Atatürk Üniversitesi Sosyal Bilimler Enstitüsü Dergisi Ekim 2018 22(Özel Sayı):1763-1783

The Effect of Economic Globalization on Unemployment in Emerging Market Economies

Ali ALTINER [(*)]
Eda BOZKURT [(**)]
Yılmaz TOKTAŞ [(***)]

Abstract: *In the present study, the effects of economic globalization on unemployment were examined for 16 emerging market economies by taking the period of 1991-2014. Within the scope of research, KOF economic globalization index as the economic globalization, unemployment rates based on the estimations of ILO for the unemployment were used. In the empirical analysis, the cross-sectional dependency was examined by using* $CDLM_1$ *and* $CDLM_2$*, and then the stationarity of series was examined by using SURADF unit root test, whereas the long-term relationship between the series was analyzed by using Durbin-Hausman cointegration test. After proving the long-term relationship between the series, finally the cointegration coefficients were estimated by using DSUR method. The empirical analysis results indicated that the increase in economic globalization increased the unemployment rates in Colombia, Hungary, India, Malaysia, Poland, South Africa, and Turkey but the increase in economic globalization decreased the unemployment rates in Brazil, China, Indonesia, Mexico, Pakistan, Peru, Philippines, Russia, and Thailand.*

Keywords: *Economic Globalization, Unemployment, Panel Data Analysis, Emerging Market Economies*

Yükselen Piyasa Ekonomilerinde Ekonomik Küreselleşmenin İşsizlik Üzerindeki Etkisi

Öz: *Bu çalışmada, ekonomik küreselleşmenin işsizlik üzerindeki etkisi 1991-2014 dönemi ele alınarak 16 yükselen piyasa ekonomisi için incelenmiştir. Analiz kapsamında, ekonomik küreselleşmeyi temsilen KOF ekonomik küreselleşme endeksi ve işsizliği temsilen ILO tahminlerine dayalı işsizlik oranları kullanılmıştır. Çalışmada ilk olarak yatay kesit bağımlılığı* $CDLM_1$ *ve* $CDLM_2$ *testiyle araştırılmış olup, daha sonra serilerin durağanlığı SURADF birim kök testiyle ve seriler arasındaki uzun dönemli ilişki Durbin-Hausman eşbütünleşme testiyle incelenmiştir. Seriler arasında uzun dönemli ilişkinin varlığı ispat edildikten sonra son olarak eşbütünleşme katsayıları DSUR yöntemiyle tahmin edilmiştir. Ampirik analiz sonuçları Kolombiya, Macaristan, Hindistan, Malezya, Polonya, Güney Afrika ve Türkiye'de ekonomik küreselleşmedeki artışın işsizlik oranını arttırdığını, ancak Brezilya, Çin, Endonezya, Meksika,*

[*)] Dr. Öğretim Üyesi, Recep Tayyip Erdoğan Üniversitesi, İİBF, İktisat Bölümü, (e-posta: alialtiner07@gmail.com)
[**)] Dr. Öğretim Üyesi, Atatürk Üniversitesi, Açıköğretim Fakültesi, (e-posta: edabozkurt@atauni.edu.tr)
[***)] Dr. Öğretim Üyesi, Amasya Üniversitesi, İİBF, İktisat Bölümü, (e-posta: toktasyilmaz@gmail.com)

Pakistan, Peru, Filipinler, Rusya ve Tayland'da ise ekonomik olarak küreselleşme düzeyindeki artışın işsizlik oranını azalttığını ortaya koymuştur.

Anahtar Kelimeler: *Ekonomik Küreselleşme, İşsizlik, Panel Veri Analizi, Yükselen Piyasa Ekonomileri.*

Makale Geliş Tarihi: 18.04.2018

Makale Kabul Tarihi: 11.10.2018

I. Introduction

It is still controversial if the globalization is advantageous or disadvantageous for the countries. Some of the scientists advocate that the globalization is the potential driving power for nationwide economic growth and development in the modern world. It is projected that, in the developing countries, the globalization would facilitate the integration to world markets and institutions, contribute to the cultural exchange, enable developing better governance, provide fund for information and knowledge transfer, and improve the extraterritorial capital movements. Moreover, under the lights of aforementioned points, it is also expected that the poverty would decrease as a result of accelerating economic development and emergence of revenue-generating activities together with the globalization. On the other hand, there also are ones thinking that the globalization creates a cultural imperialism, and that opening to international market in the early stages of development with untalented human resources and insufficient background would be disadvantageous (Daly et al., 2017: 634-635).

The positive and negative consequences of globalization (in other words, its effects on the countries) are investigated by using different measurement methods. In literature, it can be seen that the variables such as direct foreign capital investments and trade openness are used in representing the globalization. But, all these variables fall short in examining all the macroeconomic effects. For this reason, in measuring the globalization, the index methods came into use. KOF Globalization Index developed by Dreher (2006) is one of the most frequently used indexes in measuring the globalization. With KOF index, the globalization is measured from three aspects, namely the economic, politic, and social aspects. Moreover, as the sum of all these 3 subcategories, the general globalization index is achieved.

With the changes it causes in countries' production structure and the increasing commercial and financial operations, the economic globalization results in the reorganization of economies, it also gradually increases in dependencies between the countries. For instance; as the global resource utilization expands, some sorts of job types disappear and the new employment opportunities emerge for some parts of world (Ogunrinola and Osabuohien 2010: 581-582). By changing the labor demand and structure, wages, and employment flexibility in the labor market, the globalization leads to increases and decreases in the wealth of workers. In this study, the effects of economic globalization, which is thought to have significant effects on the unemployment, on 16

emerging market economies was examined by using panel data analyses for the period between 1991 and 2014. Starting with the introduction, this study continues with the theoretical background and literature review, and then the empirical analysis. In the analyses, firstly the presence of cross-sectional dependency was examined and then the unit root test was performed. Continued with the homogeneity tests, the analyses were ended with determining the cointegration relationship and the coefficients of this relationship. This manuscript was concluded with the conclusions section.

