

Doi: 10.30520/tjsosci.1332143**Received Date:** 24.07.2023**Accepted Date:** 14.09.2023**PANEL DATA ANALYSIS MAKING EFFECT THE VARIABLES ON INCOME DISTRIBUTION INJUSTICE**Yeşim KUBAR¹
Yasemin ÇİÇEK²**Abstract**

Income distribution injustice is one of the serious and complex problems in development of a country. In a country, for economic development to spread over social basis, it is necessary for the gains engendered by growth to be shared with all society. Thanks to this, a country also provides economic growth as well as welfare increase. Spread of economic growth over social basis is closely related to a fair income distribution. In the study carried out, income distribution injustice is associated with Gini Coefficient. While that Gini Coefficient approaches zero means that country incomes are fairly distributed to every sector of society, that it approaches to one expresses that incomes are collected in certain sectors and that income justice in that country becomes worse. In this study, utilizing the 1990-2020 annual data of the countries such as USA, Brazil, Canada, Finland and United Kingdom, it was aimed to identify that income distribution injustice are affected from which of the variables such as employment rate, per capita income, fertility rate, urbanization and investment rate and how. As dependent variable of the study, Gini Coefficient was used. In the study, utilized panel data analysis, according to the results of long term PDOLS predictor analysis, it was concluded that an increase of one unit occurring in per capita income, gross capital formation (investment) and employment rate affected Gini Coefficient in positive direction, that fertility rate was insignificant, and that urbanization negatively affected it.

Keywords: Income Distribution Injustice, Panel Data, Analysis, Westerlund Co-integration Analysis.**Introduction**

Income distribution is an important concept showing how many shares economic units taking place in production process from total incomes emerging as a result of production process. As an instrument of an economic policy, providing income distribution justice has a great importance from the viewpoints of both policymakers and individuals. Income distribution injustice, regardless from the difference between developing and developed countries, is a big problem experienced all over the world. While finding solutions to inflation, growth, imbalances, etc., any solution cannot be still found for the problem with income distribution injustice. Income distribution injustice is a not only experienced problem among world countries but also experienced between regions and people in a country (Kubar, 2011:228).

Although the issue of income distribution was examined in very old periods dating to Ricardo, it is also an issue emphasized importantly and subjected to studies in the present time. Even though the issue of

¹ Dr., Firat University, Faculty of Economics and Administrative Sciences, ORCID:0000-0002-3439-9430,ykubar@firat.edu.tr.

² Graduate student, Firat University, Social Sciences Institute, Branch of Economics, ORCID:0009-0008-6744-6601, 222219116@firat.edu.tr.

income distribution was ignored for a certain period in the past, depending on the developments experienced in economy and the fact that income distributions in many countries begin to become different,, the interest to this issue has begun to decrease again (Cowell, 2015:1).

The factors added to the income created or the questions such as how income will be proportioned between individuals, the effect of this apportionment on economic system and whether or not the distinction is fair has been issues discussed in economics. However, analyses about apportionment showed an important differences between the main economic approaches.

While economic approaches presenting dependency on capitalist system try to adjust in the best way for capital accumulation, they have argued that it will increase welfare of everybody in society and is a fair distinction in a sense. Apportionment analyses criticizing capitalist system has tried to attract attention to the structure of apportionment incorporating exploitation, power relationships, social restless it creates and infliction setting.

Classical economists handled apportionment matter in terms of classes based on properties of production factors. The class becoming prominent in classical approach has been capitalist class having property of production tools. Capital accumulation that is available in capitalist has been seen the resource of employment, economic growth, and thus, of social welfare. In this context, the main concern of classical economists directed to apportionment matter is how the apportionment that actualizes affects capital accumulation. Mill separately considered apportionment matter from production analysis in contrast to the other classical economists. According to Mill's analysis, apportionment has been seen as a social concept affected from traditions and institutional structure in society and, thus, a basis, resulted from social relationships, was brought in inequality in apportionment

Marxist approach attributes apportionment conflictions and power relationships between classes and describes how property of production tools transforms into exploitation in apportionment relationships. However, Marxist analysis considers production style and social classes it creates as a stage of historical process. That classical and Marxist economics attributes apportionment analyses to classes and capital-centered discussions leads social relationships in factor and inequalities based on these to be largely made invisible in this approach. However, apportionment is not only a social classical matter. The production factor individuals have and the share it takes from the income created as well as individual inequalities in the factorial group, privileges and discriminations also shape apportionment.

Apportionment analysis based on the principle of marginal productivity of neoclassical approach puts forward that it will give a share to an each production factor and contribution it makes to product from the value created in a setting, where private property is recognized, and free market economy is valid. When each factor is equally awarded to the value it creates, the apportionment that emerges will be fair and, thus, not leave a place for exploitation.

