THE IMPORTANCE OF WOMEN'S EMPLOYMENT IN TURKEY

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ABSTRACT

This study examined the contribution made to household income levels by the rate of women employment in Turkey in the 2000s. The incomes earned by women and men through working in every society are included in the gross domestic product of that country without making any discrimination. Therefore, considering the fact that the female population is equal to almost half of the population of countries, or even more, the national income levels of countries where women are not included in the business world are consequently lower compared to those countries where women are employed. Considering that women are employed in almost all sectors today, income distribution and the level of justice in this distribution will also be high in a society where women are employed. Thanks to increasing women's employment in our country, as in the world, income levels in households display a change in a positive direction. As we have demonstrated in our study, it has been determined according to Gini coefficient that an increase in women's employment rate in Turkey by 1% can reduce an injustice that may occur in the distribution of income between households in our country by 2.80%.

Keywords: Women's Employment, Income Distribution, Turkey.

Jel Codes: C22, D31, O10.

1. INTRODUCTION

Securing the justice in distribution of income, enhancing economic growth and assuring stability in economy are involved in the significant aims of a government. In theory, although the information concerning the distribution of income of the countries can be obtained via lorenz curve and gini coefficient, factors such as the socio-economic factors of countries, the living conditions of the individuals, employment policies, the differences between sexes inside the society and the roles forced by these differences have importance in terms of this subject. The leading factor among them is employment policy and there is an unbalanced distribution to the detriment of women in all countries in the world in terms of employment policy.

Industrial Revolution was the era when women got an active start in business by getting free of traditional patterns in the world. The women's workforce, which came to nothing in the rural area in the frame of technological inventions, started to work under the harsh conditions in the labor-market after migrating to cities. During the years of WWII, most of the male population was sent to war and the income level of the families decreased, as a consequence, the number of women engaging with the work life increased more and more. After these years, while the women's employment rate in the countries such as England and France increased because of increasing education level among women and including women more inside the laws, no data belonging to women's employment rate can be found in the countries such as Iran and Saudi Arabia where less or no regulations about women were made. When we consider Turkey at that time, although the women's employment was not as much as it is in the developed countries, it was not as pessimistic as it was in aforementioned countries.

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It is known that naturally the half of the population of the world and of each country consist of women. The gross domestic product of the country in which there is no women's employment will be lower when compared to the country in which the women are employed. When it is considered that women work in all kinds of jobs such as agriculture and services today, the justice in income distribution can be higher in the societies where women also work. This study has been prepared in order to measure the effect of women's employment in Turkey on justice in distribution of income for the very reason.

2. LITERATURE REVIEW

Gustafsson and Jacobsson (1985) drew attention to the decreasing wage difference for sexes in Switzerland while explaining the increasing women involvement rate.

Psacharopoulos and Tzannatos (1993) analyzed women's workforce involvement in 15 Latin-American countries. They found an increase in involvement inspite of negative economic conditions.

Granger, Stanworth and Stanworth (1995) emphasized that women become entreprenuers because of financial difficulties; and that flexible employment policies and reduction in the number of laborers force women to become owners of small businesses.

Lim (2000) studied the different effect of East Asian economic crisis on women's employment when compared to male employment in terms of the effects of cyclical fluctuations on women's employment.

Schank, Schnabel and Stephani (2009) showed that younger and more qualified individuals have a higher rate of opportunity to carry their economic situtations to high-income groups; however, women are less likely to advance to high-income groups when compared to males.

In the study which Schmid (2010) carried out for 24 European Union (EU) member countries, it is argued that women prefer non-standard employment types (part-time, free-lance etc.) in order to benefit from flexible working hours and; therefore, the rate of women's workforce involvement will increase in case non-standard job opportunities increase.

Bachmann, Bechara and Schaffnerr (2012) showed that the likelihood of men to get to high-income groups is much bigger than women, that the downward wage movement is higher in the families with many children and in the families where there are many old people, and that the likelihood of downward wage movement inside distribution of income reduces with age.

O'Sullivan (2012) indicated with the results obtained from the study examining Ireland that the increases in the rate of involvement of women in the workforce lead to a positive advancement for the society in terms of the attitude towards the working women.