II. Theoretical Backgrounds and Literature Review

The effects of globalization on the unemployment are generally unclear. But, the theoretical background of the globalization-unemployment relationship dates back to Ricardo's Comparative Advantages Theory and Factor Endowment Theory (also known as Heckscher-Ohlin Theory) among the traditional foreign trade theories. According to the Ricardian Theory, the free foreign trade decreases the unemployment. In a small country, where there are two industries and the labor is the only production factor, the foreign trade would increase the relative domestic price of a product manufactured in the exporter industry and thus increase the marginal product of labor. Through the perfect specialization brought by the foreign trade, the marginal product of labor would decrease in the importer industry. Because of the productivity for whole economy, the marginal product of labor would continue increasing and the unemployment decreases by means of creating job opportunities through more investment incentives. In the Heckscher-Ohlin Theory, it is assumed that there are two sectors and two factors (labor and capital). Before the foreign trade, the relative price of labor-intensive product would be at lower level in a capital-rich country when compared to the rest of the world. So, it means that there would be an increase in the relative price of capital-intensive product in this country together with the free foreign trade. This would lead to an increase in demand to capital in return for the labor, and thus the average wage level would decrease and finally the unemployment would be increased. On the other hand, since the foreign trade will cause an increase in demand to labor in the labor-rich countries, the wages will increase and also the unemployment rates will decrease (Adamu, 2017: 302; Dutt et al., 2009 :33). The ways, in which the globalization might affect the employment, can be gathered under 7 groups. First of them is related to the *number of jobs*. By affecting the current employment in economy, the economic globalization alters the macroeconomic variables such as unemployment rate and employment/population ratio. For instance; if a company in Country A is closed in order to transport it to Country B (offshoring), it might lead to a business loss in a certain economic activity in Country A. The economic globalization might affect the *structure of jobs*, which is the distribution of jobs among the economic activities. The jobs related to certain economic activities might disappear, whereas the jobs related to the new activities might emerge as a result of changing competitive advantages and specializing. At this point, it should be noted that some of the structural changes might originate from the technological advancements. In terms of the *composition of jobs*, the workers in developed countries might suffer unemployment or loss of income since they are exposed to the technology and the competition of low-wage workers in developing countries. The increase of multinational companies' production

in countries, where the wages are at lower levels, might cause certain activities reducing the wage levels in underdeveloped countries (such as ban on union activities and collective labor agreements, exemption from tax, tax reduction, and implementation of protective labor law legislation). Thus, the number of unemployed individuals increases in labor-intensive industries in developed countries. In underdeveloped countries, on the other hand, the employment increases, while the general level of income remains low. On the other hand, the *R&D jobs* are seen to have strategic importance for the national economies because of their relationship with the innovations. Some of companies transport their R&D activities to foreign countries and thus they might gain advantage of easier procurement in foreign countries by becoming nearer to the important markets. Besides that, they might also carry out their production activities in foreign countries and R&D activities in their own country. This means that, for the jobs that are based on knowledge and technology, the qualified labor is protected in favor of developed country. The economic globalization increases the general productivity of economy through the *job earnings* and brings an increase in income levels or balances the price differences between the countries (including the price of labor) by encouraging the factor movements. In labor markets, *migrations* play the role of catalyzer because of the improvements in transportation and communication opportunities. In developed countries, the migrants might relieve the problem of labor and they might be a part of solution for ageing population. Besides that, in developing countries, the migration to more developed countries might result in the "brain drain". *The employment conditions* are a part of economic competition. For instance; less security and longer working hours might be attractive for the multinational companies. Economic globalization or technological advancements might bring unclear employment conditions. The concept of flexible working, which has emerged as a result of globalization, can be an example for this. By means of flexible working, the part-time or homeworking systems independent from the shift and space became available. The flexible working is used in reducing the unemployment, whereas it might also create the effect of divergence from full employment (Pietro et al., 2007: 2-4; Sönmez, 2006: 183-185).

As stated at the beginning, it seems not possible to state if the effect of globalization on the unemployment is positive or negative. Studies in literature corroborate this and they might be seen in Table 1.

Table 1. Globalization and Unemployment Literature Review

Author (s) and Year of Study	**Country(s) and Period**	**Method**	**Conclusion**
Orbeta (2002)	Philippines 1980-2000	Static Panel Data Analysis	Globalization has no effect on the total employment, but the

			results might change among the sectors.
Harms and Hefeker (2003)	Firma	Partial Equilibrium Model	Globalization reduces the unemployment.
Sen (2004)	Bangladesh and Kenya 1982-1998	Regression Estimation	Globalization reduced the unemployment but increased it in Kenya.
Tavera (2007)	Peru (Industrial) 1994-2000	Static Panel Data Analysis	Globalization doesn't reduce the unemployment.
Ukpere and Slabbert (2009)	-	Conceptual Analysis	Globalization increases the unemployment.
Ogunrinola and Osabuohien (2010)	Nigeria 1990-2006	Least Squares Method (LSM)	Globalization has positive effects on employment in production industry.
Meidani and Zabihi (2012)	Iran and 1971-2006	Cointegration Model	Globalization has significant and negative effect on the unemployment rate.
Soomro et al. (2012)	Pakistan 1971-2009	Autoregressive Conditional Heteroskedasticity (ARCH)	Economic globalization has significant and positive effect on the unemployment.
Erer and Erer (2014)	25 EU-Member countries 2000-2012	Spatial Panel Data Analysis	Globalization reduces the unemployment rate.
Ar (2015)	Turkey and some developed/developing countries	Descriptive Statistics	Due to the globalization, the high rate of unemployment

