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DOES INTERNATIONAL TRADE EFFECT INCOME INEQUALITY: EVIDENCE FOR G-7 COUNTRIES

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Abstract

It has been widely accepted that international trade contributes significantly to increasing the size of the market, domestic production, productivity, and ultimately economic growth. However, as the volume of international trade has increased significantly, income inequality has long been a topic in economics that has attracted the attention of economists. It appears that there is no consensus on the effect of international trade on income inequality in the literature. While some studies suggest that the increasing volume of international trade contributes to narrow the income gap in countries, some studies argue that international trade negatively affects the income distribution or the effect of trade on the income gap is not clear. Accordingly, the study investigated the relationship between exports, imports, economic growth, foreign direct investments, and income inequality in terms of G-7 countries in the 2003-2019 period. As a result of the findings of the FMOLS estimator, there is a close relationship between income inequality and international trade. For selected developed countries, increasing exports and imports further increase the income gap, while economic growth and foreign direct investments reduce income inequality.

Keywords: FMOLS estimator, G-7 Countries, International Trade

Jel Classification: C10, O57, F13

ULUSLARARASI TİCARET GELİR EŞİTSİZLİĞİNİ ETKİLİYOR MU: G-7 ÜLKELERİ İÇİN DELİLLER

Öz

Uluslararası ticaretin pazarın büyüklüğünü, yerli üretimi, üretkenliği artırdığı ve nihayetinde ekonomik büyümeye önemli ölçüde katkıda bulunduğu yaygın olarak kabul edilmektedir. Ancak, uluslararası ticaret hacmi önemli ölçüde arttığında, gelir eşitsizliği ekonomi alanında uzun süredir ilgi konusu olmuştur. Literatürde uluslararası ticaretin gelir eşitsizliği üzerindeki etkisi konusunda bir fikir birliği olmadığı görülmektedir. Bazı çalışmalar artan uluslararası ticaret hacminin ülkelerdeki gelir açığını kapatmaya katkıda bulunduğunu öne sürerken, bazı çalışmalar uluslararası ticaretin gelir dağılımını olumsuz etkilediğini veya ticaretin gelir açığı üzerindeki etkisinin net olmadığını savunmaktadır. Buna göre çalışmada 2003-2019 döneminde G-7 ülkeleri açısından ihracat, ithalat, ekonomik büyüme, doğrudan yabancı yatırımlar ve gelir eşitsizliği arasındaki ilişki incelenmiştir. FMOLS tahmincisinin bulguları sonucunda gelir eşitsizliği ile uluslararası ticaret arasında yakın bir ilişki vardır. Seçilmiş gelişmiş ülkeler için, artan ihracat ve ithalat gelir açığını daha da artırırken, ekonomik büyüme ve doğrudan yabancı yatırımlar gelir eşitsizliğini azaltmaktadır.

Anahtar Kelimeler: FMOLS tahmincisi, G-7 Ülkeleri, Uluslararası Ticaret

Jel Sınıflaması: C10, O57, F13

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1. Introduction

In a country, international trade is very important not only to take advantage of economies of scale and market size, but also to increase domestic production, increase productivity and competitiveness, and ultimately contribute to economic growth. In addition, there is an increasing concept of income inequality within the country or between countries in recent years. This income inequality, which emerged especially in the period when the international trade volume increased significantly, attracted attention. Considering the literature, an increase in income inequality greatly increases the income level of the rich, while it is accepted as a common belief that the poor are harmed, but it is also seen that there is no common consensus on the effect of international trade on income inequality. In addition, there are different opinions on the effects of foreign direct investments, which play an important role in economic development, on income inequality.

In this direction, the aim of the study is to examine the nexus between international trade and income inequality in terms of G-7 countries for the 2003-2019 observation period. The G-7 countries are the world's seven largest and advanced economies. Moreover, these countries are the most industrialized nations and leading export countries in the world. Because of this reason, these countries have been selected to inspect the link between foreign trade and income inequality. The possible contribution of the study to the literature is: i) The nexus between international trade and income inequality for G-7 countries was analyzed with the FMOLS estimator and the Dumitrecsu-Hurlin Panel Causality test. ii) While creating the empirical model, the examination of the effects of economic growth and foreign direct investments on income inequality has not been ignored. In the remainder of the study, primarily a literature review is included on the nexus between international trade, economic growth, foreign direct investment, and income inequality. In the next stage, empirical model, data, and methodology are mentioned and empirical findings are conveyed. In the last part, results and policy recommendations are made.

2. Literature

There are many studies in the literature that examine the relationship between international trade and income inequality. These studies are generally explained by the income distribution theorem proposed by Stolper-Samuelson (1941) to investigate the impact of international trade on income inequality. Until about a hundred years after the Ricardo Model, economists adopted the view that free trade was beneficial to all people living in a country, and protective policies were to the detriment of all people. However, Stolper and Samuelson reveal the elimination of this misperception. According to Stoper and Samuelson, free trade is in favor of the factor used extensively in export industries. Protectionism also benefits factors that are used extensively in industries that rival imports. The returns on capital increase in industry that substitutes imports return on capital decreases in the export industry, money wages increase, and income level of local producers also increases in protectionism practices.

