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Income Distribution and Social Expenditures in Turkey

Türkiye’de Gelir Dağılımı ve Sosyal Harcamalar İlişkisi

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Abstract: Due to its nature built on uncertainty and chaos, globalization causes severe structural breaks and instabilities in geographies that are not ready for it yet. One of the leading instabilities located within the joint cluster of social, economic, and political areas is the inequality in income distribution. In fact, the distribution of income, which indicates how income is distributed in society, is one of the main causes of large-scale changes and transformations throughout history. With the globalization process, the socioeconomic and political effects of the income distribution increased in terms of speed and level. An increase in income inequality within the country and between countries can have multi-dimensional effects from sociological traumas to political instability. The benchmark of the differentiation of economic systems is 'how income is distributed', and income distribution's being fair is among the sine qua non in terms of inclusive and sustainable economic growth and social welfare. Today, almost all countries take measures to fight this problem and try to suppress the effects of it by making social expenditures. The present study provides a symmetrical and asymmetrical investigation of the causality relations between income distribution and social expenditures in Turkey. The study uses the causality test developed by Dolado-Lütkepohl and according to the findings of the symmetrical analysis of the study, the presence of the causality relation was found from social expenditures to income distribution. Upon reviewing the asymmetrical relations in the center of positive and negative shocks, it was determined that the increases and decreases in social expenditures have a reverse effect on income distribution while the deteriorations in income distribution reduce social expenditures and thus is able to trigger a vicious cycle. These results indicate that social expenditures in Turkey are significant and effective in fighting inequality in income distribution and hint that a reduction in social expenditures may have a negative effect on income inequality and thus on macroeconomic stability.

Structured Abstract: The globalization process has a direct and indirect effect on all socio-economic and political factors and institutions worldwide. Particularly taking the developments in the last quarter-century into consideration, it is found that the relations between factors are re-defined in the globalization process and there are various gaps taking place in the sharpening global competition environment. These gaps have become the routines of daily life and manifest themselves in various forms including protests, riots, terror, crisis, conflicts, wars, migrations, epidemic diseases, and similar ways. The inequalities in income distribution have become a key subject in international developments in recent years leading to significant literature (Anderson et al., 2017: 2). Inequality in income distribution is considered to be a cause of concern in all countries, particularly the underdeveloped countries and developing countries. Particularly, the atmosphere of uncertainty

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imposed on countries by the globalization process and the increasing inequalities within this process cause an increase in the interest in new paradigms and quests (Chu et al., 2000: 1).

The issue of income distribution has had a critical importance and is in the centre of discussions since the economy was recognized as a science. Likewise, the discussion involves economic growth and income distribution while A. Smith and his successive economists discussed how economic growth will be ensured while D. Ricardo focussed on the nature of growth. At this point, in his letter to Malthus, Ricardo emphasized that the studies on the causes and quality of wealth are useless and deceptive and stated that the way of income distribution is the core subject of science (Öztürk, 2009: 77) which is significant as it shows that the issue was discussed even in the early periods of economic studies. Wealth and income inequality between societies and social segments is a multidimensional and contradictory issue. Within general acceptance, the class system existed in societies since the early ages and the question of how to share wealth and income is determined within the own dynamics of social classes. This condition was determined by social norms and started to change with the industrial revolution whereas bourgeois tried to establish its own field and caused changes in the mechanism of wealth/income distribution. This transformation process accelerated after the 19th century and was consolidated between World Wars I and II. In this period, a process was experienced throughout the world where income distribution was subjected to structural fractures and economic instruments and centres were displaced. The welfare state concept started to gain recognition with the economic crises and developing techniques in this process and brought up the issue of justice in income distribution and the possible public interventions within this scope. In this type of intervention, called as secondary income distribution, state portions its income out among social segments while imposing tax regulations to prevent an increase in the gap with its finance policy instruments on one hand and supports the segments that are out of the economic play on the other hand (İlgün, 2015: 494-495).