			became a permanent subject.
Awad and Ishak Youssof (2016)	Malaysia 1980-2014	ARDL (Autoregressive Model with Distributed lags) Model	Globalization has significant and positive effect on the unemployment.
Adamu et al. (2017)	35 Sub-Saharan African Countries 2007-2014	GMM (Generalized Momentums Method)	Only the political globalization was observed to reduce the unemployment.
Busemeyer and Garritzmann (2017)	17 Countries 2006	Logit Model	There is no significant relationship between globalization and unemployment benefits.
Daly et al. (2017)	Pakistan 1980-2013	ARDL	The reduction effect of globalization on unemployment in long-run is not significant.
Demirtaş and Yayla (2017)	29 OECD-Member Countries 84 Developing Countries 1995-2012	Constant Effects Model	In OECD countries, KOF political globalization index doesn't positively affect the women employment. Economic and social globalization has no effect on the women employment.
Gozgor (2017)	87 Countries 1991-2014	LSM	The effects of economic, social, and political aspects of globalization on the structural unemployment are negative and

			statistically insignificant.
Nikolaevich and Aleksandrovna (2017)	Russia	Questionnaire	Globalization indirectly affects the unemployment through the modifications in various aspects of society.
Lim and Burgoon (2017)	28 Asian Countries 2003-2007	Questionnaire	Globalization doesn't reduce the unemployment.

III. Dataset and Econometric Method

In the present study, in order to examine the effects of economic globalization on the economic growth, 16 emerging market economies* were taken into consideration. Within the scope of empirical analysis and depending on the availability of data, the annual datasets for the period between 1991 and 2014 were utilized.

Table 2. Variable Definitions and Sources

Variable	Description	Expected Sign	Source
UNEMP	Unemployment rate (percentage of total labor modeled via estimations of ILO)		World Bank
GDP	Real GDP (Constant, 2010-USD), The series, natural algorithms of which were taken, were used as indexes.	+/-	World Bank
INF	Inflation, GDP Deflator (Annual, percentage increase)	+/-	World Bank
POP	Total population was used as series, natural algorithms of which were taken).	+/-	World Bank
KOFEC	Economic Globalization Index	+/-	Switzerland Institute of Economy (KOF)

* 16 Emerging Market Economies: Brazil, China, Colombia, Hungary, India, Indonesia, Malaysia, Mexico, Pakistan, Peru, Philippines, Poland, Russian Federation, South Africa, Thailand and Turkey.

The model established in order to estimate the effects of economic globalization on the unemployment is presented below;

$$UNEMP_{it} = \propto_{it} + \propto_1 GDP_{it} + \propto_2 INF_{it} + \propto_3 POP_{it} + \propto_4 KOFEC_{it} + u_{it} \quad (1)$$

From methodological aspect, the study consists of 4 stages. At first stage, the dependencies between cross-sections constituting the panel were examined by using $CDLM_1$ and $CDLM_2$ tests for the model and variables. At the second stage, the stationarity of series was examined by using second generation SURADF (Seemingly Unrelated Regression Augmented Dickey Fuller) unit root test taking the cross-sectional dependency into consideration. And then, the homogeneity of slope coefficients was investigated by using Delta test, whereas the long-term relationship between the series was analyzed using Durbin-Hausman cointegration test. At the last stage, the coefficient estimation of long-term relationships between the variables was performed using DSUR (Dynamic Seemingly Unrelated Regression) method.

IV. Ampirical Analysis

A. Cross-Sectional Dependency Test and Results

In panel data models, it is assumed that the units constituting the panel are independent from each other and, thus, the other units are equally affected or not from the shocks coming from a panel. But, considering that the globalization trend is remarkably accelerated now, the shock in any country (unit) affects the other countries at different levels. In such cases, the analyses to be performed in case of a cross-sectional dependency between the variables are to provide biased and inconsistent results (Tatoğlu, 2013: 9; Mercan, 2004: 35).

In order to test the presence of cross-sectional dependency, Langrange Multiplier (LM) test was developed by Breusch and Pagan (1980). LM statistics,

$$CDLM_1 = T \sum_{i=1}^{N-1} \sum_{j=i+1}^{N} \hat{\rho}_{ij,}^2 \quad (2)$$

$\hat{\rho}_{ij}$ is the estimation of binary correlation,

$$\hat{\rho}_{ij} = \hat{\rho}_{ji} = \frac{\sum_{t=1}^{T} e_{it} e_{jt}}{\left(\sum_{t=1}^{T} e_{it}^2\right)^{1/2} \left(\sum_{t=1}^{T} e_{jt}^2\right)^{1/2}} \quad (3)$$

is the estimation of $e_{it=y_{it}-\hat{\beta}_i' x_{it}}$ and u_{it} by using OLS regression. Differently from spatial dependency test, LM test can be implemented more generally and it does not require any particular ordering for the cross-section units. But, this test is applicable when T>N. Within this scope, the under null hypothesis representing that there is no cross-sectional dependency, Breusch and Pagan (1980) showed that $CDLM_1$ statistics has asymptotically chi-square distribution with degree of freedom of $N(N-1)/2$. But, improving the $CDLM_1$ test, they developed $CDLM_2$ test that can be used in testing the cross-sectional dependency when N and T are large:

$$CDLM_2 = \sqrt{\frac{2}{N(N-1)}} \sum_{i=1}^{N-1} \sum_{j=i+1}^{N} (T\hat{\rho}_{ij}^2 - 1) \quad (4)$$

According to this test, when $T \to \infty$ and $N \to \infty$, it is assumed according to null hypothesis that there is no cross-sectional dependency (Pesaran, 2004: 6-7). In the present study, since T=24 > N=16, $CDLM_1$ and $CDLM_2$ tests were used in order to test cross-sectional dependency for both of series and cointegration equation.

Table 3. Cross-Sectional Dependency Test Results

Variables	$CDLM_1$	Probability	$CDLM_2$	Probability
UNEMP	162.454***	0.006	2.740***	0.003
GDP	197.251***	0.000	4.987***	0.000
INF	333.166***	0.000	13.760***	0.000
POP	248.482***	0.000	8.293***	0.000
KOFEC	211.734***	0.000	5.921***	0.000
Model	212.739***	0.000	5.986***	0.000

Note: ***,** and * refer to the significance levels of 1%, 5%, and 10%, respectively.

