

Short and Long Run Relationship between Globalization and Agricultural Raw Material Exports: The Case of Turkey

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ABSTRACT

This study examine the short and long run association between nine different globalization indicators and agricultural raw material exports in Turkey for the period of 1991-2020 by employing ARDL technique. Among nine distinct globalization indicators, we obtained statistically significant results for just six of them (i.e., general globalization, economic globalization, social globalization, interpersonal globalization, informational globalization, and political globalization). Co-integration analyses were conducted via ARDL bounds test and we saw that there is co-integration relationship among the relevant variables. Statistically significant negative long run coefficients were obtained for the variables of general globalization, economic globalization, social globalization, interpersonal globalization, informational globalization, and political globalization. In other words, it is seen that: 1% increase in general globalization decreases agricultural raw material exports by 3.7011%; 1% rise in economic globalization declines agricultural raw material exports by 1.6782; 1% jump in social globalization drops agricultural raw material exports by 1.6270%; 1% increase in interpersonal globalization reduces agricultural raw material exports by 2.2046%; 1% rise in informational globalization decreases agricultural raw material exports by 1.463819%; and 1% jump in political globalization declines agricultural raw material exports by 3.5534% in Turkey during the period of 1991-2020.

Keywords: globalization, agricultural exports, co-integration, stationarity, ARDL analysis.

Jel Codes: Q01, E02,F02

1. INTRODUCTION

Although globalization is an old phenomenon, it has been a frequently used concept since the 1960s. The concept of “global” was first used in Marshall McLuhan's book “Explosions in Communication” written in 1960 and he used the concept of “Global Village” to describe the globalization process. The concept of globalization became widespread in the 1980s, used in different famous schools of economics and included in the reports of economic institutions. (Aytekin, 2013: 125).

Globalization can be traced back to the 13th century due to the strong and fast communication network established by the Mongol Empire (Alpar, 2021: 46). In addition, the phenomenon of globalization continued to strengthen with the Industrial Revolution in the following ages and the rapid transportation caused by the mechanization brought about by the revolution and the widespread use of the communication network with the invention of the telegraph in later periods. For this reason, the phenomenon of globalization and technology are inseparable. Even today, it is a fact that the economies of countries lacking in technological know-how and lagging behind in communication, transportation and marketing have not developed much (Çelik and Erkan, 2010: 184). As a result of these developments, global and regional agreements and unions have emerged. According to a study by Koo, Kennedy and Skripnitchenko (2006), regional preferential trade agreements increase the foreign trade and indirectly the welfare of member countries.

As globalization has affected many sectors, it has also affected the agricultural sector and industrial sectors which are related to agriculture. With the wave of liberalism in the 1980s, which was effective in many parts of the world, and with the collapse of the Soviet

Union in 1991, liberalist policies became effective in the Communist Bloc (Kaya and Aydemir: 2011:32), countries have taken steps towards mass production and trade liberalization. Various agreements have been made for this purpose; the Common Agricultural Policy of the European Union, the Agricultural Agreement signed as a result of the Uruguay negotiations within the framework of the General Agreement on Tariffs and Trade (Blandford, 2003: 1) are some of the effective agreements. While some agreements were made globally, others were made regionally.

In the last periods of the Ottoman Empire, the Ottoman Empire accepted that the West was ahead in science and technology and carried out various reforms in order to close this gap. Since these reforms were generally administrative and military, agriculture was not affected by this issue. With the establishment of the Republic of Turkey, different breakthroughs were made in agriculture during the Atatürk period, but statist policies were adopted instead of liberal policies. The impact of liberal policies in Turkey started with the Marshall aid between 1948 and 1951, and this process accelerated with the January 24 Decisions that came into force in 1980. In 1999, a letter of intent was submitted to the IMF for agricultural reform due to factors such as the agreements with the World Trade Organization (WTO) and the European Union, and the process of accession to the European Union. By the early 2000s, the Agricultural Reform Implementation Project was initiated with technical and financial support from the World Bank (Eğri, 2014: 92). As in many countries of the world, Turkey has been and continues to be influenced by the decisions of international organizations such as the World Trade Organization and the European Union on different types of globalization, liberal policies resulting from globalization, and trade liberalization.

Given the background of globalization aforementioned, in this study we investigate the short and long run effect of globalization on agricultural raw material exports in Turkey

for the years of 1991-2020. We identified that globalization possesses statistically significant negative long-run influence on agricultural raw material exports in Turkey.

The next section of the study provides a brief literature review. Third section explains and discusses data and methodology. Section four provides estimation results and interprets them. Finally the last section concludes.

2. LITERATURE REVIEW

During and after the 2000s, when globalization was strongly felt, important studies were conducted on this issue. Some of these studies have accepted globalization and liberalization in foreign trade as an inseparable pair. Focusing on 19th century Japan, Bernhofen and Brown (2005) found that Japan's transition from a feudal system to a free economy did not benefit from the theory of comparative advantage and that the transition to a free economy was not beneficial for the country. Pinilla and Serrano (2008) found that the protectionist policies of countries such as France and the USA had a trade-reducing role in Spain's international wine trade between 1871 and 1935. Common factors such as cultural and linguistic factors have trade-enhancing roles.

