

Do Wives' Earnings have an Impact on Income Inequality?: Evidence from Turkey

Ayşe Aylin BAYAR^{a§} and Bengi YANIK İLHAN^b

^a *Faculty of Management, Istanbul Technical University (ITU) and Economic and Social Research Center (ESRC), ITU*

^b *Department of Economics, Istanbul Kemerburgaz University*

Abstract

The Turkish economy has been experiencing a structural transformation as a result of economic liberalization, especially after the 1990s. Liberalization and integration to the world economy have had inevitable distributional consequences. In that sense, trends in the distribution of income have received substantial attention in recent years. As income inequality becomes an important issue for developing countries, gender (in)equality in Turkey also has gained attention. There exists a vast survey in the literature about the relationship between gender discrimination and inequality. Mainly, more recent research has concentrated on the reasons for gender discrimination in the labor market and its effects on the labor market. Mostly, the gender wage gap is chosen as the preferred way of examining discrimination. However, less attention is given to the effect of married women's earnings on overall inequality in the literature. As far as we know, for Turkey, there is no research that examines the impacts of wives' earnings on the income inequality of married couples. Therefore, the main aim of this study is to investigate the impact of wives' earnings on inequality by using a counterfactual distribution of income. In this respect, we believe that this study will fill this gap in the literature.

For the empirical work, we use the Income and Living Conditions Survey conducted by TurkStat for the years 2006 and 2011. At first, basic income inequality measures are applied to reveal the changes in the income inequality of married couples' earnings. The results for the overall inequality level of Turkey show that inequality has declined throughout investigated years. Also, it is found that married household inequality has a declining trend for these years. After using brief (descriptive) inequality indicators, as our aim is to compare the existing distribution in each year to the distribution that would occur if wives had no earnings, all else equal, we develop a hypothetical equation. In order to do that, we calculate the counterfactual distribution for each year by setting wives' earnings equal to zero. Our preliminary results show that, wives' earnings have the highest within inequality for the investigated years. Although a correlation between husbands' and wives' earnings exists, we conclude that wives' earnings are non-equalizing. Also, a coefficient of variation is used to measure the households' income inequality for the decomposition analysis. By discriminating the impact of wives' earnings from other sources of income, the results reveal that wives' earnings have a small contribution to income inequality.

Keywords: Inequality, Earnings, Decomposition, Female

JEL Classification: D10, J22

[§]Corresponding author: Ayşe Aylin Bayar, Faculty of Management, Department of Management Engineering, 34367 Macka – Istanbul / Turkey; Fax: +90-212-240 72 60; email: bayaray@itu.edu.tr.

1. INTRODUCTION

In Turkey, there are many studies that examine the effects of the labor force participation of married women on marriage, divorce, fertility, and time spent with children and in other pursuits. However, very little attention has been given to the effects of the labor force participation of married women on the income distribution. On the other hand, much effort has been devoted to understand the reasons for gender differentials in inequality and poverty¹. Since rising inequality leads to economic, social and political challenges, understanding every component of income inequality is very crucial before using tax and benefit policies as redistributive instruments. Therefore, the main aim of this study is to investigate the impact of wives' earnings on inequality by using counterfactual distribution of income. In this respect, we believe that this study will fill this gap in the literature.

The Income and Living Conditions Survey data that is conducted by the Turkish Statistical Institute for the years 2006 and 2011 are employed in the present paper. Giving descriptive inequality measures, the coefficient of variation is used to measure the households' income inequality for the decomposition analysis. Our ultimate aim is to compare the existing distribution in each year to the distribution that would occur if wives had no earnings, all else equal. In order to do that, we calculate the counterfactual distribution for each year by setting wives' earnings equal to zero. Afterwards, we simulate the counterfactual distribution for husbands' earnings. Our results show that a correlation exists between husbands' and wives' earnings. Also, by discriminating the impact of wives' earnings from other sources of income, the results reveal that wives' earnings contribute to the inequality of married households.

The paper is organized as follows. Section 2 is dedicated to a very brief literature review, while Section 3 presents the data and descriptive statistics. The methodology is described in Section 4, and Section 5 includes the discussion of the empirical findings. Section 6 is reserved for the conclusion.

¹ See Aktas and Uysal (2012), Cudeville and Gurbuzer (2007). For wage inequality based on gender discrimination see Eraslan (2012); Mercan (2011); Cudeville and Gürbüzler (2010). Gürler and Üçdoğruk (2007); Hisarcıklılar and Ercan (2005); Dayıoğlu and Tunalı (2004); Özcan et al (2003); Kabasakal et al (1994); Dayıoğlu and Kasnakoğlu (1997); Tansel (2001) and İlkkaracan ve Selim (2007).

2. LITERATURE REVIEW

Economic theory did not pay too much attention to the effect of wives' incomes on the distribution of family earnings. From the point of view of modern microeconomic labor supply theory, the wife's participation in the labor market is analyzed jointly with other family decision variables. In addition, it is also determined by the husband's (shadow) wage rate. The resulting complexity in aggregating individual family incomes to derive the relevant distribution could be one of the reasons for investigating the effect on the ultimate distribution of family income. Besides, it is obvious that the labor force participation of married women has different consequences on income inequality.

