

An Analysis of Income Types and Income Inequality: The Case of Turkey Between 2002 and 2009^{***}

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Abstract

In this study, 'an analysis based on Shorrocks Decomposition' has been used to determine the effects of the income types to the income inequality on the basis of households' and individuals' incomes in Turkey. All results have been assessed and interpreted for the years between 2002 and 2009. The interest income is determined as the largest contributor of the income types to income inequality. It has been much more prominent especially in the periods of economic crises. The contributions of the interest, profit and rent incomes into the inequality are higher than the contributions of wage and transfer incomes, and differ in a significant way. Contrary to the expectations, transfer incomes have an effect of increasing total inequality.

Keywords: *Shorrocks Decomposition, income types, income inequality, Turkey*

Introduction

The determination of production factors and the resulting impact of factor incomes on income inequality in a country concern all policy

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makers initially those involved in economic and social planning and the area of economic policies. The relevant determination is realized through analysis of income types and the impacts of inequality. Indeed, there are studies based on decomposition of income types within the framework of the decomposability principle framework in terms of new interpretations and approaches regarding income distribution (Gürsel et al., 2000; Bayar & Günçavdı & Selim, 2009). The Shorrocks Decomposition which is an extension of these studies, is based on the calculation of the contribution of income types on total inequality.

The decomposition of income types in terms of their impact on income distribution and the total inequality resulting from income distribution (decomposition of inequalities resulting from the income source), the determination of the ratio of the impact of any given income type on inequality is essential and necessary to reduce inequality and steer economic and social policies ensuring fairness in income distribution.

In this study, The Household Budget Survey micro data obtained from Turkish Statistical Institute (TURKSTAT) was used to analyze the process during 2002–2009. The significance of this study is highlighted by the fact that the studies based on decomposition of income according to its source for the relevant period is not widespread in Turkey, although there are pioneering and guiding studies conducted in the previous years. In the study, the household incomes were decomposed according to type without using the equivalency scale and by using ‘The Organization for Economic Cooperation and Development’ (OECD) and ‘The Statistical Office of the European Union’ (EUROSTAT) scales on an individual basis for household members (adult equivalent income). Thus, three parallel separate results were achieved for each data set for the relevant years (off scale, OECD, EUROSTAT). In this way, the factor incomes obtained during the relevant period including the transfer incomes can be used to analyze their impact on the inequality of income distribution in the country.

1. Measurements of Income Inequality, Decomposability and Shorrocks Decomposition

The lack of a theory that examines all aspects of the distribution of income has steered many researchers to conduct several applied researches

in this area (Varlier, 1982: 47). Measurements of income distribution, income inequality or measurements known as income inequality metrics are statistical methods that are used to measure inequality in income distribution and used in the research conducted. The differences between income groups, the changes occurring in income and its components over time can be observed with these measurements.

The measurements of income distribution are classified as static, dynamic, objective and normative (DPT, 1995: 284). In addition to being enlightening, measurements of income distribution also harbour some handicaps. For example, some measurements are not susceptible to some changes and movements such as transfer in incomes. In such situations, it would be a more accurate choice to use multiple measurements to determine the trend.

While conducting applied research at the point, where income distribution can be compared as to how and in what way the principles presented by the axiomatic approach come into play (Cowell, 2000: 107-108). In this context, the principle of decomposability, which argues the necessity of the decomposability of inequality into components (Ay, 2010: 52-57), sheds a light on our study.

1.1. The Decomposability Principle

The assumption of decomposability was derived from the utility functions in Strotz' (1957) model (Şengül, 2011: 69). It is emphasized that the 'decomposability principle' utilized in the analysis of this study will generate different perspectives regarding income inequality in terms of decomposition of income types. This will ensure that both economists as well as policy makers will clearly see the factors comprising inequality and help in the preparation of necessary precautions to be taken.

Frank Cowell and Stephen Jenkins contributed to the decomposability principle with the assumption that the sum of inequalities between groups and within groups are equal to the total inequality at a certain point in time (Ay, 2010: 55-56). Another issue regarding inequality is that inequality between individuals and inequality between sub-groups is studied under two domains. While inequality between individuals refers to in-

come inequality, inequality between sub-groups refers to income inequalities based on race and gender, which incur on the basis of an income gap (Jasso & Kotz, 2007: 1). The sub-groups are positioned as a component of the group they belong to. The initial studies implemented the approach of sub-group decomposition were conducted by Battacharya and Mahalonus (1967), Rao (1969), Shorrocks (1980), Cowell (1980) (Charpentier & Mussard, 2010: 2). The approaches regarding decomposition analysis can be summarized in three fundamental segregations:

The first is the decomposition according to functional income source based on the assumption that inequality in income distribution can be studied initially in accordance with functional income types. For example, let us assume that total income can be decomposed into three types of income sources as follows; wage income, capital income and transfer income. The basic question here is the one-on-one impact and share of the mentioned three functional income types on total inequality. As a result of this decomposition, the relative impact of each income source within the total income and the change (correlation) between the total income and income types is determined. The decomposition approach in terms of economic sectors consists of classification in sectors such as economy, agricultural and non-agricultural sectors. The impact of the variability of the income distribution observed in each sector on total inequality and the differences between sectors shall also be studied. Decomposition in terms of factors affecting income level is affected by characteristics of the households (education, type of work, area of residence, etc.) which have an impact on income inequality with various features. The fundamental question here is the proportional impact of the household features (Gürsel et al., 2000: 61).

