

# EKONOMİK BÜYÜME, İŐİSİZLİK VE GELİR EŐİTSİZLİĐİ: BRICS-T ÜLKELERİ ÖRNEĐİ<sup>1</sup>

## ECONOMIC GROWTH, UNEMPLOYMENT, AND INCOME INEQUALITY: THE CASE OF BRICS-T COUNTRIES

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### Öz

Gelir eŐİtsizliĐi hem akademik yazılarda hem de ekonomik tartıřmalarda çözümlenmesi beklenen en önemli konuların başında gelmektedir. Gelir eŐİtsizliĐi büyüme, enflasyon, işsizlik, eğitim ve verimlilik gibi birçok faktörle ilişkilidir. Gelir dağılımı ve ekonomik büyüme arasındaki ilişkiyi inceleyen çalışmalarda yöntem, veri seti ve dönemsel farklılıklar nedeniyle bulgular farklı sonuçlar vermektedir. İşsizlik, gelir eŐİtsizliğini etkileyen en önemli faktörlerden biridir. İşsizlik, üretim-tüketim dengesinin bozulmasına ve yatırımların azalmasına yol açarak yoksulluĐu ve gelir eŐİtsizliğini derinleřtirmektedir. Bu ampirik çalışmada, 2002-2018 dönemi için BRICS-T ülkelerinden oluşan bir panel veri seti kullanılarak ekonomik büyüme ve işsizlik oranının gelir eŐİtsizliĐi üzerindeki etkileri araştırılmıřtır. Çalışmanın bulguları, araştırma döneminde BRICS-T ülkelerinde ekonomik büyüme ve işsizlik oranlarındaki artışların gelir eŐİtsizliğini artırdığını ortaya koymuřtur. Bu çalışmanın bulguları, orta gelirli ülkelerde ekonomik ve sosyal politikaların uygulanması için ampirik kanıtlar sunmaktadır. Ekonomik başarıyı saĐlamak, gelirin yeniden dağıtımını yoluyla gelir eŐİtsizliğini azaltmaya odaklanan politikaların yanı sıra istihdamı arttırmaya yönelik politikaları da gerektirmektedir.

**Anahtar Kelimeler:** Gelir eŐİtsizliĐi, Ekonomik büyüme, İşsizlik, Panel analiz

**JEL Sınıflaması:** O47, E24, O15

### Absract

Income inequality is among the most important issues that await solutions in both academic writing and economic debates. Income inequality is associated with many factors such as growth, inflation, unemployment, education, and productivity. In studies examining the relationship between income distribution and economic growth, the findings give different results due to the method, data set and periodical differences. Unemployment is one of the most important factors affecting income inequality. Unemployment leads to deterioration in the balance of production and consumption and a decrease in investments, which deepens poverty and income inequality. In this empirical study, the effects of economic growth and unemployment rate on income inequality were investigated using a panel data set consisting of BRICS-T countries for the period of 2002-2018. The findings of the study revealed that increases in economic growth and unemployment rates in BRICS-T countries during the research period increase income inequality. The findings of this study provide empirical evidence for the implementation of economic and social policies in middle-income countries. Ensuring economic success requires policies focused on reducing income inequality through income redistribution, as well as policies aimed at increasing employment.

**Keywords:** Income inequality, Economic growth, Unemployment, Panel analysis

**JEL Classification:** O47, E24, O15

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## 1. Introduction

Income distribution inequality is among the main problems in developed countries as well as in developing countries. Inequality in income distribution brings along many social, political, cultural, and other problems in society. Therefore, it is important to ensure more equal distribution of income to increase the level of social welfare of the society. Today, income inequality tends to increase in many countries, and especially since the 1970s, studies on income inequality have begun to draw more attention (Sundrum, 1990). Income inequality has an important place in economic policies as it is an indicator of a country's economic prosperity.