According to this theorem, free trade enhances the real income of the factor that the country has abundantly and decreases the real income of the scarce factor (Minabe, 1967).

According to the Stolper-Samuelson Theorem, opening countries to trade will change the income distribution in favor of the production factor, which is used extensively by the exported product.

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For this reason, while free trade increases the income level of those working in the export sector, it causes a decrease in the income level of local producers that produce goods that rival imports. Although the customs tariffs seem to protect the factor used extensively by the goods subject to import, they also have a decreasing effect on the income of the production factor used intensively by the exported product. Therefore, in a restricted economy, the income level of local producers increases (Ford, 1982).

When the literature has been examined, generally studies indicate that a positive nexus between GDP per capita and income equality. Although the relationship between the variables is predominantly positive in the literature, the direction of the relationship is closely related to economic policies. It is known that this relationship has a fragile structure. For example, Rubin and Segal (2015) tested the nexus between economic growth and income inequality in US during 1953–2008 and found that there is a positively associated with growth and income inequality. Wang et al. (2020) tested the relationship between economic growth and income inequality for 58 countries in 2005-2014 and reported that increase in economic growth causes higher income inequality. Besides these studies in the literature, it can be seen negative link among the variables. Gyimah-Brempong (2002) analyzed the link between economic growth and income inequality in 21 African countries for the 1993-1999 periods and report that economic growth has a negative effect on GINI.

There is no clear consensus in the literature on the impact of international trade on income inequality. While there are studies showing that increasing international trade volume in developed countries contributes to reducing income inequality, there is increasing evidence that international trade negatively affects income distribution and distorts income inequality. Ghose (2004) examined the trade liberalization and income inequality nexus during 1981-1997. According to the results of the study, while the liberalization of trade increases in the inter-country inequality, it decreases the international inequality. Roser and Cuaresma (2016) assessed the link between income inequality and international trade for 32 developed countries and reported that an increase in trade leads to worsen income inequality. Barusman and Barusman (2017) analyzed the impact of openness to trade on income inequality in the US over the period 1970-2014. Findings show that trade increases income inequality. In addition, the increase in trade volume shifts to the richest, leading to a wider income gap, causing income inequality.

While detailing the trade on the export and import side, both were found to contribute significantly to a higher income inequality as measured by GINI. On the other hand, Beaton et al. (2017) investigated the nexus between trade and inequality for Latin America and the Caribbean and reported that the relationship between income inequality and trade in developing countries was not clear. They argued that many factors other than international trade may affect income inequality, such as technological changes or the capital market.

FDI, which has a significant impact on economic development, also has some effects on income inequality. However, there are different views on the relationship between FDI and income inequality, as well as the relationship between international trade and income inequality. Herzer and Nunnenkamp (2013) researched the impact of inward and outward FDI on income inequality in Europe and found a negative interaction of income inequality in the long run. In addition, Ucal et al. (2015) examined the effect of FDI on income inequality for Turkey during 1970-2008. According to the results of the study, there is a negative and significant relation between GINI coefficient and FDI in the short and long-run.

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On the other hand, there are some studies find that a positive relationship between income inequality and FDI such as Choi (2006), Zhang and Zhang (2009) and Jaumotte et al. (2013), Wang et al. (2020). Choi (2006) investigated the impact of FDI on income inequality for 119 countries in 1993-2002 and found that FDI promoted inequality. Basu and Guariglia (2007) studied the relationship between FDI, income inequality, and growth in selected developing countries and found that FDI increases both inequality and economic growth. Zhang and Zhang (2009) researched the FDI and inequality nexus in China and reported that FDI caused the widening income gap. Jaumotte et al. (2013) analyzed interactions between income inequality, trade, and financial globalization in 51 countries the period from 1981 to 2003. They found that trade globalization contributed to a decrease the inequality. Moreover, financial development - especially FDI- increases inequality. Wang et al. (2020) examined the relationship between international trades, FDI and income inequality for 58 countries in 2005-2014 and found that the higher export and import rate of GDP causes more income inequality in developing countries than in developed countries. In addition, as a result of the findings obtained, it was concluded that the increased FDI in developing countries faced higher income inequality compared to developed countries.

3. Empirical model and data

In this study, the relationship between exports, imports, economic growth, foreign direct investments, and income inequality in terms of G-7 countries in the 2003-2019 periods. The following equation has been formulated:

$$InGini_{i,t} = a_0 + a_1 InY_{i,t} + a_2 InEX_{i,t} + a_3 InIM_{i,t} + a_4 InFDI_{i,t} + \varepsilon_{i,t} \quad (1)$$

In the model, t, i and $\varepsilon_{i,t}$ indicate that period, cross section, and residual term, respectively. $InGini_{i,t}$, GINI index is World Bank estimate. $InY_{i,t}$ is natural log of GDP per capita (constant 2010 US$), $InEX_{i,t}$ is natural log of exports of goods and services (constant 2010 US$), $InIM_{i,t}$ is natural log of imports of goods and services (constant 2010 US$), $InFDI_{i,t}$ is natural log of Foreign direct investment, net inflows (% of GDP). All variables are sourced from the World Development Indicators 2021 (World Bank) and all variables for the model are shown in table 1.