It is not a simple matter to realize the decomposition variables with contingent values such as income. While judging whether the income distribution examples are good or bad, it is necessary to review the components of the relevant income distribution example on the basis of the group members. However, the impacts of income distribution may vary according to the income values of individuals outside the group (Sen, 2000: 79). The benefits acquired by an individual do not have to be affiliated only with his own income. On the other hand, the benefits acquired by an individual

may also be affected by the income of individuals, who are not in the same group (Sen, 2000: 78-79). This is also relevant for the inequality aspect. The unequal status of a person may not be the sole result of his income; it may also be affected by the income of individuals who are not included in the group. For example, if we accept the family as a group, then any change in the income of a family member whose income is shared by the family members may affect another family member although his/her income has not changed. Considering society as a whole, although they are not included in the same group, there is no doubt that the income earned by each individual in society contributes to the placement of each individual in terms of income inequality. If the change in the income of an individual is caused by a negative impact, which has a significant effect on inequality, the income acquired by another individual will also be affected negatively in terms of income inequality.

There are various methods just as there are different approaches that can be used for the analysis based on decomposition. The initial fundamental reason of differentiation in methods is the difference in the approaches of inequality indexes. A part of the indexes used as a measure for inequality cannot be used for decomposition because of the mathematical features. Studies conducted based on a sectorial basis or household characteristics are not problematic from the operational aspect; however, the execution of a decomposition analysis according to income types is problematic from an operational aspect and a part of the indexes cannot be used for this analysis. More than one index can be used in research analysis and various criteria must be taken into consideration in selecting the index to be used. For example, because of its affiliation with the Lorenz curve, the Gini index is easily derivable and interpretable while indexes based on variance resolution may be preferred because of the facilitated interpretation due to the statistical analyses. The Theil index, which gives equal significance to all points, is usable because of this characteristic. The Atkinson index may be preferred for decomposition analysis, since it has a different structure based on the basis of the welfare function (Gürsel et al., 2000: 62). The Shorrocks Decomposition may be preferred because of its approach, which is free of indexes. Therefore, in this study, the Shorrocks Decomposition has been used.

1.2. Shorrocks Decomposition

Shorrocks Decomposition is an extension of the assumption of separability (Şengül, 2011: 69). Shorrocks Decomposition is based on the study of A. F. Shorrocks (1982) titled '*Inequality Decomposition by Factor Components*'.

The fundamental reason between the differences in various decomposition methods originate from the differences in approach of the measurements of inequality (indexes). Shorrocks Decomposition is based on an approach which is independent of indexes. Shorrocks has displayed that the analyses to be conducted for the indexes of all achieved findings will generate the same result (Shorrocks, 1982: 209; Gürsel et al., 2000: 63). This characteristic is one of the reasons why the Shorrocks Decomposition was preferred. The other is that a few studies conducted in Turkey regarding income distribution based on decomposition have preferred to use this analysis (Gürsel et al., 2000; Bayar & Günçavdı & Selim, 2009).

In the decomposition of income types, when it is assumed that there are two types of income such as L (labor) and C (capital), the total inequality (I_Y) can be expressed as follows:

$$I_Y \neq I_L + I_C \quad (1)$$

α_L to indicate the portion of L in the total income,

$$I_Y \neq \alpha_L I_L + (1 - \alpha_L) I_C \quad (2)$$

The relevant formulas show that the total of inequalities of income types or the weighted total is not equal to the total inequality. Any kind of income type does not only affect the total inequality with its own internal inequality, but also with its affiliations with other income types (Gürsel et al., 2000: 182-183). Shorrocks indicates that the total of income type inequalities will be greater than the total inequality. Furthermore, the relative contribution made by each income type to the total inequality is independent of the selected inequality scale. This situation makes such an analysis regarding income distribution preferential (Shorrocks, 1982: 209).

The fundamental assumptions of the Shorrocks Analysis are as follows:

- The contributions to the inequality of income types is independent of sequence and is continuous and symmetric,
- The contribution of income types to inequality is independent of the level of aggregation,
- The contribution of income types which distributed equally is zero,
- If the contribution of an income type to inequality is greater than its share within total income, any marginal changes in this type of income will generate a greater difference in the inequality (Shorrocks, 1982; Gürsel et al., 2000: 183-184).

2. Income Types and Income Inequality in Turkey Between The Years 2002-2009 According to Shorrocks Decomposition

In this study, the incomes of households during the years between 2002 and 2009 have been decomposed according to the income types by using the Shorrocks Decomposition. The factor incomes acquired in this way for the relevant period in addition to the transfer incomes are analyzed for their impact on the income inequality in the country.

The objectivity of this analysis is to display the impact of income types of households (factor incomes and transfer incomes) on the total inequality in income distribution and study the details of the income structure in Turkey during the years between 2002 and 2009 both on a household basis as well as on an individual basis. The Gini coefficients of income types, which have an impact on inequality, are also included in the analysis.

Decomposition of the inequalities generated by income sources, determination of factors with an impact on inequalities in a country, where primarily current economic crises and other economic and social wounds such as unemployment have an impact on the income distribution of households and therefore individuals, is an analysis which is both mandatory and essential in order to establish a fair income distribution policy. Furthermore, although studies in this subject have been conducted in the past years (Gürsel et al., 2000; Bayar & Günçavdı & Selim, 2009), the fact that studies based on decomposition according to income source, which

covers the mentioned period in Turkey, are not widespread yet enhances the significance of the analysis and the significance of recommendations based on theoretical interpretation of the analysis results and social policies.

2.1. Data and Methodology

The method used in this study is the Shorrocks Decomposition Method. Analysis performed with the decomposition analysis and fundamental sources (Shorrocks, 1982; Gürsel et al., 2000; Bayar & Günçavdı & Selim, 2009; Stata Technical Bulletin, 1999) have been utilized.

The main data source of this study consisting Household Budget Survey micro data sets is the TURKSTAT. TURKSTAT has been implementing a Household Budget and Consumption Expenditures Survey regularly every year as of 2002.

In this analysis, some preferences have been in the decomposition of income types and in the calculation of their impact on inequality (Çetin, 2013: 286-299). Furthermore, there are also some limitations due to the technical reasons. Before passing onto the analysis results, it is important to explain these preferences and limitations on the axis of a few main issues.