Income distribution refers to the distribution of national income generated in a certain period among individuals, social groups, regions or production factors in a country. As it can be understood from its definition, income distribution can be categorized as regional, sectoral, functional, and personal income distributions (Pehlivan, 2009). It is accepted that there are numerous factors such as growth, economic policies, trade openness, inflation, interest rate, population and unemployment, informal economy, wealth distribution and educational status that determine distribution of income. Income inequality is affected by many factors such as growth, inflation, unemployment, education, and productivity. In the literature, there are empirical studies as well as theoretical studies on the relationship between economic growth and income inequality. There is no consensus among the findings of the studies, so the issue is still controversial. Unemployment is another important factor that affects income inequality. Unemployment leads to the deterioration of the production and consumption balance and to a decrease in investments, which in turn, deepens poverty and income inequality.

In this empirical study, the effects of economic growth and unemployment rate on income inequality were investigated using a panel data set consisting of BRICS-T countries for the period 2002-2018.

## 1. Literature Review

In the literature about the relationship between income distribution and development, there are empirical studies as well as theoretical studies. The oldest and first study in theory goes back to Kuznets (1955). In Kuznet's (1955) study, income inequality increases in the early stages of development, then decreases in further development stages. This situation is expressed as an inverted U shape. After Kuznet's study, various studies supported a positive relationship between income inequality and economic growth (Aghion et al., 1999; Galor and Moav, 2004; Lundberg and Squire, 2003; Wahiba and Weriemmi 2014; Rubin and Segal 2015) while some analyzes were in favor of a negative relationship (Bertola, 1993; Alesina and Rodrik, 1994; Persson and Tabellini, 1994; Perotti, 1996; Nisim 2007). Some studies also presented mixed results (Chambers, 2010; Huang et al. 2015). In studies examining the relationship between income distribution and economic growth, the findings may conflict with each other and give mixed results due to the method, data set and periodical differences (Topuz and Dağdemir, 2016).

In more recent studies, Topuz and Yıldırım (2017), in their study using data from 154 countries, concluded that income inequality affects economic growth first positively and then negatively as income levels of countries increase. Park and Shin (2017), in their study including panel data covering 1960-2011 data of 162 countries, and Younsi and Bechtini (2018) in their study including 1995-2015 panel data of BRICS countries also supported Kuznet's curve. Akalın et al. (2018) investigated income inequality in Turkey for 1984-2011 period and supported Kuznet's curve. Nwosa (2019) found no impact of economic growth on income inequality for Nigeria case for the period of 1981-2017. Berisha et al. (2020) studied panel data of BRICS countries for the period of 2001-2015 and found a positive relationship between economic growth and income inequality.

Since there are many factors affecting income inequality, there are studies examining the relationship of income inequality with several economic variables such as growth, inflation, unemployment, education, and productivity. One of the most important factors affecting income distribution is unemployment. The fact that the unemployed people are out of the production process, also causes them to be deprived of the opportunity to earn income. Therefore, unemployed people make up the poorest segment of society. Increasing employment thus reducing unemployment is among the most important factors to reduce income inequality and poverty. The main idea is that unemployment tends to have effect on the less skilled and the low-paid people in society more than other groups. Therefore, unemployed people tend to be concentrated in the lower percentile of the income distribution.

There is no consensus in the results of the empirical studies examining the relationship between income inequality and unemployment in the literature. Ward et al. (2009), Oduwole (2015), Yousaf and Ali (2014) found a positive relationship between unemployment and income inequality. Odeh and Okoye (2014) concluded that unemployment is the main cause of the income inequality during the periods that when most of the economy's population lives below the poverty line and income inequality is high. However, there are some studies that did not find a significant relationship between income inequality and unemployment (Gustafsson and Johansson, 1999; Mehrara and Mohammadian, 2015).

## 2. Methodology

In this study, the relationship between economic growth, inequality and income inequality were investigated for by using panel data set consisting of BRICS-T countries for the period of 2002-2018 period. The dependent variable is Gini coefficient to measure the income inequality, and the independent variables are GDP growth rate and unemployment. Gini coefficient, the measure of income inequality, is calculated based on Lorenz curve. Lorenz curve is the diagrammatic representation of income inequality. If Lorenz curve moves away from the absolute inequality line, income inequality increases. Gini coefficient has a value between 0 and 1; the value of 0 denotes absolute equality and 1 denotes absolute inequality. Gini becomes higher as the income distribution inequality increases. Equation (1) is used as the regression model between Gini coefficient and the independent variables.