There is one common sense that due to women's liberation, which leads to a growth in the labor force participation for wives of high-income husbands, income inequality increases (Danziger, 1980). From this perspective, married women participate in the labor market in order to compensate for changes in the earnings of other family members (especially the husband). Thus, the wife's labor force participation is negatively related to the husband's income (Danziger, 1980). In other words, wives of more educated men concentrate their market activities during years when the husbands' comparative advantage in market activities is low (Smith, 1979). Another argument is the fact that increasing the labor force participation of wives would reduce inequalities in family income, since income inequality amongst women is less unequal than amongst men². Thus, wives' incomes equalize the distribution of family income.

There are many studies related to the impacts of women's (especially married ones) earnings on the inequality of households. The evidence about women's contribution to household inequality from these studies is mixed. The findings mostly depend on the measure of the income, the sample and the country. Some studies have shown that although married women's earnings have greater (relative) variation than married men's, they tend to reduce inequality of family incomes (see Danziger (1980) for US, Mincer (1974), Smith (1979), Layard and Zabalza (1979) for United Kingdom). In addition, there are researchers that have investigated the impact of changes in wives'

² For instance, Gottschalk and Danziger (2005) suggested that as the rise in male wage inequality lead to the rise in the household income inequality; male wages are the dominant factor driving rising income inequality.

earnings on the income distribution among married couples (see Blackburn and Bloom, 1987; Cancian et al., 1993; Cancian and Reed, 1998)³.

Note that, technological change, globalization, marriage rates, and changes in the labor force participation of married women are the underlying causes for the change in inequality (Bound and Johnson, 1995; Danziger and Gottschalk, 1995; Katz and Murphy, 1992; Levy and Murnane, 1992). Regarding these factors, the Turkish economy has been experiencing not only a structural transformation but also a social transformation as a result of economic liberalization especially after 1990s. From this point of view, the distributional effects of macroeconomic policies on the distribution of income are inevitable⁴.

The overall inequality of Turkey has improved after 2002, and there is a more equalized distribution compared to the 1990-2000s⁵. Although, there exists an improvement in the income inequality throughout the years, overall inequality in Turkey is higher than the inequality in most of the OECD countries⁶. During these years, the female labor force participation has an increasing trend. It is around 24.5% and 27.6% for the years 2008 and 2010, whereas total labor force participation is around 46.7% and 48.8% for the same years, respectively⁷ (TurkStat, 2011).

In addition to this, one can see the added worker effect for females during crises in Turkey. During crises, most of the females are more likely to participate in the labor market in order to compensate for the income loss of their household. In this aspect, one can ask whether these women's earnings, which are probably for compensating income loss in these crises, lead to lower inequality or not. To the best of our knowledge, there is no literature on the effects of wives' earnings on inequality. This is the first paper which examines the impact of wives' earnings on inequality by using a counterfactual distribution of income.

³ Some other researches that focus on to all households (including single adults) found that female earnings have a disequalizing effect on the distribution of household income (Shorrocks, 1982; Lerman and Yitzhaki, 1985).

⁴ With various structural transformations, economic priorities have been changed in Turkey. The priority given to the domestic production is decreased whereas the production that could compete in the international market is gained importance. In this respect, various income sources affect the overall inequality in a different way. For instance, Bayar et al (2009) show that the nontradable sectors (domestic production) has more contribution on overall inequality than the one in tradable sectors (the one that could compete with the international sectors)

⁵ There is a very limited study relating on their limited data set available before 2002. The only well-known study Gürsel et al. (2000) found that overall inequality in the Turkish economy from 1987 to 1994 slightly increased. They also use Shorrocks decomposition method to analyse the various income resources contribution on overall inequality for the years 1987 and 1994. They found that the entrepreneur income component has the most contribution on overall inequality.

⁶ According to the result of Gini coefficients of OECD member countries, Turkey is among the countries possessing worst income distribution record in the late 2000s. Her income distribution is only better than Chile and Mexico (OECD, 2011).

⁷ The male labor force participation is around %70s for the same years.

3. METHODOLOGY

In the empirical literature, there are inequality measures that have been used extensively. Before examining the income inequality measures and decomposing the overall income into its income components, it should be stressed that the choice of the right unit of analysis and the choice of an equivalent scale for the households are very important issues for these estimations.

Most empirical studies take households as the unit of analysis and measure inequality by using overall household disposable income⁸. In these studies, equal sharing of individuals within a household is assumed. This assumption is also valid for our analysis, too. In this respect, equivalent scale is used as a tool to assess individual equivalent disposable income measure⁹.

In this paper, we calculate the equivalent scale¹⁰ as follows:

$$N = S^e, \quad 0 \leq e \leq 1 \quad (1)$$

where S is the household size, e is the elasticity of the scale rate with respect to household size¹¹. The value of 0.5 is employed as elasticity of scale for obtaining the individual equivalent income in this paper¹². The disposable income for the individuals is calculated as follows:

$$Y_{ij} = \frac{R_i}{S^e} \quad (2)$$

where R_i and Y_{ij} is household total disposable income and individual equivalent disposable income (where i refers to households and j refers individuals).

⁸ Household disposable income is defined as the total income plus transfer income from the government or other institutions, plus interest income minus income taxes (TurkStat, 2011).

⁹ A large dataset for both the individual and household base are collected separately for Turkey, therefore the total income level of the household and individual could be calculated. As for sure, income inequality studies for a particular country have to be for the individuals, however at that point, it should be mentioned that, in a particular household, there may be some individuals who do not have any income who may benefit from the incomes of the other individuals in this households. Therefore, this reality has to be taken into account when estimating the income inequality measures.

