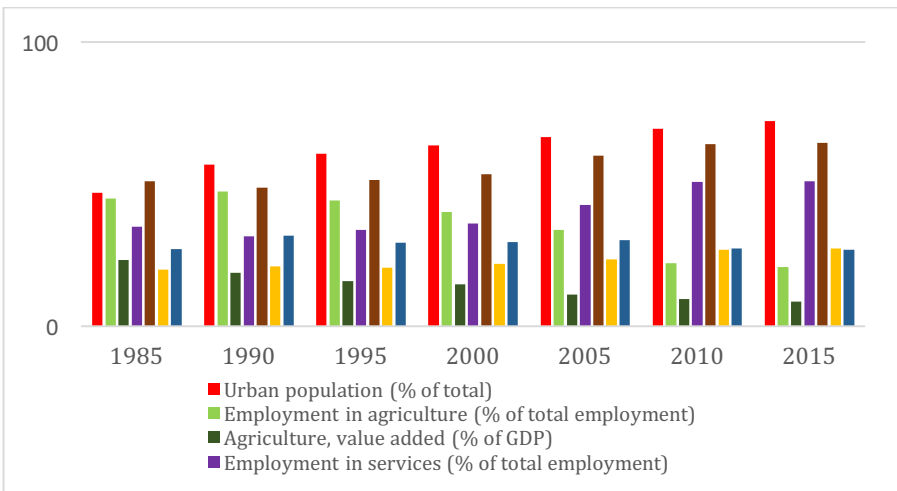
Source: Created by the author based on the World Bank's database.

Figure 2 shows the industrialisation in the period between 1985-2015 when globalisation in Turkey accelerated and, with this respect, it also shows the transformation process in which agriculture sector loses its value against the industry and services sector. This transformation co-pilots the urbanisation process. In parallel to the industrialisation of economy in terms of globalisation in Turkey, services and industry sectors gained more ratio within general employment. Meanwhile, there is an increase in favour of industry and services sectors within the share of GDP. While the share of agriculture sector was 23.36% within GDP in the period between 1980-1985, this fell to 8.72% in the period between 2010-2015. Despite this, the share of services and industry sector within GDP was 78.15% in the period between 1980-1985, this rate raised to 91.46% in the period between 2010-2015. There was an urbanisation process that accompanied a tendency from agriculture to industry in Turkey. While urban population made up 47.08% of all the population in the period between 1980-1985, this rate increased to 66.59% in the period between 1995-2000, 69.56% in the period between 2005-2010, and 72.15% in the period between 2010-2015. From this point onwards, it is seen that globalisation, industrialisation, and urbanisation are processes that feed each and reinforce each other in Turkey.

Table 1. Urbanisation Trend in Turkey

	Population density (people per ...)	Urban population growth	Population in urban agglomeratio...	Urban population (% of total)	Population in largest city	Urban population
1985	60,4	5,46	22,53	47,8	4,397,037.00	19,221,955.00
1990	67,72	4,3	25,02	55,2	5,407,297.00	25,792,919.00
1995	73,68	2,56	22,56	60,48	6,552,160.00	31,966,426.00
2000	79,7	2,38	28,78	63,7	7,665,403.00	36,355,821.00
2005	88,2	2,34	31,12	66,58	10,513,274.00	45,997,962.00
2010	91,52	2,1	34,56	69,56	12,703,384.00	51,134,311.00
2015	98,94	2,46	37,04	72,36	14,163,989.00	57,738,359.00

Source: World Bank (2017).

From 1980s in Turkey, employment increase in labour-heavy production sector and services sector contributed to the emergence of big cities. As can be seen in Table-1,

urban population increased more than three times in the period between 1980-2015. The population living in big cities increased 3.5 times in the period studied.

It is known that Turkey is a rapidly urbanised country. Yet, the unhealthy and distorted qualifications of the urbanisation process emerge as an indicator of problems that the big cities face today. Within the period starting from 1980 to 2015, urban population raised to 60 million from 20 million. Such a huge increase brought with the problem of "ruralisation of urbans" more than urbanisation of the people living in cities. In this case, industrialisation and development could not stay in front of the urbanisation, but stayed behind. This case set the basis for many urban and environmental problem.

Urbanisation in Turkey and Environmental Problems

The global economic system transformed into a "urban economic system" thanks to rapidly developing communication, transportation and production instruments, and global trade networks. The urban economic system has become a component that constitute the spine of national development with information, energy, trade, work force, agriculture, forestry, mining and hinterland (Deniz, 2009:101). These developments experienced at the global level exhibit a similar appearance in Turkey. With migration and population boost that started in Turkey in 1960s, industrialisation which was accelerated by the services sector that began with the globalisation process from 1980s, speeded up the urbanisation phenomenon. Globalisation that was seen in the economic structure after 1980s and the increase of rival environment created an excessive consumption pressure on natural resources and led to environmental effects.

Globalisation and the economic activities that were brought with it as well as the rapid and uncontrolled economic growth experienced in industrialised and industrialising countries also expedited the environmental effects of urbanisation. Industrialisation in the 20th century led to a rapid change in the natural environment and an emergence of a social environment as well. Because industrialisation was not planned, the target was industrialisation only, and environmental factors were ignored. The first country to experience this change is the United Kingdom, which experienced the industry revolution. Coal mines, textile manufacturing factories, railways, and shipyards became the concrete indicators of this enormous spread. Accompanying this is the country wide urbanisation (Guha, 2000: 10).

Developed and developing countries, rapidly advancing industrialisation, urbanisation, resources of our world on the edge of extinction, and rapidly multiplying population growth remind us the environmental anxieties in the 21st century. On the global scale, among the basic environmental problems that started in the 20th century and multiplied in the 21st century are climate change, excessive water and air pollution, chemical incidents, and contamination by dangerous waste (Sonnenfeld and Mol, 2002:1323).

Environmental problems originate from the fact that societies do not consider natural environment while performing all production and consumption activities. Through social activities, pressures on natural environment, overloaded capacity of nature reveal environmental problems (Yavuz and Keleş, 1983: 256-258). In developed countries, environmental problems result from the increase in production and consumption activities that developed mostly in parallel to industrialisation and urbanisation, which sometimes are referred as "abundance pollution". The environmental problems that the developing countries face are the problems that the developing industry reflects at a scale as well as the problems of being less developed, also referred to as "poverty pollution" (Ertürk, 1998: 81).

Environmental problems that are available everywhere in the world as a reflection of economic, social, technological, cultural, and political structure make up the other side of the medal of urbanisation, which advances with economic development and industrialisation. A migration movement from rural areas where there is a lack of industry and technological infrastructure to urban areas where there is infrastructure for better or for worse as well as uncontrolled population boom lead to urbanisation on one hand and to the emergence of environmental problems by disturbing the ecological balance as a requirement of healthy growth, on the other (Deniz, 2009:104).

When the urbanisation reports are studied, it can be seen that the world is rapidly being urbanised. This condition leads to the need of more additional resources and more energy consumption in cities. Additional energy consumption will create more carbon dioxide emissions and by this way to environmental pollution in cities. In the literature, in many researches carried out on urbanisation and environment, the relationship among urbanisation, energy and carbon dioxide emissions was studied. Cole and Nuemayer (2004), in their work where they study 86 countries in the period between 1975-1998, confirmed the positive relationship among a series of variables such as population, urbanisation rate and energy density and CO_2 emissions. S. Alam, Fatıma

and Butt (2007) studied the relationship among urbanisation, energy consumption, and carbon dioxide emissions for Pakistan. According to the findings obtained from the study, there is a positive relationship between urbanisation and energy consumption as well as carbon dioxide emissions. Martínez-Zarzoso (2008) studied the relationship between CO_2 emissions and urbanisation for developing countries in the period between 1975-2005. According to the findings of the study, while urbanisation in countries of low-income leads to a higher level of environmental destruction, the relationship between urbanisation and CO2 emissions is negative in countries of mid-high level income. Uysal and Taş (2016) studied the relationship among carbon dioxide emissions, urbanisation, and growth for Turkey in the period between 1968-2011. It was concluded in the study that there is a long-term relationship between carbon dioxide emissions and urbanisation.

While cities have the leading role in the creation of environmental problems, but also they are the places where these environmental problems are experienced extensively. Before we talk about the general overview of environmental problems in Turkey, it will be useful to create an insight concerning the condition of urbanisation in the country. It would not be incorrect to suggest that urbanisation related problems in Turkey originates from the fact that infrastructure cannot meet the demands of population density. It is known that incorrect policies, financial and technical insufficiencies of central and local administration bodies as well as the high-speed urbanisation are important factors in the deterioration of the problems in urban life such as transportation, water, solid waste, and traffic (DTP, 2007:3).