$$\text{GINI}_{it} = \beta_0 + \beta_1 \text{GDPGR}_{it} + \beta_2 \text{UNEMP}_{it} + \varepsilon \quad (1)$$

In the regression model;

GINI : Gini coefficient as a measure of income distribution inequality

GDPGR : GDP growth rate (%)

UNEMP: Unemployment rate (%)

$\varepsilon$  : The error term.

where  $\beta_0$  is constant,  $\beta_1$  and  $\beta_2$  are coefficients of regression. The relationship between economic growth and income inequality can be positive or negative. That is, there is no clear consensus among the findings of the empirical studies. Therefore, the expected sign of the coefficient of GDPGR is not clear. On the unemployment side, the expected sign of the coefficient is positive;  $\beta_2 > 0$ .

## 3. Findings

Gini coefficient, GDP growth rate, and unemployment rate annual data used in the study was drawn from Worldbank database. Descriptive statistics of the variables are shown in Table 1.

**Table 1.** Descriptive statistics of the variables

Variable	Number of observations	Average	Maximum	Minimum	Standard deviation
GINI	65	45.06	65	34	8.05
GDPGR	65	4.55	11.39	-7.8	3.92
UNEMP	65	8.91	29.12	4.2	4.86

In order to decide whether there are fixed or random effects is valid in the model, Hausman test was carried out. According to the null hypothesis, random effects are present in the model, so the alternative hypothesis favors the fixed effects in the model. Hausman test results revealed that random effects are present in the model because it was found that  $p > 0.05$  therefore  $H_0$  could not be rejected (Table 2).

**Table 2.** Hausman Test Results of the Regression Model

<b>H<sub>0</sub></b> : Random effects are present in the model.	
<b>H<sub>1</sub></b> : Random effects are not present in the model.	
<b>Test statistics: chi2 (2)</b>	<b>Prob value</b>
1.34	0.51

The panel data including BRICS-T (six countries) data for 2002-2018 years are used to explore the impacts of economic growth and unemployment on income inequality. According to the regression results, both coefficients of GDP growth rate and unemployment are found to be positive (Table 3).

**Table 3.** The Results of Panel Regression

Variable	Coefficient of the variable	Standard error	t-statistics	p-value*
GDPGR	0.173242	0.083066	2.085561	0.0415
UNEMP	0.835561	0.182148	4.587255	0.0000
C	36.82827	1.734795	21.22918	0.0000
R <sup>2</sup>	0.938534			
Adjusted R <sup>2</sup>	0.930986			
Durbin-Watson stat	1.401993			
F-Statistics	124.335			
P(F-Statistics)	0.0000			

\* $p < 0.05$  statistically significant

The panel regression results demonstrated that both variables included in the model have an increasing effect on the income inequality. When the p-values of the independent variables were examined, it was found that  $p < 0.05$  for all variables. The R<sup>2</sup> value, which indicates the regression model fit, was found to be high at 0.94. According to the findings of the panel regression, the coefficient of GDPGR was found to be  $\beta$ : 0.1732 and the coefficient of unemployment ratio was found as  $\beta$ : 0.8356. It was concluded that the coefficients of both variables were positive, as expected. Accordingly, 1 unit increase in GDPGR is expected to increase income inequality by 0.17%, and 1 unit increase in unemployment rate will increase income distribution inequality by 0.84%. The effect of the increase in unemployment on income inequality was found to be higher than the effect of the increase in economic growth.

#### 4. Conclusion

Rising income inequality is a growing concern in many parts of the world. Today, income inequality tends to increase in many countries, and efforts to solve this problem have begun to attract more attention. This study provides empirical evidence for the impacts of economic growth and unemployment on inequality for the BRICS-T countries. The findings of the study revealed that increases in both economic growth and unemployment rates in the BRICS-T countries during the 2002-2018 period increased income inequality. The effect of unemployment on income inequality was found to be higher than the effect of economic growth. The findings of this study also provide empirical evidence for the implementation of economic and social policies in middle-income countries. Ensuring economic success requires policies focused on reducing income inequality through income redistribution, as well as policies aimed at increasing employment.

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