With globalization, countries with a common economic structure or a common cultural background form regional structures among themselves. When we look at the studies on the extent to which these structures affect agricultural trade, Sun and Reed's (2010) study is quite detailed. They found that ASEAN-China, the EU (15), the EU (25) and the Southern African Development Community increased agricultural trade as a result of their agreements. In the case of NAFTA, neither an increase nor a decrease in trade was found and it was estimated that this was due to the fact that the signatory countries were already developed countries and had adopted free trade. They also found that agricultural exports increased in the member countries of the Southern African Development Community as a result of the agreements. Focusing on a slightly more specific region and agreement, Viju and Kerr (2011)

argue that the CETA signed between Canada and the EU has only marginally increased agricultural trade. This is because the EU has a strict agricultural trade policy.

In terms of Turkey, Terin, Keskin and Terin (2012), who examined the extent to which the Customs Union affected agricultural trade between the EU and Turkey, found that the Customs Union negatively affected agricultural exports and imports for Turkey. It is also added that this situation can be reversed by accelerating the EU harmonization process by complying with the Common Agricultural Policy and producing agricultural products in accordance with EU standards in a cheap way. In support of this study, Hatunoğlu and Eldeniz (2012) found that in the Eighth Development Plan (2001-2005) and the Ninth Development Plan (2007-2013), the agricultural policies required for the WTO Agriculture agreement and Turkey's EU membership were effective in the production of domestic agricultural policies. In addition, the World Bank-funded Agricultural Reform Implementation Project is still found to be effective in active policy making. Tokatlıoğlu, Selen and Leba (2018) examined the decline of state intervention due to neoliberal policies and the state role in agricultural supply security. It is found that the state has taken on a role that increases free trade, reducing its impact on agricultural production and moving away from meeting local needs.

Bojnec and Majkovic (2006), looking at the changes in Slovenia's agricultural production and agricultural trade when it became a new member of the EU, found that Slovenia's agricultural and food sectors have become more exposed to global competition due to the EU's free trade policies and that agricultural production and trade have become more important in the overall economy. It is predicted that specialization in different agricultural products will occur over time in the process of EU integration and these products may come to the fore in agricultural trade.

Anderson (2006), looking at multiple countries, finds that agricultural reforms in these countries have positive effects on the local agricultural sector as they help to adapt to current conditions. In addition, correcting distortions in agricultural incentives leads to a more stable global agricultural trade. In addition, Martin (2017), focusing on international agricultural trade, finds that trade liberalization is much more effective than agricultural reforms.

Finding that institutions and political stability are also important in the era of globalization, Gingrich and Garber (2010) look at two similar countries, El Salvador and Costa Rica, and find that free trade that emerged with globalization increased agricultural production and trade in Costa Rica, which was more economically and politically stable, while it decreased it in El Salvador, which lacked political stability and well-established institutional structures due to civil war.

Some of the most important studies in the international literature were conducted with the encouragement of the World Bank. Anderson and Swinnen (2009) studied Eastern European and Central Asian countries, Anderson and Valdés (2008) studied Latin American and Caribbean countries, Anderson and Masters (2009) studied Sub-Saharan and North African countries, Anderson and Martin (2009) studied China and South Asian countries between 1955 and 2007 and investigated the long-term changes in agricultural subsidy distortions and how they affected the agricultural sector. Anderson and Swinnen (2009) find that distortions in agricultural incentives decreased in Eastern European and Central Asian countries that left the communist bloc under the influence of globalization and that this decrease increased agricultural trade. Anderson and Valdés (2008) found that trade liberalization in Latin American and Caribbean countries increased agricultural trade. Anderson and Masters (2009) investigate Sub-Saharan and North Africa and find that agricultural trade is negatively affected by high taxation in these countries. The adoption of low taxation and free trade, which is one of the important rules of liberalism, will benefit

these countries. Anderson and Martin (2009) stated that China and South Asian countries adopted liberal policies with globalization and reduced taxes on trade. These transformations have increased agricultural production and trade.

Also there are studies in the literature investigating the impact of globalization on different issues such as on crop production, rate of e-waste recycling, labor productivity, portfolio investment, economic growth, air pollution, corruption etc. (see for instance; Koyuncu et al. (2023), Yilmaz and Koyuncu (2023), Koyuncu and Ünver (2018), Ünal and Koyuncu (2018), Koyuncu and Sarıtaş (2017), Koyuncu and Ünal (2019), Koyuncu and Ünver (2018)).

