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Consumption and Income Inequality in Turkey[1]

Türkiye'de Tüketim ve Gelir Eşitsizliği

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Abstract: In recent inequality literature the argument that consumption is more appropriate source rather than income to represent economics well-being of households has been gaining increasing attention. In this context, both income and consumption inequality between Turkish households are analyzed by calculating well known twelve different inequality measurements using the Household Budget Survey data provided by TurkStat for the period between 2003 and 2015. In this study, this argument is supported with the important results obtained from this study (i) Turkish households more likely to act consumption-smoothing behavior in the serious income fluctuations period like economic crisis; (ii) consumption inequality is more equal than income inequality during the corresponding period.

Keywords: Inequality, Consumption, Income, Households

Öz:Güncel eşitsizlik literatüründe hanehalklarının ekonomik refah düzeylerini temsil etmekte harcamaların gelirden daha tutarlı bir kaynak olduğu savı giderek artan bir önem kazanmaktadır. Bu bağlamda, Türkiye'de yerleşik hanehalkları arasındaki gelir ve harcama eşitsizliği, TÜİK tarafından sağlanan 2003-2015 dönemi Hanehalkı Bütçe Anketi verileri yardımıyla, bilinen on iki farklı eşitsizlik ölçütü hesaplanarak analiz edilmiştir. Bu çalışma ile söz konusu argüman desteklenmekle birlikte çalışmadan bazı önemli sonuçlar da elde edilmiştir. (i) Türkiye'de yerleşik hanehalkları ekonomik kriz gibi önemli gelir dalgalanmalarının yaşandığı dönemlerde harcama düzleştirmesi davranışında bulunma eğilimindedirler (ii) harcama eşitsizliği ilgili dönem boyunca gelir eşitsizliğinden daha adil dağılmaktadır.

Keywords: Eşitsizlik, Tüketim, Gelir, Hanehalkı

1. Introduction

Although inequality has been a central issue of social research for decades there is a consensus that inequality among individuals is an important factor in influencing the wealth and peace of society. The income of individuals plays a fundamental role in social integration by meeting their vital and socio-cultural needs. In this context, inequality in income distribution increases not only economical but also socio-cultural problems. Inequality in income distribution causes social impoverishment by preventing individuals from meeting their minimum basic needs as well as causing individuals to become more impoverished. The high income of high educated people as a result of individuals reaching different quality and level of education opportunities negatively affect the human capital which is the most important component of economic growth. Class differences with social exclusion increase political polarization and significantly affect social peace. Moreover, individuals increase their social status in the society and lead to unsustainable over-borrowing in order to reduce the differences in income and this increases the stress on financial institutions (Stigliz, 2009). In all these respects, there is an important link between economic crises and income inequality.Therefore, the issue of fairly distribution of the welfare and income increase, which has been occurred over the past 15 years in Turkey, has become some of the most hotly debated issues. The question of how this aggregate value created by the economic agents in the country's economy is shared by the agents is in field of interest in inequality calculations.

In the literature, there have been many studies measuring inequality among Turkish households over the income (Yükseler, 2003; Kuştepeli and Halaç, 2004; Doğan and Tek, 2007; Filiztekin and Çelik, 2010; Aydın, 2012; Ekşi and Kırdar, 2015). However, it has been argued that income variable which is commonly used to calculate the inequality between economic agents has some major problems. The first one is that individuals are more likely to manipulate the household survey data by misreporting of their income due to the tax issue. In addition, household income is extremely sensitive to temporary fluctuations such as caused by job cuts, job changes or family status changes. However, these temporary income fluctuations have less impact on household consumption and welfare (Wemmerus and Porter 1996). Especially during the economic recession periods, unemployment instantaneously rises, and asset prices fall dramatically. This circumstance affects income distribution negatively. Household consumption behaviors are more rigid against the short-term income changes. The second problem is caused by using the self-reported income for a measurement to analyze distributions of welfare. This problem may lead more sensitive estimation of income inequality. The changing in income inequality may also lead to different welfare distribution under different credit market structures. The last one is that current income may not be right measure of lifetime economic resources credit markets allow households to smooth consumption fluctuations (Duygan and Güner, 2006).