¹⁰ In some other empirical studies, another equivalent scale is used. It is calculated as follows: $N = 1 + \alpha(s_A - 1) + \beta s_K$ where s_A and s_K are the number of adults and children in the household and α and β are their own constant parameters, respectively.

¹¹ Two extreme cases of elasticity of scale, when e equals to unity or zero, show that there is no economies of scale or economies of scale is perfect, respectively.

¹² In the literature the value of 0,5 and 0,55 is commonly used as a scale value. Atkinson (1995) uses 0.5 as a scale value of elasticity in the studies of the OECD and EU.

3.1. Inequality Measures

It is very important to choose a right measure for the income distribution. In empirical analysis, there exist many different measures¹³. One of the most well-known measures is the Gini coefficient which could be expressed as follows:

$$\text{Gini} = \frac{1}{2n^2\bar{y}} \left[\sum_{i=1}^n \sum_{j=1}^n |y_i - y_j| \right] \quad (3)$$

where n is the number of individuals (equivalent households) in the sample, y_i and y_j are the income of individuals (equivalent households) $i \in (1, 2, 3, \dots, n)$ and \bar{y} is the arithmetic mean income^{14,15}.

The other measure which also used widely in the literature is Generalised Entropy (I_α) class measure. The general formula of the members of generalised entropy class of measures is as follows:

$$I_\alpha = \frac{1}{\alpha(1-\alpha)} \left[\frac{1}{n} \sum_{i=1}^n \left(\frac{y_i}{\bar{y}} \right)^\alpha - 1 \right] \quad (4)$$

where the parameter α represents the weight given to distances between incomes at different parts of the income distribution, and it can take any real value among 0, 1 and 2 in practice^{16,17}.

3.2. Decomposing by Income Source: Shorrocks Decomposition Method

Shorrocks (1982) provides an exact decomposition of inequality of total income into inequality contributions from each of the income components in his paper. He proposed a decomposition rule which is applicable to all kinds of inequality measures.

Shorrocks (1982) shows that there is a unique way of decomposing income inequality where the contribution of each k factor to overall inequality s_k is expressed as follows¹⁸:

¹³ see Litchfield, 1999.

¹⁴ Although Gini coefficient is widely used in the literature, it is not a robust measure as it is very sensitive to income transfers among middle income groups. Besides, any comparison basing on the Gini index between two overlapping distributions is not reliable at all.

¹⁵ The Gini coefficient varies between “0” and “1”. If incomes in a population are distributed completely equally (unequally), the Gini index is equal to zero (one).

¹⁶ Lower values of α point out that the inequality measure is more sensible for the income transfers in the lower tail of the distribution, whereas for higher value of α , the inequality measure is to be more sensitive to changes in the upper tail (Litchfield, 1999).

¹⁷ If $\alpha=0$, the Generalised Entropy measure is known as Theil’s L index or the mean log deviation (MLD) measure, and it is written as $I_0 = (1/n) \sum_{i=1}^n \ln(\bar{y}/y_i)$. This inequality measure is used to give more weights to changes in the income of households located at the lower the lower tail. And then if $\alpha=1$, and the resulting measure is called Theil’s T index. Besides, if $\alpha=2$ this measure is called as one half the squared coefficient of variation, and is written as $I_2 = \frac{1}{2n\bar{y}^2} [\sum_{i=1}^n (y_i - \bar{y})^2]$. All these inequality measures are calculated for married households for Turkey. For further details, see the empirical analysis in Section 4.

$$s_{k=} = \text{cov}(Y_k, Y) / \sigma^2(Y) \quad (5)$$

Where Y_k is an income of individual in income category of k , $\text{cov}(Y_k, Y)$ is the covariance of factor income Y_k and total income Y , and $\sigma^2(Y)$ is the variance of total income.

In the present paper, we chose one inequality measure for the decomposition analysis. We assume that $\alpha=2$ in equation (4) so that we use *one half the squared coefficient of variation*, CV for the investigation. As this inequality measure gives proportionately more weight to gaps in the upper tail of distribution in measuring income inequality, we think it is appropriate to adapt this measure of inequality for Turkey where there are higher income gaps among households at the higher income group¹⁹.

4. DATA AND EMPIRICAL RESULTS

This section includes brief descriptive statistics and explores the impact of wives' earnings on the inequality of the married households. Since one of the aims of this paper is to investigate the impact of wives' earnings on the overall inequality for married households, we divide overall household income into wives' earnings, husbands' earnings and other earnings. Therefore, the basic inequality measures related to the different earnings will be given and then with the decomposition analyses the impact of the wives' earnings will be investigated.

The dataset comprises the information collected through a survey conducted within different parts of the country. In this research, we use the Survey of Income and Living Conditions conducted by the Turkish Statistical Institute (TurkStat) in 2006 and 2011. The survey covers a random sample of households in all seven geographical regions of Turkey. It is a multi-stage stratified cluster sample.

As mentioned before, besides the brief descriptive statistics, the effect of wives' earnings on the overall inequality for the married households will be examined. For this investigation, we suggest an intuitive counterfactual reference distribution in which wives' earnings are equal to zero. Therefore, the impact of wives' earnings could be measured as the difference between income inequality in the reference distribution and the actual one.

¹⁸ It is also pointed out that total inequality across observations could be expressed as the sum of inequality contributions from each of the income components and which also satisfied some other basic axioms.

¹⁹ The generalised entropy measure of income inequality described in (5) can commonly be employed by the empirical studies which examine the distributional problems in developing countries like Turkey.