Within the scope of this study, the relationship between social expenditures and income distribution is questioned for Turkey. The present study examines a symmetrical and asymmetrical way of the effect of social expenditures on income inequalities that have critical socio-economic and political importance in particularly for Turkey. Accordingly, the series are divided into shocks with the method developed by Granger and Yoon (2002) and thereafter the causality relation between the variables – as a whole and divided into shocks – is examined with the Granger test developed by Dolado-Lütkepohl (1996). In the analysis, the social expenditures data obtained from the OECD-SOCX database and the market income inequality (Gini_Mkt) data obtained from the Standardized World Income Inequality Database-SWIID are used. The findings substantially conform to the relevant empirical literature and indicate the presence of a reverse relation between social expenditures and income equality. Accordingly, the increase in social expenditures (positive shocks) decreases income inequality ($p < 0,05$) and the decrease (negative shocks) in social expenditures increases income inequality ($p < 0,01$). In addition to these results, it was found that the increases in income inequality cause a decrease in social expenditures ($p < 0,01$). This is indicating that there may be a vicious cycle if considered in combination with the result that the decreases in social expenditures cause an increase in income equality. That is to say, if social expenditures decrease for a reason, this will cause an increase in income inequality, which will, in turn, cause a decrease in social expenditures, thus becoming a vicious cycle. In order to break this vicious circle, authorities need to focus on structural problems such as education, demography, urbanization, and market failures and develop long-term projects that increase the effectiveness of markets rather than short-term populist practices. And in this process, it is thought that public authorities should focus on improving socio-economic and political equality and pay special attention to negative shocks in social expenditures.

Keywords: Economics, Social Expenditures, Income Distribution, Asymmetric Dolado-Lütkepohl Causality Test

Öz: Küreselleşme, belirsizlik ve düzensizlik üzerine bina edilmiş olan doğası gereği, kendisine hazır olmayan coğrafyalarda ciddi yapısal kırılmalara ve istikrarsızlıklara neden olmaktadır. Sosyal, ekonomik ve politik alanların ortak kümesinde yer alan istikrarsızlıkların başında gelir dağılımı eşitsizliği gelmektedir. Aslında gelirin toplum içinde nasıl dağıldığını işaret eden gelir dağılımı; tarih boyunca yaşanan büyük çaplı değişim ve dönüşümlerin temel nedenlerinden birisidir ve küreselleşme süreciyle birlikte gelir dağılımının sosyoekonomik ve politik etkileri hız ve düzey bakımından artmıştır. Gelir dağılımı eşitsizliğinin ülke içinde ve ülkeler arasında artması, sosyolojik travmalardan politik istikrarsızlıklara kadar çok boyutlu etkilerde bulunabilmektedir. İktisadi sistemlerin şekillenmesinde mihenk taşı konumundaki gelir dağılımının adil olması ekonomik büyüme

ve toplumsal refah artışının kapsayıcı ve sürdürülebilir olması bakımından olmazsa olmazlar arasında yer almaktadır. Günümüzde hemen hemen bütün ülkeler gelir dağılımı eşitsizliği sorunuyla mücadele etmek adına önlemler almakta ve sosyal harcamalar yaparak sorunun etkilerini baskılamaya çalışmaktadır. Çalışma kapsamında, Türkiye’de sosyal harcamalar ile gelir dağılımı eşitsizliği arasındaki nedensellik ilişkileri simetrik ve asimetrik olarak incelenmektedir. Dolado-Lütkepohl tarafından geliştirilen nedensellik testinin kullanıldığı bu çalışmadan elde edilen simetrik analiz bulgularına göre; sosyal harcamalardan gelir dağılımına doğru nedensellik ilişkisinin olduğu tespit edilmiştir. Pozitif ve negatif şoklar merkezinde, asimetrik ilişkiler incelendiğinde ise sosyal harcamalardaki artış ve azalışların gelir dağılımında ters yönde etki ettiği görülürken, gelir dağılımındaki bozulmaların da sosyal harcamaları azalttığı ve böylece bir kısır döngüyü tetikleyebildiği tespit edilmiştir. Bu sonuçlar, Türkiye’de sosyal harcamaların gelir dağılımı eşitsizliğiyle mücadelede önemli ve etkili olduğunu göstermekte, sosyal harcamalarda yapılacak bir kesintinin gelir eşitsizliğinde ve dolaylı olarak da makroekonomik istikrarda olumsuz etkiye bulunabileceğini işaret etmektedir.