As seen in Table 3, for all the variables and model, there is cross-sectional dependency at statistical significance level of 1%. Under the lights of these results, it was decided to implement the second generation panel unit root tests taking the cross-sectional dependency into consideration.

B. Panel Unit Root Test and Results

Since the presence of cross-sectional dependency was determined for the series and model in the previous stage, among the second generation panel unit root tests, SURADF unit root test developed by Breuer et al. (2001) was used.

Developed by Breuer et al. (2001), SURADF test is an ADF test based on SUR (Seemingly Unrelated Regression) panel estimation method. SURADF test is represented with the Equation (5) below;

$$\Delta y_{1,t} = \alpha_1 + (\rho_1 - 1)y_{1,t-1} + \sum_{i=1} \delta_i \Delta y_{1,t-i} + u_{1,t}$$
$$\Delta y_{2,t} = \alpha_2 + (\rho_2 - 1)y_{2,,t-1} + \sum_{i=1} \delta_i \Delta y_{2,t-i} + u_{2,t}$$
$$\Delta y_{N,t} = \alpha_N + (\rho_N - 1)y_{N,t-1} + \sum_{i=1} \delta_i \Delta y_{N,t-i} + u_{N,t} \quad (5)$$

Here, ρ_i is the autoregressive coefficient for series i. This system is estimated using SUR method, and the significance of each $(\rho_i - 1)$ is tested against the critical values obtained from the simulation. The specification of this model has various advantages

over the panel unit root test developed by Levin and Lin. First of all, SUR estimation takes the cross-sectional dependency between the error terms into account, they provide more information when compared to the single-equation ADF and Levin and Lin (1992, 1993) tests. Secondly, this equation allows for heterogeneity of the lag structures between the units constituting the panel. Assuming that there are unit-specific lag structures eliminates the problem of misspecification in equations and allows each of the error terms to be white-noisy. Determining a identical lag structure between the units constituting the panel causes bias test statistics. But, in SURADF method, one lag is sufficient for eliminating the serial correlation for each unit. Finally, specification allows greatness of the autoregressive coefficients to differ between the units. In this method, the limitation of $(\rho_1 - 1) = (\rho_2 - 1) = \cdots = (\rho_N - 1)$ was removed and, thus, the null hypothesis that all the series have unit root and the alternative hypothesis that all the series are stationary with the same autoregressive coefficient were avoided. In other words, in this test, it is possible to calculate null and alternative hypotheses for each unit constituting the panel within the frame of SUR.

Null and alternative hypotheses established for n-number of units are as follows:

$H_0^1: \beta_1 = 0;\ H_A^1: \beta_1 < 0$
$H_0^2: \beta_2 = 0;\ H_A^2: \beta_2 < 0$
$H_0^N: \beta_N = 0;\ H_A^N: \beta_2 < 0$ (6)

SURADF test statistic below the critical value indicates that the series is stationary (Breuer et al. 2001: 487; Breuer et al. 2002: 531). In this study, the SURADF unit root statistics of each country constituting the panel are presented in Tables 4, 5, 6, 7 and 8.

Table 4. SURADF Unit Root Test Results of UNEMP

Country	$SURADF_{test}$	Critical Values		
		1%	5%	10%
Brazil	-1.525	-6.337	-7.692	-10.480
China	-2.770	-7.122	-8.398	-11.660
Colombia	-3.770	-5.508	-6.506	-8.732
Hungary	-4.604	0.110	-1.739	-4.757
India	-3.763	-7.868	-9.328	-12.870
Indonesia	-4.543	-7.197	-8.415	-12.170
Malaysia	-6.910	-6.843	-8.371	-11.930
Mexico	-3.791	-7.868	-9.241	-12.200
Pakistan	-5.375	-6.079	-7.232	-9.776
Peru	-6.135*	1.905	0.861	-1.369
Philippines	-0.439	-7.814	-9.167	-11.860
Poland	-4.618	-7.010	-8.536	-13.030

Russia	-2.626	-11.540	-13.500	-18.080
South Africa	-9.256	-7.237	-8.417	-11.240
Thailand	-3.746	-6.877	-8.044	-11.420
Turkey	-5.118	-11.310	-13.860	-19.270

Note: ***,** and * refer to the stationarity at the significance levels of 1%, 5%, and 10%, respectively. Critical values were obtained from Monte Carlo Simulation with 10,000 replications.

According to Table 4, at the significance level of 10%, it was determined that the test statistics calculated with SURADF test for UNEMP series were below the critical values for Peru. Thus, it was found that the unemployment series in this country are stationary. And in other 15 countries, the calculated test statistics were above the critical values and it was decided that the series have non-stationary structure.

Table 5. SURADF Unit Root Test Results of GDP

Country	$SURADF_{test}$	**Critical Values**		
		1%	**5%**	**10%**
Brazil	0.792	-17.140	-12.570	-10.610
China	2.609	-12.480	-8.912	-7.552
Colombia	2.450	-10.770	-8.303	-7.382
Hungary	-2.123	-10.310	-7.320	-6.154
India	5.368	-11.300	-8.671	-7.405
Indonesia	2.906	-12.180	-8.758	-7.583
Malaysia	1.009	-18.320	-13.890	-11.970
Mexico	-1.895	-11.660	-9.012	-7.855
Pakistan	2.073	-11.450	-8.557	-7.314
Peru	1.631	-11.070	-8.325	-7.172
Philippines	4.180	-12.040	-8.907	-7.813
Poland	-0.678	-12.010	-9.315	-8.059
Russia	-3.395	-14.060	-10.960	-9.519
South Africa	-1.890	-15.900	-11.820	-9.945
Thailand	-0.083	-15.010	-11.280	-9.722
Turkey	0.546	-12.530	-9.460	-8.234

Note: ***,** and * refer to the stationarity at the significance levels of 1%, 5%, and 10%, respectively. Critical values were obtained from Monte Carlo Simulation with 10,000 replications.