The Shorrocks decomposition technique to test whether or not there is a statistically significant difference between the contributions of different income sources on overall income inequality for married households is employed.

Empirical Results

Table 1 reports the brief descriptive summary of households such as the sample size, mean annual income per household and some general measures of inequality.

According to the general descriptive summary statistics in Table 1, the sizes of households in the surveys seem to be stable, and vary from 10.000 and 15.000 whereas the sample size (individuals that are in the sample) varies from 42.000 to 56.000. These numbers make the estimations more comparable over time. The mean households' sizes for the two investigated years are around the value of four. The mean annual income per household appears to increase steadily over time and it is around 13.000 TL in 2006 and reaches around 23.000 TL in 2011. The mean equivalent annual incomes per household are around, respectively, 7.600 TL and 13.000 TL for the same years. When the whole economy is examined in order to compare the urban households over time, it is seen that urban households are higher than rural households for the investigated years. The percentage of the urban households varies from 60% to 66% from 2006 to 2011.

Table 1 - General Summary of the Samples

	2006	2011
Total		
Sample Size	42795	56438
Sample Household Size	10920	15024
Median Household Size	4	4
Mean Household size	3.91	3.76
Mean annual income per household	13884.3	23025
Mean equivalent annual income per hh	7635.3	12883.5
Urban Households (%)	60.6	66.6
Head-Count Ratio	18.5	15.2
Gini Coefficients	0.42	0.39

Source: Authors calculations from the data set of TurkStat for the year 2006 and 2011

The general inequality and poverty measures for the investigated years show that, there exists an improvement for the whole sample. The finding about the poverty is shown as the head-count ratio²⁰. The poverty of the whole sample slightly improved from the year 2006 to 2011. About 18.5% of the total population lived below the poverty line in

²⁰ This ratio is the simplest way of measuring poverty and shows the proportion of the population whose income level is lower than the predetermined poverty line. However, this index does not show the severity of poverty. Although the ratio improved over the years, the depth of poverty could worsen for the country.

the year 2006, whereas, for the year 2011 nearly 15% of the total population lived below the poverty line. The results of the income inequality measure of the Gini coefficient appear to show that the year 2006 has a more unequal income distribution than the year 2011. As observed from the table, income inequality for the overall economy decreases over time, which means that income is shared more equally in households (0.42 in 2006 and 0.39 in 2011) over time.

Table 2a and 2b reveal some main descriptive statistics for only married households for the years 2006 and 2011. It is observed from the Table 2a-2b that the sample size of the economy for married households is around 9,000 for the year 2006 and 12,000 for the year 2011.

The age differences of the husbands and wives show that wives are slightly younger than the husbands for both investigated years. However, both of them are mostly between 25 and 45 years old. The same is true for the employed wives' findings.

When we compare the married couples within a household by their education level, it is exposed that males have mainly graduated from primary and secondary school (51.20% and 11.51% for the years 2006; 47.27% and 12.04% for the year 2011, respectively) whereas females are illiterate or graduated from primary school (21.94% and 47.74% for the year 2006 and 20.90% and 42.18% for the year 2011, respectively). These facts reveal that, even if females are employed or not, their education level is lower than their husbands. For instance, the education level of the employed wives indicates that they are mainly graduated from primary school or illiterate for both investigated years. However, a striking point is that the level that graduated from university for employed females is higher than the whole sample of females (while 3.78% of females have graduated from university for the whole sample, the employed females have a percentage share of 8.38% for the year 2006; the same is true for the year 2011). This result points out that, for married couples are engaged to the labor market if they are graduated from primary school or university.

Table 2a -Descriptive Statistics for Married Households –The Year 2006

	2006					
	Frqency		Frqency		Frqency	
	MALE		FEMALE		Employed Female	
Sample Size	20576					
Household Size	9261					
Age Groups						
Age 15-19	21	0.21	232	2.22	45	1.56
Age 20-24	254	2.51	819	7.83	177	6.15
Age 25-29	954	9.43	1228	11.74	331	11.51
Age 30-34	1290	12.76	1420	13.57	436	15.16
Age 35-39	1274	12.60	1332	12.73	457	15.89
Age 40-44	1385	13.70	1335	12.76	432	15.02
Age 45-49	1182	11.69	1125	10.75	345	12.00
Age 50-54	1081	10.69	910	8.70	261	9.08
Age 55-59	810	8.01	752	7.19	184	6.40
Age 60-64	648	6.41	521	4.98	109	3.79
Age 65+	1214	12.00	789	7.54	99	3.44
Education						
Illiterate	617	6.10	2609	24.94	762	25.24
Literate	767	7.58	931	8.90	241	8.38
Primary School	5178	51.20	4995	47.74	1388	48.26
Secondary School	1164	11.51	583	5.57	95	3.30
High School	775	7.66	561	5.36	99	3.44
Technical High School	742	7.34	288	3.71	86	2.99
University	870	8.60	296	3.78	241	8.38
Employment Type						
Full-Time Worker	6996	69.18	2024	19.34		
Part-Time Worker	375	3.71	852	8.14		
Searching for a job	418	4.13	32	0.31		
Continuing his/her education	4	0.04	5	0.05		
Retired	1626	16.08	275	2.63		
Seasonal Worker	82	0.81	41	0.39		
Disabled	534	5.28	408	3.90		
Housekeeping	7	0.07	6791	64.90		
Other	71	0.70	35	0.33		
Social Security Coverage	3758	50.98			511	17.77
Labor Force Participation	7371	72.89			2876	27.49
Employment Status						
	7371				2876	
Paid	3376	45.80			546	18.98
Casual Employee	760	10.31			227	7.89
Employer	597	8.10			42	1.46
Self Employed	2400	32.56			437	15.19
Unpaid Family Worker	238	3.23			1624	56.47
Regional Areas						
Istanbul	2065	10.04				
West Marmara	1534	7.46				
Algerian	2659	12.92				
East Marmara	1625	7.90				
West Anatolia	1795	8.72				
Mediterranean	1986	9.65				
Central Anatolia	1500	7.29				
West Black Sea	1649	8.01				
East Black Sea	1261	6.13				
Northeast Anatolia	1483	7.21				
Middleeast Anatolia	1282	6.23				
Southeast Anatolia	1737	8.44				