3. MATERIAL AND METHODS

This study analyzes the short and long run impact of globalization (general globalization (KOFGI), economic globalization (KOFecGI), trade globalization (KOFTrGI), financial globalization (KOFFiGI), social globalization (KOFSoGI), interpersonal globalization (KOFIpGI), informational globalization (KOFInGI), cultural globalization (KOFcuGI) and political globalization (KOFpoGI)) on exports of agricultural raw materials by using the ARDL method for the period of 1991-2020 (i.e., hyper globalization period)) and the sample of Turkey. On the other hand, since the empirical estimations does not yield statistically significant results for KOFTrGI, KOFFiGI and KOFcuGI globalization types, the empirical findings for these globalization types are not reported and discussed in the study. Globalization may have a two-way effect on exports. On the one hand, the increase in globalization may increase exports of products in which countries have a production advantage over other countries and have high competitiveness. On the other hand, the increase in globalization may lead to a decrease in exports as a result of the substitution of domestic production of the relevant sector or product with imported products. In this study, it is aimed to determine the direction of the effect of globalization on agricultural raw material

exports in Turkey. The export (EXPORT) variable in the study represents the percentage share of agricultural raw material exports in merchandise exports. The globalization variable (GLOBAL) represents the main umbrella globalization (i.e., general globalization) variable compositely generated from the eight different types of globalization mentioned above. We included agricultural value added and employment variables into the model as control variables. The employment in agriculture variable (EMPLOYMENT) is the percentage share of employment in agriculture in total employment. An increase in the amount of agricultural labor input, which is the main input of the agricultural sector, is expected to increase agricultural production, and an increase in agricultural production is expected to increase agricultural exports. The variable (VALUEADDED) is defined as the value added of the agriculture, forestry and fisheries sector in 2015 constant prices in US dollars and is included in the model as an indicator of productivity of the agricultural sector; an increase in agricultural productivity is expected to increase agricultural production, which in turn is expected to increase exports of agricultural sector. Globalization variables were obtained from KOF Globalization Index and other variables were gathered from the WDI database of the World Bank. Logarithmic forms of all variables are used in the analyses.

We constructed and estimated the model below for the ARDL bounds test:

$$\Delta EXPORT_t = \alpha_0 + \sum_{i=1}^p \delta_i \Delta EXPORT_{t-i} + \sum_{i=0}^q \phi_i \Delta GLOBALIZATION_{t-i} + \sum_{i=0}^r \gamma_i \Delta EMPLOYMENT_{t-i} + \sum_{i=0}^s \lambda_i \Delta VALUEADDED_{t-i} + \theta_0 EXPORT_{t-1} + \theta_1 GLOBALIZATION_{t-1} + \theta_2 EMPLOYMENT_{t-1} + \theta_3 VALUEADDED_{t-1} + \varepsilon_t \quad (1)$$

In Equation 1 above: the θ_0 , θ_1 , θ_2 and θ_3 notations denote the long-run coefficients; δ_i , ϕ_i , γ_i and λ_i stand for the short-run coefficients; the Δ symbol represents the first order difference operator; the notation α_0 shows constant term of the model; and the ε_t notation indicates white noise error term of the model.

The null hypothesis of the ARDL bounds test for co-integration analysis is $H_0: \theta_0=\theta_1=\theta_2=\theta_3=0$ and claims that there is no co-integration relationship among the relevant variables while the alternative hypothesis is $H_1: \theta_0\neq\theta_1\neq\theta_2\neq\theta_3\neq 0$ and asserts that there is co-integration relationship among the relevant variables. As long as the F-statistic value obtained for the ARDL bounds test is greater than the upper bound critical value, we conclude that there exists co-integration association among the relevant variables.

The following model was estimated to obtain the short and long run coefficient estimations:

$$EXPORT_t = \beta_0 + \sum_{i=1}^p \alpha_i \Delta EXPORT_{t-i} + \sum_{i=0}^q \mu_i \Delta GLOBALIZATION_{t-i} + \sum_{i=0}^r \pi_i \Delta EMPLOYMENT_{t-i} + \sum_{i=0}^s \omega_i \Delta VALUEADDED_{t-i} + \gamma ECM_{t-1} + \varepsilon_t \quad (2)$$

In Equation 2 above: the α_i , μ_i , π_i and ω_i notations represent the dynamic coefficients that return the series to the long-run path; the ECM abbreviation stands for the error correction term of the model; and the γ_i notation shows the speed of adjustment returning the series to the long-run path in response to a short-run shocks. The γ_i coefficient should have a statistically significant negative sign.

First, in order to determine the stationarity levels of the variables, the ADF unit root test was applied to the variables used in our model. Since the co-integration analysis in the study will be performed with the ARDL bounds test and the ARDL bounds test does not allow for series integrated order two or more degrees, we have to be sure that the series we will use in the model must have integration order less than two (i.e. series must be I(0) or I(1) or mixed).

The results of the ADF unit root test points out that all variables used in our models are stationary in their first differences even though they are not stationary in levels. We did not report the findings of ADF unit root test to save space.

4. RESULTS AND DISCUSSION

4.1. Estimation Results for the Impact of General Globalization on Agricultural Raw Material Exports in Turkey

AIC (Akaike Information Criterion) was applied to find the optimal lag length for the ARDL model of general globalization. The AIC criterion indicates that the ARDL(1,2,0,1) model is the most appropriate model out of the evaluation of 54 different ARDL models. Therefore, ARDL(1,2,0,1) model is used in our analyses of the effect of general globalization on agricultural raw material exports in Turkey.

The co-integration test results from the ARDL bounds test are reported in Table 4.1.1. As can be seen from the Table 4.1.1, the F-statistic value for the ARDL bounds test exceeds the upper bound critical values at all significance levels, which leads us to conclude that there is co-integration relationship (i.e. a long-run relationship) between EXPORT variable and variables of KOFGI, EMPLOYMENT, and VALUEADDED.