Energy production and consumption are two of the most important factors in the decline of environment quality in cities in Turkey. Fossil energy sources such as coal, petroleum, and natural gas, which are used in the steps of creating, producing and consuming electricity energy production, lead to environmental pollution by causing CO_2 emission, one of the most important types of greenhouse gases. Today topics like sustainable development, environment and energy economy as well as renewable energy resources have become highly debated topics in parallel to the relationship among development, energy, and environment.

In Table 2, energy consumption, carbon dioxide emission and urbanisation trend in Turkey are provided for the period between 1980-2015.

Table 2. Urbanisation, Energy Use and CO2 Emission Data in Turkey (1980-2015)

Years	Urban population	Population in the largest city (% of urban population)	Urban population (% of total)	Energy use (kg of oil equivalent per capita)	CO2 emissions (metric tons per capita)
1980	19,221955	22,87507696	43,8	716,2913	1,725601271
1985	25,792919	20,96426931	47,8	799,5611	2,170012253
1990	31,966426	20,49700521	55,2	976,3442	2,701354922
1995	36,355821	21,08438976	60,48	975,7323	2,938621811
2000	40942310	21,35655756	63,7	1201,087	3,417943997
2005	45997962	22,85595611	66,58	1240,948	3,498208379
2010	51134311	24,84317037	69,56	1455,834	4,121154855
2015	57738359	24,5313328	72,36	1540,491	

Source: World Bank (2017)

When we have a look at Table 2, it can be seen that there is a constant increase in the urbanisation rate of Turkey from 1980s onwards. In the same way, urbanisation rate of Turkey show an increasing trend from 1980s onwards. The urban population was 19,221,955 in 1980, 31,966,426 in 1990, and the numbers showed an increasing trend in 2000s, 40,942,310 in 2000, 51,134,310 in 2010, and 57,738,359 in 2015. While the ratio of urban population within the total population was 43.8% in 1980, this number increased to 72.36% in 2015. Due to the reason of saturation in the speed of urbanisation in 2000s, there can be seen a relative decline in the increase rate between 1980-1990. The increase of population and urbanisation rate in Turkey has important effects of environment management. While on one hand, the increase in question has a rising effect in terms of the pressure on natural resources and assets, on the other hand, it is a hindrance for the urban services to be performed as required. In figure 3, the relationship between energy consumption, urbanisation, and CO_2 emission in Turkey can be seen.

Figure 3. Energy Consumption, Carbon Dioxide Emission and Urbanisation Trend for Turkey
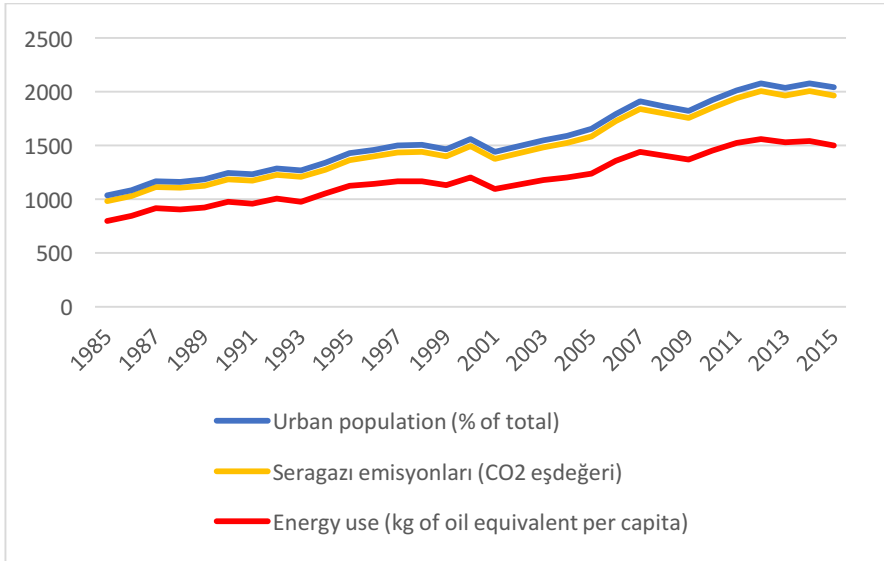
Source: Created by the author based on the World Bank's database.

When the urbanisation movement, energy consumption and greenhouse gas emission trend for Turkey, shown in Figure 3, is examined, it can be seen that the values of energy consumption and emission moves in parallel to the values of urbanisation in the period between 1985-2015.

The phenomenon of global scale industrialisation and rapid urbanisation brought with environmental deterioration in Turkey. Environmental problems that emerged due to industrialisation, rapid population boom and urbanisation in Turkey are presented in Figure 4. When figure 2 is evaluated, it can be seen that among initial environmental problems of cities are air pollution, water pollution, wastes, noise pollution, and erosion.

Figure 4. Priority Level of Environmental Problems in Turkey
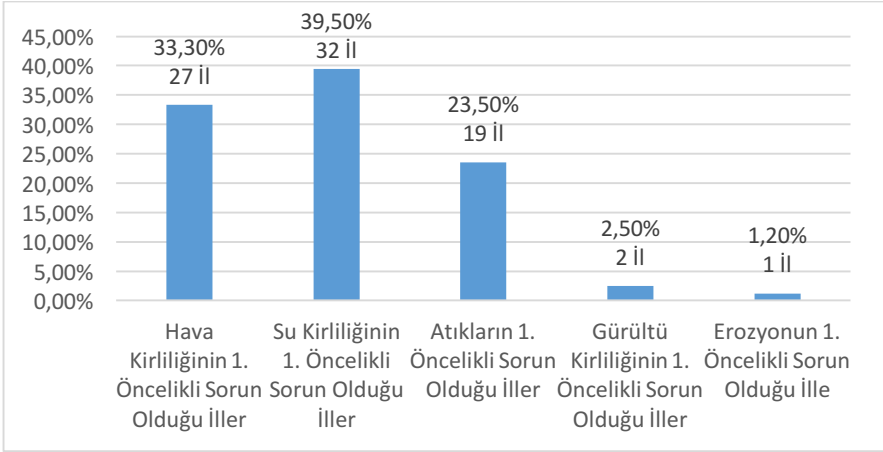
Source: Ministry of Environment and Urbanisation, 2014:15

Intergovernmental Panel on Climate Change (IPCC) put forward that climate change depends on human causes in the *Fifth Assessment Report* published in the period between 2013-2014. There are/must be effects of these changes in Turkish scale.

Turkey is made up of many sub regions having different climatic and environmental conditions geographically. Therefore, there is an immediate need for regional studies that targets determining the effects of climate change in different regions of Turkey. Such researches must be accepted as a prerequisite for developing more efficient and correct strategies that are in harmony with climate change (Balaban and Balaban, 2015). A "Participatory Vulnerability Analysis – PVA) was carried out within the scope of "A United Nations Common Program for Developing Compatibility Capacity of Turkey for Climate Change" under the coordination of the Ministry of Environment and Urbanisation (MEU) in order to determine the effects of climate change at local level. The aim of this analysis to determine the urban and rural effects of climate change and to reveal affected areas in selected regions in order to make it easy for the fighting strategies and activities that will be developed and used in the process of developing a national compatibility to be determined for Turkey (MEU, 2010).

Floods due to immediate and heavy rains are among the negative effects of climate change of urban areas in Turkey. Turkey is already an open country for floods, and floods are frequently seen in many cities. It is expected that the frequency and strength of these river and instant floods will increase and in addition to the casualties and losses, infrastructure theses and systems will be damaged as a result of them (Balaban, 2010). One of the reasons of these effects is that the drainage channels are under the pressure of accommodation in parallel to rapid urbanisation. Another negative effect of climate change, which we might see in our cities, is the temperature increases and heat waves in parallel to this. Heat waves will be an important problem in many of our cities where summer months are already very hot and dry. Another structural problem that can deepen this problem is that cities in our country is poor in terms of green and open areas, which are under the pressure of accommodation (illegal construction and intervention due to causes like plan changes) and that there is not an available and sustainable system for green and open areas (TÜSİAD 2016).

Another problem that can be triggered by the heat waves and drought is water scarcity. Climate change will have a negative effect on water resources because of increasing vaporisation due to decrease in the rain levels and increase in temperature. Increasing water demand depending on the increasing urban population, the intervention of this population to water resources, irregularities in rain regime, and increasing temperature will lead to the deepening of water scarcity problem and it will become an important problem for some cities in our country.

