Araştırma Makalesi ● Research Article

Globalization and Employment: The Case of Turkey*

Küreselleşme ve İstihdam: Türkiye Örneği

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ÖZ

Bu çalışma, 1970-2019 yılları için Türkiye'nin küreselleşme ve istihdam düzeyi arasındaki uzun dönemli ilişkiyi ARDL yaklaşımıyla incelemektedir. ARDL sınır testi ile uygulanan eşbütünleşme testinin sonucu, Türkiye'de enflasyon, küreselleşme ve istihdamın eşbütünleşik olduğunu ve uzun vadede birlikte hareket ettiklerini göstermektedir. Uzun dönem katsayı tahmin bulgularına göre küreselleşmenin istihdam düzeyi üzerinde pozitif ve istatistiksel olarak anlamlı bir etkisi vardır. Enflasyonun ise istihdam düzeyi üzerinde negatif ve istatistiksel olarak anlamlı bir etkisi vardır. Diğer bir deyişle, küreselleşme düzeyindeki yüzde birlik sıçramayı, Türkiye'de istihdam düzeyindeki yüzde 0,853'lük bir artış takip ederken, enflasyon düzeyindeki yüzde birlik artış, Türkiye'de istihdam düzeyindeki yüzde 0,057'lik bir düşüşe yol açmaktadır. Son olarak VAR Granger Nedensellik testi bulgularına dayalı olarak, GLOB ve EMP değişkenlerinden INF değişkenine ve ayrıca INF ve GLOB değişkenlerinden EMP değişkenine uzanan nedensellikler tespit edilmiştir.

ABSTRACT

This study examines the long run nexus between globalization and employment level of Turkey for the years of 1970-2019 by using ARDL approach. The result of co-integration test implemented via ARDL boundary test show that inflation, globalization and employment are co-integrated and they move together in the long-run in Turkey. According to the long-run coefficient estimation findings, globalization has a positive and statistically significant effect on employment level. On the other hand inflation has a negative and statistically significant effect on employment level. In other words one percent jump in globalization level is followed by a 0.853% rise in employment level while one percent rise in inflation level leads to a drop by 0.057% in employment level in Turkey. Lastly based on VAR Granger Causality test findings, causalities running from GLOB and EMP variables to INF variable and also from INF and GLOB variables to EMP variable are identified.

1. Introduction

The concept of globalization, which has been discussed in many ways until today, is a multifaceted phenomenon. A world that integrates with interactions in many different dimensions in terms of cultural, economic and social aspects. Although it seems like a positive phenomenon, globalization also has many negative effects. Therefore, globalization has been the subject of many emdirici and theoretical studies.

In this study, globalization is discussed from an economic point of view. There are many different macroeconomic indicators in the economic dimension. It is a fact that globalization affects the world economic system in every way. For this reason, the factor of globalization, which is handled from many different aspects, has been investigated in many studies. In this study, the long-term relationship between globalization and employment is examined. For these two factors, an examination was made on the example of Turkey. The variables of globalization and employment discussed in the study have been discussed in many different studies in the literature. Some of these studies are summarized in the literature section.

2. Literature Review

Studies on globalization and employment occupy a large space in the literature. Some of these studies are summarized in two subgroups as globalization and employment. In one of the studies showing that globalization does not always lead to positive results, the concept of poverty is discussed. In this study, she stated that while industrialized economies developed more, less developed economies became poorer (Şenses, 2004:13-54). In another study, the relationship between the globalization variable and growth was examined. In the study covering the years 1970-2000, empirical analysis was made with data from 123 countries. As a result of the analysis, it has been seen that globalization encourages growth. It has been stated that the effect of globalization on growth is more in developing economies (Dreher, 2006: 1091-1110). In another study in the direction of growth and globalization, ARDL analysis was made with the data of Turkey's 1970-2013 years. Analyzes show that there is a positive relationship between growth and globalization (Koyuncu and Saritaş, 2017: 51). In another study, which states that globalization will reduce corruption, on the contrary of the hypothesis; concluded that corruption will increase with political globalization (Yalçınkaya koyuncu and Unver, 2017: 27). There are many more studies on globalization. In some of these, its relationship with many macroeconomic factors such as globalization and household consumption expenditures, the Interest Rates on External Debt, investment, tax revenu, banking crises and Female Labor Force Participation has been examined (Yalcinkaya and Saritas, 2017; Yilmaz and Yalcinkaya Koyuncu,2019; Yalcinkaya Koyuncu and Unver, 2021; Unver and Yalcinkaya Koyuncu, 2021; Yalcinkaya Koyuncu and Varsak, 2019; Oksak and Yalcinkaya Koyuncu, 2017).