Recent inequality literature has been focusing on the argument that consumption is more reliable source than income to reflect the inequality due to some disadvantages of the income data (Slesnick, 1991; Cutler and Katz, 1991; Johnson

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and Shipp, 1997; Meyer and Sullivan 2013). For these reasons, the aim of this study is to show how inequality measurement results will change in case of using of income or consumption variables. As far as we know, except for Duygan and Güner (2006), there is no study that calculates in inequality in Turkey over consumption. In this context, we expect our study will contribute to consumption inequality literature with the evidence of Turkey.

The remainder of the paper is organized as follows. In section 2, the literature review is presented. In section 3, the Household Budget Survey (HBS) dataset is introduced and in the following section, the results of income-consumption inequalities are reported. Finally, the conclusion part is presented.

2. Literature

In the inequality literature, there are several studies suggesting the use of household consumption level as a household welfare indicator due to the significant problems caused by using income variable in measuring the households' economic well-being. In the study of Cutler and Katz (1992), the distribution of income and consumption in the United States during the 1980s is investigated to determine the households' well-being using the micro data set. In the study, it is concluded that the distribution of income and consumption is parallel to each other during the entire period but the distribution of household consumption is much less equally distributed when consumption variable is used. They are also suggested to assign different equivalence scales for each household member because of the fact that consumption might be significantly affected by the number of children and adults in the household.

The studies focusing on consumption inequality differ in their definition of consumption. While in some studies, durables goods are excluded from the definition of consumption (Cutler and Katz, 1992, Johnson and Shipp, 1997; Garner 1993; Garner et al., 1994), in some studies investment good are not included (Barrett and Pendakur 1995; Barrett et al, 1999; Kruger and Perri 2006). (Meyer and Sullivian, 2003) On the other hand, in the most studies consumption is defined as a total expenditure (O'neill and Sweetman, 1999; Akita et al, 1999; Blacklow, 2002; Goodman and Oldfield 2004, Gardin et al 2008 Gunatilaka and Chotikapanich, 2009). In this study, consumption is also considered as total expenditure.

This study has some differences from previous studies. First one of this, inequalities are estimated over the whole sample without making any demographic constraints on the sample. Another one is, this study provides more consistent results thanks to some advantages of the HBS data set. It contains both consumption and income data for the same household whereas in other studies consumption and income data are derived from different surveys (Brzozowski et al, 2010; Blundell and Etheridge, 2010; Meyer and Sullivan, 2011; Attanasio et al., 2012; Hassett and Mathur, 2012).

Although it can be argued that there has been a consensus on the use of consumption and income as per equivalence scale in the literature, there has not been consensus on which scale to use. For this reason, the OECD equivalence scale, which is available in the HBS dataset, is preferred in this study.

3. Data and Methodology

Several different inequality indices will be calculated through both income and consumption channel using the Household Budget Survey (HBS) data provided by TurkStat for the period 2003 -2015. The most important limitation of this data is that the panel data feature does not exist. HBS is obtained by applying to the randomly selected households from specific regions in every each month between for corresponding year (TurkStat). During the period 2003 -2015 the data includes 25765, 8545, 8560, 8559, 8549, 8550, 10047, 10083, 9919, 9988, 10060, 10122 and 11491 households, respectively.

In the analysis, income is defined as yearly disposable income of household. It is calculated as the total of individual disposable income of all members of the household, adding the total of yearly income for the household and subtracting taxes paid during the reference period of income and regular transfers to the other households or persons (Turkstat). Consumption is defined as monthly total consumption expenditure of household deflated by monthly CPI. Those two variables are weighted by *Faktor* variable and divided by OECD equivalence scale, which is used to calculate household size. This scale considers the 1 parameter for the first adult, 0,5 parameter for the individuals 14 years old or older, and 0,3 parameter for the individuals under 14 years old (TurkStat).