Anahtar Kelimeler: Ekonomi, Sosyal Harcamalar, Gelir Dağılımı, Asimetrik Dolado-Lütkepohl Nedensellik Testi

1. Introduction

The globalization process has a direct and indirect effect on all socio-economic and political factors and institutions worldwide. Particularly taking the developments in the last quarter-century into consideration, it is found that the relations between factors are re-defined in the globalization process and there are various gaps taking place in the sharpening global competition environment. These gaps have become the routines of daily life and manifest themselves in various forms including protests, riots, terror, crisis, conflicts, wars, migrations, epidemic diseases, and similar ways.

The fact that the manufacturing processes lose space dependency together with globalization triggers transformations in the levels of welfare and income, particularly including labour force markets. Incentives and subsidies particularly including low labour force cost offered by underdeveloped and developing countries to the actors of the market result in the shift of the citizens of developed countries to more unique fields and/or the become content with lower fees and possibilities. This indicates an increase in the inequality of income distribution in developed countries while increasing the social policy pressure on public authorities on one hand and testing the resistance of the social security systems on the other (Grauwe and Polan, 2005: 105). While these developments take place, public authorities implement policies to ensure that the interaction between social layers remains on a legitimate ground and at a reasonable level and to preserve the transitivity between layers. As stated by İlgün (2015: 494), these micro and macro policies of governments are discussed with the topics of reforms in the market system and re-distribution of income. Re-distribution of income refers to the use of fiscal policy and includes the supporting of weak segments through social expenditures under the topic of the re-distribution of income.

Especially, after the industrial revolution, the capitalist understanding focused on the technical developments provoked immoral behaviours for the ambition to profit took place. In this period millions of people become unemployed, and so the system opened the gate for low wages and labour abuse, till now (Zaim, 2010: 107). The most evident problem from the socio-economic and political aspects in the globalization process built on neoliberal thinking is the income inequality or income gap in other words. In the World Inequality Report (WIR) for the year 2018, it is seen that the inequalities throughout the world have increased after 1980 although with varying speeds, that the share of the richest 10% from the total output increased, that the income of the 1% is way more than the 50% globally, that the ratio of the real income percentage increase to the income groups is in the shape of elephant curve and that the private capital accumulations increase rapidly (WIR2018). Income inequality increases in most of the OECD countries in a period when the globalization movements are rising (İlgün, 2015: 493). From the perspective of Turkey, it is seen that the income distribution is rather in a bad condition compared to developed countries (OECD). For example, according to the data of 2017, the income of the richest 10% is 13,36 times more than the income of

the poorest 10% (P90/P10) (TÜİK) and this has critical importance in the socio-economic and political polarization of the country. Upon reviewing the global income inequality together with wealth inequality, it is believed in line with the experiences, that the expectations for the future included major deviations and the pessimistic possibility is stronger. This causes an increasing interest in the subject matter.

The inequalities in income distribution have become a key subject in international developments in recent years leading to significant literature (Anderson et al., 2017: 2). Inequality in income distribution is considered to be a cause of concern in all countries, particularly the underdeveloped countries and developing countries. Particularly, the atmosphere of uncertainty imposed on countries by the globalization process and the increasing inequalities within this process cause an increase in the interest in new paradigms and quests (Chu et al., 2000: 1). This is demonstrated by the fact that the books published by leading authors and publishers after the 2008 Global Finance crisis (e.g.; Piketty, 2015; Galbraith, 2016; Rycroft, 2018; Wysong and Perrucci, 2018; Cuervo and Miranda, 2019; Mihályi and Szelényi, 2019; Berg, Loungani and Ostry, 2019 and Royce, 2019) focused on the subject of the income distribution.