Apportionment matter, discussed in economics discipline for long times through social classes based on property of production factor, is handled as apportionment between individuals or households as of 20thcentury. So, inequalities in social classes and discrimination factor that is an important resource of these injustices has begun to be more visible.

There is no an equal income distribution. Income is distributed according to some standards. Individuals participate in the production at the extent of their abilities and receive share from income according to their needs. This expresses that some individual will obtain less income die to their lower abilities. In economies based on market system, individuals receive from income distribution according to their contributions Hailstones and Mastrianna, 1988: 234).

The presence of income distribution injustice makes a current issue justice and efficiency ("trade off") variation rate, presents a tendency toward egalitarianism' and making prominent human rights and, minimizing opposite effects on economic efficiency, makes a current issue the problem that how will be achieved redistribution (McConnell et al., 1993:661-662).

Income distribution injustice is one of the serious problem in the development of every country. One of the important measure of being a developed country is to provide income distribution justice in country. In a country, whose income distribution is not fair, the emerging poverty is an expected situation. In struggling with poverty, which is a global social problem, reducing inequalities in every areas to raise incomes of the sectors receiving lower share from income plays important role in providing social welfare (Gençler, 2017: 19). There are many variables affecting income distribution such as growth, income per capita, capital, investment, employment rate and population increase. Population increase has a direct effect on the level of social welfare. Rapid population increase in countries leads human welfare to decrease at a certain level, a decrease to be experienced in welfare in the long term and the number of poor people to increase. This case also causes increase of income distribution injustice. Employment rate is an important indicators with its both social and economic dimensions. Lower rate of employment comes by disturbing national stability of country and can increase income distribution injustice. Therefore, it is important to identify the factors causing income distribution injustice and at what extent these factors affect income distribution injustice. The reason for income distribution to become prominent in the present time is that income distribution becomes more injustice, although there is an improvement about income distribution. The fact that income is collected in hands of a minority brings many problems with it. Income distribution is a phenomenon related to the concepts of social peace and social justice. Unfair income distribution not only leads to economic problems but also many social and political problems in a country. Gradually increase of income distribution injustice causes the events to increases such as theft and robbery as a result of opening gate between the rich and poor people in country. In these countries, social problems become prominent, and social peace cannot be provided. In terms of that individuals in society live in more equal life standards, and social justice and social peace is provided, improving income distribution is a prioritized matter. For income to be distributed more rightfully, it is necessary to identify leading to income distribution injustice and take actions according to these factors. This study aims to identify how the variables, considered that they cause income distribution injustice, such as per capita income, employment rate, fertility rate, investment rate and urbanization affect income distribution injustice.

1. Literature Review

When regarded to the studies carried out for the determinants of income distribution, it is seen that the interaction between [income distribution] and the variables used in the study gives weak and different results for short and long terms in some studies. It is considered that this difference arises from developedness levels of countries and the periods when analyses are made. In Table, literature summary of the studies carried out for income distribution injustice takes place.

Table-1: Literature Review

Author	Period	Variables	Method	Findings
Persson & Tabellini (1991)	1830-1850 1970-1985 1960-1985	Growth Gini Coefficient	Horizontal Cross-sectional Analysis	Between income inequality and economic growth, it was found a significant and negative relationship.
Dawson (1997)		Gini Coefficient , Per Capita GDP	Horizontal Cross-sectional Analysis	According to the findings obtained in the study carried out, it was obtained the results regarding that Kuznets Hypothesis is correct.

List and Gallet (1999)	1961-1992	Gini Coefficient, Per Capita GDP	Panel Data Analysis	It was concluded that income distribution hypothesis was firstly valid, however, that inequality would again increase as long as growth was continuing.
Forbes (2000)	1966-1995	Income Inequality, Economic Growth	Panel Data Analysis	It was identified that there was a positive relationship between income inequality and economic growth in short and middle term, negative relationship in long term.
Panizza (2002)	1940-1980	Gini Coefficient, Per Capita Income	Panel Data Analysis	It was obtained the findings strongly confirming Kuznets Hypothesis.
Çukur and Bekmez	1975-2001	Income Distribution, Health	LS and Panel Data Analysis	It was reached the results supporting income hypothesis. However, there is a linear relationship between decrease in the under five - mortality rate and increase at income level
Bahmani Os-kooee and Gelan (2008)	1957-2002	Gini Coefficient, Per Capita Income, Population, Exchange Rate	Time Series - ARDL Analysis	It was seen that growth increased inequality in short time and reduced it in long term. The results supporting hypothesis were obtained.
Dişbudak and Süslü (2009)	1963-1998	Gini Coefficient, Per Capita GDP, Openness	Time Series, ARDL Analysis	In contrast to Kuznets Hypothesis, it was concluded that the curve was U-shaped.
Majeed (2010)	1970-2007	Capital, Economic Growth, Gini Coefficient	Panel Data Analysis	It was seen that there was a significant an positive relationship between income inequalities and economic growth.
Herzer and Vollmer, 2011	1970-1995	Per Capita GDP, Gini Coefficient, Investments	Panel Co-integration Test	As a result of the analysis carried out, it was identified that income inequality had important effects on growth in long term. It was identified that human capital h had stronger effects than physical capital on economic growth.