In the study on globalization and employment, it is stated that globalization will increase with many variables such as world trade, foreign direct investment, financial instruments (Lee, 1996). In another study on globalization and employment, it was discussed together with poverty and production factors (Jenkins, 2004). In another study examining the relationship between globalization and employment in developed economies, it was concluded that unemployment levels were high where growth slowed down (Nayyar, 2015). There are many more employment studies in the literatüre (Yilmaz and Yalcinkaya Koyuncu,2016; Conte and Vivarelli,2007). Some of the many different studies on employment and globalization are summarized above.

3. Data And Methodology

Globalization may play an explanatory role on employment level of relevant country. Hence this study investigates the long-run nexus between globalization and employment for the case of Turkey. We employ Auto Regressive Distributed Lag (ARDL) method to conduct our analyses and sample covers the years of 1970-2019. Since globalization enhances incoming FDI level and both internal and external trade volume of a country, it is expected to have a positive effect of globalization on employment level in Turkey. The KOF Index of Globalization of KOF Swiss Economic Institute is utilized for globalization (GLOB). Employment (EMP) is persons employed (thousands) and gathered from The Conference Board Total Economy Database. Besides we use GDP deflator (INF) collected from World Development Indicators of the Word Bank to capture economic and political unrests as a country potentially experiences economic and political crisis during the period of high inflation. Logarithmic values of GLOB, EMP, and INF variables are used in the analyses.

As it is well known, conventional cointegration tests require to have series with integration order one. Unlike those conventional cointegration tests, ARDL boundary test of cointegration allows to any order of integration no higher than two. Due to it's this advantage, we employed ARDL boundary test of cointegration to conduct our cointegration analysis and estimated the following model:

$$\Delta EMP_t = \alpha_0 + \sum_{i=1}^{p} \delta_i \Delta EMP_{t-i} + \sum_{i=0}^{q} \phi_i \Delta GLOB_{t-i} + \sum_{i=0}^{r} \theta_i \Delta INF_{t-i} + \gamma_0 EMP_{t-1}$$
$$+ \gamma_1 GLOB_{t-1} + \gamma_2 INF_{t-1} + \varepsilon_t \qquad (1)$$

In Equation 1: γ_0, γ_1, and γ_2 symbols reflect the coefficients of long-run; δ_i, ϕ_i, and θ_i symbols show the coefficients of short-run; Δ symbol stands for first degree difference operator; α_0 represents intercept term of the regression model, and ε lastly notation is white noise error term of the model.

In the null hypotheses of ARDL boundary test of cointegration, absence of co-integrating is claimed (i.e.,$H_0: \gamma_0 = \gamma_1 = \gamma_2 = 0$) while in the alternative hypotheses of ARDL boundary test of cointegration, presence of co-integrating is asserted (i.e., $H_1: \gamma_0 \neq \gamma_1 \neq \gamma_2 \neq 0$). When the F-statistic value exceeds the upper bound at a particular significance level then the alternative hypothesis must be accepted whereas a F-statistic value smaller than the lower bound at a particular significance level means that we failed to reject the null hypothesis. On the other hand if F-statistic value remains between the lower and upper bounds then we are unable to make decision.

We obtained coefficients of short-run and long-run by estimating the error correction model below:

$$EMP_t = \beta_0 + \sum_{i=1}^{p} \lambda_i \Delta EMP_{t-i} +$$
$$\sum_{i=0}^{q} \varphi_i \Delta GLOB_{t-i} + \sum_{i=0}^{r} \eta_i \Delta INF_{t-i} + \pi ECM_{t-1} + \varepsilon_t \qquad (2)$$

In Equation 2: λ_i, φ_i, and η_i symbols depict the dynamic coefficients; ECM is error correction term of the model; π symbol represents the speed of adjustment term and it must have a statistically significant negative sign.