Inequality indices used to measure income and consumption inequalities for the corresponding term are the relative mean deviation, the coefficient of variation, the standard deviation of logarithms, Gini, Mehran, Piesch, Kakwani, Atkinson, Theil, the mean log deviation, the generalized entropy measure with sensitivity parameters -1 and 2 indices. Very brief information about these indices is given below (Whitehouse, 1995):

1. **The Relative Mean Deviation (RMD):** It is one of the simplest inequality measures and its mathematical form is shown in Equation 1:

$$RMD = \frac{1}{2n\bar{y}} \sum_{i=1}^{n} |y_i - \bar{y}| \quad (1)$$

   Here y_i is the income of the household, n is the sample size, and $\bar{y}$ is the average income. RMD becomes significant if it satisfies the Pigou-Dalton condition, which it implies that any transfer from relatively richer households to relatively poorer households that do not change the inequality. This index is not sensitive to transfers between individuals in the same income group and therefore it is not satisfy the Pigou-Dalton condition.
2. **The Coefficient of Variation (CV):** Although it satisfies the Pigou-Dalton condition, it causes different results depending on its the average level. It is shown in Equation 2.

$$CV = \sqrt{\left(\frac{1}{n}\sum_{i=1}^{n}(y_i - \bar{y})^2\right)/\bar{y}} \quad (2)$$

3. **The Standard Deviation of Logarithms (SDL):** This is an alternative version of the Pigou-Dalton condition. It was proposed in the study of Foster and Shorrocks (1985). In the study, it is emphasized that income transfer among low-income groups is more important than in high-income groups. It is shown in Equation 3 where $\bar{y}_G$ is the geometric mean.

$$SDL = \frac{1}{n}\sum_{i=1}^{n}(logy_i - log\bar{y}_G)^2 \quad (3)$$

4. **Gini:** This is one of the frequently used inequality methods. It is a Lorenz curve-based index and is more sensitive to income transfer among average income groups. It is shown in Equation 4 where *i* is ascending order.

$$Gini = \frac{1}{n^2\bar{y}}\sum_{i=1}^{n} i(y_i - \bar{y}) \quad (4)$$

5. **Mehran:** This index, which is also based on Lorenz Curve, was proposed in Mehran (1976). It is more sensitive to low-income groups and is shown as a mathematically in Equation 5.

$$Mehran = \frac{3}{n^3\bar{y}}\sum_{i=1}^{n} i(2n + 1 - i)(y_i - \bar{y}) \quad (5)$$

6. **Piesch:** This is also a Lorenz Curve based index, proposed by Piesch (1975). It is more sensitive to high-income groups:

$$Piesch = \frac{3}{2n^3\bar{y}}\sum_{i=1}^{n} i(1 - i)(y_i - \bar{y}) \quad (6)$$

The Gini, Mehran and Piesch inequality indices all satisfy the Pigou-Dalton condition and take a value between 0 and 1. As the index value rises, inequality increases.

7. **Kakwani:** It was proposed by Kakwani (1980) and it is sensitive to the income transfers in extreme and it is shown in Equation 7:

$$Kakwani = \frac{1}{2-\sqrt{2}}\left[\left(\frac{1}{n\bar{y}}\sum_{i=1}^{n}\sqrt{{y_i}^2 + \bar{y}^2}\right) - \sqrt{2}\right] \quad (7)$$

8. **Atkinson:** This index is proposed in Atkinson (1970) study and it is derived by the constrained social welfare function, which is one of the most commonly used inequality measurement methods in the literature. The index is shown in equation 8. The ε parameter in the Atkinson index indicates aversion to inequality.

$$Atkinson(\varepsilon) = 1 - \left(\frac{1}{n}\sum_{i=1}^{n}\left(\frac{y_i}{\bar{y}}\right)^{1-\varepsilon}\right)^{1/(1-\varepsilon)} \quad (8)$$

9. **The Generalized Entropy [GE(α)]:** The most general form of inequality measurement method, which was borrowed from the information theory, is included in equation 9:

$$GE(\alpha) = \frac{1}{\alpha(\alpha-1)}\left[\frac{1}{n}\sum_{i=1}^{n}\left(\frac{y_i}{\bar{y}}\right)^{\alpha} - 1\right] \quad (9)$$

This index allows focusing on different groups of income distribution through the value of the (α) parameter. The (α) parameter usually takes the values -1, 0, -1 and 2 and it becomes more sensitive to the inequality in high-income groups as the parameter value increases. The GE index takes a value between 0 and infinite. While the value increases, the inequality increases.