Source: Authors calculations from the data set of TurkStat for the year 2006.

Table 2b -Descriptive Statistics for Married Households –The Year 2011

	2011							
	Frqncy		%		Frqncy		%	
	<i>MALE</i>		<i>FEMALE</i>		<i>Employed Female</i>			
Sample Size	27692							
Household Size	12487							
Age Groups								
Age 15-19	21	0.15	264	1.89	35	0.90		
Age 20-24	336	2.45	1061	7.59	246	6.31		
Age 25-29	1232	8.98	1692	12.11	470	12.06		
Age 30-34	1790	13.05	1902	13.61	610	15.66		
Age 35-39	1788	13.04	1840	13.17	633	16.25		
Age 40-44	1690	12.32	1569	11.23	559	14.35		
Age 45-49	1719	12.53	1549	11.08	473	12.14		
Age 50-54	1438	10.48	1270	9.09	336	8.62		
Age 55-59	1179	8.60	994	7.11	248	6.37		
Age 60-64	870	6.34	751	5.37	151	3.88		
Age 65+	1653	12.05	1084	7.76	135	3.47		
Education								
Illiterate	643	4.69	2921	20.90	743	19.07		
Literate	915	6.67	1449	10.37	329	8.44		
Primary School	6483	47.27	5895	42.18	1616	41.48		
Secondary School	1651	12.04	1193	8.54	244	6.26		
High School	1158	8.44	930	6.65	206	5.29		
Technical High School	1232	8.98	673	4.82	186	4.77		
University	1634	11.91	915	6.55	572	14.68		
Employment Type								
Full-Time Worker	9672	70.52	2781	19.90				
Part-Time Worker	446	3.25	1114	7.97				
Searching for a job	583	4.25	97	0.69				
Continuing his/her education	4	0.03	32	0.23				
Retired	2380	17.35	476	3.41				
Seasonal Worker								
Disabled	567	4.13	602	4.31				
Housekeeping		0.00	8838	63.24				
Other	64	0.47	36	0.26				
Social Security Coverage	6230	61.48			1200	30.80		
Labor Force Participation	10133	73.88			3896	26.12		
Employment Status	10133				3896			
Paid	5292	52.23			1292	33.16		
Casual Employee	1018	10.05			221	5.67		
Employer	610	6.02			38	0.98		
Self Employed	2914	28.76			411	10.55		
Unpaid Family Worker	299	2.95			1934	49.64		
Regional Areas								
Istanbul	2982	10.77						
West Marmara	1786	6.45						
Algerian	3701	13.36						
East Marmara	2168	7.83						
West Anatolia	2472	8.93						
Mediterranean	2832	10.23						
Central Anatolia	1882	6.80						
West Black Sea	2119	7.65						
East Black Sea	1119	4.04						
Northeast Anatolia	1901	6.86						
Middleeast Anatolia	2165	7.82						
Southeast Anatolia	2565	9.26						

Source: Authors calculations from the data set of TurkStat for the year 2011.

Besides, the results reveal that the labor force participation of wives is very low compared to the husbands. While wives' participation is only 27.5% and 26.1% for the years 2006 and 2011, respectively, husbands' participation rate is 72.90% and 73.88% for the same years²¹. Actually, it is seen that the labor force participation rate for wives increased through the years. It will be an interesting point whether the increase in the participation rate will affect inequality positively or not. Therefore, further analysis is done about this issue in the present paper²².

The situation of low labor force participation rate of women leads to a fact of limited accessibility for females to work in Turkey. Women mostly have the responsibilities of household work rather than work at a job. This statement could be supported with findings about employment type in Table 2a-2b. When we examine the wives' employment type closely, almost 65% of all married females define themselves as housekeepers. Only 20% of them are working in a full time job for the investigated years, whereas nearly 70% of males have a full time job.

Another striking finding is about the employment status of married couples. When we examine the employment status of employed wives, unfortunately half of the whole employed females are working as unpaid family workers (56.47% and 49.64% for the investigated years, respectively). Only 20% of wives work as paid workers for the year 2006, however this ratio improved over the years and reached 33.16% in year 2011.

In the light of these improvements in the employment status and working type of wives in the labor market, it could be said that wives are getting more attached to the labor market throughout the investigated years.

Social security coverage of wives is also very low compared to husbands. The ratio of the security coverage is only 17.7% and 30.80% for wives, whereas it is 50.98% and 61.48% for husbands for the investigated years, respectively. Actually, mainly the paid workers have social security coverage in Turkey and thus, they could reach more health care. However, unpaid family workers are not able to get their needs from health care services. Therefore, these results indicate that wives could not reach sufficient social and health care services.