The final analysis section of the survey was the household members. In the literature, many analyses are available that process distribution of disposable income (Gottschalk & Smeeding, 2000: 267-268). Disposable income means the income in the hands of the household after tax payments and social aid, which can be consumed and saved. This context is used in the measuring of income inequality and polarization and best describes the welfare of the household (Molnar, 2010: 10). In this study, the analyses were performed both for the total disposable income of the household in addition to individual disposable incomes (adult equivalent income). The variables subjected to the analysis consist of the number of households and the total of the shares of various incomes (derived from the Gross Domestic Product -GDP-) received by the members of the household through the years. The 'dynamic' character of the decomposition analysis is reflected, because the application addresses the period between the years 2002-2009. The analysis consists of the impact of total disposable income of the household based on six income types consisting of wage income containing the cash income, non-agricultural entrepreneurial income (profit), agricultural

entrepreneurial income (profit)¹, rent income, interest income and transfer income, respectively, for each year on income inequality and Gini coefficients. As indicated above, in addition to factor incomes, the analysis also comprises transfer incomes. The intention of including the transfer incomes in the analysis is to observe the impact of renewed distribution policies.

In our study, income from tax returns and in-kind incomes have not been included in the 'household disposable income' and 'individual disposable income' in order to enable the nearest assessment to the equivalency between aforementioned years. The reason why the impact of in-kind incomes on inequality has not been processed (operating incomes and non-operating incomes) is to enable assessment on a common ground (monetary income). The circulation market of monetary incomes is not parallel with the movement area of in-kind incomes. For example, while wage income circulates on the capital markets and commodity markets as money, in-kind incomes do not have this kind of activity area. Therefore, only monetary incomes with similar maneuverability have been included in the analysis.

In our study, the calculation has been done in accordance with GDP and for this reason; income originating abroad has not been included in the analysis (monetary income in the form of an annual pension from abroad, unrequited foreign currency from abroad, aid, scholarships, etc.). All the income included in the study indicates annual income. 'Monthly property income' for which no annual data is available has been calculated separately² and included in annual data. Private pension income has not been taken into consideration for 2007 and subsequent years to ensure a match with other years and because of the various theoretical conflicts regarding the type of income.

TURKSTAT has not asked households any questions about taxes (Gürsel et al., 2000: 21-22). For this reason, the subject of taxes has been excluded from this analysis. Tax returns were not included in the analysis in order to ensure unity regarding the years covered by the assessment. The data for tax returns has not been decomposed in the micro data of TURKSTAT for 2003.

1 The necessity to decompose the unique structure of the agricultural sector has mandated that entrepreneurial incomes are separated into agricultural entrepreneurial income and non-agricultural entrepreneurial income.

2 As TURKSTAT determined the 'reference period' as the 'survey month' the data regarding property income has been multiplied by 12 and the resulting figures were used.

In the literature, there are numerous interpretations regarding the acceptance of households (family) as a unit in studies involving income distribution. According to G. D. Snooks (1994), the 'total economy' in a country consists of three groups as follows; the market, the public and the family (Çağlar, 1998: 28). Statistics for income distribution are mainly organized by considering families as single units rather than individuals. Considering that the number of members may be deceiving from some aspects, the distribution can be displayed in terms of individuals as well as families (Karaman, 1995: 155). Since there is no homogeneity among families (Atkinson & Bourguignon, 2000: 44), this leads to the impression that homogeneity among individuals cannot be achieved either. Let us consider two family members who have different incomes. If both are considered as separate units, an erroneous impression regarding livelihood will emerge which is why mainly families rather than individuals are accepted as units for income distribution statistics. However, the acceptance of families as units may contain some deceiving elements (Sarc, 1970: 8-9). Some household members may be indigent while others are not. The complete opposite may be true because of the unequal distribution of sources. In fact, this may happen even when the household average is not indigent. Unequal revenue sharing may display the household members above average who are not indigent as considered, while some members of indigent households above average may be rescued from poverty (Jantti & Danziger, 2000: 316-332). The income is transmitted into the household by different individuals; however, usually the transfer within the household in terms of benefiting from the income and any changes are mostly unknown.

Some academic studies have endeavored to overcome this problem by calculating a certain 'equivalence scale' and used this scale to convert the income for each total household into adult equivalent income (adjusted adult equivalent income). Adjusted adult equivalent income has an impact on the size of the household. While the decrease of the household size has a positive effect on adjusted adult equivalent income, the decrease in the number of children has a negative impact (Gürsel et al., 2000: 12-20).

In the literature, the fundamental assumption of the approaches which are in favor of considering the individual as a unit for income distribution analyses is that families spend according to their scale economies. The equivalency scale used for scale economies in decomposition analyses

is based on estimated numerical burdens assigned to the individuals in the household. Calculations performed with estimated values are based on numerous assumptions for which economists mostly do not agree (Gottschalk & Smeeding, 2000: 267-268).

There is no optimal method to derive an equivalency scale. Actually, it is not possible to select an equivalency scale without making additional assumptions. Jenkins and Lambert emphasize that the selection of an equivalency scale is shaped by three different assumptions. These are listed as 1) Determination of the characteristics of the household or families, differences between their requirement levels (for example the household size and consumption), 2) reaching a consensus on the sequence of the priorities of these characteristics and 3) determination of the main priorities of the requirement levels of different households. Here, the 'scales to be used to grade priorities' and 'priorities for grading scales' point to the main issues, in which disagreements regarding the subject emerge (Jantti & Danziger, 2000: 319-320). Use of a scale in income distribution studies may generate results which are more equal or less equal (different) compared to those generated with another scale. In addition, there may be differences between the theoretically foreseen results and the application results (Atkinson & Bourguignon, 2000: 33-35).