Table 4.1.1: ARDL Bounds Test for KOFGI

<i>F-statistic: 7.932916</i>	<i>Critical Values</i>	
<i>Significance Level</i>	<i>Lower Limit</i>	<i>Upper Limit</i>
10%	2.72	3.77
5%	3.23	4.35
2.50%	3.69	4.89
1%	4.29	5.61

As a result of the estimations made through the ARDL(1,2,0,1) model, the long-run coefficient estimations of KOFGI, EMPLOYMENT and VALUEADDED variables are shown in Table 4.1.2. When Table 4.1.2 is analyzed, it is seen that the coefficients of the KOFGI, EMPLOYMENT and VALUEADDED variables are statistically significant at 1% significance level. The long-run coefficient (-3.7011) for the KOFGI variable is negative means that a 1% increase in general globalization decreases exports of agricultural raw

materials by 3.7011%. The long-run coefficient of the EMPLOYMENT variable (2.0835) is positive, which indicates that a 1% rise in agricultural employment enhances agricultural raw material exports by 2.0835%. Also, since the long-run coefficient (2.6325) for VALUEADDED variable has a positive sign, it is concluded that a 1% jump in agricultural sector productivity in Turkey expands agricultural raw material exports by 2.6325%.

Table 4.1.2: Long Run Coefficients of ARDL(1, 2, 0, 1) Model

<i>Variable</i>	<i>Coefficient</i>	<i>Std. Deviation</i>	<i>t-statistic</i>	<i>P-value</i>
KOFGI	-3.7011	0.6679	-5.5410	0.0000
EMPLOYMENT	2.0835	0.2525	8.2525	0.0000
VALUEADDED	2.6325	0.3487	7.5500	0.0000

Table 4.1.3 shows the short-run coefficients and the results of diagnostic tests for ARDL(1,2,0,1) model. The short-run coefficient of KOFGI variable in the current period is negative and statistically significant. However, the one-period lagged coefficient is statistically insignificant. The short-run coefficient of the VALUEADDED variable in the current period is positive and statistically significant. The coefficient of the error correction term has a negative sign as expected and is statistically significant at 1%. According to the results of the Jarque-Bera normality test, the test statistic value obtained is statistically significant, which indicates that the error terms of the model do not have a normal distribution. The test statistic for the Breusch-Godfrey autocorrelation test is statistically insignificant, indicating that the error terms of the model do not contain autocorrelation problem. The test statistic for Harvey's test for heteroscedasticity is statistically insignificant, implying that the error terms of the model do not suffer from heteroscedasticity problem. The test statistic for the Ramsey RESET test is statistically insignificant, hinting that the estimated model does not have misspecification problem.

Table 4.1.3: Short Run Coefficients for ARDL(1, 2, 0, 1) Model

<i>Variable</i>	<i>Coefficient</i>	<i>Std. Deviation</i>	<i>t-statistic</i>	<i>P-value</i>
C	-60.1918	10.0250	-6.0042	0.0000
D(KOFGI)	-2.4240	1.1543	-2.0999	0.0474
D(KOFGI (-1))	0.4949	1.0415	0.4752	0.6394
D (VALUEADDED)	1.1050	0.5833	1.8944	0.0714
ECM(-1)	-1.0667	0.1776	-6.0049	0.0000
EC=LOG(EXPORT)-(-3.7011*LOG(KOFGI)+2.0835*LOG(EMPLOYMENT) +2.6325*LOG(VALUEADDED))				

Diagnostic Tests

	Test Statistic	P-value		
Jarque-Bera Test	9.5590	0.0084		
Breusch-Godfrey test	0.5143	0.6056		
Harvey Test	0.6949	0.6758		
Ramsey RESET Test	0.6649	0.4240		

In addition to the diagnostic tests given above, the results of the CUSUM parameter stability test reveal that the parameters of the ARDL(1,2,0,1) model are stable. For the sake of saving space, we did not display CUSUM test graph.

4.2. Estimation Results for the Impact of Economic Globalization on Agricultural Raw Material Exports in Turkey

The AIC criterion discloses that ARDL(2,0,0,1) model is the most appropriate model in terms of lag length. Therefore, we used ARDL(2,0,0,1) model in the analyses of the effect of economic globalization on agricultural raw material exports in Turkey.

The ARDL bounds test findings for co-integration analysis are given in Table 4.2.1. As indicated by Table 4.2.1, the F-statistic value for the ARDL bounds test is larger than the upper bound critical values at all significance levels, which lead us to deduce that the variables of EXPORT, KOFEcGI, EMPLOYMENT, and VALUEADDED are co-integrated.