When different regions are explored more closely, it is apparent that differences in the level of development in different regions cause marital status differences amongst the

²¹ This situation is an evidence of limited accessibility for females to work in Turkey. Especially for the eastern part of Turkey, women mostly are housewives rather than working at a particular job. The low ratio of female workers basically results from getting limited education and discriminatory treatments in favor of males. Especially, families do not let their girls reach sufficient education because of their gender, which is mainly caused from some religious belief and uneducated.

²² For the detailed investigation for this question, please see the table 3 and 4.

individuals²³. The Algerian and İstanbul region have the highest ratio of married couples (12.92% and 10.01%; 13.46% and 10.77% for the investigated years, respectively). These facts expose that individuals in the eastern part of Turkey are more likely to choose legal marriage.

Counterfactual Distribution

Table 3 exhibits the findings of the counterfactual distribution of married households. As mentioned before, at first, the inequality within the household (with wives' earnings) are investigated and then, a hypothetical distribution is generated by equaling wives' earnings to zero.

Table 3 – Inequality Measures within The Households With and Without Wives' Earnings

	2006	2011
<i>Inequality within the household WITH wives' earnings</i>		
Coefficient of Variation	0.988	0.984
Gini Coefficient	0.418	0.394
Theil Index	0.319	0.292
Mean Log Deviation	0.306	0.266
Half Coef. of Variation Squared	0.488	0.484
<i>Inequality within the household WITHOUT wives' earnings</i>		
Coefficient of Variation	0.974	0.963
Gini Coefficient	0.409	0.383
Theil Index	0.307	0.279
Mean Log Deviation	0.296	0.260
Half Coef. of Variation Squared	0.475	0.464

Five different inequality measures are calculated to compare the inequality within the married couples with and without wives' earnings. The first block of Table 3 shows the inequality of the married households with wives' earnings. The Gini coefficient is 0.418 and 0.394 for the years 2006 and 2011, respectively. It is apparent that there is a slight improvement over time. The same slight improvement is also seen from the other inequality measures except the coefficient of variation. The coefficient of variation measure is 0.988 and 0.984 for the same years. This measure is the more robust inequality measure compared to the others for Turkey, considering that it gives proportionately more weight to gaps in the upper tail of the distribution²⁴. This finding exposes the fact that there is not a striking improvement over time.

²³ According to SR1 level Anatolian part of Turkey consists of the following regions: CentralAnatolia; West Anatolia; Middleeast Anatolia; Southeast Anatolia and Northeastast Anatolia.

²⁴ As mentioned previously, Turkish economy represent an income distribution where higher income gaps among households at the higher income group. A measure which gives more weight to gaps in the upper tail of distribution in measuring inequality will be the most appropriate one.

When we compare the findings of the inequality of married couples with wives' earnings and without wives' earnings, it is clear that for all inequality measures, inequality is lower by setting wives' earnings equal to zero. This means that wives' earnings deteriorate the income distribution of married couples. The Gini coefficient measure and coefficient of variation are 0.409 and 0.974 for the year 2006; 0.383 and 0.963 for the year 2011. This finding maybe is not consistent with the theoretical expectations, but it actually fits with our expectations for Turkish economy. Because when we examine females' attachment to the labor market, (as seen from Table 2a and 2b), mostly married women do not attach to the labor market unless they have a high education level (such as university degree) or they have the lowest education level (such as illiterate). Besides, they mostly work as unpaid family workers. As the dispersion of the income of the employed women is wide, this gap makes the income inequality of the women high²⁵.

Decomposition of Income Inequality

We investigate the impact that various income sources had on overall income inequality for married couples in the years 2006 and 2011. We employ the Shorrocks decomposition method in order to obtain the contribution of each of the income components to overall income inequality. As one of the aims of this paper is to determine whether or not the contribution of the wives' earnings to the overall inequality of married households is significantly different than husbands', we divide the whole households into three different income sources; namely wives' earnings, husbands' earnings and all other earnings (the other individuals' earnings within the household and the other type of income earnings such as transfer payments)

²⁵ This fact is supported with the findings of the decomposition of inequality within the married households. The wives' earnings have the highest inequality within the household in contrast with their low share in total income. For further evidence please see Page 12.

Table 4 - Effects of Different Income Sources to overall Inequality of Married Households

Income Sources	2006	2011
<i>Factor shares in total income (1) (%)</i>		
Husbands' Earnings	62.05	60.70
Wives' Earnings	7.30	10.03
All Other Earnings	30.65	29.27
<i>Proportionate contribution of factor incomes to total inequality (2) (%)</i>		
Husbands' Earnings	61.31	59.85
Wives' Earnings	11.37	15.80
All Other Earnings	27.32	24.35
<i>Relative inequality indicator [(2)/(1)]</i>		
Husbands' Earnings	0.99	1.01
Wives' Earnings	1.56	0.63
All Other Earnings	0.89	1.20

Source: Authors calculations from the data set of TurkStat for the year 2006 and 2011.

Table 4 represents the impact of the different income sources on overall income inequality for married households. Columns of the table report the findings for each year. The first block of the table presents the proportionate contribution of each of the income sources on overall income inequality, based on individual equivalent disposable income. The second block of the table reveals the results of the percentage shares of each income source on total income. At last, the numbers at the third block of the table are obtained by dividing the proportionate contribution that income sources had on overall income to factor shares in total income. These values are named as relative inequality indicators.