The effectiveness of social expenditures in Turkey is questioned over the income distribution within the scope of the study. Accordingly, income distribution and social expenditures are discussed in the next chapter with respect to concept and scope together with a summary of the literature on the subject. After that, the analysis methods and application results are given followed by the chapter of evaluation and result.

2. Theoretical Background and Literature Summary

The issue of income distribution has had a critical importance and is in the centre of discussions since the economy was recognized as a science. Likewise, the discussion involves economic growth and income distribution while A. Smith and his successive economists discussed how economic growth will be ensured while D. Ricardo focussed on the nature of growth. At this point, in his letter to Malthus, Ricardo emphasized that the studies on the causes and quality of wealth are useless and deceptive and stated that the way of income distribution is the core subject of science (Öztürk, 2009: 77) which is significant as it shows that the issue was discussed even in the early periods of economic studies. Wealth and income inequality between societies and social segments is a multidimensional and contradictory issue. Within general acceptance, the class system existed in societies since the early ages and the question of how to share wealth and income is determined within the own dynamics of social classes. This condition was determined by social norms and started to change with the industrial revolution whereas bourgeois tried to establish its own field and caused changes in the mechanism of wealth/income distribution. This transformation process accelerated after the 19th century and was consolidated between World Wars I and II. In this period, a process was experienced throughout the world where income distribution was subjected to structural fractures and economic instruments and centres were displaced. The welfare state concept started to gain recognition with the economic crises and developing techniques in this process and brought up the issue of justice in income distribution and the possible public interventions within this scope. In this type of intervention, called as secondary income distribution, state portions its income out among social segments while imposing tax regulations to prevent an increase in the gap with its finance policy instruments on one hand and supports the segments that are out of the economic play on the other hand (İlgün, 2015: 494-495).

Since the 1970s, the welfare state approach has begun to be abandoned and replaced by the neoliberal thinking and policies bringing up inequalities. At this point, the perspectives towards inequalities vary. On one side, there is the view that considers inequalities to be a condition to ensure capital accumulation that is necessary for the financing of investment which is the engine for economic growth while the approach on the other side that argues that inequalities would damage

the economic atmosphere of trust and stability and take economic growth away from its potential (Arjona et al., 2002: 9). Inequalities have also critical importance with respect to social and political aspects. From a social point of view, countries with a deep gap of income may experience undesired developments including cultural corruption, moral breakdown, favouritism, and bribery. From a political point of view, it may open doors to irrational practices particularly in countries with a democratic system including instability and election economy.

Income distribution, referring to the question of “how to share output”, and the income inequality concept, referring to the ineffectiveness of this distribution, are in the centre of socio-economic and political instabilities bringing up the policies that include public interventions primarily including public social expenditures (Ulu, 2018: 184). The importance of public social expenditures stood out with the market failure including income distribution, unemployment, and poverty taking place as a result of neoliberal policies particularly after 1980 (Hagfors and Kajanoja, 2007: 2). The importance of social expenditures is increasing every day. The reasons for it include the change of labour force market together with the technological advances and the significant increase in the life expectation together with the developments in the field of medicine. These developments indicate that the dependent population will increase in the years to come and the works on income distribution will remain on the agenda.

In general, the results of practical studies show that social expenditures reduce income inequality. However, it is controversial whether this result is valid all the time and in every country. In addition, it is yet uncertain whether inequalities are a cause or result for social policies and expenditures (Molina-Morales et al., 2013: 745) triggering the studies on the relation between variables. Among these studies, Jones (2007), Sanchez and Pérez-Corral (2010), Niehues (2010), D’Agostino et al. (2018), Gaentzsch (2018) and Ulu (2018) conducted studies on different countries/country groups and determined the existence of a reverse relation between social expenditures and income inequality. Lustig et al (2014) say that cash and in-kind social transfer types generally reduce income inequality. However, Faricy (2016: 195-196) found a positive correlation between social expenditure ratio and income inequality in the short and long term for the USA. From a wider perspective, Bergh et al (2019) reach that economic globalization has a negative effect on income inequality and social spending does not moderate this effect. Ospina (2010), Anderson et al. (2014) and İlğün (2015) found that only certain types of social expenditures have a positive effect on income inequality while Molina-Morales et al. (2013) concluded that the increasing inequalities do not increase social expenditures.