3. WOMEN'S EMPLOYMENT IN TURKEY AND COMPARISON TO EU & USA

In Turkey, the beginning of women's workforce was in the field of textile industry where women workforce was densely used in the early 19th century. Women had to be directed to the work area which became vacant during WWI and Turkish War of Independence. 1950s are the years when industrilization in Turkish economy and migration from rural areas to urban areas accelareted. Thus, the women's employment in Turkey

mainly began in 1950s. However, women were employed in the jobs based on quantity and cheapness of workforce which did not generally require vocational education. Also there was an enhancement in the work life of women of the member countries of European Union during WWII. Especially, due to the reasons such as patriotism and men's involvement in the war, the women took place in the work life in 1950s in Europe. 5.4%-6.3% of the women, who had turned back their homes when the war ended, made a come-back to labor-markets later (Goldin, 1991: 740-745). The rapid technological enhancements in Europe, the increase in the level of education of the women, and service sector's superseding the structure in which agriculture and industry once dominated in the economy caused increase in women's employment in Europe.

After 1950s when the women's involvement in work life began, the technological enhancement of Turkey was weaker than the technological enhancements in Europe. Although the increase in educational level of European women of that period was higher than the women in Turkey, there was a significant increase in educational level of women in Turkey, as well. However, some of the educated women in Turkey didn't continue to work, like the women in Europe determinedly did, when they got married and had children because of the traditional structure in Turkey. Besides, especially agriculture in Turkish economy did not give its place to service industry as readily as it did in Europe. In contrast, agriculture sector has an important place in Turkey and the women employed in agriculture sector have been unpaid family workers. For example, in the frame of 2008 data which is a closer date to nowadays, although women in rural areas seem to participate more in workforce with 32.9% when compared to the women in urban areas with a percentage of 20.8%, 84 women out of 100 in rural area work in agricultural sector and 77% of these women work as unpaid family workers. In addition to that, women's wish to find jobs in urban areas when the agricultural sector dies and not being able to find jobs deal major blow in women's employment. Another important problem for women's employment in Turkey except for being an unpaid family worker is unregistered employment of women. It is known that although they are registered as "unemployed" in the statistics, many women are engaged in point lace, sewing, casual labors, and knitting works. As a result, these women create an off-the-books situation both for women's employment and for the total employment.

Table 1: EU-Turkey Women's Employment Rate (%)

	1994	**2004**	**2014**
EU	49.4	59.3	63.5
Turkey	30.4	21.0	31.6

Source: OECD, Eurostat

The women's employment rates in EU and Turkey for the years 1994, 2004 and 2014 are given in Table 1. As it can be seen in the table, while the women's employment rate in Europe increases on a regular basis in a 20-year process, the subject rate in Turkey does not show a regular increase. Also, while the women's employment rate difference between EU and Turkey in 1994 was 19.4%, this rate difference increased to 31.9% in 2014 which doubled the women's employment of EU when compared to the women's employment of Turkey. These data can be accepted as an indicator of the aforementioned causes related to subject matter.

While the situation in European Union and Turkey are as they've been shown, the United States of America can be shown as one of the countries where women's employment increases on a regular basis.

Table 2: Women's Employment Rate in USA (%)

	1950	**1960**	**1970**	**1980**	**1990**	**1998**	**2015**
USA Women's Employment Rate	33.9	37.7	43.3	51.5	57.5	59.8	61.9

Source: (Dünya Gazetesi [Dünya Magazine], 2015), "Labor force participation: 75 years of change, 1950–98 and 1998–2025", **Labor Force Participation,** 1999, United States

As it can be seen from the Table 2, the women's employment of USA resembles the women's employment of EU. While data for women's employment can be found for EU, USA and Turkey, no data concerning women's employment can be found Saudi Arabia. Similarly, this rate is rather low in the countries such as Qatar, Oman and Iran.

It is known that naturally the half of the population of the world and of each country consist of women. The gross domestic product of the country in which there is no women employment will be lower when compared to the country in which the women are employed. When it is considered that women work in all kinds of jobs such as agriculture and services today, the justice in income distribution can be higher in the societies where women also work. For example, in case women and men participate equally in work life in terms of rate, it is indicated that there will be a come-back of 5% economic contribution to USA's GDP. If the number of working women and men were equal in the United Arab Emirates, the contribution to the economy would be calculated to be 12% of its economy and the same situation would result in 34% for Egypt. Qatar, Oman and Iran are at the very top of the list of the countries which suffer from the greatest economic loss with the 30% of their GDPs (Dünya Newspaper, article dated 07.03.2015). At the same time, the countries such as Qatar, Oman and Saudi Arabia are among the countries where the income inequality is at the highest degree.