a. **Theil [GE(1)]:** Theil index is the most common measurement in inequality literature. It is a special case of Generalized Entropy index when (α) parameter takes the value of 1. It is calculated as follows:

$$Theil = GE(1) = \frac{1}{n}\sum_{i=1}^{n}\frac{y_i}{\bar{y}}log\frac{y_i}{\bar{y}} \quad (10)$$

b. **The Mean Logarithmic Deviation (MLD)[GE(0)]:** It is a special case of Generalized Entropy index when (α) parameter takes the value of 0 and it is calculated as follows:

$$GE(2) = \frac{1}{n}\sum_{i=1}^{n} log\frac{y_i}{\bar{y}} \quad (11)$$

c. **Half the Square of the Coefficient of Variation [GE(2)]:** It is a special case of Generalized Entropy index when (α) parameter takes the value of 2. It is calculated as follows:

$$GE(2) = \frac{1}{2n\bar{y}^2}\sum_{i=1}^{n}({y_i}^2 - \bar{y}^2) \quad (12)$$

4. Empirical Findings

Table 1 presents the income and consumption inequalities for the period between 2003 and 2015. It is seen that the magnitude of income and consumption inequalities are parallel to each other during the corresponding term. The lowest value for both of them is in 2008. It is easy to say that while the 2009 Global Economic Crisis caused a serious disparity in income distribution, income inequality declined in the following years. Although the magnitudes of income inequalities, which are calculated by different indices, are parallel to each other during the entire period, when considering as a percentage change the value of magnitudes The indices with the highest change in the income inequality are GE (-1) and GE (2), respectively 0,43 and -0,22. With this result it can be argued that while the income distribution is more unequal in low income group, in high income group it is more equal.

Table 1. Income and Consumption Inequalities for Turkey (2003-2015)

Methods	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Δ 15-03	Δ%
Income Inequalities															
RMD	0,309	0,301	0,294	0,284	0,280	0,285	0,306	0,296	0,295	0,291	0,275	0,274	0,292	-0,02	-5,5
CV	1,343	1,153	1,080	1,008	0,953	0,974	1,230	1,244	1,064	1,140	1,018	0,992	1,181	-0,16	-12,1
SDL	0,772	0,786	0,790	0,742	0,728	0,739	0,785	0,757	0,764	0,733	0,703	0,698	0,722	-0,05	-6,5
Gini	0,432	0,425	0,413	0,400	0,394	0,402	0,430	0,416	0,414	0,406	0,386	0,384	0,410	-0,02	-5,1
Mehran	0,552	0,550	0,542	0,523	0,517	0,525	0,554	0,538	0,537	0,527	0,503	0,500	0,526	-0,03	-4,7
Piesch	0,372	0,362	0,349	0,339	0,333	0,340	0,368	0,355	0,353	0,346	0,328	0,325	0,352	-0,02	-5,4
Kakwani	0,162	0,157	0,149	0,140	0,136	0,141	0,160	0,151	0,149	0,144	0,131	0,129	0,147	-0,02	-9,3
Theil	0,379	0,354	0,325	0,302	0,288	0,300	0,369	0,345	0,327	0,324	0,287	0,279	0,342	-0,04	-9,8
MLD	0,326	0,321	0,309	0,282	0,272	0,282	0,327	0,304	0,301	0,287	0,257	0,251	0,290	-0,04	-1,0
GE(-1)	0,446	0,462	0,468	0,390	0,364	0,379	0,458	0,416	0,429	0,383	0,376	0,370	0,639	0,19	43,3
GE(2)	0,902	0,664	0,583	0,508	0,454	0,474	0,757	0,774	0,566	0,650	0,518	0,492	0,697	-0,21	-22,7
Atkinson	0,278	0,275	0,266	0,245	0,238	0,245	0,279	0,262	0,260	0,249	0,226	0,222	0,235	-0,04	-15,5
	Consumption Inequalities														
RMD	0,278	0,269	0,277	0,265	0,259	0,251	0,261	0,257	0,263	0,270	0,267	0,268	0,284	0,01	2,2
CV	0,998	0,928	0,921	0,851	0,811	0,772	0,819	0,816	0,852	0,870	0,851	0,872	0,980	-0,02	-1,8
SDL	0,681	0,679	0,699	0,674	0,659	0,656	0,673	0,659	0,663	0,677	0,670	0,663	0,690	0,01	1,3
Gini	0,389	0,379	0,390	0,373	0,363	0,356	0,367	0,363	0,370	0,378	0,373	0,374	0,396	0,01	1,8
Mehran	0,505	0,499	0,509	0,492	0,482	0,475	0,488	0,480	0,487	0,496	0,491	0,490	0,511	0,01	1,2
Piesch	0,331	0,318	0,331	0,314	0,304	0,297	0,307	0,304	0,312	0,319	0,315	0,316	0,338	0,01	2,1
Kakwani	0,133	0,126	0,133	0,123	0,116	0,112	0,119	0,116	0,121	0,125	0,122	0,123	0,137	0,00	3,0
Theil	0,289	0,266	0,280	0,252	0,234	0,223	0,239	0,236	0,248	0,258	0,250	0,253	0,296	0,01	2,4
MLD	0,255	0,244	0,259	0,237	0,224	0,217	0,230	0,224	0,231	0,241	0,235	0,234	0,263	0,01	3,1
GE(-1)	0,306	0,300	0,325	0,295	0,276	0,276	0,292	0,279	0,283	0,297	0,290	0,282	0,316	0,01	3,3
GE(2)	0,498	0,431	0,424	0,362	0,329	0,298	0,336	0,333	0,363	0,378	0,362	0,380	0,481	-0,02	-3,4
Atkinson	0,225	0,217	0,228	0,211	0,200	0,195	0,206	0,201	0,206	0,214	0,210	0,209	0,225	0,00	0,0