4. Empirical Results

In order to find out integration order of each variable, we implemented Kwiatkowski-Phillips-Schmidt-Shin (KPSS) stationarity test for two distinct models, namely Constant and Constant&Linear Trend models. Table 1 below reports the KPSS stationarity test results for GLOB. The results in Table 1 point out that GLOB variable is stationary at level for model of Constant&Linear Trend (i.e., I(0)) and GLOB variable is stationary at first difference for model of Constant (i.e., I(1)) when they are evaluated at %1 significance level.

Table 1: KPSS Stationarity Test Results for GLOB Variable

		LM-Stat.
Null Hypothesis: GLOB is stationary		
Exogenous: Constant		
Bandwidth: 5 (Newey-West automatic) using Bartlett kernel		
Kwiatkowski-Phillips-Schmidt-Shin test statistic		0.910880
Asymptotic critical values:	1% level	0.739000
	5% level	0.463000
	10% level	0.347000
Null Hypothesis: ΔGLOB is stationary		
Exogenous: Constant		
Bandwidth: 3 (Newey-West automatic) using Bartlett kernel		
Kwiatkowski-Phillips-Schmidt-Shin test statistic		0.221247
Asymptotic critical values:	1% level	0.739000
	5% level	0.463000
	10% level	0.347000
Null Hypothesis: GLOB is stationary		
Exogenous: Constant, Linear Trend		
Bandwidth: 5 (Newey-West automatic) using Bartlett kernel		
Kwiatkowski-Phillips-Schmidt-Shin test statistic		0.149205
Asymptotic critical values:	1% level	0.216000
	5% level	0.146000
	10% level	0.119000

In Table 2 above KPSS stationarity test results for EMP variable is displayed. The findings in Table 2 reveal that EMP variable is stationary at level for model of Constant&Linear Trend (i.e., I(0)) and EMP variable is stationary at first difference for model of Constant (i.e., I(1)) when they are discussed at %1 significance level.

Table 2: KPSS Stationarity Test Results for EMP Variable

		LM-Stat.
Null Hypothesis: EMP is stationary		
Exogenous: Constant		
Bandwidth: 5 (Newey-West automatic) using Bartlett kernel		
Kwiatkowski-Phillips-Schmidt-Shin test statistic		0.925870
Asymptotic critical values:	1% level	0.739000
	5% level	0.463000
	10% level	0.347000
Null Hypothesis: ΔEMP is stationary		
Exogenous: Constant		
Bandwidth: 3 (Newey-West automatic) using Bartlett kernel		
Kwiatkowski-Phillips-Schmidt-Shin test statistic		0.153659
Asymptotic critical values:	1% level	0.739000
	5% level	0.463000
	10% level	0.347000
Null Hypothesis: EMP is stationary		
Exogenous: Constant, Linear Trend		
Bandwidth: 5 (Newey-West automatic) using Bartlett kernel		

	LM-Stat.
Kwiatkowski-Phillips-Schmidt-Shin test statistic	0.112112
Asymptotic critical values: 1% level	0.216000
5% level	0.146000
10% level	0.119000

KPSS stationarity test results for INF variable are given in Table 3. The results in Table 3 indicate that INF variable is stationary at level for model of Constant&Linear Trend (i.e., I(0)) and INF variable is stationary at first difference for model of Constant (i.e., I(1)) when they are assessed at %1 significance level.

Table 3: KPSS Stationarity Test Results for INF Variable

Null Hypothesis: INF is stationary
Exogenous: Constant
Bandwidth: 5 (Newey-West automatic) using Bartlett kernel

	LM-Stat.
Kwiatkowski-Phillips-Schmidt-Shin test statistic	0.922844
Asymptotic critical values: 1% level	0.739000
5% level	0.463000
10% level	0.347000

Null Hypothesis: ΔINF is stationary
Exogenous: Constant
Bandwidth: 5 (Newey-West automatic) using Bartlett kernel

	LM-Stat.
Kwiatkowski-Phillips-Schmidt-Shin test statistic	0.302008
Asymptotic critical values: 1% level	0.739000
5% level	0.463000
10% level	0.347000