3. Methodology

The present study examines a symmetrical and asymmetrical way of the effect of social expenditures on income inequalities that have critical socio-economic and political importance in particularly for Turkey. Accordingly, the series are divided into shocks with the method developed by Granger and Yoon (2002) and thereafter the causality relation between the variables – as a whole and divided into shocks – is examined with the Granger test developed by Dolado-Lütkepohl (1996).

3.1. Granger and Yoon (2002): Decomposition of the Series

Econometric analysis usually deals with series directly. Granger and Yoon stated that the relation between series was based on their cooperation, however, series might not give the same reactions against shocks that might lead to the hide of some relations. Based on this, they stated that the series actually comprised a total of positive and negative shocks and a more detailed analysis would be possible by dividing series into these shocks (2002: 3). If P_{1t} and P_{2t} are cointegrated variables, dividing the error terms into positive and negative shocks may be shown as follows: $\varepsilon_{1i}^+ = \max(\varepsilon_{1i}, 0)$; $\varepsilon_{2i}^+ = \max(\varepsilon_{2i}, 0)$; $\varepsilon_{1i}^- = \max(\varepsilon_{1i}, 0)$ and $\varepsilon_{2i}^- = \max(\varepsilon_{2i}, 0)$. Accordingly, the

estimated equation becomes $\varepsilon_{1t} = \varepsilon_{1t}^+ + \varepsilon_{1t}^-$ and $\varepsilon_{2t} = \varepsilon_{2t}^+ + \varepsilon_{2t}^-$. In this case, variables can be shown as follows (Adıgüzel et al., 2016: 245);

$$P_{1t} = P_{1t-1} + \varepsilon_{1t} = P_{1,0} + \sum_{i=1}^t \varepsilon_{1i}^+ + \sum_{i=1}^t \varepsilon_{1i}^-$$

$$P_{2t} = P_{2t-1} + \varepsilon_{2t} = P_{2,0} + \sum_{i=1}^t \varepsilon_{2i}^+ + \sum_{i=1}^t \varepsilon_{2i}^-$$

Then total shocks can be shown as $P_{1t}^+ = \sum_{i=1}^t \varepsilon_{1i}^+$; $P_{1t}^- = \sum_{i=1}^t \varepsilon_{1i}^-$; $P_{2t}^+ = \sum_{i=1}^t \varepsilon_{2i}^+$; $P_{2t}^- = \sum_{i=1}^t \varepsilon_{2i}^-$ and thus the relation between series can be studied asymmetrically (Hatemi J and Roca, 2014: 8)

3.2. Dolado-Lütkepohl Linear Causality Test

Dolado and Lütkepohl (1996) test examine the causality relation between variables using the existing Wald test (MWALD). Despite the standard Granger test, this test does not take the unit root test results of the variables into account. Instead, VAR model matrix is predicted by adding lag (p+1) to the lag length (p) presented by the VAR model (Bayat et al., 2011: 92; Şentürk and Akbaş, 2012: 49).

$$\begin{bmatrix} socx \\ gini \end{bmatrix} = \begin{bmatrix} v_1 \\ v_2 \end{bmatrix} + \begin{bmatrix} a_{11,1} & a_{12,1} \\ a_{21,1} & a_{22,1} \end{bmatrix} \begin{bmatrix} socx_{t-1} \\ gini_{t-1} \end{bmatrix} + \dots + \begin{bmatrix} a_{11,k+1} & a_{12,k+1} \\ a_{21,k+1} & a_{22,k+1} \end{bmatrix} \begin{bmatrix} socx_{t-(k+1)} \\ gini_{t-(k+1)} \end{bmatrix} + \begin{bmatrix} U_t \\ W_t \end{bmatrix}$$

Dolado-Lütkepohl causality test has basically two stages. The first stage is the determination of the VAR model lag length according to the Akaike and Schwarz information criteria. The other stage is the application of the Wald (MWALD) test developed in accordance with the (p+1) VAR coefficient matrix which is created by adding one to the existing lag length (Çetin and Seker, 2013: 133).