The first column of Table 4 shows that husbands' earnings have the largest share of total income generated in the married households of Turkey. Its share is 62.05% in 2006 and decreased to 60.70% in 2011. The second largest share of income comes from all other earnings, and its share is around 30% for both years. The wives' earnings have the smallest share of the total income. It is only responsible for 7.30% and 10.03% of the total income of married couples. These findings explore the fact of wives' not engaging to the labor market.

The second column of Table 4 exhibits that the contribution of husbands' earnings to overall inequality within the household is the biggest one (61.31% and 59.85% for the years 2006 and 2011). Despite its smallest share in total, it is surprising that the wives' earnings were accounted 11.37% and 15.80% of total inequality for the same years, respectively. Besides, all the other earnings have contributions of 27.32% and 24.35% to overall inequality.

The third column of the table is obtained by dividing the contribution of each income group into inequality given in panel (b) with the share of the same income group in total. With this implementation, the numbers expose the relative importance of each income source in the total income. Therefore, any value above unity is considered a significant contribution to inequality, whereas values below are treated as unimportant in contributing to inequality. When the findings are examined closely, the relative inequality indicator of wives' earnings is higher than unity (1.56) for the year 2006. This points out that, despite its small share of total income, wives' earnings generate more inequality. However, the relative inequality indicator of wives' earnings is lower than unity (0.63) for the year 2011, which indicates that its relative importance appears to decrease over time. The other two income sources exhibit an opposite situation. Their relative importance increased from 2006 to 2011.

Table 5: Within Inequality Measures of Different Income Sources

Income sources	2006	2011
	<i>Half Coefficient of Variation Squared</i>	
Husbands' Earnings	0.609	0.630
Wives' Earnings	0.806	0.887
All Other Earnings	0.870	0.875
General	0.491	0.487
	<i>Gini coefficient</i>	
Husbands' Earnings	0.444	0.426
Wives' Earnings	0.552	0.563
All Other Earnings	0.538	0.509
General	0.419	0.396

Source: Authors calculations from the data set of TurkStat for the year 2006 and 2011.

Another supportive evidence could be observed from the Table 5, which presents the within Gini coefficients and half coefficient of variation squared measures of different income sources. The highest inequality measure is from wives' earnings for both investigated years (0.552 and 0.563 for Gini coefficient; 0.806 and 0.887 for Half Coefficient of Variation Squared measure for the years 2006 and 2011, respectively). Besides, husbands' earnings appear to be more equally distributed compared to wives' earnings.

5. CONCLUSION

The main motivation of the present paper is to reveal the role of wives' earnings on the inequality of married couples. In this respect, wives' earnings are investigated with different aspects. First, brief statistical tables are given in order to reveal human capital

variables of the women in Turkey and to see their attachment to the labor market. After that, a counterfactual distribution is obtained by setting wives' earnings to zero. This empirical analysis is done to show whether or not wives' earnings has an equalizing impact on the inequality of the married households. At last, decomposition by income sources is employed to test the wives' earnings contribution to the overall inequality of married households.

The simple statistical findings point out that the labor force participation of females is very low in Turkey. Especially for married couples, women's attachment rate to the labor market is very low. They mainly work as paid workers or unpaid family workers. Therefore, this situation leads a high dispersion of their within overall income. Besides, the findings of the empirical analysis of Turkey reveals that wives' earnings have the highest inequality compared to husbands' earnings and the all other income sources.

It is also apparent from the findings that the households without wives' earnings have less within inequality compared to the ones with wives' earnings. These results indicate that wives' earnings have non-equalizing impact on married households. In other words, wives' earnings cause a deterioration of the income distribution of married households.

This paper has also presented an examination of the impact that the contribution of various income sources have on the overall inequality of married households for Turkey over time. In order to investigate this more deeply, Shorrocks decomposition method is employed for this investigation. It is clear from the results that, for married households in Turkey, wives' earnings have less contribution to overall inequality than the husbands' earnings. However, if the share in total income is taken into account, the relative inequality indicator of the income sources point out that, wives' earnings contribution to overall inequality beyond its share in total income.