Özdemir, Em-sen, Gencer, Kılıç(2011)	1992-2007	Economic Growth, ,In- come Distri- bution Injus- tice Income Per Capita	Panel Data Analysis	It was concluded that there was a posi- tive-sloped linear relationships between income inequalities and income per capita.
Çakmak and Tosun	2002-2013	Growth Income Dis- tribution Injustice	Kuznets Hy- pothesis Panel Data Analysis	In the study carried out, it was con- cluded that income distribution injustice firstly decreased as growth increases, after a certain point, that it has been in- creasing.
Desbordes and Verardi (2012)	1960-2000	Gini Coeffi- cient, Per Capita In- come	Panel Data Analysis	According to Kuznets Hypothesis, ob- servational evident was obtained but causal findings could not be reached.
Huang, Lin and Yeh (2012)	1917-2007	Income Dis- tribution Ac- cording to Population Percentage, Per Capita GDP	Time Series Analysis	The “reversed U” relationship between economic growth and income distribu- tion was rejected, and it was stated that the relationship of interest was “U”- shaped.
Theyson and Heller (2015)	1992-2007	Per Capita GDP, In- come Distri- bution Injus- tice	Panel Data Analysis	It was concluded that there was a “re- versed U-shaped” relationship, when Per Capita GDP and GDP Indices was used, and that there was a “S-shaped relationship”, when expected life time and educational indices were used.
Rubin & Segal (2015)	1953-2008	Gini Coeffi- cient, Growth	Generalized Moments Method	It was identified that there was a posi- tive relationship between growth and income inequality.
Topuz & Dağdemir (2016)	1995-2011	Economic Growth, Gini Coeffi- cent	System- Gener- alized Moments Method (Sis- tem-GMM)	In the study, it was concluded that eco- nomic growth and income inequality in- creased in low and low –middle income countries and upper-middle countries, while economic growth and income in- equality decreased in high income countries and the findings supporting Kuznets Hypothesis were obtained.

Peçe, Ceyhan and Akpolat (2016)	1977-2013	Real GDP, Income Distribution	Johansen Co-integration Test, Toda-Yamamoto Granger Causal Test	It was concluded that there was a negative relationship between the variables
Çelik and Erkişi	1990-2017	Income Distribution, Inflation	Panel Data Analysis	In the study carried out, in the group of developing countries, unemployment rates, commercial openness and population increase rate were seen as insignificant. In addition, it was concluded that inflation rate that is main variable, per capita GDP and final public expenditures were significant.
Uçar(2019)	2000-2014	Income Distribution Inequality, Gini Coefficient, Economic Growth	Horizontal Cross Section and Time Series Analyses	Income distribution inequality is firstly increasing together with economic growth and, it is seen that inequality decreases in the proceeding process of growth process,
Erkişi and Ceyhan(20-20)	1993-2016	Income Distribution Justice, Economic Growth	Panel Data Analysis	According to the data obtained, it was concluded that income distribution justice would increase in the long period.
Aktaş(2022)	1996-2018	Gini Coefficient, Employment Rate, Urbanization, Investment, Fertility rate Per Woman, Human Development Index	Tobit, Panel Data Analysis	As a result of the findings obtained, it was concluded that employment, investment and human development reduced income inequality and that population and fertility rate increased income inequality.

2. Methodology

Since panel data analyses that is correlation of time series considered more than one variables with cross-sectional analyses carried out, they provide possibility to acquire in more detail and lower simultaneity between variables to less, can increase degree of freedom and becomes more efficient. In addition, it is more advantageous compared to time series and horizontal cross sectional analyses in measuring dynamic reactions of units (Gujarti, 2004:637-638). Therefore, in the study, the relationship of the data belonging to USA, Brazil, Canada, Finland and United Kingdom and income distribution was tried to be explained by utilizing the methods of panel data analysis. In the analyses, the annual data belonging to the period 1990-2020 for USA, Brazil, Canada, Finland and United Kingdom were obtained from the

site of World Bank, and analysis was made by Stata program. In the analyses, the logarithmic values of annual data belonging to the indicators were used.