Table 4.2.1: ARDL Bounds Test for KOFEcGI

<i>F-statistic: 8.2598103</i>	<i>Critical Values</i>	
<i>Significance Level</i>	<i>Lower Limit</i>	<i>Upper Limit</i>
10%	2.72	3.77
5%	3.23	4.35
2.50%	3.69	4.89
1%	4.29	5.61

Table 4.2.2 exhibits the long-run coefficient estimations of KOFEcGI, EMPLOYMENT and VALUEADDED variables. It is seen that the coefficient KOFEcGI variable is negative and statistically significant at the 10% significance level while the coefficients of EMPLOYMENT and VALUEADDED variables are positive and statistically significant at the 1% significance level. The fact that the long-run coefficient (-1.6782) for the KOFEcGI variable is negative means that a 1% increase in economic globalization between drops agricultural raw material exports by 1.6782%. The long-run coefficient of the agricultural employment variable (2.9884) implies that a 1% rise in agricultural employment will increase agricultural raw material exports by 2.9884%. Moreover, since the long-run coefficient of value added variable (3.1679) has a positive sign, we say that a 1% jump in productivity of agricultural sector augments agricultural raw material exports by 3.1679%.

Table 4.2.2: Long Run Coefficients of ARDL(2, 0, 0, 1) Model

<i>Variable</i>	<i>Coefficient</i>	<i>Std. Deviation</i>	<i>t-statistic</i>	<i>P-value</i>
KOFEcGI	-1.678214	0.928043	-1.808336	0.0836
EMPLOYMENT	2.988495	0.385519	7.751865	0.0000
VALUE ADDED	3.167999	0.697172	4.544069	0.0001

The short-run coefficient estimations and the results of diagnostic tests for ARDL(2,0,0,1) model are displayed in Table 4.2.3. The short-run coefficient estimations are statistically insignificant for all variables. The coefficient of the error correction term possesses statistically significant negative sign at 1% significance level. The results of the Jarque-Bera normality test indicate that the error terms of the model have a normal distribution at 1%

significance level. Meanwhile, as pointed out by Table 4.2.3, ARDL(2,0,0,1) model does not experience autocorrelation, heteroscedasticity, and model misspecification problems.

Table 4.2.3: Short Run Coefficients for ARDL(2, 0, 0, 1) Model

<i>Variable</i>	<i>Coefficient</i>	<i>Std. Deviation</i>	<i>t-statistic</i>	<i>P-value</i>
C	-50.3435	8.2242	-6.1214	0.0000
D(EXPORT(-1))	-0.2074	0.1221	-1.6982	0.1030
D(VALUEADDED)	0.6012	0.5234	1.1488	0.2625
ECM(-1)	-0.6182	0.1012	-6.1114	0.0000
EC = LOG(EXPORT)-(-1.6782*LOG(KOFECGI)+2.9885*LOG(EMPLOYMENT)+3.1680*LOG(VALUEADDED))				

Diagnostic Tests

	<i>Test Statistic</i>	<i>P-value</i>		
Jarque-Bera Test	8.2642	0.0160		
Breusch-Godfrey test	0.4382	0.6510		
Harvey Test	1.9570	0.1141		
Ramsey RESET Test	1.0712	0.3119		

Also the results of the CUSUM parameter stability test indicate that the parameters of ARDL(2,0,0,1) model are stable.

4.3. Estimation Results of the Impact of Social Globalization on Agricultural Raw Material Exports in Turkey

Based on the AIC criterion, the ARDL(2,1,0,1) model was picked as the optimal model in terms of lag length; and hence we utilize ARDL(2,1,0,1) model in the analysis of the influence of social globalization on agricultural raw material exports in Turkey.

The ARDL bounds test results are provided in Table 4.3.1. As seen from Table 4.3.1, the F-statistic value for the ARDL bounds test goes beyond the upper bound critical values at all significance levels; thus we conclude that the variables of EXPORT, KOFSOGI, EMPLOYMENT, and VALUEADDED move together in the long run.

Table 4.3.1: ARDL Bounds Test for KOFSOGI

<i>F-statistic: 6.3739173</i>	<i>Critical Values</i>	
<i>Significance Level</i>	<i>Lower Limit</i>	<i>Upper Limit</i>
10%	2.72	3.77
5%	3.23	4.35
2.50%	3.69	4.89
1%	4.29	5.61

The long-run coefficients of KOFSOGI, EMPLOYMENT and VALUEADDED variables are shown in Table 4.3.2. According to the results, it is seen that KOFSOGI variable is statistically significant at 5% significance level, while EMPLOYMENT and VALUEADDED variables are statistically significant at 1% significance level. In addition, the fact that the long-run coefficient (-1.6270) for the KOFSOGI variable is negative means that a 1% rise in social globalization leads to a drop in agricultural raw material exports by 1.6270%. The long-run coefficient of the employment variable (2.1159) is positive, which indicates that a 1% increase in agricultural employment enhances agricultural raw material exports by 2.1159%. The long-run coefficient of VALUEADDED variable (2.8099) is positive; pointing out that a 1% increase in agricultural sector productivity augments agricultural raw material exports by 2.8099%.

Table 4.3.2: Long Run Coefficients of ARDL(2,1,0,1) Model

<i>Variable</i>	<i>Coefficient</i>	<i>Std. Deviation</i>	<i>t-statistic</i>	<i>P-value</i>
KOFSOGI	-1.627085	0.675000	-2.410495	0.0247
EMPLOYMENT	2.115990	0.558338	3.789803	0.0010
VALUEADDED	2.809993	0.659296	4.262112	0.0003

Table 4.3.3 reports the short-run coefficient estimations and the results of the diagnostic tests for ARDL(2,1,0,1) model. According to the results, none of the short-run coefficients are statistically significant. The coefficient of the error correction term takes a negative sign and is statistically significant at 1% in parallel to prior expectation. Diagnostic test findings show that there is no non-normality, autocorrelation, heteroscedasticity, and model specification problems in the model at least at 1% significance level.