For example, some equivalency scales such as the OECD Scale,³ EUROSTAT Scale,⁴ Oxford Scale⁵, which use different weights for adults and children, have all been established in accordance with a family structure of European standards. Reviewing the subject from a different angle reveals that the application goes beyond individual equivalency concept and is applied to take the distribution of wealth into consideration. The reason is that the welfare level of an individual within the household has an impact on the total income and size of the household (Gürsel et al., 2000: 35). It is necessary to estimate and define an equivalency scale which is unique to Turkey in order to enhance the scientific quality and reliability of income distribution (Gürsel et al., 2000: 175). Actually, it is also necessary

3 Equivalency scale flexibility is accepted as 0.5.

4 The scale used for the head of the household, the spouse and other adults and children is 1, 0.5 and 0.3, respectively.

5 This was developed in the 1950's for Europe and is not used anymore. The scales used for adults, other adults and children are 1, 0.7 and 0.5, respectively.

to formulate the expenditure behavior of households in order to determine an equivalency scale in Turkey (Gürsel et al., 2000: 40).

STATA (STATA 9.1) program (Stata Technical Bulletin, 6 February 2011: 13-15), which is a powerful statistics program, was used for the Shorrocks Decomposition to obtain results of the study.

Gini index is a popular income inequality measurement used for decomposition analyses since it can be derived in affiliation with the Lorenz curve.⁶ The most frequently used measure in the calculation of income distribution is also the Gini Coefficient (Karaman, 1995: 156). In this study, the Gini coefficient has been preferred because of its ability to make comparisons between different income groups and for its facilitated interpretation capabilities. Similar to any other time based measurement, the Gini coefficient enables interpretation of income distribution changes within time independently from absolute income.

2.2. Results and Assessment

The results of Shorrocks Decomposition conducted within the scope of this study are given in the tables below. Table 1 displays the contribution of each type of income on the inequality on the basis of total disposable income. Each number in this table indicates the percentage of the relevant income type in terms of total inequality. Table 2 shows the share of income types within the ‘disposable income’.⁷ The numbers in this table were generated by rating the total household income for the relevant income type with off scale calculation, while the scaled calculations rated

6 Many researchers such as Rao (1969), Das and Parikh (1982), Lerman and Yitzhaki (1985), Silber (1989) have focused on decomposition of the Gini Coefficient in their studies.

7 *Household disposable income*: The individual annual disposable total income of each member of the household is calculated by deducting the taxes paid during the income reference term and regular transfers to other household members or people from the annual total income of the household. *Equivalent household disposable income and equivalency scale*: Income inequality is measured by taking the number of individuals in the household and the differences in the income per individual into consideration. The differences in the adult-child components of the households in this calculation and the size of the household is calculated with the coefficients referred to equivalency scales to match the number of adults (equivalent individual). The total household disposable income is divided into equivalent household size to calculate the income per equivalent individual of that household; in other words, the disposable income of the equivalent household.

the ‘total individual equivalent income’ with the ‘total individual equivalent disposable income’.

The figures in Table 3 have been obtained by dividing the figures in Table 1 by the figures in Table 2. Table 3 displays results of the calculation of contribution of the income types to total inequality after they have been weighted with factor shares. Here, the numbers show the possible marginal change which can occur in the total inequality when share of the relevant income type changes in the ‘total disposable income’. The values depicted here show the change which occurs in the income inequality when for example, the share of the transfer incomes in the ‘total disposable income’ changes (Gürsel et al., 2000: 70-71). If there is a minus (or plus) value such as an increase in the transfer incomes, it means that this will have a decreasing (or increasing) impact on income inequality.

Table 1. Contribution Rate of Income Types to Inequality* (1) (Percentage)

	2002	2003	2004	2005	2006	2007	2008	2009
Wage Income								
- Off scale	14.28	22.62	21.64	30.39	27.61	27.60	41.05	21.53
- OECD	11.98	24.46	24.80	27.97	28.30	30.05	49.68	22.90
- EUROSTAT	11.73	25.46	25.64	27.45	29.97	32.54	52.11	24.11
Non-agricultural Entrepreneurial Income (Profit)								
- Off scale	35.96	50.18	54.29	43.99	50.47	54.12	15.48	35.90
- OECD	30.93	41.24	48.79	46.02	45.99	46.78	11.17	35.34
- EUROSTAT	29.45	38.47	47.29	47.48	43.42	43.88	10.62	36.78
Agricultural Entrepreneurial Income (Profit)								
- Off scale	1.87	6.57	6.47	3.84	3.08	2.41	0.97	2.16
- OECD	0.85	3.14	4.97	2.21	1.95	2.09	0.61	1.87
- EUROSTAT	0.63	2.36	4.92	1.73	1.63	1.95	0.58	1.78
Rent Income								
- Off scale	27.47	8.53	9.78	11.93	11.32	7.52	10.42	23.55
- OECD	31.60	9.48	10.86	12.18	14.33	9.64	9.30	22.67
- EUROSTAT	32.33	9.57	11.23	11.86	15.36	9.92	8.98	21.06
Interest Income								
- Off scale	18.58	7.74	4.47	4.47	1.89	2.65	4.00	12.69
- OECD	22.48	15.59	5.38	4.17	2.45	3.27	4.27	12.20
- EUROSTAT	23.77	17.80	5.69	4.04	2.65	3.36	4.32	11.18
Transfer Income								
- Off scale	1.85	4.36	3.36	5.38	5.63	5.70	28.07	4.18
- OECD	2.16	6.10	5.20	7.47	6.98	8.18	24.97	5.03
- EUROSTAT	2.09	6.34	5.23	7.44	6.97	8.36	23.38	5.08
* Off scale data have been calculated based on ‘total household disposable income’ while OECD and EUROSTAT data have been calculated based on ‘individual disposable income’.								

As it can be seen in Table 1, the largest contribution made by wage income to income inequality scales occurred in 2008. This is valid for all three calculation forms (off scale, OECD and EUROSTAT). The largest contribution made by non-agricultural entrepreneurial income (profit) on the income inequality figures was in 2004 when the off scale and OECD scale were used for calculation and 2005 when the EUROSTAT scale was used for calculation, respectively. The major contribution of rent and interest incomes to income inequality according to all three calculations was in 2002. Transfer incomes contributed the most to income inequality scales in 2008.