Source(s): Author's calculations.

The second part of Table 1 presents the estimated results of consumption inequalities. While there is no significant improvement in income inequality during the analysis period, the highest percentage change is observed in GE (-1) index with 0,033, and GE (2) with -0,034. this result can be interpreted that inequality increases in low- consumption groups while decreases in high- consumption groups when these indices are considered to be more sensitive to the inequality in low and high consumption groups. The Kakwani index, which is sensitive to income transfers in the extreme cases, shows a high change with 0.03.

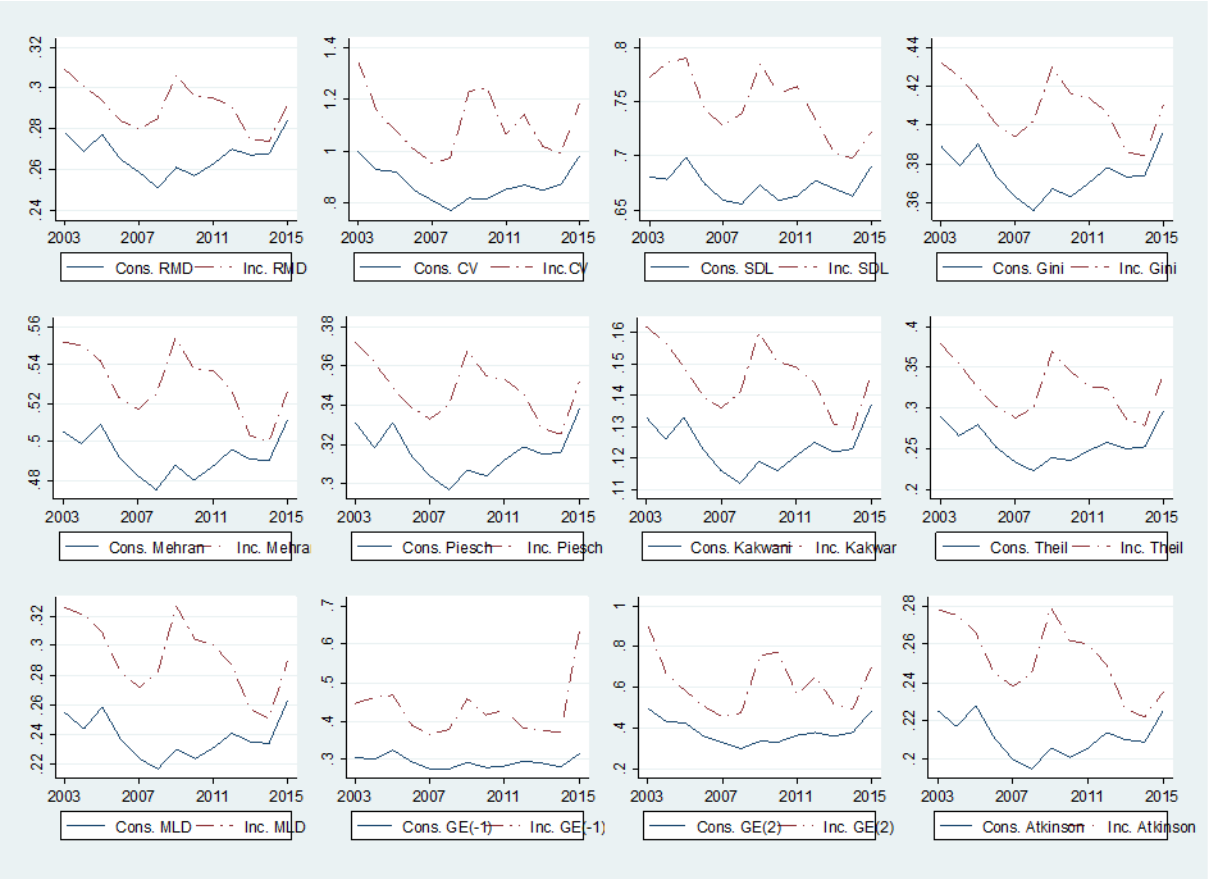

Figure 1. Income and Consumption Inequalities for Turkey (2003-2015)

Source(s): Author's calculations.

The Figure 1, presents the visual estimation results of income and consumption inequality among households in Turkey during the period 2003 -2015. In entire period, consumption inequality is lower than income inequality. This result is consistent with the inequality literature. It also reveals other important facts for Turkey. First, both in consumption and income inequalities in 2003 are seen to be significantly higher due to the serious economic crisis experienced in Turkey in 2000 and its after-effects. In terms of consumption inequality, the disruptive effect of the local crisis in 2000 is higher than all years subject to research. It can be said that this effect adversely affects the income and consumption distribution at almost the same level as the 2009 global crisis in all inequality measurements, except for GE (2). Moreover, GE (2) index was the highest in 2003 due to higher inequality in income distribution among low income groups.

Similarly, the impact of 2009 global crisis on income distribution is significant and positively correlated with inequality, the inequality estimated through consumption was less affected in the corresponding period. This result shows that the consumption inequality is not too much affected by economic crisis because of the fact that households tend to act consumption smoothing behavior in the crisis periods despite the instantaneous income changes. On the other hand, the highest difference between income and consumption inequality is the calculated by the GE (2) index. According to GE (2) index, it can be concluded that income inequality is higher in high income groups whereas consumption inequality is lower in the same income group. This implication shows that high-income households are more equal in terms of consumption/living standards thanks to loans or borrowing facilities they have. some reasons such as irregular disintegration of labor force between