The main state of linear model used in regression analysis, realized by panel data, is as follows.

$$y_{it} = \alpha_{it} + \beta_{it}x_{it} + \epsilon_{it}$$

where

i: horizontal sectional unit in n piece

t: time period

y_{it} : The value of dependent variable of I units in time period t

x_{it} : The value of independent variable of I units in time period t

ϵ_{it} : Deviation unit with mean zero and constant variance

β : is slope coefficient (Somuncu, 2019:64).

If panel data, balanced panel data, where there is a time dimension in equal length in dataset for each unit of horizontal cross-section, from the different time dimensions, they are expressed as unbalanced panel data. (Özer and Çiftçi, 2009:41). In this study, balanced panel data analysis was used. The abbreviations belonging to the variables are given in Table 2.

Table -2: Abbreviations belonging to the variables

Abbreviations	Name of Variable	Resource
lgini	Gini Coefficient	World Bank
lupp	CityPopulation (%)	World Bank
lemp	Rate of employment to population 15+	World Bank
lgci	Gross Capital Formation (Investment)	World Bank
lfer	Fertility rate (Birth per Woman)	World Bank
lpgdp	Per Capita GDP (Current US Dollar)	World Bank

The model to be used in the study are as follows:

Model-1: $lgini_{it} = \beta_0 + \beta_1 lupp_{it} + \epsilon_{it}$

Model-2: $lgini_{it} = \beta_0 + \beta_1 lemp_{it} + \epsilon_{it}$

Model-3: $lgini_{it} = \beta_0 + \beta_1 lgci_{it} + \epsilon_{it}$

Model-4: $lgini_{it} = \beta_0 + \beta_1 lfer_{it} + \epsilon_{it}$

Model-5: $lgini_{it} = \beta_0 + \beta_1 lpgdp_{it} + \epsilon_{it}$

β_0 denotes constant value ; β_1 : coefficient to be predicted ; ϵ_{it} : error term; i: unit dimension; t: time dimension.

3. Research Findings

Proceeding to panel data analysis, it is necessary to identify stationarity of series. Stationarity of series is identified by means of unit root tests. Unit root tests are divided into two groups as first generation unit root tests and second generation unit root tests. In identifying which of the tests under consideration, horizontal cross-sectional dependence (HSD/YKB) are considered. In order to determine horizontal cross-sectional dependence, the different tests are made. While selecting these tests, time and unit dimension of panel data is considered. In identification of horizontal cross-sectional dependence, in the literature, “LM test, Pesaran CD test, NLM Test are often used. In this study, since time dimension is bigger than unit root (T > N), CD Test, developed by Pesaran, was utilized (Tatoğlu, 2020:238). The results of horizontal cross-sectional dependence are given in Table 3.

Table-3: Cross-Sectional Dependence CD Test

Variables	CD	P-value
lgini	1.68	0.093
lupp	16.83	0.000*

lemp	5.43	0.000*
lgc1	15.22	0.000*
lpgdp	15.73	0.000*
lfer	8.87	0.000*

* expresses significance at the level of 1 %; ** at the level 5%

In Table 3 “Pesaran CD Test” results for horizontal cross-sectional dependence. According to the results, the main hypothesis expressing interunit YKB, which belongs to the variables of lupp, lemp, lgc1, lfer, lpgdp, in the form of “H0: There is no horizontal cross-sectional dependence” is rejected. There is interunit horizontal sectional dependence between the variables. The main hypothesis H0 expressing interunit YKB belonging to lgini among the variables is rejected. There is no interunit horizontal cross-sectional dependence between the variables at the significance level of 5% Unit root test to be used in case that there is YKB, is the second generation unit root test. Unit root test to be used in case that there is not YKB, is the second generation unit root test. In the study; CIPS test, one of the second generation unit root tests, was used for lupp, lemp, lgc1, lfer, lpgdp variables. Levin, Lin and Chu (LLC) test, which is one of the first generation unit root tests, was used for the lgini variable. The results of CIPS unit root are given in Table 4.

Table-4: CIPS Unit Root Test Results

Variables	Level CIPS Value	Variable	Difference CIPS Value
lupp	-1.886	Δ lupp	-2.667
lemp	-1.615	Δ lemp	-4.672
lgc1	-1.929	Δ lgc1	-4.092
lpgdp	-1.604	Δ lpgdp	-3.503
lfer	-0.969	Δ lfer	-3.248
CIPS Critical Value at the level			
	10% ; -2.21	5% ; -2.33	1%;-2.55
CIPS Critical Value in difference			
	10% ; -2.21	5% ; -2.33	1%;-2.57

In Table 4, the results of the variables for CIPS unit root test take place at the level and in the first difference. Since CIPS statistics is smaller than the critical values calculated for “ lupp, lemp lgc1, lpgdp and lfer” at the significance levels of 10 %, 5% and 1%, they are not stationary. In this case, for making the data stationary, their first differences were taken and it was concluded that all variables became stationary in their first differences. In Table 5, Levin Lin Chu (LLC) unit root test belonging to the variable lgini takes place.