Asymmetrical Dolado-Lütkepohl test is the application of the Dolado-Lütkepohl test shown symmetrically by the VAR model matrix dealing with the series as a whole to the positive and negative shocks. In this case, the above matrix varies as follows and the causality relation between the positive-positive, positive-negative, negative-negative and negative-positive shocks of the series respectively.

$$\begin{array}{l} \begin{array}{c} + + \\ \begin{bmatrix} socx^+ \\ gini^+ \end{bmatrix} \end{array} = \begin{bmatrix} v_1 \\ v_2 \end{bmatrix} + \begin{bmatrix} a_{11,1} & a_{12,1} \\ a_{21,1} & a_{22,1} \end{bmatrix} \begin{bmatrix} socx_{t-1}^+ \\ gini_{t-1}^+ \end{bmatrix} + \dots + \begin{bmatrix} a_{11,k+1} & a_{12,k+1} \\ a_{21,k+1} & a_{22,k+1} \end{bmatrix} \begin{bmatrix} socx_{t-(k+1)}^+ \\ gini_{t-(k+1)}^+ \end{bmatrix} + \begin{bmatrix} U_t \\ W_t \end{bmatrix} \\ \hline \begin{array}{c} + - \\ \begin{bmatrix} socx^+ \\ gini^- \end{bmatrix} \end{array} = \begin{bmatrix} v_1 \\ v_2 \end{bmatrix} + \begin{bmatrix} a_{11,1} & a_{12,1} \\ a_{21,1} & a_{22,1} \end{bmatrix} \begin{bmatrix} socx_{t-1}^+ \\ gini_{t-1}^- \end{bmatrix} + \dots + \begin{bmatrix} a_{11,k+1} & a_{12,k+1} \\ a_{21,k+1} & a_{22,k+1} \end{bmatrix} \begin{bmatrix} socx_{t-(k+1)}^+ \\ gini_{t-(k+1)}^- \end{bmatrix} + \begin{bmatrix} U_t \\ W_t \end{bmatrix} \\ \hline \begin{array}{c} - - \\ \begin{bmatrix} socx^- \\ gini^- \end{bmatrix} \end{array} = \begin{bmatrix} v_1 \\ v_2 \end{bmatrix} + \begin{bmatrix} a_{11,1} & a_{12,1} \\ a_{21,1} & a_{22,1} \end{bmatrix} \begin{bmatrix} socx_{t-1}^- \\ gini_{t-1}^- \end{bmatrix} + \dots + \begin{bmatrix} a_{11,k+1} & a_{12,k+1} \\ a_{21,k+1} & a_{22,k+1} \end{bmatrix} \begin{bmatrix} socx_{t-(k+1)}^- \\ gini_{t-(k+1)}^- \end{bmatrix} + \begin{bmatrix} U_t \\ W_t \end{bmatrix} \\ \hline \begin{array}{c} - + \\ \begin{bmatrix} socx^- \\ gini^+ \end{bmatrix} \end{array} = \begin{bmatrix} v_1 \\ v_2 \end{bmatrix} + \begin{bmatrix} a_{11,1} & a_{12,1} \\ a_{21,1} & a_{22,1} \end{bmatrix} \begin{bmatrix} socx_{t-1}^- \\ gini_{t-1}^+ \end{bmatrix} + \dots + \begin{bmatrix} a_{11,k+1} & a_{12,k+1} \\ a_{21,k+1} & a_{22,k+1} \end{bmatrix} \begin{bmatrix} socx_{t-(k+1)}^- \\ gini_{t-(k+1)}^+ \end{bmatrix} + \begin{bmatrix} U_t \\ W_t \end{bmatrix} \end{array}$$

4. Data and Empirical Findings

In the analysis, the social expenditures data obtained from the OECD-SOCX database and the market income inequality (Gini_Mkt) data obtained from the Standardized World Income Inequality Database-SWIID are used.