Climate change is expected to have two basic effects on the coastal cities. The first of these is raise in the water level in the sea and coastal floods, extreme weather disasters, storms and salinization of ground waters in parallel to this. The second important problem is the decrease in touristic activities due to heat increases and scarcity in water. It will be difficult to provide local economic development for many of our coastal cities economic life of which mostly depend on tourism. Even though there were some steps taken on issues like providing drinking and usable water, disposing waste, and industrial contamination especially after rapid urbanisation that globalisation brought with in Turkey, since the developments do not meet the levels required for population and urbanisation, attempts seem to be far from meeting the demands. Environmental agreements that Turkey signed to fight against environment and climate change are presented in Table 3. The fact that these agreements are seen as a chance will contribute to climate change having a global qualification by creating positive environmental effects in urban-rural areas at national level.

Multilateral Environment Agreements That Turkey Participated

It is clearly known that environmental problems have beyond border effects, that it has a global qualification, and that it cannot be solved by the individual attempts of countries. That the environmental problems have a global qualification requires a global cooperation for the solution of the problems. The most evident results of creating a global cooperation for the solution of environmental problems are the multilateral environment agreements. Multilateral environment agreements have an important role in the global environmental management due to the fact that they set the basis for a global cooperation, that they provide a legal stand for the solution of environmental problems, and that they create guidelines for national environmental policies.

Table 3 shows some of the environment agreements that Turkey took part with the dates they are put into force and with the national regulation concerning the practice of them.

Table 3. Environment Agreements That Turkey Participated and Legal Regulations

Multilateral Environment Agreement	Date of Approval	Legal Regulation	Date of Entry into Force
The Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean (Barcelona Convention) - 1976	1981	Law on Water Regulation on the Coastal Law and Implementation Regulation on Water Pollution Control Regulation on the Control of Pollution Caused by surrounding water of Hazardous Substances Regulation on the Conservation of Waters against Agricultural Nitrate Pollution	1926 1990-1992 1988/2004 2005 2004
Vienna Convention for the Protection of the Ozone Layer -1985	1990	Regulation on the Reduction of Ozone Depleting Substances	1999/2008
Montreal Protocol on Substances that Deplete the Ozone Layer - 1987	1990	Regulation on the Reduction of Ozone Depleting Substances	1999/2008

Table 3. Continue			
Multilateral Environment Agreement	Date of Approval	Legal Regulation	Date of Entry into Force
MARPOL Convention (International Convention for the Prevention of Pollution from Ships – 1973)	1990	Law on the Principles of Intervention and Compensation for Damage in Emergency and the Implementing Regulation on the Pollution of the Marine Environment by Oil and Other Hazardous Materials.Regulation on Collection of Waste from Vessels and Control of Waste	2005-2006 2004
Ramsar Convention (Convention of Wetlands of International Importance especially as Waterfowl Habitat -1971)	1994	Regulation on Conservation of Wetlands	2002/ 2005
Basel Convention (Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal - 1989)	1994	Regulation on the Control of Solid Waste Regulation on the Control of Hazardous Wastes Medical Waste Control Regulation Regulation on the General Principles of Waste Management Regulation on the Regular Storage of Wastes	1991 1995/ 2005 1993 /2005 2008 2010
CITES (the Convention on International Trade in Endangered Species of Wild Fauna and Flora –1973)	1996	Implementing Regulation on the Implementation of the Convention on International Trade of Endangered Species of Wild Animals and Plants (CITES Practice Regulation)	2001/2004
Convention on Biological Diversity - 1992	1997	Forest Law Animal Protection Act and Implementation Regulation Wildlife Conservation and Wildlife Development Regulations	1992 - 1956 2004 2004 2006 2004
Cartagena Biosecurity Protocol–2000	2003	Food and Feed Law on Biosafety of Genetically Modified Organisms and Import of Products, Processing, Export, Regulation on the Control and Audit Regulation on Genetically Modified Organisms and Their Products	2010 2009-2010
United Nations Framework Convetion on Climate Change - 1992	2003	Regulation on the Protection of Air Quality Control Regulation on the Control of Air Pollution Caused by Industrial Facilities	1986/ 2004 2004/2006
Kyoto Protocol- 1997	2009	Renewable Energy Law Energy Efficiency Law	2007

The main responsibility of the practice of multilateral environmental agreements is on the governments. With this respect, it is possible to come to similar conclusions for Turkey. Turkey has participated many environment agreements regarding the protection of natural resources and biological diversity as well as prevention of contamination. However, governments may be unwilling in the practice of these agreements because of the economic worries and priorities. Some agreements cannot be practiced efficiently due to lack of capacity (Kaya, 2011: 446). The problems faced in the practice of multilateral environment agreements influences the success of these agreements significantly and make it easy for these agreement's contribution to the global environmental problems debatable.

Turkey initially preferred to determine her own environment policies by reviewing the international balances and her position in this balance in terms of political, economic and developmental issues. Turkey could not obtain desired results in practicing the legal instruments that she signed in the international arena in terms of environment and sustainable development (also mentioned in Table 3) due to lack of coordination among governmental institutions. The incorrect perception that precautions for environmental protection and sustainable development approaches pose hindrance against economic and social development is a drastic aspect for future studies and these perceptions are held especially by business and industry world. Sustainable production and consumption models that increase energy and resource efficiency to save the base for natural resources must be clearly expressed focusing on their role in supporting both industrial and economic as well as social development.

Results

In the globalising world, industrialisation and urbanisation that comes with it, realizes without completing required social and economic infrastructure. Industrialisation and rapid urbanisation in developing countries have a negative effect on environment quality and ecosystem. Problems such as air, water, and land pollution that influences urban areas; decrease and disappearance of green areas; and distortion of historical and cultural city patterns show that urban development in many cities of Turkey lack ecological bases. Also, we can say that the pacing of urbanisation experience many issues due to the fact that plans go further than targets. Irregular migration experienced unexpectedly (due to security, due to refugee movements, etc.) causes urban areas to be under pressure to keep natural and cultural sites. In the context of the relationship

between city and environment, cities create contamination in environmental values such as land, air, and water, and also it prepares the setting where city dwellers alienate to their environment and where urban crimes increase. Sustainable cities and definitions or concepts such as sustainable urban development are the focal point of the discussions made with the environmental concerns.

The perception of sustainable urbanisation is unified with the social and economic development purpose of the protection and improvement of natural resources and it includes all environmental, social, and economic components that influence urban development and that are influenced by urban development relevantly and in a balanced way. Understanding of the perception of sustainable urbanisation requires the decision-making process with a broad participation process in all planning scales with the strategical spatial planning approach of urban development. Within this framework, Turkey needs to take action by a more sensitive strategy and policies especially in the international arena related to environment in terms of positive and negative effects of globalisation. Because, Turkey's stance in this direction will contribute to all international environmental agreements. For the sustainability of urban development, that the decisions of urban land use are made appropriate to the principles of environment science and that the natural resources, agriculture land, green land, historical and cultural values are protected from the practices that serve to generate income under the pressure of rapid urbanisation are of great importance. How cities should respond to different scenarios with strategical planning approach must be planned. Roles must be assigned to actors in this issue and steps must be staged and put into practice.

In order to create a more efficient system in environment management in Turkey, the current institutional structure must be revised and reorganised. Within this scope, while making economic and social decisions, policy makers must take environmental values into consideration and awareness for environment must be created through training and education (widespread, formal, technical and occupational, media) about environment to all shareholders.

Another reason of the environment management problems in Turkey does not result either from the lack of legal regulations or from being insufficient – but because they are not practiced appropriately. For this reason, all government bodies, NGOs, and the society should give more importance and should contribute in adapting the legal

regulations related to urbanisation and environment and in fighting against the problems related to environment.

That the legal sanctions in environmental issues are weak is another problem. From this respect, those who contaminate or damage environment or institutions are not able to feel the power of public power and sanctions community practices. Therefore, contaminators and those who damage environment do not face determined sanctions. In this issue, in Turkish Criminal Code (Law No. 5237 of 2004), it is mentioned that penalties be implemented for the guilt committed against environment and the awareness concerning the fact that there will be sanctions for the guilt against environment should be created in society.

Rapid urbanisation, pressure on natural resources, and climate change are not a multi-layer problem for our climate policies. Scientific research and discussions as well as knowledge for new tendencies are required for the solution. Thus, it is important that multi-layered negotiations in which there will be governmental bodies, business world, academics as well as NGOs are to be continuous with a strategical approach in the process where policies against climate change are created.