Table-5: LLC Unit Root Test Results

Variable Level	Statistics	P-value	Variables Difference	Statistics	P-Value
lgini	-1.1496	0.1252	Δ lgini	-6.1426	0.0000

In Table 5, for LLC unit root test, the results at the level and in second differences take place. At the significance level of 5%, since LLC statistical values are bigger than 0.05, they are not significant. For Δ lgini, LLC statistical values became stationary, since they are smaller than 0.05. In this case, for the data to become stationary, their first differences were taken and it was concluded that the variables became stationary in the first differences. In this study, the reasons for preferring co-integration test is that all variables are stationary in their first differences. The case that the data used in the model is I(1) is a precondition for being able to make co-integration analysis. Therefore, for determining co-integration test to be used in the study, first of all, the tests of horizontal cross-sectional dependence and homogeneity belonging to the models were made and, according to the results obtained, the suitable co-integration test was also included in the study. About which co-integration test will be made, it was decided by making horizontal sectional dependence and homogeneity tests based on the models.

In the study, the presence of YKB was researched by means of “Breusch and Pagan LM Test”, because this test can be used in case of T>N (Tatoğlu,2020:238-239). In Table 6, the results of horizontal cross sectional dependence LM tests take place.

Table-6: LM Test Results

Modeller	Test	Test Sts..	P-Value
Model-1: $lgini_{it} = \beta_0 + \beta_1 lupp_{it} + \epsilon_{it}$	LM	16.5	0.0863
Model-2: $lgini_{it} = \beta_0 + \beta_1 lemp_{it} + \epsilon_{it}$	LM	17.84	0.0578
Model-3: $lgini_{it} = \beta_0 + \beta_1 lgcl_{it} + \epsilon_{it}$	LM	18.11	0.0532
Model-4: $lgini_{it} = \beta_0 + \beta_1 lfer_{it} + \epsilon_{it}$	LM	12	0.2850
Model-5: $lgini_{it} = \beta_0 + \beta_1 lpgdp_{it} + \epsilon_{it}$	LM	19	0.0603

When Table 6 is examined, the hypothesis “, H0:Residuals are not in interunit correlations” is not rejected for Model -1, Model-2, Model-3, Model -4 and Model-5. In Panel Co-Integration Model, there is not horizontal cross –sectional dependence for Model -1, Model-2, Model-3, Model -4 and Model-5 at the significance level of 5%. In the study, for the homogeneity of slope parameters according to the units, Swamy-S Test was preferred. If the result of Swamy-S Test statistics is bigger than critical values, parameters are interrupted as heterogeneous, if smaller, as homogenous (Tatoğlu,2020:246-247). In Table 7, the results of Swamy-S homogeneity test take place.

Table-7: Swamy-S Homogeneity Test results

Models	Chi-2 Value	P-Value
Model-1: $lgini_{it} = \beta_0 + \beta_1 lupp_{it} + \epsilon_{it}$	10.21	0.2505
Model-2: $lgini_{it} = \beta_0 + \beta_1 lemp_{it} + \epsilon_{it}$	12.10	0.1470
Model-3: $lgini_{it} = \beta_0 + \beta_1 lgcl_{it} + \epsilon_{it}$	8.55	0.3818
Model-4: $lgini_{it} = \beta_0 + \beta_1 lfer_{it} + \epsilon_{it}$	13.65	0.0913
Model-5: $lgini_{it} = \beta_0 + \beta_1 lpgdp_{it} + \epsilon_{it}$	8.61	0.3764

According to Swamy-S homogeneity test taking place in Table 7, for Model-1, Model- 2, Model-3, Model -4 and Model-5, H0 Hypothesis according to P values is not rejected. Since p values is bigger than 0.05, it was concluded that they were homogenous. Considering horizontal cross-sectional dependence, homogeneity and heterogeneity results for countries, co-integration tests were applied. In the study, as co-integration test, Westerlund panel co-integration test was used, which can be used in case that there is no horizontal cross-sectional dependence and that homogeneity is valid. For the hypotheses considering both panel homogeneity and panel heterogeneity, the different test statistics can be calculated (Westerlund, 2008: 196-199). While Westerlund was working with panel data, for testing the presence of co-integration, he suggested 4 pieces of panel co-integration test with error correction model-based. Tests are based on testing the presence of co-integration via deciding whether or not each unit has its own error correction. So, when the hypothesis “There is no error correction” is rejected, the hypothesis “There is no co-integration” is also rejected. In order to test the presence of long term relationship between the variables, 4 pieces of co-integration tests (Ga, Gt, Pa, Pt) take place. In case that the panel, based on structural dynamics, is heterogeneous, group mean statistic Ga and Gt, more relied, is used; in case that it is homogenous, Pa and Pt tests, accepted more reliable and based on error corrections of panel in horizontal cross section. In Table 8, co-integration analyses results for homogenous models take place.