Upon reviewing the relevant literature, it is seen that social expenditures may vary with respect to institution, concept, and scope. The most popular criteria on the matter are SOCX (Social Expenditure database) published by OECD, ESSPROS (European System of Social Protection Statistics) published by Eurostat and SSI (Social Security Inquiry and Social Protection Expenditure and Performance Reviews -SPERs) provided by ILO (OECD, 2007: 6). Differences in the conceptualization and theorization of social expenditures may cause changes in data (Buğra and Adar, 2007: 16). The SOCX data published by OECD was preferred in the present study as it is popular in the literature, it has a long observation period and it offers comprehensive content.

Another variable handled in the analysis is income inequality. There are different methods and criteria on how income distribution is. The most popular method and criteria are the percentiles and the Gini coefficient. There are different approaches in the calculation of the Gini coefficient that show the extent of the variance of income from the equal distribution within society. Leigh states that there are three popular approaches in recent years on Gini calculation. These are Deininger & Squire, World Income Inequality Database (WIID), Luxembourg Income Study (LIS) (2007: 620). In addition to that, there are Estimated Household Income Inequality Data Set (EHII) and The Standardized World Income Inequality (SWIID) approaches in the relevant literature. Among these approaches, SWIID developed by Frederic Solt is widely accepted with respect to both its scope and methodology (Altıntaş, 2017: 21). Solt states that his data set has a larger content compared to others and provides three to eight times better results than the alternative data sets (2016: 1). Therefore, the SWIID data set is frequently used in applied studies.

The development of social expenditures and income inequalities data for Turkey is as follows. When we look at the chart, we see that there has been a substantial change in social expenditures from 1987 until today and there has been approximately a twenty-times nominal increase.

Chart 1: Development of SOCX and GINI Data in Turkey, 1987-2016

On the other hand, it is remarkable that the series showing the social expenditures trend is fluctuating in crisis periods when the country's economy is shrunk. Upon reviewing the GINI series on the chart indicating the income distribution inequality, it is seen that the income inequality increased until 1995 and decreased from that time to 2013 in Turkey which adopted outward-oriented liberal policies in 1980 and was able to implement policies with social content in 1987 after a turbulent period.

From the statistical aspect, the information on the variables is given in the following table. Accordingly, the SOCX asymmetry consisting of 30 observations covering the period from 1987 to 2016 was positive and kurtic than normal while the GINI asymmetry was negative (left-skewed) and kurtic than normal.

Table 1: Descriptive Statistics for the SOCX and GINI Variables

	Mean	Median	Skewness	Kurtosis	Probability	Obs.
SOCX	82977.48	64765.75	0.507951	1.8889	0.242531	30
GINI	44.94333	45.15	-0.37579	1.626645	0.216135	30

- Results were obtained by the Eviews 9.0

The variables obtained in the analysis were subjected to the ADF and PP unit root tests to be used in the VAR model that is necessary to determine the lag length. The obtained probability values (prob.) are given in the following table.

Table 2: Unit Root Test Results of the Variables

		Level		First Difference		
		Constant	Constant & Trend		Constant	Constant & Trend
ADF Test	SOCX	3.6951 (0.9999)	-1.1934 (0.8917)	d(SOCX)	-0.4575 (0.8840)	-5.7482 (0.0003 ^a)
	GINI	-0.5812 (0.8596)	-2.4848 (0.3324)	d(GINI)	-2.8432 (0.0652 ^c)	-2.7549 (0.2242)
PP Test	SOCX	4.1580 (0.9999)	-0.6573 (0.9671)	d(SOCX)	-3.6051 (0.0122 ^b)	-5.7491 (0.0003 ^a)
	GINI	-0.3091 (0.9118)	-3.0641 (0.1334)	d(GINI)	-2.8432 (0.0652 ^c)	-2.7260 (0.2345)

- Probability values (Prob.) taken according to the Akaike criteria.

- ^a, ^b and ^c refer to the significance levels of 1%, 5%, and 10% respectively.