Table 4.3.3: Short Run Coefficients for ARDL(2, 1, 0, 1) Model

<i>Variable</i>	<i>Coefficient</i>	<i>Std. Deviation</i>	<i>t-statistic</i>	<i>P-value</i>
C	-52.70101	9.783116	-5.386935	0.0000
D(EXPORT(-1))	-0.184481	0.122992	-1.499938	0.1478
D(KOFSoGI)	-0.926062	0.834705	-1.109447	0.2792
D(VALUEADDED)	0.801748	0.529601	1.513872	0.1443
ECM(-1)	-0.754236	0.140125	-5.382597	0.0000
EC = LOG(EXPORT)-(-1.6270*LOG(KOFSoGI)+2.1159*LOG(EMPLOYMENT)+2.8099*LOG(VALUEADDED))				

Diagnostic Tests

	<i>Test Statistic</i>	<i>P-value</i>		
Jarque-Bera Test	0.1197	0.9419		
Breusch-Godfrey test	2.4539	0.1114		
Harvey Test	1.9800	0.1045		
Ramsey RESET Test	6.9033	0.0157		

The CUSUM parameter stability test discloses that the parameters of the ARDL(2,1, 0,1) model are stable.

4.4. Estimation Results of the Impact of Interpersonal Globalization on Agricultural Raw Material Exports in Turkey

ARDL(2,1,0,1) model chosen by the AIC criterion as the most appropriate model is employed in the analysis of the effect of interpersonal globalization on agricultural raw material exports in Turkey.

According to the co-integration test results shown in Table 4.4.1, the F-statistic value exceeds the upper bound critical values at all significance levels, which lets us to conclude that there is co-integration relationship among EXPORT, KOFIpGI, EMPLOYMENT, and VALUEADDED variables.

Table 4.4.1: ARDL Bounds Test for KOFIpGI

<i>F-statistic: 7.9249213</i>	<i>Critical Values</i>	
<i>Significance Level</i>	<i>Lower Limit</i>	<i>Upper Limit</i>
10%	2.72	3.77
5%	3.23	4.35
2.50%	3.69	4.89
1%	4.29	5.61

The long-run coefficient estimations of KOFIpGI, EMPLOYMENT and VALUEADDED variables are exhibited in Table 4.4.2. According to the results, it is seen that KOFIpGI variable is statistically significant at 10% significance level and the variables of EMPLOYMENT and VALUE ADDED are statistically significant at 1% significance level. The negative long-run coefficient estimation (-2.2046) of KOFIpGI variable hints that a 1% rise in interpersonal globalization drops agricultural raw material exports by 2.2046%. The long-run coefficient of EMPLOYMENT variable (3.0602) is positive, which indicates that a 1% rise in agricultural employment expands agricultural raw material exports by 3.0602%. Given the long-run positive coefficient estimation for VALUEADDED variable (4.4215), we deduce that a 1% jump in agricultural sector productivity enhances agricultural raw material exports by 4.4215%.

Table 4.4.2: Long Run Coefficients of ARDL(2, 1, 0, 1) Model

<i>Variable</i>	<i>Coefficient</i>	<i>Std. Deviation</i>	<i>t-statistic</i>	<i>P-value</i>
KOFIpGI	-2.204584	1.225623	-1.798746	0.0858
EMPLOYMENT	3.060207	0.434884	7.036836	0.0000
VALUEADDED	4.421535	0.974182	4.538715	0.0002

Table 4.4.3 reports the short-run coefficient estimations and the results of the diagnostic tests for the ARDL(2,1,0,1) model. According to the test results, the short-run coefficient estimation of the one period lagged EXPORT variable is negative and statistically significant at the 5% level and the short-term coefficient estimation of the VALUEADDED variable for the current period is positive and statistically significant at 10%. The coefficient of the error correction term gets a negative sign and is statistically significant at 1%. According to the diagnostic test results, the model is not exposed to non-normality, autocorrelation, heteroscedasticity, and model specification problems at least at 1% significance level.

Table 4.4.3: Short Run Coefficients for ARDL(2, 1, 0, 1) Model

<i>Variable</i>	<i>Coefficient</i>	<i>Std. Deviation</i>	<i>t-statistic</i>	<i>P-value</i>
C	-71.43626	11.88957	-6.008313	0.0000
D(EXPORTT(-1))	-0.273391	0.124017	-2.204468	0.0383
D(KOFIpGI)	0.385285	1.250760	0.308041	0.7609
D(VALUEADDED)	1.101966	0.551896	1.996690	0.0584
ECM(-1)	-0.646074	0.107646	-6.001864	0.0000
EC=LOG(EXPORT)-(-2.2046*LOG(KOFIpGI)+3.0602*LOG(EMPLOYMENT)+4.4215*LOG(VALUEADDED))				

Diagnostic Tests

	<i>Test Statistic</i>	<i>P-value</i>		
Jarque-Bera Test	0.5545	0.7578		
Breusch-Godfrey test	2.5512	0.1031		
Harvey Test	2.0795	0.0897		
Ramsey RESET Test	5.4103	0.0301		

In addition to the diagnostic tests above, the results of the CUSUM parameter stability test implies that the parameters of the ARDL (2,1,0,1) model are stable.