In Table 5, it can be seen that, at the statistical significance level of 10%, the series for the period 1991-2014 have unit root in all of the emerging market economies according to the unit root tests on GDP.

Table 6. SURADF Unit Root Test Results of INF

Country	$SURADF_{test}$	Critical Values		
		1%	5%	10%
Brazil	-6.853	-13.400	-10.630	-9.070
China	-8.597*	-11.890	-8.672	-7.185
Colombia	-5.877	-12.860	-9.011	-7.697
Hungary	-5.198	-13.610	-10.140	-8.713
India	-5.053	-14.510	-11.610	-10.340
Indonesia	-8.618	-15.020	-11.600	-10.140
Malaysia	-17.290***	-13.040	-9.263	-7.876
Mexico	-9.689**	-12.780	-9.451	-8.142
Pakistan	-8.134*	-12.330	-9.087	-7.500
Peru	-7.616	-13.610	-10.080	-8.554
Philippines	-10.220	-15.080	-11.970	-10.460
Poland	-11.580**	-14.110	-10.880	-9.340
Russia	-7.578	-15.040	-10.980	-9.532
South Africa	-2.824	-11.950	-8.568	-7.157
Thailand	-14.590**	-14.810	-11.570	-10.160
Turkey	-7.331	-14.720	-11.420	-10.090

Note: ***,** and * refer to the stationarity at the significance levels of 1%, 5%, and 10%, respectively. Critical values were obtained from Monte Carlo Simulation with 10,000 replications.

According to the SURADF unit root test results presented in Table 6, it was determined that the inflation series was stationary in China and Pakistan at the significance level of 10% and in Mexico, Poland, Thailand at the significance level of 5% and Malaysia at the significance level of 1%. Since the SURADF test statistics were above the critical values in other countries constituting the panel, it was observed that the series have a stationary structure and thus incorporate unit root.

Table 7. SURADF Unit Root Test Results of POP

Country	$SURADF_{test}$	Critical Values		
		1%	5%	10%
Brazil	-10.450	-36.020	-27.870	-24.240
China	-0.580	-101.100	-77.870	-66.150
Colombia	-2.750	-17.560	-13.650	-11.690
Hungary	0.679	-18.810	-13.130	-10.820
India	-5.175	-20.070	-15.650	-13.570
Indonesia	0.576	-18.670	-14.350	-12.320
Malaysia	-1.743	-15.260	-11.700	-9.914
Mexico	1.634	-21.810	-16.230	-13.710
Pakistan	5.070	-16.740	-12.200	-10.390
Peru	0.687	-19.630	-15.380	-13.330

Philippines	-0.407	-23.310	-17.700	-15.350
Poland	-1.195	-13.310	-9.311	-7.798
Russia	-7.257**	-9.342	-6.827	-5.457
South Africa	3.968	-74.710	-58.670	-51.450
Thailand	-21.340	-182.400	-163.800	-156.400
Turkey	2.332	-56.730	-51.690	-49.120

Note: ***,** and * refer to the stationarity at the significance levels of 1%, 5%, and 10%, respectively. Critical values were obtained from Monte Carlo Simulation with 10,000 replications.

According to the SURADF test results presented in Table 7, since the test statistics were below the calculated critical values at the significance level of 5%, it was determined that the population series was stationary in Russia. In all the countries (other than Russia) constituting the panel, the population series incorporate unit root and, thus, it was determined that they exhibit no stationary structure.

Table 8. SURADF Unit Root Test Results of KOFEC

Country	$SURADF_{test}$	**Critical Values**		
		1%	**5%**	**10%**
Brazil	-6.008	-12.48	-8.575	-7.120
China	-2.993	-13.100	-9.394	-7.990
Colombia	-3.467	-11.540	-8.149	-6.676
Hungary	-11.44**	-13.610	-9.592	-8.063
India	-1.194	-13.410	-9.692	-8.012
Indonesia	-13.83***	-12.500	-8.263	-6.870
Malaysia	-10.37**	-14.020	-9.553	-7.844
Mexico	-4.826	-13.140	-9.472	-7.840
Pakistan	-4.193	-13.460	-9.224	-7.869
Peru	-1.741	-12.770	-9.411	-7.832
Philippines	-5.721	-13.080	-9.487	-8.109
Poland	-5.093	-18.790	-12.920	-10.780
Russia	-8.960	-19.350	-13.750	-11.520
South Africa	-9.160**	-11.910	-7.930	-6.459
Thailand	-7.130	-13.490	-10.290	-8.688
Turkey	-10.18*	-14.660	-10.370	-9.001

Note: ***,** and * refer to the stationarity at the significance levels of 1%, 5%, and 10%, respectively. Critical values were obtained from Monte Carlo Simulation with 10,000 replications.

According to the SURADF unit root test results shown in Table 8, it was determined that the test statistics of economic globalization series were below the critical values in Turkey at the significance level of 10%, Hungary, Malaysia, and South Africa at the significance level of 5%, and Indonesia at the significance level of 1%. Thus, it was decided that the series were stationary. Since the SURADF test statistics were below the critical values in other 11 countries constituting the panel, it was decided that the series were not stationary and thus they incorporate unit root.