REFERENCES

- Aktaş, A. and Uysal G.** (2012). "Explaining the Gender Wage Gap in Turkey Using the Wage Structure Survey" *Betam Working Paper Series*, No: 005.
- Atkinson, A.B.** (1995). *Incomes and the Welfare State*, Cambridge University Press, Cambridge.
- Bayar, A. A., Günçavdı, Ö. and Selim, R.** (2009). "Inequality Effects of Sectoral Distribution: Evidence From Turkey" International Conference on Inequalities And Development In The Mediterranean Countries, Galatasaray University, Istanbul, Turkey.
- Bound, J. and Johnson. G.** (1995). "What Are the Causes of Rising Wage Inequality in the United States?", *Federal Reserve Bank of New York Economic Policy Review* Vol. 1, No:1, pp.9-17.
- Blackburn, M., and Bloom, D.** (1987) "Earnings and Income Inequality in the United States." *Population and Development Review*, Vol. 13, pp. 575–609.
- Cancian, M., Danziger, S. and P. Gottschalk,** (1993). "The Changing Contributions of Men and Women to the Level and Distribution of Family Income, 1968–1988," in Dimitri B. Papdimitriou and Edward N. Wolff (eds.), *Poverty and Prosperity at the Close of the Twentieth Century* (NewYork: St. Martin's Press, 1993a), pp. 317–353.
- Cancian, M. and Reed, D.** (1998) "Assessing the Effects of Wives' Earnings on Family Income Inequality." *Review of Economics and Statistics*, Vol. 80, pp. 73_9.
- Cancian, M. and Reed, D.** (1999), "The Impact of Wives' Earnings on Income Inequality: Issues and Estimates." *Demography*, Vol 36, No:2, pp: 173-184
- Cudeville, E. and Gurbuzer, L. Y.** (2007). "Gender Wage Discrimination in the Turkish labor market." Working Paper
- Cudeville, E. and Gurbuzer, L. Y.** (2010). "Gender Wage Discrimination in the Turkish Labor Market: Can Turkey be Part of Europe?" *Comparative Economic Studies*, Vol. 52, No:3, pp. 429-463.
- Danziger, S.** (1980). "Do Working Wives Increase Family Income Inequality?", *Journal of Human Resource*, Vol. 15, pp. 444–451.
- Dayioğlu, M. and Kasnaoğlu, Z.** (1997). "Kentsel Kesimde Kadın ve Erkeklerin İş gücüne Katılımları ve Kazanç Farklılıkları." *METU Development Studies*, Vol. 24, No:3, pp. 329-361.
- Dayioğlu, M. and Tunalı, I.** (2004). "Falling Behind While Catching Up: Changes in the Female-Male Wage Differential in Urban Turkey, 1988 to 1994." Unpublished working paper.
- Eraslan, V.** (2012). "Türkiye İşgücü Piyasasında Ücret Seviyesinde Cinsiyet Ayrımcılığı: Blinder-Oaxaca Ayrıştırma Yöntemi." *İktisat Fakültesi Mecmuası*, Vol. 62, No: 1, pp. 231-248.
- Gottschalk, P. and Danziger, S.** (2005) "Inequality of Wage Rates, Earnings and Family Income in the United States." *Review of Income and Wealth*, Vol. 51, pp. 231-254.
- Gürler Ö. K. and Üçdoğruk, Ş.** (2007). "Türkiye'de Cinsiyete Göre Gelir Farklılığının Ayrıştırma Yöntemiyle Uygulanması." *Journal of Yasar University*, Vol. 2, No: 6, pp. 571-589.

Gürsel, S., Levent, H., Selim, R. and Sarıca, Ö. (2000). "Türkiye'de Bireysel Gelir Dağılımı ve Yoksulluk: Avrupa Birliği ile Karşılaştırma." *TÜSİAD Working Paper*, No: TÜSİAD-T/2000-12/295, Ankara.

Hisarcıklılar, M. and Ercan, H. (2005). "Gender Based Wage Differentials in Turkey." *Bilgi*, Vol. 10, No: 1, pp. 45-62.

İlkkaracan, İ. and Selim, R. (2007). "The Gender Wage Gap in the Turkish Labor Market." *Labour*, Vol. 21, No: 3, pp. 563-593.

Kabasakal, H., Boyacıgiller, N., and Erden, D. (1994). "Organisational Characteristics as Correlates of Women on in Middle and Top Management." *Bogazici Journal*, Vol. 8, No: 1-2, pp. 45-62.

Katz, L. and Murphy. K. (1992). "Changes in Relative Wages, 1963- 1987: Supply and Demand Factors." *Quarterly Journal of Economics*, Vol.5, pp. 35-78.

Layard, R. and Zabalza, A. (1979). "Family Income Distribution: Explanation and Policy Evaluation." *Journal of Political Economy*, Vol. 87, No. 5, Part 2, pp. 133-S161.

Lerman, R. I. and Yitzhaki, S. (1985). "Income Inequality Effects by Income Source: A New Approach and Applications to the United States." *The Review of Economics and Statistics*, Vol. 67, No. 1, pp. 151-156.

Levy, F. and Murnane. R. (1992). "U.S. Earnings Levels and Earnings Inequality: A Review of Recent Trends and Proposed Explanations", *Journal of Economic Literature* Vol. 30, pp. 1333-1381.

Litchfield, J. A. (1999). *Inequality: Methods and Tools*. The World Bank, Washington, D.C. <http://www.worldbank.org/poverty/inequal/index.htm>.

Mincer, J. (1980). "Schooling, Experience and Earnings" (New York: NBER, 1974).

Mercan, M. A. (2011). "Marriage Premium in Turkey." *MPRA Paper Series*, No: 3326.

OECD. (2011). *Society at a Glance 2011*, OECD Books.

Özcan, Y. Z. and Özcan, K. M. (2003). "Measuring Poverty and Inequality in Turkey." *Topics in Middle Eastern and North African Economies*, electronic journal, Vol. 5, Middle East Economic Association and Loyola University Chicago.

Shorrocks, A. F. (1982). "Inequality Decomposition by Factor Components." *Econometrica*, Vol. 50, pp. 193-212.

Shorrocks, A. F. (1983). "The Impact of Income Components on the Distribution of Family Incomes." *Quarterly Journal of Economics*, Vol. 98, pp. 311-326.

Smith, J. P., (1979). "The Distribution of Family Income." *Journal of Political Economy*, Vol. 87, pp. 163-S192

Tansel, A. (2001). "Wage Earners, Self Employed and Gender in the Informal Sector In Turkey." *Economic Research Forum for the Arab Countries, Iran and Turkey Working Paper Series*, No: 0102.

TurkStat (2011). Income and Living Conditions Survey.