Table-8: Co-integration Analysis Results for Homogenous Models

$\Delta lupp$	Z-value	P-value	$\Delta lepm$	Z-value	P-value
P_t	-8.925	0.000	P_t	-5.802	0.000
P_a	-12.318	0.000	P_a	-6.235	0.000
$M\Delta lgc1$			$\Delta lfer$		
P_t	-10.071	0.000	P_t	-8.661	0.000
P_a	-20.568	0.000	P_a	-11.591	0.000

$\Delta lpgdp$			
P_t	-8.888	0.000	
P_a	-11.836	0.000	

The results of co-integration tests in case of homogenous panel. take place in Table 8. According to the results, for our homogenous models, since p-values is smaller than 0.05, H0 Hypothesis is rejected for the variable $l\text{gini}$ and the variables $lupp$, $lemp$, $lgc1$, $lfer$, $lpgdp$ and it was identified that there was co-integration relationship. In Table 9, for homogenous models, the long term POOLS prediction results of co-integration relationship take place.

Table-9: PDOLS Prediction Results

Models	Coefficient	P- Value
Model-1: $\Delta l\text{gini}_{it} = \beta_0 + \beta_1 \Delta lupp_{it} + \epsilon_{it}$	-.0202	0.016
Model-2: $\Delta l\text{gini}_{it} = \beta_0 + \beta_1 \Delta lemp_{it} + \epsilon_{it}$	+.2839	0.000
Model-3: $\Delta l\text{gini}_{it} = \beta_0 + \beta_1 \Delta lgc1_{it} + \epsilon_{it}$	+.0820	0.000
Model-4: $\Delta l\text{gini}_{it} = \beta_0 + \beta_1 \Delta lfer_{it} + \epsilon_{it}$	-.0345	0.202
Model-5: $\Delta l\text{gini}_{it} = \beta_0 + \beta_1 \Delta lpgdp_{it} + \epsilon_{it}$	+.0327	0.006

According to POOLS prediction results taking place in Table 5, it is seen that there is a long term relationship between $l\text{gini}$ and $lupp$, $lemp$, $lgc1$, $lpgdp$ variables. According to POOLS results, in long term, the variables of $lupp$, $lemp$, $lgc1$, $lpgdp$ affect the variable $l\text{gini}$. It was concluded that urbanization, per capita income, gross capital formation and employment rate positively affected income distribution injustice. The variable population used in the study is associated with urban population (urbanization). Population increase may engender positive effects by means of scale economy in terms of population working in agricultural sector. In addition, population increase reduces labor/capital rate. When considered that capital is mostly concentrated in urban population areas, decrease of labor/capital rate due to population increase can increase gini coefficient (injustice). Due to this feature of it, the effect of variable urbanization on income distribution injustice is not clear. In the study carried out, it was concluded that it both increased an reduced income distribution injustice. In this case, it is considered that that countries are and regions are in the different development stages and different economic structure are effective. Since urbanization process affects many economic, social and cultural areas, it is an element that can directly affect quality of life of society. Hence, urban expansion, forming opportunities for the poor people, can improve inequalities in accessing to the services, housings and job opportunities. Spatial expansion of a country or region can directly affect the poor people and reduce income distribution injustice. .

In upper, middle and high income countries, it is accepted that there is a positive relationship between income distribution injustice investment. According to Keynes, investments create income and are the resource of savings. Income distribution justice is a function of investment-saving equation. If investments are more than savings, demand for consumption goods will be more, and it will raise the prices of goods. This will also reduce the real value of labor. In such a situation, when surplus income resulted from rises in the prices of consumption goods is again directed by capital owners to investment, it is interpreted that prices will be much more rise and income distribution justice will disturb at the expense of workers. The result obtained in the study has a quality supporting Keynes' view.

For income distribution to be fair and country welfare to be high, employment has a great importance. When the literature on the relationship of income-inequality and employment is examined, it is mostly seen that the intensity rate of market institutions, policies, wages, labor force costs, union intensity rate and unemployment are associated with injustice. That the number of employee is high in country means that total income is fairly distributed to every sector. The structure of employment, unequal wage and

income obtained from capital can cause income distribution injustice. The leading disturbance in income distribution are unequal wage distribution and the effect of this on demographical structure. That labor force supply becomes higher due to increase of active population, negatively affecting labor force supply, can lower down wage rates. Therefore, employment increase can increase income distribution injustice.