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15|

Analysis of the Relationship Between Energy Intensity & Economic Development Levels: A Study on BRICS-T Countries

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Abstract

The main objective of this study is to empirically examine the relationship between energy intensity and economic development. For that purpose, a data set of BRICS-T countries between the period 1990-2012 is used. The relationship between energy intensity, income per capita, foreign direct investment and industrial energy consumption ratio have investigated by cointegration method. The existence of cointegration relation between series was examined through Westerlund Durbin Hausman Test; and it was confirmed that there was cointegration relation between series. Long-term cointegration coefficient of cointegrated model was estimated through estimation method based on the Common Correlated Effect developed by Pesaran (2006). Results of cointegration method shown that the inverted-U shape curve relation between per-capita income and energy intensity is confirmed on BRICS-T countries.

__Keywords__ Energy Intensity, Economic Development, Westerlund (2008) Durbin Hausman Test, CCE, BRICS-T

__Jel Codes:__ Q43, F63, O11

Introduction

Energy intensity represents the primary energy amount per GDP (Gross Domestic Product) and is indicated in terms of tons of oil equivalent (toe). 'Toe' is a concept used to express diferent units like kg, m^3, ton, kWh as a single unit and for identifying the amount of energy sources. 1 toe is equal to the amount of energy obtained by burning 1 ton of petrol (equals to about 10^7 Kcal, $41,8 \times 10^9$ joule and $11,6 \times 10^3$ kWh).

Energy intensity and energy flexibility concepts are often used in energy demand forecasts looking future, energy efficiency comparisons, and evaluating the effect of energy to economic structure. This notion showing the amount of energy to be consumed to create one unit income is an indicator showing the relation between energy consumption and income.

Firstly Damstadler, Dunkerly and Alterman (1977) used energy intensity concept to compare energy consumptions of industrialized countries and indicated that there was complex procedural problems in making international comparison, at the same time it was needed to focus on this indicator in their study. Energy intensity stating the unit energy used per economic activities is naturally related with economic savings and environmental benefits arising from low CO_2 emission. Primary energy consumption to GDP ratio shows the primary energy intensity, final energy consumption to GDP ratio shows the final energy intensity.

I: *E / GDP* (1)

I: *Energy Intensity (mtoe/1000$)*

E: *Total energy consumption in country*

GDP*: Gross Domestic Product (1000$)*

Falling energy consumption per unit will increase productivity. Downward trend of energy intensity shows that energy productivity started upward trend. This situation means that more goods can be produced with less energy. But the energy intensity, unlike energy productivity, allows to make comparison on economic impacts of energy

consumption by sectors or countries. Finding energy intensity helps understanding economic structure, structural differences, energy consumption trend and all stages of national energy consumption of a country (Weiyu et al., 2005: 12)

Energy intensity, unlike other energy indicators, is a central measure combining energy supply and demand. The energy intensity, at the same time, is the most important element of productivity accurately reflecting the role of energy in economic development. Thus energy intensity is the variable best reflecting the relation between energy, environment, economy. Energy intensities of countries also inform about the energy intensities of countries, economic structure, technological level and energy productivity of that country.

Table 1. Possible Factors Associated with Changes in Energy Intensity, by Energy-Consuming Sector

All Sectors	Industrial Sector	Commercial Sector	Residential Sector	Transportation Sector
Climate	Industrial mix	Number of buildings	Number of households	Passenger transit (mass versus individual transit)
Economic growth	Value of end products	Amount of floor space	Amount of floor space	Freight traffic
Price of energy	Capital turnover	Commercial sector mix	Number of household members	Automobile type and use
Energy efficiency	Capacity utilization	Employment levels	Income levels	Air traffic
Technological changes		New construction	Employment levels	
Government policies and actions		New energy-using devices	New energy using-devices	

Source: Elliot, 2007

Energy intensity value is varied according to the sectors energy consumed. Therefore, the factors underlying the energy intensity vary by sector. While industrialization

structure affects energy intensity in industrial sector, the number of buildings affects the energy intensity in the housing sector (Table 1).

Methodology

Panel Cointegration Tests

In panel data analysis, after stability resarch of the series, if absence of same level unit root is accepted, cointegration tests are performed. Thus the existence of the long term relationship between variables can be tested. But it is important to know whether there is cross-section dependency when this relation is tested. The existence of cross section dependency shows that error terms of the units forming the panel were related. Cointegration test to be done is done considering this situation.

Variable Selection, Data Sources and Model Specification

In this study, energy intensity (Mtep/ $1000), per capita national income (by 2011 prices $), foreign direct investments ($ GDP), total energy consumed in industry to total energy consumption ratio (%), and per capita energy consumption data of 1990-2012 years of BRIC member countries and Turkey were used. The data of per capita national income, per capita energy consumption, energy intensity and foreign direct capital investments were taken from World Bank Indicator, and energy consumption in industry to total consumption ratio was taken from International Energy Agency (IAE). Because the data of Russia's before 1990 has could not be found, 1990-2012 years were selected as the data set.

All the variables were included in the model by taking natural logarithms by level values. Thus the logarithmic form of the model both provides obtaining flexibilities of explanatory variables and empirical estimate of the model.

$$EI_{it} = a_{it} + \beta_{1i}PGDP_{it} + \beta_{2i}PGDP_{it}^2 + \beta_{3i}FDI_{it} + \beta_{4i}IEC_{it} + \beta_{5it}PEC_{it} + \varepsilon_{it}$$

EI: Energy Intensity, obtained by dividing the total energy consumed by the real GDP

$PGDP_{it}$: Per capita real GDP.

FDI$_{it}$: Foreign Direct Investment, inflows as a proportion of GDP

IEC$_{it}$: Industrial energy consumption rate in total energy consumption

PEC$_{it}$: Personal energy consumption

The studies of Galli (1998), Elliot et al. (2010), and Destais et al. (2009) were benefited while the model was being established.

In developing economies like BRICS-T, energy consumption in industrial sector and foreign direct capital investment have significant effect on energy intensity because of industrialization speed. Therefore, energy consumption in industrial sector, foreign direct capital investments and per capita energy consumption which is accepted among the indicators of economic and social development were included in the Model. Variables used in both models and the direction of assumed relation between these variables and energy intensity which is defined as dependent variable was given in Table 2 considering the literature.

Table 2. Variable and expected relationship

Variable	Definition	Unit	Expected relationship
EI	Total energy consumed by the real GDP	Mtoe/1000$	
PGDP	Per capita real GDP	$	Inverted U
FDI	Foreign Direct Investment, inflows as a proportion of GDP	%	-
IEC	Industrial energy consumption rate in total energy consumption	%	+
PEC	Personal energy consumption	Mtoe	+

Empirical Results

Model will be analyzed by panel cointegration tests to study the relation between energy intensity, per capita income which among the indicators of economic development, foreign direct investments, per capita energy consumption and industrial sector energy consumption to total energy consumption ratio. While cointegration test is done, it will be primarily investigated whether the variants are static by the help of unit root tests. As for in the next stage, the existence of cointegration relation between variables will be analyzed through Westerlund Durbin-Haussman cointegration test. In case of cointegrated variables, the estimation of panel cointegration vector will be made.

Cointegration Tests Results

In the first stage of cointegration tests, unit root tests are applied to determine whether the series are static. But in case of cross-section dependency between countries, unit root tests to be applied vary. Therefore, whether cross-section units are related with each other is firstly tested by cross-section dependency tests.

Peseran (2004) suggests CDLM2 test having asymptotic standard normal distribution instead of CDLM1 cross-section dependency test in case of N<T and N>T conditions. Therefore the cross-section dependency will be investigated by CDLM2 test in this part of the study. This test statistic is calculated as;

$$CD_{LM2} = \sqrt{\frac{1}{N(N-1)}} \left(\sum_{i=1}^{N-1} \sum_{j=i+1}^{N} (T\rho_{ij} - 1) \right) \quad N(0,1)$$

and hypotheses of this test is expressed as follows:

H₀: There is not cross-section dependency

H₁: There is cross-section dependency.

When examining Table 3, null hypothesis is strongly rejected against the alternative hypothesis at significance level of 1% for all variables both in constant models and constant and trend models.   That is, dependency between cross-sections is the matter.

This situation means that other countries would be affected by the shock which comes to one of the countries.

Table 3. Cross-Section Dependency Test Results

Variables	CD_{LM2} Constant	CD_{LM2} Constant and trend
EI	20.615[***]	20.343[***]
PGDP	28.076[***]	22.304[***]
FDI	19.810[***]	17.926[***]
PEC	38.268[***]	34.609[***]
$PGDP^2$	28.076[***]	22.304[***]
IEC	37.184[***]	34.208[***]

In the next part of the study, Im, Pasaran and Shin (1997) and Levin, Lin and Chu (2002) unit root tests with Pesaran (2007) CIPS and Hadri Kruzomi (2012) unit root tests which consider cross-section dependency will be applied while stability of series are investigaed.