C. Homogeneity Test and Results

Before the cointegration tests, it should be determined if the slope coefficients of each country were homogenous or heterogeneous. Because determining if the slope coefficients are homogeneous or not is important for the cointegration to be applied. Using Delta($\hat{\Delta}$) tests developed by Pesaran and Yamagata (2008), it is examined if the slope coefficients are homogeneous or not. For the large samples, the $\hat{\Delta}$ test presented below is used, whereas $\hat{\Delta}_{adj}$ test might be used for small samples:

$$\hat{\Delta}= \sqrt{N}\left(\frac{N^{-1}\hat{S}-k}{\sqrt{2k}}\right), \tag{7}$$

$$\hat{\Delta}_{adj}= \sqrt{N}\left(\frac{N^{-1}\hat{S}-E(\hat{z}_{iT})}{\sqrt{Var(\hat{z}_{iT})}}\right) \tag{8}$$

$$Y_{it} =\propto_i+ \beta_i X_{it} + \varepsilon_{it}, \qquad i = 1 \dots \dots .. N, \qquad t = 1 \dots \dots \dots T \tag{9}$$

The null and alternative hypotheses used for estimating the Equation (9) are presented below;

H_0: $\beta_i = \beta$ the slope coefficients are homogeneous .

H_a: $\beta_i \neq \beta$, the slope coefficients are not homogeneous. The results of slope homogeneity test performed in this study are shown in Table 9.

Table 9. Homogeneity Test Results

	Test statistics	**Probability**
$\hat{\Delta}$ **Delta_tilde**	12.873***	0.000
$\hat{\Delta}_{adj}$ **Delta_tilde_adj**	14.766***	0.000

Note: ***,** and * refer to the heterogeneity of slope coefficients at the significance levels of 1%, 5%, and 10%, respectively.

According to the homogeneity test results shown in Table 9, the H_0 hypothesis was rejected since the probability values were below 5%, and it was decided that the slope coefficients were heterogeneous for each country.

D. Cointegration Test and Results

The cointegration analysis is a method that is used for statistical presentation of long-term relationships between the non-stationary variables (Sevüktekin and Çınar, 2017: 559). In the studies, for determining the cointegration test to be employed, it is important to determine if the dependency between the cross-sectional units and the slope coefficients are homogeneous. Since some of the series used in this study were stationary but some others were not and since the cointegration coefficients in the model were heterogenous and also because there was dependency between the cross-sectional units, the Westerlund (2008) Durbin-Hausman cointegration test was used in this parallel.

Durbin-Hausman cointegration test can be used if some of independent variables are stationary and some others are not (on the condition that the dependent variable shall be non-stationary). The test can be calculated in two ways; one of them is the group average statistics (DH_g) assuming that the autoregressive parameter is heterogeneous and the second is the panel statistics (DH_p) assuming that the autoregressive parameter is homogeneous;

$$DH_g = \sum_{i=1}^{n} \hat{S}_i(\widehat{\emptyset}_i - \widehat{\emptyset}_i)^2 \sum_{t=2}^{T} \hat{e}_{it-1}^2 \quad (11)$$

$$DH_p = \hat{S}_n(\widehat{\emptyset} - \widehat{\emptyset})^2 \sum_{i=1}^{n} \sum_{t=2}^{T} \hat{e}_{it-1}^2 \quad (12)$$

For DH_p and DH_g, the H_0 hypothesis was "there is no cointegration for all the units". The alternative hypotheses were H_1^p "There is cointegration for the entire panel" and H_1^g "There is cointegration for some of the units" (Westerlund, 2008: 199-203). The results of Durbin-Hausman cointegration test implemented in this study are presented in Table 10.

Table 10. Cointegration Test Results

	Test Statistics	**Probability**
Durbin-H Group	1.604*	0.054
Durbin-H Panel	3.801***	0.000

Note: ***,** and * refer to the cointegration at the significance levels of 1%, 5%, and 10%, respectively.

Given the results in Table 10, it can be seen that, according to the DH_p and DH_g test statistics, H_0 hypothesis was rejected at the significance levels of 1% and 10%, respectively. Consequently, it was decided that there were long-term relationships throughout the panel and between the cross-sectional units constituting the panel.

E. Estimation of Cointegration Coefficients

By using Westerlund (2008) Durbin-Hausmann cointegration test, it was determined that there were long-term relationships between the series, and the DSUR estimator was used in estimating the long-term coefficients of variables.

DSUR method is a parametric alternative to the non-parametrical estimators of Seemingly Unrelated Cointegration Regressions (SUR) suggested by Park and Ogaki (1991) and is asymptotically equivalent for these non-parametric estimators. DSUR method is suitable for the balanced panels, in which the cross-section dimension is below the time dimension (N<T) and cointegration vectors are heterogeneous or homogenous among the equations. This method has a significant efficiency advantage over the non-systematic methods such as DOLS (Dynamic Ordinary Least Squares) if the descriptive variables in the regression are heterogeneous and there is correlation between the error

terms (Mark et al., 2005: 797-798). For the selected emerging marketing economies in the present study, the direction and magnitude of long-term effects of population, economic growth, inflation, and economic globalization parameters on unemployment were estimated by using DSUR method developed for this purpose, and the results are presented in Table 11.

Table 11 Coefficient Estimation Results

	GDP		INF		POP		KOFEC	
	Coef.	**t-stat**	**Coef.**	**t-stat**	**Coef.**	**t-stat**	**Coef.**	**t-stat**
Brazil	-0.082***	-8.50	0.010	0.00	-0.131***	-6.88	-0.467***	-46.70
China	-0.003***	-3.00	-0.002**	-2.00	-0.115***	-57.50	-0.163***	-54.33
Colombia	-0.096***	-13.71	-0.166***	-83.00	-0.175***	-8.75	0.140***	8.75
Hungary	-0.343***	-18.05	-0.700***	-16.28	1.658***	17.08	0.130***	1.91
India	-0.008***	-8.00	-0.069***	-23.00	0.041***	20.50	0.075***	37.50
Indonesia	0.164***	20.05	0.091***	22.75	-2.112***	-46.93	-1.324***	-66.20
Malaysia	0.020***	10.00	0.169***	33.80	-0.775***	-31.00	0.251***	19.31
Mexico	0.041***	5.13	0.180***	60.00	-0.064***	-2.56	-0.222**	13.86
Pakistan	0.035***	8.75	-0.046***	-11.50	-1.209***	-28.79	-0.114***	-5.70
Peru	-0.063***	-21.00	-0.042***	-21.00	0.314***	14.95	-0.081***	-3.68
Philippines	0.059***	21.00	-0.221***	-20.10	0.186***	10.33	-1.582***	-39.55
Poland	-0.158***	-19.75	-0.263***	-52.60	-0.853***	-28.43	2.104***	67.87
Russia	-0.108***	-108.00	-0.005	0.05	-0.108***	-18.00	-0.539***	-107.80
South Africa	0.215***	10.75	0.324***	8.53	-0.315**	-4.26	0.940***	14.24
Thailand	-0.019***	-19.00	-0.102***	-34.00	0.178***	59.33	-0.373***	-93.25
Turkey	-0.095***	-47.50	-0.054***	-54.00	-1.111***	-35.84	1.572***	36.56

Note: ***,** and * refer to the cointegration at the significance levels of 1%, 5%, and 10%, respectively.