Null Hypothesis: INF is stationary
Exogenous: Constant, Linear Trend
Bandwidth: 5 (Newey-West automatic) using Bartlett kernel

	LM-Stat.
Kwiatkowski-Phillips-Schmidt-Shin test statistic	0.184062
Asymptotic critical values: 1% level	0.216000
5% level	0.146000
10% level	0.119000

As deducted from Table 1, 2, and 3, GLOB, EMP, and INF variables are integrated order zero (i.e., I(0)) for constant&linear trend model whereas they are integrated order one (i.e., I(1)) for constant model. As a result none of the variables violates the condition of ARDL boundary test of being integrated order no more than two. Hence we are able to employ ARDL bounds test to check if GLOB, EMP, and INF variables are co-integrated.

In next we attempt to find out optimal lag length and thus optimal ARDL model by using Akaike information criterion (AIC). One hundred different ARDL model was evaluated and ARDL(1,3,1) model possessing the lowest AIC score among one hundred ARDL models was chosen as the optimal model. Therefore our analyses are conducted by utilizing ARDL(1,3,1) model. Figure 1 shows top twenty ARDL models with the lowest AIC scores out of one hundred models.

Figure 1: Optimal Model Selection

Akaike Information Criteria (top 20 models)
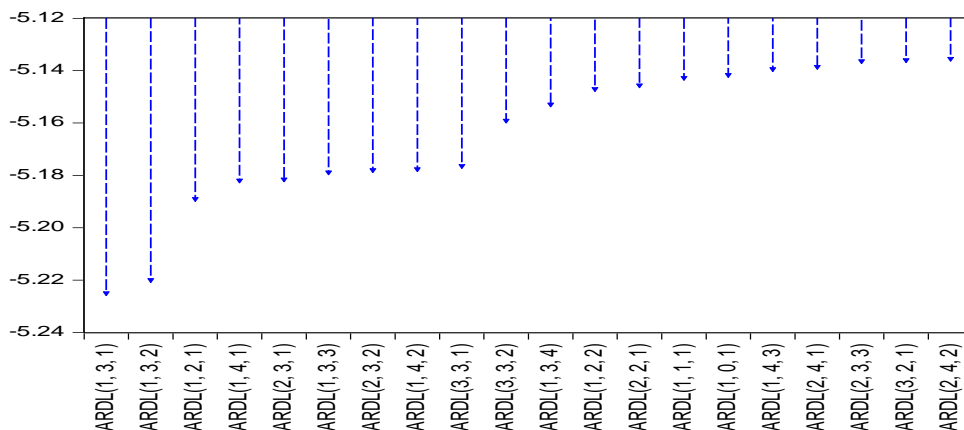
The findings of ARDL boundary test of cointegration are reported in Table 4 below. As seen from Table 4, F-statistic value of ARDL boundary test is 10.30330 and it is far beyond the upper bound critical values at all significance levels. As a result of this we conclude that GLOB, EMP, and INF variables are co-integrated and thus they move together in the long-run in Turkey for the period of 1970-2019.

Table 4: ARDL Boundary Test of Co-integration

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	**10.30330**	10%	4.19	5.06
k	2	5%	4.87	5.85
		2.5%	5.79	6.59
		1%	6.34	7.52

Coefficient estimations of long-run are given in Table 5. As indicated by the table, globalization has a statistically significant positive impact on employment level and inflation, which is a proxy of economic and political crises, has a statistically significant negative impact on employment level. In other words one percent jump in globalization level leads to a rise by 0.853% in employment level while one percent jump in inflation level causes to a drop by 0.057% in employment level in Turkey in the relevant period.

Table 5: Long-run Coefficient Estimations for ARDL (1,3,1) Model

Dependent Variable: EMP			
Variable	Coefficient	t-statistic	Prob.
GLOB	0.853300	2.916537	0.0059
INF	-0.057262	-5.844205	0.0000

As can be seen from Table 6 where short-run coefficients are reported, first two short-run lags of globalization variable have negative significant impact on employment in the short run. Short-run coefficient of inflation variable has positive significant impact on employment in the short run. In parallel to our prior expectation, the coefficient of ECM term gets a statistically significant negative sign. The bottom part of Table 6 provides diagnostic test results for ARDL (1,3,1) model. Diagnostic test findings disclose that ARDL (1,3,1) model does not possess autocorrelation and heteroscedasticity problems at %1 significance level. Figure 2 shows CUSUM test finding and as can be deducted from the figure ARDL (1,3,1) model is stable.