When we consider the table from another point of view, it is evident that every year, profit income (non-agricultural entrepreneurial income) was the income type which contributed the most to the inequality with the off scale calculation format except in 2008. In 2008, the largest income type contribution was made by the wage income. According to the calculations made by using the OECD and EUROSTAT scales, the income type which contributed the most to inequality every year was profit income (non-agricultural entrepreneurial income) with the exceptions of 2002 and 2008. In 2002, the largest contributor was rent while the largest contributor in 2008 was wage income, respectively.

The high contribution made by entrepreneurial incomes to inequality in Turkey can be explained with the heterogeneous quality of this type of income values. Likewise, entrepreneurial incomes cover marginal sector employees as well as medium and large capital groups together.

In Table 2 given below, the total household income is displayed within the total household disposable income in accordance with off scale calculation of the relevant income type, whereas the calculations made according to OECD and EUROSTAT scales showing the share of total individual equivalent income within total individual (equivalent) disposable income of the relevant income type. In other words, the total income in this table (calculated as off scale and scaled) have been rated with the total disposable income.

Table 2. The Share of Disposable Income Within Income Types* (2) (Percentage)

	2002	2003	2004	2005	2006	2007	2008	2009
Wage Income								
- Off scale	44.37	40.64	41.46	43.09	45.99	46.93	44.98	46.10
- OECD	43.15	39.87	40.38	41.67	44.78	45.85	43.78	44.95
- EUROSTAT	43.25	40.15	40.52	41.72	44.97	46.11	43.94	45.11
Non-agricultural Entrepreneurial Income (Profit)								
- Off scale	22.68	21.23	22.84	19.90	19.76	19.33	18.12	17.18
- OECD	21.67	20.06	21.83	19.34	18.97	18.27	16.91	16.58
- EUROSTAT	21.49	19.86	21.76	19.42	18.85	18.07	16.76	16.63
Agricultural Entrepreneurial Income (Profit)								
- Off scale	5.53	10.51	8.47	8.14	6.98	6.87	5.13	7.20
- OECD	4.96	9.34	7.71	7.35	6.49	6.40	4.81	6.73
- EUROSTAT	4.69	8.82	7.35	6.95	6.24	6.16	4.65	6.48
Rent Income								
- Off scale	8.47	3.68	6.27	6.37	5.88	4.52	6.86	7.06
- OECD	9.30	4.00	6.73	6.82	6.40	4.86	7.30	7.49
- EUROSTAT	9.52	4.05	6.88	6.93	6.52	4.89	7.35	7.51
Interest Income								
- Off scale	3.69	2.15	1.79	2.22	1.63	0.74	1.66	1.57
- OECD	4.20	2.47	1.95	2.25	1.72	0.81	1.87	1.73
- EUROSTAT	4.38	2.56	2.02	2.28	1.76	0.82	1.92	1.74
Transfer Income								
- Off scale	15.28	21.79	19.17	20.29	19.76	21.60	23.25	20.89
- OECD	16.72	24.26	21.39	22.57	21.65	23.82	25.33	22.52
- EUROSTAT	16.68	24.56	21.48	22.72	21.67	23.94	25.38	22.53

* Off scale data portray the shares within 'total household disposable income', whereas OECD and EUROSTAT data portray the shares within 'total individual disposable income'.

In Table 2, it has been presented that income type with the largest share in total household and total individual disposable income has been wage income for every year. This share is very important because the wage income is the only income of the families and employees. The relative increase of labor income within disposable income is a positive development in terms of functional income distribution. The income type with the least share according to the three calculation formats was interest income. This low share for interest is very significant in terms of reflecting on the relative inequality index. Likewise, interest income is the income type which contributes the most to inequality in terms of relative inequality. The fact that interest incomes have a significant share in inequality is also concerned

with the fact that interest income is obtained over capital and wealth. Capital and wealth inequality generates inequality in interest income.

The figures given in Table 3 are very important to clearly display the relative contribution made by income types to inequality. Likewise, neither the contribution made to the income inequality scales in Table 1 nor the shares of the income types within total income given in Table 2 alone do not indicate a clear meaning of inequality. The rates indicated in Table 3 have been achieved by dividing the rates in Table 1 by those given in Table 2. This table comprises the results, which have been achieved as a result of the calculations for the contribution of the income types to the total inequality after they were weighted with factor shares.

Table 3. Relative Inequality Index for Income Types (3) = (1) / (2) (Percentage)

	2002	2003	2004	2005	2006	2007	2008	2009
Wage Income								
- Off scale	0.32	0.56	0.52	0.71	0.60	0.59	0.91	0.47
- OECD	0.28	0.61	0.61	0.67	0.63	0.66	1.13	0.51
- EUROSTAT	0.27	0.63	0.63	0.66	0.67	0.71	1.19	0.53
Non-agricultural Entrepreneurial Income (Profit)								
- Off scale	1.59	2.36	2.38	2.21	2.55	2.80	0.85	2.09
- OECD	1.43	2.06	2.23	2.38	2.42	2.56	0.66	2.13
- EUROSTAT	1.37	1.94	2.17	2.45	2.30	2.43	0.63	2.21
Agricultural Entrepreneurial Income (Profit)								
- Off scale	0.34	0.63	0.76	0.47	0.44	0.35	0.19	0.30
- OECD	0.17	0.34	0.64	0.30	0.30	0.33	0.13	0.28
- EUROSTAT	0.13	0.27	0.67	0.25	0.26	0.32	0.13	0.27
Rent Income								
- Off scale	3.25	2.32	1.56	1.87	1.93	1.66	1.52	3.33
- OECD	3.40	2.37	1.61	1.79	2.24	1.98	1.27	3.03
- EUROSTAT	3.40	2.37	1.63	1.71	2.36	2.03	1.22	2.80
Interest Income								
- Off scale	5.04	3.60	2.50	2.02	1.16	3.56	2.41	8.06
- OECD	5.35	6.31	2.75	1.86	1.42	4.05	2.28	7.06
- EUROSTAT	5.43	6.96	2.81	1.78	1.51	4.08	2.25	6.42
Transfer Income								
- Off scale	0.12	0.20	0.18	0.27	0.28	0.26	1.21	0.20
- OECD	0.13	0.25	0.24	0.33	0.32	0.34	0.99	0.22
- EUROSTAT	0.13	0.26	0.24	0.33	0.32	0.35	0.92	0.23

The proportional distribution of relative inequality ‘in itself’ for income types are given below in Table 4. This table facilitates perception by transmitting inequality over a percentage (%) value. Calculations made on

a household basis as off scale as well as individual basis with the OECD and EUROSTAT scales are given in Table 4 together. The OECD and EUROSTAT results are same when assessed over a percentage (%) value.