Panel Unit Root Tests Results

Convergence of variables to a certain value in time is called stability (Tarı, 2010: 374). The investigation of stability in panel data including time series and horizontal section data is important. This is because statistical tests of analyses performed by nonstationary series may give non-objective results. The existence of unit root in series shows that that serie was not stationary. Therefore testing the presence of unit root in analyses to be done is very important.

As in the panel data anlyses, it is accepted that unit root tests which are done in both time series dimension and cross-section dimension were statistically more powerful than unit root tests which only deal the time or cross-section dimension (Pesaran, 2006a).

Test results of Im, Pasaran and Shin (1997) and Levin, Lin and Chu (2002) which do not consider the cross-section dependency are given in Table 4.

Table 4. The Results Of IPC and LLC Unit Root Tests

lnEI				
	Constant		Constant and Trend	
Unit Root Tests	t-stat I(0)	Prob. I(0)	t-stat I(0)	Prob. I(0)
Levin, Lin & Chu	-1.03514	0.1503	-0.77490	0.2192
Im, Pesaran & Shin	0.93177	0.8243	-0.34720	0.3642
lnPGDP				
Levin, Lin & Chu	-0.21966	0.4131	-2.57222	
Im, Pesaran & Shin	3.63181	0.9999	-0.85955	0.1950
lnFDI				
Levin, Lin & Chu	-5.09538***	0.0000	-2.74576***	0.0030
Im, Pesaran & Shin	-3.69559***	0.0001	-2.09602***	0,0015
lnIEC				
Levin, Lin & Chu	-0.52157	0.3010	-0.35759	0.3603
Im, Pesaran & Shin	-0.71089	0.2386	-0.13575	0.4460
lnPEC				
Levin, Lin & Chu	2.34256	0.9904	-0.79804	0.2124
Im, Pesaran & Shin	3.21497	0.9993	0.73706	0.7695

Notes: Figures in parenthesis are t-statistics. * and ** denote statistical significance at the 5% and 10% levels, respectively.

When Table 4 is examined, it is seen that all variables excluding FDI were not stationary at level values, and as for FDI variant, it was stationary both in constant model and constant and trend model at the 1% significance model.

Table 5. CIPS Unit Root Test Results

	CIPS$_{stat}$ Constant	CIPS$_{stat}$ Constant and Trend
EI	-2.1956	-2.0965
PGDP	-1.5859	0.0319
FDI	-1.9400	-2.9720**
PEC	-2.3148*	-1.3095
IEC	-2.6503***	-2.5570
%1	-2,57	-3,10
%5	-2,33	-2,86
%10	-2,21	-2,73

Source: Authors' estimations

CIPS tests considering cross-section dependance are given in Table 5, and Hadri Kruzomi test results are given in Table 6.

When CIPS values for variables in Table 5 are examined, it is observed that IEC and PEC variables were stationary in constant model at 1% and 10% significance level respectively, and that other variables were not stationary at level values. On the other hand, it is undertood that only FDI variable was stationary at 5% significance level in fixed and trended model. This result, at the same time, is consistent with the IPS and LLC tests which do not consider cross-section dependency.

Table 6. Hadri-Kruzami Unit Root Test Results

Değişkenler	Constant		Constant and Trend	
	Z_A _SPC	Z_A _LA	Z_A _SPC	Z_A _LA
EI	-1.653*	-0.322*	-0.194*	-0.117*
PGDP	0.824*	9.069*	4.635*	7.853*
FDI	-1.253*	-1.327*	78.259	47.831
PEC	-1.711	-0.443	-0.971*	0.957*
IEC	-1.090	-1.402	-0.852*	-2.691*

Source: Authors' estimations.

In the Hadri-Kruzomi test, it shows that null hypothesis serie was stationary unlike other unit root tests. When Table 6 is examined, it will be seen that Hadri-Kruzomi test results were consistent with CIPS test results.

When the unit root tests are examined generally, it is seen that variables used in the research generally were not stationary at level values and followed a stationary process at their 1st difference. Therefore, it is possible to say that the panel data set of this research consisted of mixed series.

After investigating cross-section dependency and stability of variable series which form the panel, it is decided to cointegration test to be applied by looking at the results. This is because stability levels of the series and cross-section dependency change the type of the cointegration test which will be applied. Westerlund Durbin Hausman

cointegration test was applied in the study because the variables used in the study were not same level stationary and included cross-section dependency.

Durbin-Hausman Panel Cointegration Test Results

This test which was developed by Westerlund (2008) is used in case of the existence of cross-section dependency in the series. Precondition of this test which allows stability levels of variables to be different is dependent variable's not being stationary at level value and its first difference's being stationary. This test allows variaables excluding dependent variable to be stationary at different levels (Westerlund, 2008:193-233).

Two test statistics are calculated by this test. One of them is group statistic and the other is panel statistic. Hypotheses of panel statistic are as follows;

$H_0 : \alpha_i = 0,$ No co-integration for all panel

$H_1 : \alpha_i < 0,$ Co-integration for all panel

The hypothesis test for the group statistics is as below:

$H_0 : \alpha_i = 0,$ No co-integration for all panel

$H_1 : \alpha_i < 0,$ Co-integration for some individuals, but for some it no cointegration.

Rejection of null hypothesis in group statistic shows the presence cointegration for some cross-sections. Mathematical representation of the Durbin-H panel and Durbin-H group statistics are as follows (Altıntaş and Mercan: 2015; 366).

$$DH_g = \sum_{i=1}^{n} S_i \left(\alpha_i - \alpha_i \right)^2 \sum_{t=2}^{T} e_{it-1}^2 \tag{2}$$

$$DH_p = \sum_{i=1}^{n} S_n \left(\alpha - \alpha \right)^2 \sum_{i=1}^{n} \sum_{t=2}^{T} e_{it-1}^2 \qquad (3)$$

Variables of our model are seen nonstationary at level values, in constant and trended model (excluding FDI) because of the presence of unit root. Results of Westerlund – Durbin Hausman (2008) test which is applied because the energy intensity which is defined as dependent variable in the model does not follow a stationary process at level value and other variables are stationary at different levels.

Table 7. Westerlund (2008) Durbin-Hausman Panel cointegration Test Results

	T-stat	P-Value
Durbin-H Grup Statistics	-0.465	0.679
Durbin-H Panel Statistics	2.501***	0.006
Notes: Critical Values	10%=1.28	
	5%=1.645	
	1%=2.333	

Note: All tests are based on an intercept and the Whitney K. Newey and Kenneth D. West (1994) procedure for selecting the bandwidth order. The p-values are based on the asymptotic normal distribution.

When Table 7 is examined, it is seen that Durbin-H test was insignificant and Durbin-H panel statistic was statistically significant at 1% significance level. That is, existence of cointegration for all of the panel has been accepted by Durbin-H panel statistic but Durbin-H group value which allows parameters of cross-sections to differ was found insignificant. In the next part of the study, the estimation of the coefficients of cointegration relation of which existence is detected will be done.

Estimation of Cointegration Coefficients

In the study, existence of cross-section dependency, unit root and cointegration were detected respectively and long term cointegration coefficients of the model which is cointegrated at this stage were tested by benefiting Common Correlated Effect (CCE) estimator which is developed by Pesaran (2006). By CCE estimator, firstly cointegration coefficients of each cross-section are estimated, then cointegration coefficient of the panel is calculated by taking the average of the sum of coefficients of cross-sections. CCE estimator;

$$b_i = (x_i' M_w x_i)^{-1} x_i' M_w y_i$$

calculated as follows (Topal and Ünver, 2016: 66).

For the overall of the panel, long term cointegration coefficients were estimated by Common Correlated Effects (CCE) estimator, estimations of cross-sections were not included because Durbin-H group statistics were found insignificant. Estimation results for overall of the panel are given in Table 8.

Table 8. CCE Estimator Results for Panel

Depend Variable: EI	Coefficents	SE	P-Value
PGDP	0.0996728***	0.0269173	0.000
PGDP^2	-0.0010067	0.0007443	0.176
FDI	-0.0006456	0.0005437	0.235
IEC	1.020333**	0.0275253	0,028
PEC	-0.096666***	0.0423732	0.000

Notes: Figures in parenthesis are t-statistics. * and ** denote statistical significance at the 5% and 10% levels, respectively

Conclusion

According to CCE estimation results for overall of the panel, when income increases by 1%, energy intensity increases by 0,99%. The results of the studies of Galli (1998, 2008) and Destais (2009) which are in literature support these results. In addition, the coefficent of income squared's being negative shows that relation between energy intensity and income was negative after a certain income level. However, this relation was not statistically significant.