According to the DSUR estimation results presented in Table 11, it was determined that, except for Indonesia, Malaysia, Mexico, Pakistan, and South Africa, the economic growth (GDP) generally reduced the unemployment in selected emerging market economies. Considering the effect of inflation (INF) on unemployment (UNEMP), in 14 countries except for Brazil and Russia, inflation has significant effects on the

unemployment. But, it was also observed that the direction of effect of increase in inflation on economic growth varied between the countries. Accordingly, in the countries other than Indonesia, Malaysia, Mexico, and South Africa, it was observed that the increase in inflation reduced the unemployment. Examining the effects of population (POP) on unemployment (UNEMP), it was determined that there were significant relationships between the variables in all of the selected countries constituting the panel. But, considering the direction of population's effect on unemployment, the population growth increased the unemployment in many countries, whereas it reduced the unemployment in some others.

Constituting the focus of study, the effect of economic globalization (KOFEC) on unemployment (UNEMP) was examined, and it was determined that the economic globalization has significant effects on the unemployment in all the countries constituting the panel. But, it was also observed that the economic globalization reduced the unemployment in some of countries, while it increased it in some other countries. It was concluded that the increase in economic globalization increased the unemployment rate in Colombia, Hungary, India, Malaysia, Poland, South Africa, and Turkey. The country, in which the economic globalization's effect increasing the unemployment is at highest level, is Poland. 1% increase in economic globalization in Poland was found to increase the unemployment by 2.104%. It was determined that the economic globalization significantly increased the unemployment also in Turkey. Accordingly, 1% increase in economic globalization in Turkey increased the unemployment by 1.572%. In these countries, it can be stated that the unemployment increase because of the change in labor markets as a result of structural adjustment policies implemented since 1980s in relation with the globalization process in these countries. Moreover, it can also be stated that financial liberalization discourage the long-term real sector investments by making short-term financial sector investments more attractive, and thus the unemployment is negatively affected.

In Brazil, China, Indonesia, Mexico, Pakistan, Peru, Philippines, Russia, and Thailand, it was determined that the increase in level of economic globalization reduced the unemployment rates. The country, in which the economic globalization's effect reducing the unemployment is at highest level, was Philippines. In Philippines, 1% increase in economic globalization level reduces the unemployment by 1.582%. It can be stated that, in these countries, the productivity increases encourage the investments and reduce the unemployment for the whole economy in proportion to the abovementioned negative effects of globalization process.

V. Conclusion

The globalization, which is a multidimensional concept, means that the countries become dependent to each other from political, economic, and sociocultural aspects. The economic aspect of globalization is considered as the increase in economic integrations between the countries depending on the removal of economic and financial borders. The discussions about if the economic globalization is advantageous or disadvantageous for the national economies date back to the first period of globalization concept. Some of

the researchers advocate that the globalization contributes to the economic developments of countries, whereas some others claim that the globalization results in consequences threatening the individuals' welfare such as unemployment, income inequality, and impoverishment.

In this study, the effects of economic globalization on unemployment were examined in order to contribute to the aforementioned discussions about the selected emerging market economies. For this purpose, considering the availability, the panel data analysis was employed by using the data of period between 1991 and 2014. Within the scope of present analyses, the unemployment rates were used as dependent variable. As the descriptive variables, the parameters used were KOF economic globalization index representing the economic globalization, which is the main variable, and the real GDP representing the economic growth, as well as the inflation and population as the control variables. Durbin-Hausman cointegration test was employed in order to examine the long-term relationships between the variables. After documenting the long-term relationships, then DSUR method was used for estimating the coefficients of variables. According to the results, it was determined that the economic globalization reduced the unemployment in some countries but increased it in some other countries. It was found that the increase in economic globalization level increased the unemployment rates in Colombia, Hungary, India, Malaysia, Poland, South Africa, and Turkey. But, in Brazil, China, Indonesia, Mexico, Pakistan, Peru, Philippines, Russia, and Thailand, the increase in level of economic globalization reduced the unemployment rate.

Under the lights of these results, as emphasized in many studies in literature, it was found also in the present study that the globalization concept has positive and negative effects on the unemployment. It can be seen that the structural adjustment policies based on the liberalization, privatization, and stability that have been implemented since 1980s within the scope of Washington Convention suggested by IMF and World Bank have changed the production and employment structures and increased the unemployment in many countries. Together with the accelerating globalization process, the number of economic crises in developing countries increased and this increased the unemployment rates in some of these countries. Moreover, causing the removal of borders, the globalization also made the short-term financial investments and its consequences brought the discouraging effect on the real sector investments, in which the results are obtained in long period. This prevented the increase in employment through the real sector investments. As a result, it can be said that the economic globalization has brought the low-cost labor by decreasing the investments in countries, which has no stable structure and are implementing export-based growth policies, and triggered the economic crises and thus the increase in unemployment rates. But, in developing countries that have relatively higher competitive power, it can be stated that the economic globalization had positive effects on the unemployment by increasing the total productivity. In conclusion, in order to benefit from the positive aspects of globalization process, each country must develop and implement its policies based on its own economic conditions.