4.5. Estimation Results of the Impact of Informational Globalization on Agricultural Raw Material Exports in Turkey

We used the ARDL(2,1,0,1) model picked by AIC criterion as the optimal model in the analysis of the impact of information globalization on agricultural raw material exports in Turkey.

The co-integration test results given in Table 4.5.1 reveal that the F-statistic value of the ARDL bounds test is bigger than the upper bound critical values at all significance levels; and hence we state that EXPORT, KOFInGI, EMPLOYMENT, and VALUEADDED variables move together in the long run.

Table 4.5.1: ARDL Bounds Test for KOFInGI

<i>F-statistic: 7.9588213</i>	<i>Critical Values</i>	
<i>Significance Level</i>	<i>Lower Limit</i>	<i>Upper Limit</i>
10%	2.72	3.77
5%	3.23	4.35
2.50%	3.69	4.89
1%	4.29	5.61

Table 4.5.2 exhibits the long-run coefficient estimations of KOFInGI, EMPLOYMENT and VALUEADDED variables. As seen from Table 4.5.2, each one of the variables of KOFInGI, EMPLOYMENT and VALUE ADDED are statistically significant at 1% significance level. In addition, the negative long-run coefficient (-1.463819) for the KOFInGI variable indicates that a 1% increase in informational globalization declines agricultural raw material exports by 1.463819%. The long-run coefficient of the employment variable (1.9175) is positive and implies that a 1% jump in agricultural employment augments agricultural raw material exports by 1.9175%. The long run coefficient for the VALUEADDED variable (2.6687) is positive and hints that a 1% rise in agricultural sector productivity increases agricultural raw material exports by 2.6687%.

Table 4.5.2: Long Run Coefficients of ARDL(2, 1, 0, 1) Model

<i>Variable</i>	<i>Coefficient</i>	<i>Std. Deviation</i>	<i>t-statistic</i>	<i>P-value</i>
KOFInGI	-1.463819	0.312242	-4.688085	0.0001
EMPLOYMENT	1.917559	0.330542	5.801262	0.0000
VALUEADDED	2.668745	0.418699	6.373897	0.0000

The short-run coefficient estimations are provided in Table 4.5.3. As can be concluded from Table 4.5.3, only the short run coefficient of KOFInGI variable for the current period is statistically significant at 5% and takes negative sign. As anticipated, the coefficient of the error correction term is negative and statistically significant at 1%. Moreover the model does not possess any problem in terms of non-normal distribution, autocorrelation, heteroscedasticity, and model misspecification.

Table 4.5.3: Short Run Coefficients for ARDL(2, 1, 0, 1) Model				
Variable	Coefficient	Std. Deviation	t-statistic	P-value
C	-59.23044	9.845364	-6.016075	0.0000
D(EXPORT(-1))	-0.114179	0.108764	-1.049788	0.3052
D(KOFInGI)	-1.213840	0.449762	-2.698846	0.0131
D(VALUEADDED)	0.759370	0.490572	1.547929	0.1359
ECM(-1)	-0.894200	0.148669	-6.014687	0.0000
EC=LOG(EXPORT)-(-2.2046*LOG(KOFInGI)+3.0602*LOG(EMPLOYMENT)+4.4215*LOG(VALUEADDED))				
Diagnostic Tests				
	Test Statistic	P-value		
Jarque-Bera Test	0.3981	0.8195		
Breusch-Godfrey test	2.1356	0.1443		
Harvey Test	1.3367	0.2804		
Ramsey RESET Test	1.4540	0.2413		

Also the results of the CUSUM parameter stability test indicate that the parameters of the ARDL(2,1,0,1) model are stable.

4.6. Estimation Results of the Impact of Political Globalization on Agricultural Raw Material Exports in Turkey

The ARDL(2,0,0,1) model is utilized in the analysis of the impact of political globalization on agricultural raw material exports in Turkey, since AIC criterion chose the ARDL(2,0,0,1) model as the most appropriate model.

Table 4.6.1 displays the results of the co-integration test implemented via the ARDL bounds test. As the F-statistic value of the ARDL bounds test goes beyond the upper bound critical values at all significance levels, we deduce that there is co-integration relationship among the variables of KOFPoGI, EMPLOYMENT, VALUEADDED, and EXPORT.

Table 4.6.1: ARDL Bounds Test for KOFPoGI

<i>F-statistic: 8.9117613</i>	<i>Critical Values</i>	
<i>Significance Level</i>	<i>Lower Limit</i>	<i>Upper Limit</i>
10%	2.72	3.77
5%	3.23	4.35
2.50%	3.69	4.89
1%	4.29	5.61

The long-run coefficient estimations of KOFPoGI, EMPLOYMENT and VALUEADDED variables are provided in Table 4.6.2. According to the results, the KOFPoGI variable is statistically significant at the 5% significance level whereas the variables of EMPLOYMENT and VALUEADDED are statistically significant at the 1% significance level. The negative long-run coefficient (-3.5534) of the KOFPoGI variable points out that a 1% increase in political globalization drops agricultural raw material exports by 3.5534%. The long-run coefficient of the employment variable (2.5591) is positive and discloses that a 1% jump in agricultural employment enhances agricultural raw material exports by 2.5591%. Also the long run coefficient estimation of the VALUEADDED variable (2.8030) is positive and implies that a 1% increase in agricultural sector productivity enlarges agricultural raw material exports by 2.8030%.