**Table 6:** Error Correction Estimation for ARDL (1,3,1) Model

Dependent Variable: EMP			
	Coefficient	t-Statistic	Prob.
$\Delta GLOB$	-0.022888	-0.186129	0.8533
$\Delta GLOB_{t-1}$	-0.353279	-2.475447	0.0179
$\Delta GLOB_{t-2}$	-0.254613	-1.914064	0.0632
ΔINF	0.026620	1.901022	0.0649
TREND	0.010755	5.785251	0.0000
CONSTANT	2.151764	5.726765	0.0000
ECM_{t-1}	-0.415494	-5.704099	0.0000

$$ECM = EMP - (0.8533 * GLOB - 0.0573 * INF)$$

Diagnostic Tests

Tests	Test Value (Prob.)
Breusch-Godfrey Serial Correlation LM Test	2.061563 (0.1420)
Breusch-Pagan-Godfrey Heteroskedasticity Test	1.085140 (0.3942)

Figure 2: CUSUM Test
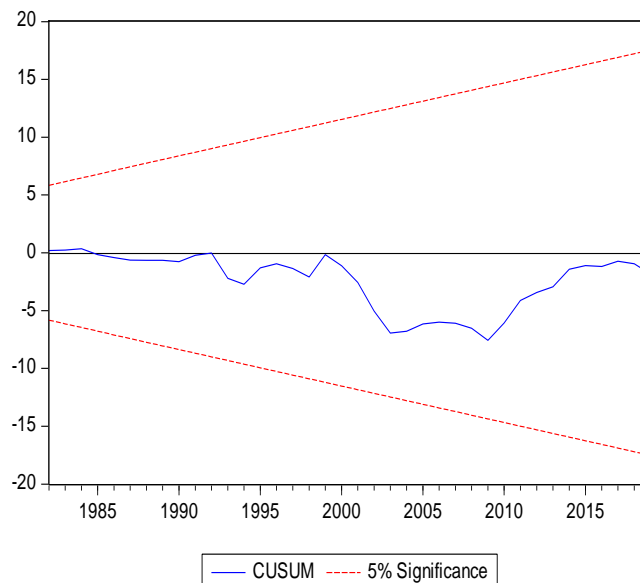
By using unrestricted VAR(2,2) model we implemented VAR Granger Causality test and results are given in Table 7. We identified causality running from GLOB and EMP variables to INF variable and also from INF and GLOB variables to EMP variable.

Table 7: VAR Granger Causality Test Results

Dependent variable: INF			
Excluded	Chi-sq	df	Prob.
GLOB	7.019594	2	0.0299
EMP	5.303754	2	0.0705
All	10.62260	4	0.0311
Dependent variable: GLOB			
Excluded	Chi-sq	df	Prob.
INF	1.928337	2	0.3813
EMP	0.207254	2	0.9016
All	3.150323	4	0.5330
Dependent variable: EMP			
Excluded	Chi-sq	df	Prob.
INF	10.29750	2	0.0058
GLOB	8.516712	2	0.0141
All	11.07116	4	0.0258

5. Conclusion

In this study we attempt to analyze the long run impact of globalization on employment level of Turkey for the years of 1970-2019 by using ARDL estimation technique. Globalization may have a positive effect on employment level by enhancing incoming FDI level and both internal and external trade volume of a country. Out of one hundred evaluated models by utilizing AIC criteria, ARDL(1,3,1) model is chosen as optimal model. Co-integration test was implemented via ARDL boundary test and the test results reveal that inflation, globalization and employment are co-integrated and they move together in the long-run in Turkey. As to the long-run coefficient estimation findings, globalization has a positive and statistically significant effect on employment level whereas inflation has a negative and statistically significant effect on employment level. More specifically one percent increase in globalization level is followed by a 0.853% rise in employment level while one percent increase in inflation level results in a drop by 0.057% in employment level in Turkey. Lastly based on VAR Granger Causality test findings, causalities running from GLOB and EMP variables to INF variable and also from INF and GLOB variables to EMP variable are identified.

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