References

Adamu, P., Kaliappan, S. R., Bani, Y. and Nor, M. N. (2017). "Impact of Globalization on Unemployment in Sub-Saharan African (SSA) Countries". *Governance and Sustainability of Global Business Economics, 14-15 August 2017,* (pp. 302-310), Malaysia, Universiti Putra Malaysia.

Ar, K. N. (2015). "Küreselleşme Sürecinde İstihdam ve Sendikacılık". *Girişimcilik ve Kalkınma Dergisi,* 10(1), 239-270.

Awad, A. and Youssof, I. (2016). "The Impact of Economic Globalisation on Unemployment: The Malaysian Experience". *The Journal of Internatıonal Trade & Economıc Development,* 15(2), 1-21.

Busemeyer, M. R. and Garritzman, J. L. (2017). "The Effect of Economic Globalization on Compensatory and Social Investment Policies Compared: A Multi-Level Analysis of OECD Countries". *DaWs Working Paper Series,* No:2.

Daly, V., Ullah, F. Rauf, A. and Khan, G. Y. (2017). "Globalization and Unemployment in Pakistan". *Asian Economic and Financial Review,* 7(7), 634-643.

Dreher, A. (2006). "Does Globalization Affect Growth? Evidence from a New Index of Globalization". *Applied Economics,* 38, 1091-1110.

Dutt, P.,, Mitra, D. and Ranjan, P. (2009). "International Trade and Unemployment: Theory and Cross-national Evidence". *Journal of International Economics,* 78, 32–44.

Erer ve Erer (2014). "AB Ülkelerinde Küreselleşmenin İşsizlik Üzerine Etkileri: Mekansal Panel Veri Analizi". *Çukurova Üniversitesi İİBF Dergisi*, 18(2), 21-26.

Gozgor, G. (2017). "The Impact of Globalization on the Structural Unemployment: An Empirical Reappraisal". *International Economic Journal,* 31(4), 471-489.

Demirtaş, G. and Yayla, N. (2017), "Küresel Entegrasyonun Kadın İstihdamı Üzerine Etkisi: Ampirik Bir İnceleme". *Journal of Yasar University*, 12(48), 339-349.

Harms, P. and Hefeker, C. (2003). "Globalization and Unemployment: The Role of International Diversification". *Economics Letters*, 78, 281–286.

Lim, S. and Burgoon, B. (2017). "Globalization and Support for Unemployment Spending in Asia: Do Asian Citizens Want to Embed Liberalism?". *CEAFJP Discussion Paper Series,* No:17-03.

Meidani, A. A. N. and Zabihi, M. (2012). "The Dynamic Effect of Globalization on Unemployment Rate in Iran: A Co-integration Analysis". *International Business Research,* 5(1), 120-126.

Mercan, M. (2014). "Feldstein-Horioka Hipotezinin AB-15 ve Türkiye Ekonomisi için Sınanması: Yatay Kesit Bağımlılığı Altında Yapısal Kırılmalı Dinamik Panel Veri Analizi". *Ege Akademik Bakış*, 14(2), 231-245.

Nikolaevic, E. A. and Aleksandrovna, S. A. (2017). "Main Areas of Globalization Influence on the Unemployment Structure and Dynamics in Russia". *The Turkish Online Journal of Design, Art and Communication TOJDAC,* 710-721.

Ogunrinola, I.S. and Osabuohien, E.S.C. (2010). "Globalisation and Employment Generation in Nigeria's Manufacturing Sector (1990-2006)". *European Journal of Social Sciences*, 12(4), 581-593.

Orbeta, A. C. J. (2002). "Globalization and Employment: The Impact of Trade on Employment Level and Structure in the Philippines,". *Philippine Institute for Development Studies*. Discussion Paper Series No: 04

Pesaran, M. H. (2004). "General Diagnostic Tests for Cross Section Dependence in Panels". *Cambridge Working Papers in Economics*, 435, 1-39.

Pesaran, M.H. and Yamagata, T. (2008). "Testing Slope Homogeneity in Large Panels". *Journal of Econometrics*, 142(1), 50-93.

Pietro, M. A. D., Girsberger, E.M. and Vuille, A. (2007). "The impact of globalization on employment" 63rd SPC and 93rd DGINS Conference 19–21 September 2007, Budapest, Hungary.

West, K. (2004). "Globalisation and Employment in Kenya and Bangladesh". *School of Development Studies and Overseas Development Group*. Discussion Paper 7, University of East Anglia, United Kingdom.

Sevüktekin, M. and Çınar, M. (2017). *Ekonometrik Zaman Serileri Analizi* (5. Baskı), Bursa, Dora Yayıncılık.

Soomro, R. H., Nasar-ul-eman, S. M. and Aziz, F. (2012). "Impact of Economic Globalization on Unemployment: Global and National Perspective". *Interdisciplinary Journal of Contemporary Research in Business*, 3(12), 605-616.

Sönmez, P. (2006). "Küreselleşme, Avrupa Birliği ve İstihdam: Çalışma İlişkilerinde Yaşanan Dönüşüm". *Ankara Avrupa Çalışmaları Dergisi*, 5(3), 177-198.

Ukpere, W. I. and Slabbert, A. D. (2009). "A Relationship Between Current Globalisation, Unemployment, Inequality and Poverty". *International Journal of Social Economics*, 36(1/2), 37-46.

Tatoğlu, F.Y. (2013). *Panel Veri Ekonometrisi: Stata Uygulamalı* (2. Baskı), İstanbul, Beta Yayınları.

Tavera, J. A. (2007). "Globalization and Its Effects on Manufacturing Employment: The Case of Peru, 1993-2000". http://servicio.indecopi.gob.pe/revistaCompetencia/castellano/articulos/otono2006/06-TAVERAindd.pdf.

Westerlund, J. (2008). "Panel Cointegration Tests of the Fisher Effect". *Journal of Applied Econometrics*, 23(2), 193-233.