Table 4.6.2: Long Run Coefficients of ARDL(2, 0, 0, 1) Model

<i>Variable</i>	<i>Coefficient</i>	<i>Std. Deviation</i>	<i>t-statistic</i>	<i>P-value</i>
KOFPoGI	-3.553386	1.290770	-2.752919	0.0113
EMPLOYMENT	2.559129	0.350403	7.303390	0.0000
VALUEADDED	2.802991	0.532981	5.259079	0.0000

The short run coefficient estimations given in Table 4.6.3 reveal that the short-run coefficient of the one period lagged EXPORT variable is negative and statistically significant at 10% while the short-run coefficient of the VALUEADDED variable for the current period is positive and statistically significant at 10%. The coefficient of the error correction term takes a negative sign and is statistically significant at 1%. Except the normality test, we

deduce that the model does not contain autocorrelation, heteroscedasticity, and model misspecification problems based on the results of diagnostic tests.

Table 4.6.3: Short Run Coefficients for ARDL(2, 0, 0, 1) Model

<i>Variable</i>	<i>Coefficient</i>	Std. Deviation	<i>t-statistic</i>	<i>P-value</i>
C	-49.63814	7.806591	-6.358491	0.0000
D(EXPORT(-1))	-0.214753	0.119296	-1.800179	0.0850
D(VALUEADDED)	0.925156	0.518658	1.783748	0.0877
ECM(-1)	-0.803641	0.126598	-6.347965	0.0000
EC = LOG(EXPORT)-(-3.5534*LOG(KOFPoGI)+2.5591*LOG(EMPLOYMENT) +2.8030*LOG(VALUEADDED))				
Diagnostic Tests				
	Test Statistic	P-value		
Jarque-Bera Test	19.0947	0.0001		
Breusch-Godfrey test	1.1572	0.3336		
Harvey Test	1.5816	0.1975		
Ramsey RESET Test	0.0738	0.7884		

Meanwhile the results of the CUSUM parameter stability test show that the parameters of the ARDL(2,0,0,1) model are stable.

5. CONCLUSION

Although the concept of globalization has been frequently discussed after the 1980s and especially in the 2000s, it is not a new concept as a phenomenon, but a development grown in capitalism and liberalism. The phenomenon of globalization, which is particularly associated with technology, has found the opportunity to develop rapidly in western political and economic systems. Western researchers have generally seen globalization as liberalization in the flow of resources, labor and trade, and see it as a positive development for the economy and welfare of the country. Although this view is theoretically correct, as the findings of this study show in the case of Turkey, globalization may be done more harm than good in developing countries.

According to the long run coefficient estimations, increases in agricultural employment and value added of the agriculture, forestry and fisheries sector lead to increases

in agricultural raw material exports of Turkey during the period of 1991-2020. On the other hand, increases in six distinct globalization indicators cause to decreases in agricultural raw material exports of Turkey during the estimation period.

More specifically, when we look at the long run effects of general globalization, economic globalization, social globalization, interpersonal globalization, informational globalization and political globalization, which are globalization indicators with statistically significant coefficient estimations, on agricultural raw material exports we can conclude that;

i.) 1% increase in general globalization decreases agricultural raw material exports in Turkey by 3.7011%,

ii.) 1% increase in economic globalization decreases agricultural raw material exports in Turkey by 1.6782,

iii.) 1% increase in social globalization decreases agricultural raw material exports in Turkey by 1.6270%,

iv.) 1% increase in interpersonal globalization decreases agricultural raw material exports in Turkey by 2.2046%,

v.) 1% increase in informational globalization decreases agricultural raw material exports in Turkey by 1.463819%,

vi.) 1% increase in political globalization decreases agricultural raw material exports in Turkey by 3.5534%.

What is noteworthy here is the higher rate of decrease in agricultural raw material exports is due to the increase in general globalization, political globalization and interpersonal globalization compared to the other types of globalization indicators. The fact that general and political globalization are so effective in agricultural raw material exports

raises the question of how to increase agricultural production and trade with neoliberal policies.

Globalization is an irresistible phenomenon. What are needed for the export of agricultural raw materials is a strong agricultural reform and the stability of policies to be established together with the industrial reform to support it. It would be much better in terms of efficiency if agricultural incentives are indirect rather than direct. Efficiency in production by reducing costs will also benefit agricultural raw material trade. For this, cooperatives, which are frequently practiced in the Europe, are very important. In addition to cooperatives, it is crucial that people involved in agricultural production and trade are properly informed and self-organized. Geographically, Turkey has very fertile lands for which many wars have been done in the past. It is incumbent on policy makers to make the necessary policies and incentives for specialization in production here. The Netherlands is a good example of specialization in agricultural production.

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