The relation between foreign direct investments and energy intensity is also negative as expected. It is possible to say that foreign direct capital investments decreased energy intensity, as Elliot et al. (2012) have noted in their study.

Coefficients of the amount of energy used in industry and per capita energy consumption are statistically significant at 5% and 1% significance levels respectively. Coefficient sign of per capita energy consumption has become negative, contrary to expectation. An increase by 1% in personal energy consumption decreases energy

intensity by 0,01%. On the other hand, 1% increase in the energy consumed in industry to total energy consumption ratio causes energy intensity to increase by 1.02%. This situation is thought to be resulted from high speed industrialization in BRICS-T countries and from the failure to provide enough energy saving in countries with high industrialization speed.

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16 | Globalizing Terrorism and Economic-Politic Dynamics[*]

Mehmet KARAÇUKA
Necmettin ÇELIK

> *"No one in this world can feel comfortable or safe*
> *when so many people are suffering and deprived"*
> *UN Former Secretary General Kofi Annan*

Abstract

Understanding the potential dynamics of terrorism, which have increased dramatically and become a vital problem in the international system, is crucial to succeed in the fight against terrorism. The economic and politic problems such as poverty, anti-democratic practices and politic instability are often observed in countries that most affected by terrorism; indicate that terrorism may have economic and political dynamics. Although, most affected countries from terrorism have similar characteristics, same political and economic conditions are invalid for all countries. It shows that terrorism is complicated element and cannot be explained uniformly. For this purpose, this study uses an econometric analysis by using Panel Data Analysis, as well as qualitative analysis which covers the period of 2002-2011 and 156 countries Case Control Methodology in order to determine the potential economic, political,

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[*] The study was also makes use of some material Necmettin ÇELİK's master thesis entitled "Fragile-Failed State Phenomenon and Terrorism Impasse."

psychological and regional dynamics which stand out in the literature on terrorism. Here it has been indicated that in societies, which exhibit high rates of ethnic, linguistic or religious fractionalization, as opposed to homogeneity, terrorism can be linked with economic and political dynamics such as income level and democratization. Moreover, other important findings of the model include that the number of casualties which are caused by acts of terrorism and responses represent a vital psychological impact of terrorism overall. Also, countries in troubled destinations have more potential terrorism risk; such that terrorism has regional dynamics.

**Keywords:** Terrorism, Economic Development, Democracy, Social Fractionalization.

Jel Codes: C33, D74, F51, P48

Introduction

The concept of terrorism in political terms was first used during the French Revolution (Krueger and Maleckova, 2002), and it represents a highly complex phenomenon as the concept varies along periodical differences. It is difficult to have a precise definition in consensus, as there is no clear understanding on who will use the legal violence to whom and what, and the absolute and relative boundaries of such a force.[1] However, there are some common characteristics in the definition of terrorism, which can be interpreted as destabilizing and violent actions by spreading fear to public in order to reach political targets. This can be defined as usage of systematic and illegal force for political goals. The dimensions of terrorism, which is defined as "the implementation of force by an actor other than state in order to achieve a political, economic, religious or social target via fear, or suppressionby The National Consortium for the Study of Terrorism and Responses to Terrorism (START) are considerable.

Graph 1 shows terrorist activities between 1970 and 2012 years which are registered in Global Terrorism Database and gives us a presentation of the growing threat that international system is facing. We see that there were 30564 terrorist attacks between 1990-2000 in the world but this number increased by % 26.1 between 2001-2012 and reached to 41405. On the other hand, in year 2012 there were 13508 terrorist attacks in the world. This is %25 more than the attacks in the previous ten years. This dramatic increase shows that in the next years we may witness more critical periods. This situation can be seen as a reflection of international system, which has been destabilizing both

economically and politically. We also see that not only number of attacks, and share of attacks that result with deaths in total attacks have been differentiated, but also the weaponry and the targets have changed in the post-2001 period.[2] The fact that terrorism which is expanding in the West-East axis and getting global aspects, is getting more complex and unconditionally rising; requires to determine its possible dynamics to take measures, since terrorism does not threaten only a few countries but all the countries in the states system.
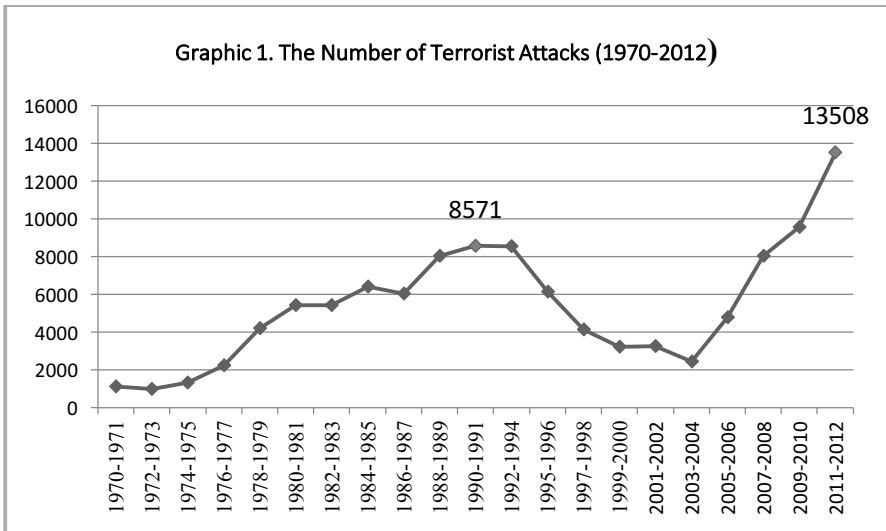
Source: Global Terrorism Database

Possible Dynamics of Terrorism Phenomenon

The main elements in the empirical literature that investigate the possible dynamics of terrorist activities or the main factors of accelerating such attacks are documented as economic factors such as income level, human development level and income distribution; political factors such as the level of democracy, type of governance, political status, and political destabilization; and spatial factors such as geography. Although there is a vast international literature in this field, the contrasting findings of these studies are also remarkable. For example, Krieger and Meierrieks (2010) find that welfare policies to solve economic problems can decrease terrorist attacks. On the other

hand, Muller and Seligson (1987) find that political and economic factors such as oppressive regime type and injustice in income distribution have accelerating effects on political violence. Similarly, Boswell and Dixon (1990) find that inequality in income distribution has positive effects and increases in income level have negative effects on violence-based uprisings. On the other hand, they find inverse U-shape relationship between violence based uprisings and oppressive political regime, which is taken in the quadratic form. However, Abadie (2006), in another study which finds an inverse U-shape relationship between political rights and freedoms and violence of terrorism, cannot find a significant relationship between economic factors such as income distribution inequality, income level, human development index and violence dimension of terrorism. Similarly, Piazza (2006) does not find a statistically significant relationship between economic variables such as unemployment, income distribution inequality, corruption; and terrorist attacks. Boylan (2010) also find no statistically significant relationship between economic development level, political rights and terrorist attacks. However, Richardson (2011) finds accelerating effects of unemployment as an economic problem on terrorist attacks, but no statistically significant effect of income level, political rights and civic freedom on terrorist attacks. Dreherand Fischer (2010), Dreher and Fischer (2008)do not find any statistically significant relationship between income level and terror attacks, but finds decreasing effects of political freedom on terrorist attacks.

Some studies in the literature classify terrorist attacks as national, international, and ethnic or separatist types. This type of a classification may shed light to the causes of contrasting findings on the economic and political dynamics or terrorism as it takes different characteristics into account. For example Li (2005), does not find any relationship between inequality of income distribution and international terrorist attacks but finds decreasing effects of economic and political factors such as income level, democratic participation, and political regime resilience on terrorism. Derin-Gure (2010) finds that income level has no effect on national type terrorist attacks. On the other hand, the estimated models based on separatist terrorist attacks, income distribution inequality exhibits increasing effects on terrorist attacks. This can be interpreted as separatist terrorist attacks have economic dynamics rather than international terrorism. However, Walsh and Piazza (2010) find that income level exhibit increasing effects on international level terrorist attacks rather than national attacks. Sunde and Cervellati (2013) find that getting more democratic regimes decrease the conflicts targeting the governments, however; they find that it has no effect on separatist conflicts.

Empirical literature mainly documents findings that terror has political dynamics such as democracy level, political instability, governance regime, basic rights and freedoms. We do not see such a consensus on economic dynamics such as income level, inequality in income distribution and unemployment, since the studies are split as finding such economic dynamics and finding no such as a systematic relationship.