Table 4. Proportional Distribution of Relative Inequality in Itself for Income Types (Percentage)

	2002	2003	2004	2005	2006	2007	2008	2009
Wage Income								
Off scale	3.0	5.8	6.6	9.3	8.6	6.4	12.9	3.2
OECD – EUROSTAT	2.6	5.1	7.6	9.2	8.6	6.6	17.6	3.9
Non-agricultural Entrepreneurial Income (Profit)								
Off scale	14.9	24.5	30.1	29.3	36.7	30.3	12.1	14.5
OECD – EUROSTAT	13.3	17.2	27.6	32.5	33.0	25.8	10.2	16.1
Agricultural Entrepreneurial Income (Profit)								
Off scale	3.2	6.5	9.7	6.2	6.3	3.8	2.7	2.1
OECD – EUROSTAT	1.6	2.8	8	4.1	4.1	3.3	2	2.1
Rent Income								
Off scale	30.5	24.0	19.7	24.8	27.6	18.0	21.4	23.1
OECD – EUROSTAT	31.6	19.9	19.9	24.4	30.5	20	19.7	22.9
Interest Income								
Off scale	47.3	37.2	31.7	26.8	16.7	38.6	34.0	55.8
OECD – EUROSTAT	49.8	52.9	34	25.4	19.4	40.8	35.3	53.4
Transfer Income								
Off scale	1.1	2.1	2.2	3.5	4.1	2.9	17.0	1.4
OECD – EUROSTAT	1.2	2.1	3	4.5	4.4	3.5	15.3	1.7

The public expenditures decreased prominently in the 2000s together with the decrease in the activities of the State in the economic life. The inadequacies and ineffectiveness in the social expenditures have brought about the lack of individual needs that should be met by the State. This deficiency has integrated with the financial liberalization process which is dominated by credit economy. These situations have also affected the income distribution in our country.

According to the inequality indicators shown in the relevant tables (Table 3 and Table 4), the largest relative inequality indicator for all the years and for all income types was the relative inequality of the interest incomes in 2009 with ongoing impact of the global crisis in 2008. In Table 3, the calculation performed in accordance with EUROSTAT scale revealed that interest income reached maximum level both in 2003 and 2009. In 2009, these rates were realized for all three calculation formats (off scale, OECD, EUROSTAT) as 8.06%, 7.06% and 6.42%, respectively. According to these three calculation formats, the income type, which had the

least impact on the relative inequality, was transfer incomes. According to calculations executed in accordance with OECD and EUROSTAT scales, agricultural entrepreneurial income was one of the income types with the least impact on the relative inequality indicator.

The data for 2002 is significant because it reflects the process in which the impacts of the 2001 crisis continue. In this aspect, the interest incomes which are the fundamental element of the stock market and financial markets have had a very high impact on total income inequality. When the rate of income types within themselves is converted into percentage, it is responsible for a ratio of 47.3% when calculated with off scale and 49.8% when calculated with the OECD and EUROSTAT scales. It is also responsible for almost half of the determined inequalities followed by rent and profit incomes. These results are very significant indicators showing the contribution of interest as a factor income to inequality.

Just like in 2002, when interest income made the largest contribution to inequality, it maintained this characteristic in 2003 as well (off scale 37.2%; OECD and EUROSTAT scale 52.9%, respectively). The contribution of transfer incomes to relative inequality had almost doubled compared to the previous year. In response to the transfer incomes, which continued on the same course in 2004, the impact of wage and profit incomes on relative inequality had increased.

In 2005, the relative inequality rate of transfer incomes, wage incomes and rent incomes increased. In the transition from 2005 to 2006, the income type which displayed a noteworthy decrease in the relative inequality rate was the interest income (off scale from 26.8% to 16.7%, OECD and EUROSTAT scale from 25.4% to 19.4%, respectively). The relative inequality rate for interest income reached its lowest level in 2006 (off scale 16.7%; OECD and EUROSTAT scale 19.4%, respectively). The income type showed the most change in 2007 compared to the previous year was interest incomes. This change was experienced in a negative way and the relative odds ratio was more than doubled in a devastating way. In 2008, when the global financial crisis erupted, major differences were experienced in the relative inequality rates of income types compared to other years. The income, which changed the most compared to the previous year in 2008 in a negative way, was transfer incomes. This significant change was reflected on the other income types as either significant increases or decreases.

The expected impact of the transfer incomes, which in fact are the equivalent of services ensuring fairness in income distribution (Uzunhasanoğlu, 2007: 52), in the form of one way income stream from the government to individuals and companies (Peterson, 1994: 47) have a decreasing effect on income inequality. However, some of the transfer expenditure types have a disrupting impact on income distribution. There is no doubt that the assignment of the transfer incomes is significant in terms of assessing this impact.