- The results were obtained by the Eviews 9.0

According to the Augmented Dickey-Fuller (1979-ADF) and Phillips-Perron (1988-PP) unit root tests, it was found that the series are stationary in the first difference I(1). The optimal lag length in the VAR model -established with the series with difference- was selected according to the Akaike criteria. After that, Dolado-Lütkepohl causality test was applied where the results are given in the following table.

Table 3: Symmetrical and Asymmetrical Dolado-Lütkepohl Causality Test Results

Causality Direction	Prob. Value	Relation	Causality Direction	Prob. Value	Relation
SOCX→GINI	(1) 0,0862 ^c	✓	GINI→SOCX	(1) 0,2960	✗
SOCX⁺→GINI⁺	(1) 0,4700	✗	GINI⁺→SOCX⁺	(1) 0,2767	✗
SOCX⁺→GINI⁻	(2) 0,0300 ^b	✓	GINI⁺→SOCX⁻	(1) 0,0090 ^a	✓
SOCX⁻→GINI⁻	(1) 0,1870	✗	GINI⁻→SOCX⁻	(1) 1,000	✗
SOCX⁻→GINI⁺	(1) 0,0042 ^a	✓	GINI⁻→SOCX⁺	(2) 0,4273	✗
<ul style="list-style-type: none"> - Values in parentheses are the lag lengths selected according to the Akaike criteria. - ^a, ^b, and ^c indicate the significance levels of 1%, 5% and 10% respectively. - The results were obtained by the Eviews 9.0 program. 					

The SOCX→GINI relation is valid with a significance level of 10% according to the causality test result where series were subjected to examination as a whole. On the other hand, it was found that there was no significant relation in the direction of GINI→SOCX. When the asymmetrical causality test was done over the series that are divided into positive and negative shocks, the significant relations that were found are as follows: SOCX⁺→GINI⁻ (p<0.05), SOCX⁻→GINI⁺ (p<0.01) and GINI⁺→SOCX⁻ (p<0.01).

5. Evaluation and Conclusion

Income distribution is a subject that is included in the intersection set of socio-economic and political areas and it has triggered, managed and finalized small and big-scale developments and transformations throughout the history of humankind. Therefore, the concept has been discussed in every period of history in a multidimensional manner and followed up continuously by different disciplines. In the age of globalization that we are currently in, the income gap becomes deeper due to developments including wide recognition of the free market system, liberalization of trade, increase in migrations, technological advancement, etc. This strengthens the need to review the social expenditures policies of countries (particularly with a democratic system) the main goal of which is to keep income inequality within reasonable and acceptable limits. In addition, it is stipulated that job definitions will change, and unemployment will increase on one hand due to the technological transformation that is defined over concepts like artificial intelligence, machine learning and industry 4.0. Besides these developments, the average life expectancy is increasing rapidly thanks to the developments in the field of health. Considering all these enormous developments, the probability of which is increasing every day, it is indicated that the issue of income distribution and social expenditures will become more important locally and globally in the future.

The present study examines the relationship between social expenditures and income distribution in Turkey by the symmetrical and asymmetrical time series methods for the years 1987 to 2016. The findings substantially conform to the relevant empirical literature developed by Jones (2007), Sanchez and Pérez-Corral (2010), Niehues (2010), D'Agostino et al. (2018), Gaentzsch (2018), and Ulu (2018) and indicate the presence of a reverse relation between social expenditures and income equality. Accordingly, the increase in social expenditures (positive shocks) decreases income inequality (p<0,05) and the decrease (negative shocks) in social expenditures increases income inequality (p<0,01). In addition to these results, it was found that the increases in income inequality cause a decrease in social expenditures (p<0,01). This is indicating that there may be a vicious cycle if considered in combination with the result that the decreases in social expenditures cause an increase in income equality. That is to say, if social expenditures decrease for a reason, this will cause an increase in income inequality, which will, in turn, cause a decrease in social

expenditures becoming a vicious cycle. In order to break this vicious circle, authorities need to focus on structural problems such as education, demography, urbanization, and market failures and develop long-term projects that increase the effectiveness of markets rather than short-term populist practices. And in this process, it is thought that public authorities should focus on improving socio-economic and political equality and pay special attention to negative shocks in social expenditures.

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