production sectors due to rapid population growth and migration in the relevant period, decrease in real wages with the stagnation in the real economy, emphasis on indirect taxes on taxation by the government, failure to translate public expenditures into infrastructure investments that will have consequences in favor of low income groups in the long term and inability to control informality negatively affected income distribution.

5. Conclusion

The income distribution in a country affects the volume of savings and the combination of consumption. Inequality in income distribution increases not only economic but also socio-cultural problems. Therefore, In Turkey making the income distribution more equitable should be a priority target. In order to overcome the inequality in income distribution, policies need to be developed to ensure a fairer share of the national income cake derived from the sum of the goods and services produced. For this, there is a need for developing a tax policy based on direct taxes and wealth taxes, and urgent implementation of income-generating social transfer policies for low-income segments. In addition, in order to overcome the income distribution inequality, it is necessary to achieve stable growth. For this, investments should be directed to

productive investments. In addition, the labor force in the labor market should be qualified by eliminating the differences in the level of education and quality among citizens.

This study in which income and consumption inequalities are calculated for the period 2003-2015 presents some important findings for growing literature on income and consumption inequality in case of Turkey with household level data.The first one is that consumption inequality is lower than income inequality during the 2003-2015 as a parallel result with the different country case studies. The second one is that while 2009 global economic crisis has a remarkable negative effect on income inequality, its effect on consumption is very small. The last one is that consumption inequality has smoother pattern than income inequality during the corresponding period. In the light of these findings, it can be argued that Turkish households acts consumption smoothing behavior despite remarkable fluctuations in household income. Therefore, consumption is more reliable source to measure welfare inequality between households.

In the further consumption inequality studies, all these findings and results obtained from this study can be retested with some modifications such as using different equivalence scale, different consumption definitions like excluding the durables goods from the consumption.

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