The thought that producers want to keep profit margin high keep low the wages of employee can lead to injustice in income distribution. The relationship between income distribution injustice and economic growth was mostly tested by Kuznets Hypothesis. According to Kuznets (1955), income distribution injustice shows increase together with economic growth in the first stage, but in the proceeding process, as long as increase in the growth, the relationship reverses and income distribution injustice tends to decrease. This case is termed as Reversed U Hypothesis. In the studies carried out by using the variables of per capita income and income distribution injustice gini coefficient), the different results were obtained according to the variables of country group and time dimension. In this study, with moving from per capita national income, economic growth was tried to be interpreted. According to the findings obtained, it was concluded that an increase occurring in per capita income increased income distribution injustice. As a cause of this, it is considered that high income group is only group that can economize in total and that they enrich much more, obtaining high income the savings they make. Hence, this case increases income distribution injustice.

That there is a positive relationship between the variables used in the study and income distribution injustice, namely, it is considered that moving away is experienced from the approach of social state after 1990s, that Keynesian expansionary monetary policies were begun to be applied as a result of the effects of financial crisis experienced but these policies cannot create a positive effect on labor sector among the reasons for increase of income distribution injustice.

4. Conclusion

Unfair distribution of income is one of the most basic macroeconomic problems of many countries in the world. This problem can differ according to the developedness level of the countries. Therefore, it has specific importance to identify the factors leading to income distribution injustice and at what extent these factors affect income inequalities. Thus, policy makers and practitioners of countries can develop policies directed to reduce and eliminate income distribution injustices and take steps directed to more effectively applying these policies. It was revealed by the quantitative studies the other researchers carry out that there are many factors affecting income distribution injustice directly and clearly. In this study, the effect of the variables such as employment, urbanization, fertility, investment and per capita on income distribution injustice was tried to be analyzed for the period 1990-2020.

At the end of the study, it was concluded that there was co-integration relationship between employment, urbanization, fertility, investment and per capita income and gini coefficient and that the results if long term predictors were significant for the variables of employment, urbanization, investment and per capita income. It was concluded that urbanization among the variables negatively affected gini coefficient and that the variables of employment, investment and per capita income, positively. When the findings obtained are evaluated, especially together with 2008 global financial crisis, it is considered that that wealth is captured by a few number of people and that Keynesian expansionary monetary and financial policies are applied in the world stayed away from supporting labor-agricultural sector that can be named as weak sectors. That Keynesian policies cannot cover labor sector, that these policies are left without crating positive effect on labor sector are seen as the causes of not being able to provide any improvement in income distribution. As a cause of increase of income distribution injustice, it is considered that economies are polarized as high and low income groups as a result of middle income class.