Political Dynamics of Terrorism

Political instability, basic rights and freedoms, regime formations of the countries, democracy level are seen as prominent elements of political dynamics of terrorism. There is a vast consensus that democratization will bring out peace in international politics (Sunde and Cervellati, 2013: 1). This view is based on "Democratic Peace" and implies that the countries with democratic values are tended to solve their problems in peaceful and diplomatic ways. The expectations that the countries that have developed democratic culture such state policies are formed in the axis of legal and institutional restrictions, the concern to be re-elected and high costs of conflict based policies. Check-and- balance institutions and constitutional norms that form these institutions by prioritizing citizens' interests and safetiesprevent the politicians in democratic regimes to use violence as a policy instrument. In other words, the acts of politicians in democratic states are restricted by some forms legal regulations. These theoretical ideas that emphasize democratic values contribute to peace environment in international relations can also be attributed to the violence based elements such as terrorism. As the existence of democratic institutions, the concerns for re-elections and legal restrictions prevent politicians to implement violence based, war-like policy instruments; similar criteria can be valid in domestic based violence. Some studies also show that democratic states are less prone to domestic conflicts in line with the "Democratic Peace" idea (Hegre, 2014: 1). Based on this view, the preference of peaceful and common sense policies in democratization process can have a significant effect to diminish violence. Opponent views can be resolved by majority votes or by consensus in democratic system (Hegre, 2014: 4), since demanding rights and freedoms by illegal means will have high opportunity cost in the democracies that secure political freedoms and participation in the political governance. As presented in Table 1, the countries that are most effected by terrorism have authoritarian, or partial democracy and partially free status by year 2011 except India; showing the importance of democratic values. This situation gives an impression that terrorism may have political dynamics.

Table 1. Most Affected Countries from Terror and PoliticalStatus		
COUNTRY	**Regime Characteristics**[a]	**Freedom Status**[b]
Iraq	Autocracy	Not Free [NF]
Pakistan	Partial Democracy	Partly Free [PF]
Afghanistan	-66	Not Free [NF
India	Full Democracy	Free [F]
Yemen	Autocracy	Not Free [NF]
Somali	-66	Not Free [NF]
Nigeria	Partial Democracy	Partly Free [PF]
Thailand	Partial Democracy	Partly Free [PF]
Russia	Partial Democracy	Partly Free [PF]
The Philippines	Full Democracy	Partly Free [PF]
Sudan	Autocracy	Not Free [NF]
Congo (DRC)	Partial Democracy	Not Free [NF]
Colombia	Partial Democracy	Partly Free [PF]
[a] Autocracy : Countries with "polityIV" values between -10 – 0 Partial Democracy :Countries with "polityIV" values between 1 - 7 Full Democracy :Countries with "polityIV" values between 8 - 10 66 : Failed/Occupied [b] Countries 'FreedomHouse scores		
Source: Compiled from"Freedom House", "PolityIV" and "Vision of Humanity" Databases		

Although the countries with high severity dimension of terror have similar characteristics, when all the countries are taken into account, it is difficult to make generalization on political dynamics of terrorism. According to the findings of Case-Control Study, which presents the relationship between political status and high-density terrorist activities for 156 countries registered in Global Terrorism Database in 2011, only 6 of the countries in 32 countries that terror is significant have free status, and other 26 countries have "not free" or "partially free" status. This situation clarifies the inverse relationship between terrorist activities and respect for human rights and democratic values. However, the absence of terrorism experience, or not having a high

severityin terror, in 83 of 109 countries that are not in "free" status makes it difficult to make generalizations about the political dynamics of terrorism. The shares of the countries that are not in "free" status but have high level terror and the countries with low level of terrorist violence and in the free status are %54 in total.

Table 2. Case – Control Study (Political Dynamics)

	CASE *(GTI ≥ 4,00)*	*CONTROL* *(GTI < 4,00)*	*All Countries*
Factor (NF; PF)	26 countries	83 countries	**109**
No Factor (F)	6 countries	41 countries	47
All Countries	**32**	**124**	

NF   :Not Free
PF   :Partly Free
F   : Free
GTI   : Global Terrorism Index

Source: Compiled from "Freedom House" and "Vision of Humanity" Databases.

Finally, along with the adoption of democratic values in a country, endogenizing these values in institutional level and political stability are also important factors that determine the severity level of terror; since the dynamics of terror find roots more easily in the environment of political instability (Campos and Gassebner, 2009:10). This situation gives rise to the movement and action capabilities of terrorist organisations in the countries with instable political environments, and result with higher severity of terror. Hence, along with democratization level, political instability can be also counted among the possible political dynamics of terrorism.

Economic Dynamics of Terror

Factors such as development level, income distribution inequality and unemployment are considered to be the most prominent elements among the possible dynamics terrorism. Although the idea that poverty causes terrorism is popular among policy makers, the empirical literature on the relationship between terrorism and socio-economic factors is not sufficient (Piazza, 2011:339). The relationship between terrorism and socio-economic dynamics has been lacking in both theoretical and empirical aspects, and this relationship is mostly analysed within Opportunity Cost Theory, which is based on the rationality assumption. According to this theory, as employment opportunities, and income level increase, and individuals get more

socialized; the opportunity cost of crimes both political and towards properties will also increase, and the tendencies towards crime of individuals with rational behaviours will decrease. On the other hand, terrorism is regarded as a reflection of socio-economic dissatisfaction and low social and economic development level will promote political violence and instability (Piazza, 2006:160).

Table 3. Most Affected Countries from Terror and Economic Status

COUNTRY	Income Group[a]	HDI [b]
Iraq	UMI	0,583
Pakistan	LMI	0,513
Afghanistan	LI	0,371
India	LMI	0,551
Yemen	LMI	0,459
Somali	LI	//
Nigeria	LI	0,467
Thailand	UMI	0,686
Russia	HI	0,784
The Philippines	LMI	0,426
Sudan	LMI	0,419
Congo (DRC)	LI	0,299
Colombia	UMI	0,717

[a] LI   : Low Income (GDP ≤ $1,025)
   LMI :Lower Middle Income ($1,026 ≤ GDP ≤ $4,035)
   UMI :Upper Middle Income ($4,036 ≤ GDP ≤ $12,475)
   HI   :High Income (GDP ≥ $12,476)
[b] HDI   : Human Development Index
   //   :No Observations
   GDP :Gross Domestic Product per capita

Source: World Bank

In this perspective, terrorist organization ay gain more support in less developed countries with low education level and poverty, and these countries may experience

more violence related to terrorism. Table 3 shows economic situation of the countries with the highest terrorist severity in 2011, and we can see that most of these countries are have low or lower-middle income level. Human development index for these countries are also below average level (0,636).

However, the values in Table 4 which present Case-Control Study based on average human development index and income group (factor), and violent terror incidents (case) makes such a generalization difficult. According to the statistics of 2011, only 15 of 62 countries, which have values below middle level human development index (0.636) face violent terrorist attacks, and other 47 countries face no terrorist attacks or the violent dimension is too low for these countries. On the other hand, only 17 of 94 countries, which have values above average human development index face violent terrorist attacks. Similarly, 18 of 69 countries in low and lower-middle income group face terrorist attacks; 73 of 87 countries in high and upper-middle income group do not face terrorist attacks or the violence factor is too low. This situation shows that it has pitfalls to generalize that terrorism has economic dynamics.

Table 4. Case - Control Study (Economic Dynamics)

	CASE (GTI ≥ 4,00)	*CONTROL (GTI < 4,00)*	*All Countries*
Factor (HDI ≤0.636)	15 countries	47 countries	**62**
No Factor (HDI>0.636)	17 countries	77 countries	**94**
Factor (LI; LMI)	18 countries	51 countries	**69**
No Factor (UMI; HI)	14 countries	73 countries	**87**
All Countries	**32**	**124**	**156**

HDI : Human Development Index
LI : Low Income (GDP ≤ $1,025)
LMI : Lower Middle Income ($1,026 ≤ GDP ≤ $4,035)
UMI : Upper Middle Income ($4,036 ≤ GDP ≤ $12,475)
HI : High Income (GDP ≥ $12,476)
GDP : Gross Domestic Product per capita
GTI : Global Terrorism Index

Source: World Bank

However, economic conditions play a crucial role when the fact that they are crucial in order to survive for recruiting human resources and getting the support of public is considered. The effects of reducing poverty, increasing income and education level and

social policies towards the least advantaged sector of public do not guarantee to eliminate or reduce terrorist activities; however, policies towards improving economic conditions along with political dynamics will help to create more educated society with more rational individuals and therefore reduce the partial public support for terror and prevent such organizations to recruit new members. Hence, it should be noted that improvements in economic dynamics could act as pro-active precautions to cut support and enlistments to terrorist organizations and solutions to the social and political problems, rather than a short-term removal of terrorism.