Although the fact that transfer income (pension, old age pension, welfare fund and family allowances, widow-orphan pension, veterans and disability pension, student scholarship income, unemployment benefits, direct support and fuel payment, etc.) has an increasing impact on inequality, which is quite surprising, it is consistent with results of a study conducted in Turkey by the World Bank regarding income distribution (World Bank, 2000) as well as the results of other analyses conducted using the Shorrocks Decomposition (Gürsel et al., 2000; Bayar & Günçavdı & Selim, 2009; Selim & Günçavdı & Bayar, 2014). Likewise, an analysis regarding income distribution conducted with the Miyazawa method concluded that high income groups achieved more income even from transfers made to lower income groups. (Kurtipek, 2011: 131-156).

This impact, which has received criticism for operating in a way which disrupts the income distribution in Turkey, is explained with reasons such as the fact that the social groups affected by the welfare state in general are limited, the inability to display many types of social transfer, the preference of intervention in market prices instead of direct income transfers in subvention policies. Furthermore, referring to the nature of transfer expenditures in Turkey, it is evident that a large part of these expenditures consist of debit interests (Uzunhasanoğlu, 2007: 52).

For example, interest paid on government bonds, since the holders of government bonds are usually high income groups, increases the inequality in income distribution. On the other hand, participation of the state in the financing of social security has an increasing impact on the income of low income groups and a minimizing impact on income inequalities (Bosnali, 1996: 111). Due to the fact that the share of debit interest of high sums in our country from the consolidated budget exceeds other current and investment expenditures, thus the consolidated budget has become an income transfer tool with a negative impact on income distribution

(Uzunhasanoğlu, 2007: 53-54). This situation has also narrowed the opportunities of the state to apply correct policies to social welfare in general and income distribution in particular as well as policies to mitigate poverty (Bedir & Karabulut, 2011: 26). Likewise, this impact can be observed in the impact of transfer expenditures on income distribution inequality.

The significant increase occurred in the share of transfer expenditures on income inequality in 2008 can be explained with investments and employments, which were decreased with the crisis, the increase in the number of applications for unemployment insurance and unemployment benefits and short time working. In addition, the largest share in transfer incomes are received by the high and middle income groups, while the share of low income groups remains rather low. (For example, individuals in the middle and high income groups are usually employed in decent registered jobs and consequently, acquire a corresponding retirement income.) This situation causes social policies based on transfer incomes to become alienated from their functions; in fact, this may cause them to turn into mechanisms which function to the contrary.

However, regardless of degree of the negative impact of transfer income on income distribution inequality, the pre-transfer income distribution inequality is higher compared to the post transfer income distribution inequality in general. While this situation appears to contradict the initial approach, it is actually related to the measurement of different phenomenon. In addition, it is necessary to assess the relevant impacts more carefully during the design of social policies in order to enable transfer incomes to play a mitigating role in inequality. For example, increasing the share of transfer incomes received by the most indigent groups will increase the efficiency of transfer incomes and mitigate the negative impact on income distribution inequality.

By 2009, the relative inequality rate of transfer incomes (off scale from 17% to 1.4%. OECD and EUROSTAT scale from 15.3% to 1.7%, respectively) had dropped down, in fact with the exception of 2002, the rate was below the level of all the other years. The relative inequality rate of wage income had decreased 4 fold compared to the previous year. While no major change had occurred in profit and rent incomes compared to the previous year, the relative inequality rate of interest incomes increased on the off scale calculation from 34% to 56% and from 35% to 53% on the OECD and EUROSTAT scale, respectively. The credit economy, which is

a 'sine qua non' of the financial liberalization process, played an important role in this escalation. While impacts of the 2008 global financial crisis was reflected in the real sector and social sphere on one hand, the income types acquired by households had increased relative inequality.

As a result, in the next year after the 2001 crisis, which indicated to the process after the previous major financial crisis, the higher rates of relative inequality rates of interest, rent and profit (non-agricultural entrepreneur) income are noteworthy. Furthermore, while the relative inequality rates for interest, profit (agricultural entrepreneur & non-agricultural entrepreneur income) and rent income were on a rising trend after the 2008 crisis, a decrease was observed in the rates of other incomes types (wage and transfer incomes) within relative inequality.

It is possible to see the Gini coefficient for income types in Table 5 given below.

Table 5. Gini Coefficients for Income Types

	2002	2003	2004	2005	2006	2007	2008	2009
Wage Income								
- Off scale	0.45	0.43	0.42	0.42	0.42	0.42	0.47	0.47
- OECD	0.47	0.45	0.44	0.44	0.44	0.44	0.49	0.49
- EUROSTAT	0.49	0.47	0.45	0.46	0.45	0.46	0.50	0.51
Non-agricultural Entrepreneurial Income (Profit)								
- Off scale	0.57	0.51	0.50	0.49	0.50	0.52	0.54	0.58
- OECD	0.59	0.52	0.52	0.51	0.51	0.52	0.55	0.60
- EUROSTAT	0.60	0.53	0.53	0.53	0.52	0.53	0.55	0.61
Agricultural Entrepreneurial Income (Profit)								
- Off scale	0.59	0.50	0.52	0.53	0.51	0.50	0.57	0.55
- OECD	0.59	0.49	0.52	0.52	0.51	0.51	0.56	0.55
- EUROSTAT	0.60	0.50	0.54	0.53	0.52	0.51	0.57	0.56
Rent Income								
- Off scale	0.62	0.58	0.51	0.54	0.54	0.51	0.59	0.64
- OECD	0.64	0.59	0.53	0.55	0.56	0.53	0.59	0.65
- EUROSTAT	0.65	0.60	0.54	0.56	0.58	0.53	0.59	0.65
Interest Income								
- Off scale	0.78	0.78	0.66	0.52	0.54	0.69	0.75	0.78
- OECD	0.80	0.80	0.69	0.54	0.57	0.70	0.76	0.79
- EUROSTAT	0.81	0.81	0.70	0.54	0.58	0.71	0.76	0.78
Transfer Income								
- Off scale	0.33	0.49	0.33	0.38	0.39	0.38	0.44	0.41
- OECD	0.36	0.52	0.36	0.42	0.42	0.41	0.46	0.44
- EUROSTAT	0.39	0.53	0.38	0.44	0.43	0.43	0.48	0.46

According to the Gini coefficient results obtained with the Shorrocks Decomposition we conducted, the Gini coefficient for interest income achieved the highest value for every year, except 2005, in all three calculation formats (off scale, OECD and EUROSTAT). In other words, it was the income type most closely affiliated with unfair distribution. Monitoring the trends in the Gini coefficients in the format of three clusters reveals that the Gini coefficients of wage and transfer incomes received less value than the Gini coefficients of the other income types received, which means that their affiliation with equality was more pronounced.