Table 1: The dependent and independent variables

Variables	Obtained from	Representation in the model
The dependent variable		
GINI	World Bank	$InGini$
The independent variables		
Economic growth	World Bank	InY
Export	World Bank	$InEX$
Import	World Bank	$InIM$
Foreign direct investment	World Bank	$InFDI$

In the study, the relationship between exports, imports, economic growth, foreign direct investments, and income inequality has been investigated using panel data approach. In the first step, the stationary of variables is tested with IPS unit root test developed by Im, Pesaran and Shin (2003).

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The hypothesis of IPS is as follows:

$H_0 = \beta_i - 0$ for all (I)

$H_1: \beta_1 < 0$, and 1=1,2,3,…,N_1, $\beta_i = 0_{\delta i} = N_1 + 1. N_1 + 2, \ldots, N$ (2)

Change in βi indicates to an alternative hypothesis for across groups in the panel while equation 3 states that the alternative hypothesis of the individual process is different from zero.

$\Delta\gamma_{it} = \mu_i + \rho\gamma_{it-1} + \sum_j^k = 1 \quad a_j \Delta\gamma_{it-j} + \delta_{it} + \theta_t + \varepsilon_{it}$ (3)

In the second step, the long-run parameters of each variable are examined with FMOLS estimator developed by Pedroni (2000, 2001). To estimate the panel cointegration parameters, $\hat{\beta}_{GFMOLS} = N^{-1} \sum_{i=1}^{N} \beta_{FMOLS}$ can be used.

Finally, in the last step, the causality among variables is searched with a panel causality test developed by Dimutrescu-Hurlin Causality (2012). Dimutrescu-Hurlin Causality test is estimated as follows:

$$\gamma_{i,t} = a_1 + \sum_{k-1}^{K} \gamma_i^{(k)} \gamma_{i,t-k} + \varepsilon_{i,t} \quad (4)$$

4. Empirical results

The results of the stationary properties of the variables are shown in Table 1. According to the results of the IPS unit root test, all series is non-stationary in level however, all variables are stationary in the first differences. Moreover, all series are integrated at I (1).

Table 2: The result of Unit of Root (IPS)

Variables	Level	First
INGINI	-0.737	-5.0274***
INY	1.688	-3.578***
INEX	0.592	-3.435***
INIM	0.918	-3.742***
INFDI	-0.861	-4.163***

*Note: *, **, *** indicates %10, %5, %1 respectively.*

Table 2 shows the results of the panel FMOLS estimator. The results of individual variables are significant. While economic growth and foreign direct investments reduce income inequality, exports and imports increase income inequality.

Table 3: The results of the FMOLS estimation

Variable	Coefficient	Prob.
LY	-0.161040	0.0176
LIM	0.134846	0.0027
LEX	0.170811	0.0038
FDI	-0.216494	0.0814

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Finally, Table 4 indicates the results of the Dumitrescu-Hurlin panel causality test. There is unidirectional causality from GINI to economic growth, FDI, export, and import.

Table 4: Dumitrescu Hurlin panel causality test results

Null Hypothesis:	**W-Stat.**	**Zbar-Stat.**	**Prob.**
DY does not homogeneously cause DGINI	4.34988	1.15270	0.2490
DGINI does not homogeneously cause DY	5.67730	2.01306	0.0441
DFDI does not homogeneously cause DGINI	3.22865	0.50482	0.6137
DGINI does not homogeneously cause DFDI	5.05787	1.77214	0.0764
LEX does not homogeneously cause DGINI	3.07070	0.32360	0.7462
DGINI does not homogeneously cause LEX	5.25551	1.73968	0.0819
LIM does not homogeneously cause DGINI	4.46141	1.22499	0.2206
DGNII does not homogeneously cause LIM	6.55222	2.58015	0.0099

5. Conclusion and policy implications

In this study, the relationship between exports, imports, economic growth, foreign direct investments, and income inequality in terms of G-7 countries in the 2003-2019 period using panel FMOLS estimator and Dumitrescu Hurlin Panel Causality. According to the empirical results, there is an indirect relationship between GDP per capita and income inequality.

It is seen that the increase in imports and exports leads to a widening income gap in developed countries. This result is the similar with Roser and Cuaresma (2016) and Barusman and Barusman (2017). In addition, according to the results, it was determined that the increasing income inequality around the world was negatively affected by FDI in developed countries. The studies of Herzer and Nunnenkamp (2013) and Ucal et al. (2015) are also supported these results. Moreover, economic growth reduces income inequality, and this result is supported by Gyimah-Brempong (2002).

In this direction, it is necessary to take steps to reorganize the trade policies of developed countries and to ensure the strength of income to regulate the global income inequality especially related to trade.

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