As a summary, we see that in the countries with the highest severity level of terrorism there are political and economic distortions such as political instability, anti-democratic practices and poverty, and these countries are in problematic locations. However, it is difficult to make generalizations about political, economic and spatial dynamics of terrorism when the samples of all countries are taken into account. This fact shows that it is not possible to reduce into a monotonic explanation of such a complex phenomenon like terrorism, and requires analysing possible dynamics of terrorism also econometrically. For this purpose, next section presents the findings of econometric analysis that covers 156 countries.

An Empirical Analysis

Data Set and Variables

The variables used in the analysis, and characteristic properties of grouping criteria and the resources are explained in Table 6. This analysis covers terrorist attacks between 2002-2011 in 156 countries that are registered in Global Terrorism Database in order to determine the potential dynamics of terrorism.[3] Linguistic, cultural and faith based fractionalization (plurality) in the social structure is taken into account not as a root of terrorism but as an accelerator of the severity of terrorism and create a playground for it. For this reason, ELF index of countries is not taken as an explanatory variable into the model and instead the sample of 156 countries are categorized into two groups as the ones with ELF index higher than 0.5 (100 countries) and the ones with less (56 countries); and accordingly estimated within two different alternative models.

Table 6. Characteristic Properties of Variables and Classification Criteria

Variables (2002-2011)	Abbreviation	Explanation	Foresee	Source
Global Terrorism Index	GTI	It measures impact of terrorism		Vision of Humanity
Explanatory Variables	ln (GDP)	Income level per capita	-	UNDATA
	ln (POP)	Total Population	+	World Bank
	"polityIV"	It shows countries' political status between -10 and +10 values	-	PolityIV www.sytemic peace.org
	Autocracy	Dummy variable includes "polityIV" values between -10 and 0 as1; others 0	+	
	Partial Democracy	Dummy variable includes "polityIV" values between 1and 7 as 1; others 0	+/-	
	Full Democracy	Dummy variable includes "polityIV" values between 8and 10 as1; others 0	-	
	Political Instability	Dummy variable includes worsening "polityIV" values as 1; others 0	+	
	Psychological Factor	Dummy variable includes more than 1000 death and injured people caused by terrorist attacks and responses as 1; others in 0	+	Global Terrorism Database
	Africa (Sub-Sahara)	Regional Dummy Variables	+	www.state.gov.tr
	Near East			
	South and Central Asia			
	Europe and Eurasia			
	Western Hemisphere			
Classification Criteria	High Ethnicity	Countries with EFL values 0,5 and bigger	+	Kolo, P. (2012)
	Low Ethnicity	Countries with EFL values lower than 0,5	Neutral	

Econometric Model and Analysis

In the estimation procedure, we use fixed effects panel model in order to cover unobserved cross-section specific differences, since these countries may be

heterogeneous in various aspects. However, the results are in parallel with the Pooled Panel Data Method and in order to prevent confusions we present all results of different methods in Table 7 that estimate 156 countries for the period between 2002-2011.

Model 1 covers 100 countries with high social fractionalization and, Model 2 includes 56 countries with low social fractionalization. The findings of Fixed Effects Panel Model[4], which is in the middle columns of both models, show that economic and political dynamics such as income level and democracy turn to be insignificant statistically in the more homogenous countries with low ELF index. However, for the countries with more ethnic, lingual, or faith-based fractionalization, these dynamics are statistically significant in Model 1. This can be interpreted as in the countries with high fractionalization; terrorism can take these differences into advantages. In other words, social fractionalization is possibly among the dynamics of terrorism. This is consistent with the findings of Wade and Reiter (2007). According to the results of Model 1, main determinants of the severity of terror are the wounded and death people as a result of terrorist attacks and responses to these attacks in highly fractionalized countries. This situation implies that terror becomes a paradox as the casualties and attacks increase and casualties seem to be a psychological wall in the pursuit to end terrorism. This is also consistent with the findings of Walter (2004) that there is a positive relationship between the number of causalities caused by conflict and the possibility of reoccurrence.

The findings indicate that terrorism has political, economic, psychological and regional dynamics in the countries, which are far from being homogenous, and highly ethnic, lingual, faith based fractionalized. Economic and politic dynamics apart from psychological and regional dynamics loose significance in more homogenous societies. This implies that illegal activities like terrorism benefit from social differences. It is also obvious that terrorism may gain support from discriminatory, economically and politically distorting policies rather implementing policies towards a unified society in terms of basic rights and freedoms in the societies with high social fractionalization will prevent terrorism into some extent. National, international policy makers, and supranational institutions should be in full knowledge that combating against terrorism is not possible by only military means; and should implement realist and active policies to solve development problems of less developed countries. This situation emphasizes the necessity that combating against terrorism requires pro-active precautions.

Table 7. Regression Results

2002-2011	High Social Fractionalization (ELF ≥ 0.5) (Model 1)			High Social Fractionalization (ELF < 0.5) (Model 2)		
Dep. Var. (GTI)	POLS	FE	RE	POLS	FE	RE
C	-9.14***	-8.86***	-13.82***	-12.1***	-11.83***	-15.04***
	(0.754)	(0.763)	(1.551)	(1.192)	(1.204)	(3.062)
ln (GDP)	-0.11**	-0.14***	0.08	0.02	0.0008	0.21**
	(0.049)	(0.050)	(0.078)	(0.060)	(0.062)	(0.090)
ln (POP)	0.7***	0.69***	0.9***	0.69***	0.69***	0.75***
	(0.036)	(0.036)	(0.081)	(0.062)	(0.062)	(0.168)
Autocracy	0.13	0.14	0.42**	0.02	0.05	0.59***
	(0.141)	(0.141)	(0.170)	(0.188)	(0.189)	(0.213)
Full Democracy	-0.45***	-0.42**	-0.66***	-0.22	-0.18	0.22
	(0.169)	(0.169)	(0.188)	(0.197)	(0.199)	(0.226)
Political Instability	0.34	0.33	0.86*	-0.12	-0.11	0.18
	(0.213)	(0.213)	(0.463)	(0.571)	(0.573)	(1.499)
Psychological Factor	1.66***	1.67***	0.27***	2.04***	2.03***	2.30*
	(0.107)	(0.107)	(0.099)	(0.186)	(0.186)	(0.492)
Regional Effects						
Near East	1.35***	1.38***	1.25**	2.86***	2.87***	2.68***
	(0.247)	(0.247)	(0.561)	(0.290)	(0.291)	(0.744)
South and Central Asia	1.46***	1.43***	1.99***	1.71***	1.68***	1.76*
	(0.243)	(0.243)	(0.572)	(0.366)	(0.367)	(0.976)
Africa (Sub-Sahara)	-0.07	-0.09	0.15	2.43***	2.38***	2.7***
	(0.188)	(0.188)	(0.442)	(0.312)	(0.315)	(0.834)
Europe and Eurasia	0.69***	0.73***	0.56	1.75***	1.77***	1.64***
	(0.216)	(0.217)	(0.508)	(0.233)	(0.234)	(0.632)
Western Hemisphere	0.16	0.17	0.16	1.27***	1.27***	1.41**
	(0.212)	(0.212)	(0.502)	(0.254)	(0.255)	(0.696)
F$_{Restricted}$	9.8979 [0.3588]			5.2182 [0.8149]		
Hausman Test	71.8179 [0.000]			10.1769 [0.0375]		
Test Evaluation Results						
R²	0.55	0.56	0.16	0.53	0.54	0.15
Durbin Watson	0.45	0.45	0.59	0.31	0.31	0.77
Fstat	112.70	62.52	17.54	58.48	32.18	9.03
N*T	1000	1000	1000	560	560	560

Note: *,**, *** respectively stands for %10, %5 and %1 significance level, values in parentheses ( ) stands for robust standard error for heteroscedasticity; values in square parentheses [ ] stands for p-values.

End Notes

[1] The definition of terrorism concept in General Assembly of the United Nations, United Nations Security Council and European Union have several differences .

http://www.un.org
http://www.state.gov
http://eur-lex.europa.eu

[2] The percentage of bomb attacks increased from 40 % to 60%. The percentage of terrorist attacks targeting civilians directly or indirectly increased from 22,9 % to 33,4 % all over the world after 2001 according to Global Terrorism Database's statistics.

[3] GTI is dependent variable in the models and it stands for the impacts of terrorism between 0 and 10 values. It weighted with five-year declining average. Therefore, all independent variables are consistent with it and they stand for one lagged values.

[4] Models' diagnostic results are valid. Standard errors of coefficients robust against heteroscedasticity and autocorrelation.

[5] Partial Democracy dummy variable was selected as benchmark variable to investigate the effects of autocracy and full democracy.

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