While the Gini coefficients for interest income received values closer to inequality, the Gini coefficients for profit (agricultural and non-agricultural entrepreneur income) and rent vary year to year and are positioned in a central area between full inequality and full equality. In other words, it is possible to say that income types including of labor incomes are distributed more fairly than income types, which do not include of any labor income.

Conclusion

It is necessary to ensure equal opportunity in a society and establish a balanced structure in terms of education, health and other areas in order to prevent the emergence of significant differences in income. For this reason policies that may have an impact on the distribution of income should be activated not only in the process of obtaining income and its division but also much earlier than implementation of these processes. It is vital that factors which 'have an impact on the inequality of income distribution' are determined in order to form the relevant policies.

The basis for the calculation and measurements of income distribution are based on extension of the accounting system to cover the whole economy and its application on economic activities. The differences between income groups, the changes incurring in income and its components in time can always be monitored through these criteria.

The number of studies and analyses performed regarding income distribution in Turkey and particularly the impact of income types on income inequalities are limited and comprise of different methods. Although

there are differences between calculation methods, the aim of relevant studies is to reveal a potential inequality or unfairness. No studies regarding income distribution at regular intervals were conducted in Turkey until 2002. The studies conducted by different individuals and organizations until 2002 are not suitable for comparison purposes.

The aim of this study is to measure the impact of income types (factor incomes and transfer incomes) on income distribution inequality both on household and individual basis (by using OECD and EURO-STAT scales) in Turkey during the years between 2002 and 2009 for which regular data is available. Thus, it will be possible to assess the impact of each type of income on inequality before designing the policies that will may have an impact on income distribution. The Shorrocks Decomposition, which was preferred for this study because of its independence from indexes, is based on decomposition according to income types within the framework of decomposition principle.

According to the analysis results, the income type responsible for contributing the most to income distribution inequality for both calculations (both on household basis and individual basis) is the interest income. The amount of contribution of interest, profit and rent income on inequality is more than the contribution of salary and transfer incomes and differentiates significantly. From another point of view, labor income distributes more fairly than other income types, which do not contain labor income. The relevant findings verify the interest incomes and consequently, verify the adverse impact of the credit economy on income distribution. Likewise, right after the financial crises of 2001 and 2008 (in 2002 and 2009), impact of the interest income on inequality was extremely high (off scale 47.3% and 55.8%; OECD and EUROSTAT scale 49.8% and 53.4%, respectively). In general, although the burden for the 2001 crisis was imposed on Turkey and the burden of the 2008 crisis was imposed on the global world, essentially in both crises, economic policies were influenced by financialization, neo-liberalism and deregulation flows. It is not possible to assess the contribution of interest by excluding labor income, profit and rent incomes independently from these influences.

Especially as of the beginning of year 2000, since the interest rates digressed from the supply demand operation of the free market economy

in Turkey, the saving-investment balance was disrupted. In addition, in developing countries such as Turkey, there is an affiliation between the continuity of economic stability and political stability. After the crisis took place in 2001, stabilization started in the political area in Turkey with a single party power and economic stability was targeted with the new implemented economy and financial discipline programs. In the post crisis period, significant reductions in interest, which is one of the major factors contributing to income distribution inequality, were implemented within the framework of the economy program. The impact of the mortgage crisis happened in 2008 around the globe emerges as an interest factor in the study results.

The establishment of a progressive rate structure for asset taxes and enhancing economic initiatives to steer those in a dilemma over interest and profit to productive investments could be a solution in order to reduce the negative impact of interest income on income inequality.

Another finding of the analysis is the unexpected adverse impact of transfer incomes with an overriding purpose on total inequality. It is expected that transfer incomes have a mitigating impact on inequality. However, some types of transfer expenditures have a disrupting impact on income distribution. This impact, which has been criticized for disrupting the income distribution in Turkey, is explained with reasons such as the social groups affected by the welfare state being limited, the inability to display many types of social transfer and the preference of intervention in market prices instead of direct income transfers in subvention policies. Transfer incomes are important for the state in order to monitor the impacts of redistribution policies. It is necessary to design social policies more carefully for transfer incomes to play a role in mitigating inequality even if they do not increase. Likewise, even if the state has not planned any changes in income distribution while it makes public expenditures, this change takes place.

A difficulty encountered in the process of realizing the analysis was the lack of equivalency scale in Turkey. In future studies, the formulation of the expenditure behavior of households and the determination of an equivalency scale which is unique to Turkey will be a significant contribution in order to be able to analyze individual income distribution in Turkey through decomposition.

Consequently, considering that an income distribution, which is not fair and balanced, forms the groundwork for many social and economic problems displaying a permanent presence, it is vital to spend solution-oriented efforts without any delay. Therefore, individual and corporate exertion must be spent for solution oriented efforts. Policies supporting the real sector that covers labor and production must be created. On the other hand, it is also necessary to mitigate the adverse impacts of the process covering financial liberalization that can be expressed as virtual or fictitious on income distribution and income inequality. This requirement necessitates an active approach in income distribution policies. The level of income, the generation of the income as well as the mechanism generating the income must be assessed with common sense.

The establishment of economic relations, which are trust and ethics oriented on an individual and corporate level, the establishment of a system operating on a basis of equality, freedom, justice and rights and supporting the real sector of the economy form the overall framework of the specified efforts. These efforts are vital so that the economy, which has distanced itself from ethics, can recapture the value judgment that has been lost.

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