References

- Aktaş, E. E. (2022). Gelir dağılımı adaletsizliği ve istihdam ilişkisi: Seçili ülkeler için panel tobit analizi. *Hacettepe Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi*, 40 (1), 1-24.
- Bahmani-Oskooee, M. ve Gelan A. (2008). Kuznets inverted-u hypothesis revisited: a time-series approach using us data. *Applied Economics Letters*, 15(9): 677-681.
- Cowell, F. A. (2015). *Income distribution and inequality*. In *The Elgar Companion to Social Economics*, Second Edition. Edward Elgar Publishing.
- Çakmak, A. ve Tosun İ. B. (2017). Ekonomik büyüme-gelir dağılımı ilişkisi: kuznets hipotezinin seçilmiş ülkeler üzerine araştırılması. *Kocaeli Üniversitesi Sosyal Bilimler Dergisi*. 33:33-44.
- Çelik, D., ve Erkişi K. (2020). Gelişmiş ülkelerde enflasyonun gelir dağılımı üzerine olan etkisinin panel veri analizi ile incelenmesi. *Doğuş Üniversitesi Dergisi*, 23(2): 53-68.
- Çukur, A. ve Bekmez, S. (2011). Türkiye’de gelir, gelir eşitsizliği ve sağlık ilişkisi: panel veri analizi bulguları, *Gaziantep Üniversitesi Sosyal Bilimler Dergisi*, 10(1), 21-40.
- Dawson, Pj (1997). On testing kuznets' economic growth hypothesis. *Applied Economics Letters*, 4(7): 409-410.
- Desbordes, R. ve Verardi V. (2012). Refitting the kuznets curve. *Economics Letters*, 116(2): 258-261.
- Dişbudak, C. ve Süslü B. (2009). Kalkınma ve bireysel gelir dağılımı: kuznets hipotezi türkiye için geçerli mi?. *Akdeniz Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi*, 9(18).
- Forbes, K. (2000). A reassessment of the relationship between inequality and growth, *American Economic Review*, 90(4), 869-887.
- Gençler, A. (2017). *Gelir dağılımının kavramsal çerçevesi*. Ç. Özdemir, & E. İslamoğlu içinde, Gelir Dağılımı ve Yoksulluk: Kavram-Teori-Uygulama (2. b.). Seçkin Yayıncılık.
- Gujarati, D.N. (2004). *Basic econometrics*, New York, McGraw-Hill.
- Hailstones T. J. And Mastrianna, F. V. (1988). *Basic economics*, 8th edition, SouthWestern Publishing Co.
- Erkişi, K. & Ceyhan T. (2020). İktisadi büyüme ve gelir dağılımı adaleti ilişkisi: bir panel veri analizi, *Sosyoekonomi*, 28(43), 195-212.
- Herzer, D. And Vollmer, S. (2011). Inequality and growth: evidence from panel cointegration, *Journal of Economic Inequality*, February, 9: 1-15.
- Huang, H. C., Lin, Y. C. And Yeh, C.C. (2012). An appropriate test of the kuznets hypothesis. *Applied Economics Letters*, 19(1): 47-51.
- Kubar Y. (2011). Bir iktisat politikası amacı olarak gelir dağılımı: türkiye örneği (1994–2007) analizi, *Kahramanmaraş Sütçü İmam Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi*, 1(2): 227-246.
- List, J. A. and Gallet, A. C. (1999). The kuznets curve: what happens after the inverted-u?. *Review of development economics*, 3(2): 200-206.
- Majeed, M. (2010). Inequality, trade openness and economic growth in asia, *Applied Econometrics and International Development*, 10(2), 201-212.
- McConnell, C. R. Brue Stanley L., Flynn Sean M. (1993). *Economics-principles, problems, and policies*, Twelfth Edition, McGraw-Hill,Inc.
- Özdemir, D., Emsen,Ö., Hiç-Gencer, A. And Kılıç, C. (2011). Ekonomik Büyüme ve Gelir Dağılımı İlişkileri: Geçiş Ekonomileri Deneyimi, *International Conference on Eurasian Economies*, Bişkek, Kırgızistan, 12-14 Ekim, 440-447.

- Özer, M. ve Çiftçi, N. (2009). AR-GE harcamaları ve ihracat ilişkisi: oecd ülkeleri panel veri analizi, *Dumlupınar Üniversitesi Sosyal Bilimler Dergisi*, 23:39-49.
- Panizza, Ugo (2002). Income inequality and economic growth: evidence from American data., *Journal of Economic Growth*, 7(1): 25-41.
- Peçe, M. A., Ceyhan, M. S. ve Akpolat, A. (2016). Türkiye’de gelir dağılımının ekonomik büyümeye etkisi üzerine ekonometrik bir analiz, *International Journal of Cultural and Social Studies (Int-JCSS)*, 135-148.
- Persson, T. & G. Tabellini (1991). Is inequality harmful for growth? theory and evidence, *NBER Working Paper*, 3599, National Bureau of Economic Research.
- Rubin, A. & D. Segal (2015). The effects of economic growth on income inequality in the US, *Journal of Macroeconomics*, (45), 258-273.
- Somuncu, S. (2019). *Ülke kredi notunun makroekonomik ve finansal belirleyicileri: gelişmekte olan ülkeler üzerine bir panel veri uygulaması*, (Yayımlanmamış Yüksek Lisans Tezi). İstanbul Üniversitesi Sosyal Bilimler Enstitüsü İşletme Anabilim Dalı. İstanbul, Türkiye.
- Tatoğlu, F. Y. (2020). *panel zaman serileri analizi*. İstanbul: Beta Yayınları.
- Theyson, K. & L. Heller (2015). Development and income inequality: a new specification of the kuznets hypothesis, *The Journal of Developing Areas*, 49(3), 103-118.
- Topuz, S. & Ö. Dağdemir (2016). Ekonomik büyüme ve gelir eşitsizliği ilişkisi: kuznets ters-u hipotezi’nin geçerliliği, *Eskişehir Osmangazi Üniversitesi İİBF Dergisi*, 11(3), 115-130.
- Uçar, H. M. (2019). *Gelir dağılımı ve büyüme ilişkisi*, (Yayımlanmamış Yüksek Lisans Tezi), Yıldız Teknik Üniversitesi, Sosyal Bilimler Enstitüsü, İktisat Yüksek Lisans Tezi, İstanbul, Türkiye.
- Westerlund, J. (2008). Panel cointegration tests of the fisher effect. *Journal of Applied Econometrics*, 23(2), 193-223.