4. METHODOLOGY

4.1. The Concept of Stationarity in Time Series and Unit Root Tests

Before analyzing the causal relations among variables, the order of stationarity of the series must be determined. In the studies made with non-stationary time series, spurious regressions may occur. Although high R2 and significant t statistics value can be found in spurious regressions, the parameter predictions are not economically significant. In that case, the stationarity of the time series to be used requires to be tested with the aim of avoiding spurious regressions in the studies made with time series analysis (Ümit, 2007: 160).

$$X_t = c_o + j.X_{t-1} + e_t \quad (1)$$

In the equation (1), if |j|<l, Xt series is stationary; if |j| =1, Xt series is non-stationary. It is favorable for autoregressive coefficient "j" to be equal to one or to be smaller than 1 in many economic time series. If j>l, it is not economically significant. In the autoregressive equation #(1), j=1 is know as "the process with stationary differences" and most of the economic time series are observed as the processes with stationary differences. In such a process, when j=1, Xt series is said to be integrated in the first order (Utkulu, 1993: 309). In the equation (1), Dickey and Fuller (1987) suggested an easy and favorable method for the test of the order of integration of Xt and it is know as Dickey Fuller (DF) test.

Although DF test is an important step in measuring the integration order, it doesn't take autocorrelation in the error terms in consideration. If the error term et is with

autocorrelation, DF (Dickey-Fuller) test becomes void. As a solution for that problem, Dickey and Fuller suggested that lagged values of the dependent variable must be added to the model as explanatory variable and that the autocorrelation will be removed this way. This test, which is named as Augmented Dickey-Fuller (ADF), is considered as the most effective test to determine the integration order among the other test that are used to determine the integration order and is widely used in practice. (Charemza, Deadmen, 1999: 103-104).

Various methods came in view in order to overcome some deficiencies of Dickey and Fuller test. One of them is Phillips Perron (PP) test which is an alternative unit root test. Dickey and Fuller ignore the effect of sturctural fractions on autoregressive (AR) process. In order to resolve this problem, Perron developed his own test in 1989 and aimed to prevent DF test from accepting the wrong hypothesis which depends on fractions. In addition to that, the hypothesis of Dickey and Fuller stating that error terms are statistically independent and that they have constant variance was expanded by Phillips-Perron. They added the effects of error term's standard error's being different into the process. For this purpose, they developed a nonparametric unit root test. As a result, no autocorrelation between error terms is required in this test (Kır, 2011: 64).

The regression used in Phillips-Perron unit root test is as follows (Enders, 1998:239).

$$Y_t = \beta_0 + \beta_1 Y_{t-1} + \beta_2 \left(T - \frac{N}{2}\right) + \mu_t \qquad (2)$$

In the equation (2); "N" is the number of observation and “μ” is error term. In this test, Hypothesis zero “ β_1 = 1” is being tested. In order to be able to accept or reject these hypotheses, the test statistics of Phillips-Perron unit root test is compared to the critical table values used for Augmented Dickey-Fuller (ADF) unit root test, and according to the results, hypothesis zero is either accepted or rejected. Hereunder, the series are decided to be stationary or not (Altunç, 2008: 118).

In this study, Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests have been used in determining the stationarity of the series.

4.2. Causality Analysis

Granger suggests a commonly used causality analysis in the economics literature in order to reveal the direction of causality between analyzed variables. Granger brought causality and exogeneity concepts forward. Hereunder, if adding information about variable X into model contributes to the prediction of variable Y, variable X is the cause of variable Y. Granger causality analysis requires the regression prediction built on each endogenous variable's own and the other variable's lagged value (Granger, 1969: 553-560).

In this study, Granger Causality Analysis has been used in searching the causality relationship between GDP and investments. This analysis is made by using the following two equations.

$$Y_t = \alpha_0 + \sum_{i=1}^{k1} \alpha_i Y_{t-i} + \sum_{i=1}^{k2} \beta_i X_{t-i} + u_t \quad (3)$$

$$X_t = X_0 + \sum_{i=1}^{k3} \chi_i X_{t-i} + \sum_{i=1}^{k4} \delta_i Y_{t-i} + v_t \quad (4)$$

Granger causality analysis is made through testing if coefficients of the lagged values of the indpendent variable which is infront of the error term in the model above is equal to zero as a group or not. If the βi coefficients in the equation (3) are found different from zero in a certain significancy level, it is concluded that X is the cause of Y. Similarly, if the δi coefficients in the equation (4) are found different from zero in a certain significancy level, it is concluded that Y is the cause of X. In this case, there is a mutual causality relationship between Y and X. If βi coefficients in the equation (3) are only different from zero, there is a unidirectional causality from X to Y; and if δi coefficients in the equation (4) are only different from zero there is a unidirectional causality from Y to X. If both βi and δi coefficients are not different from zero, then, there isn't any causality relationship between these two variables. In the original Granger causality test, k1, k2, k3, k4 represent lagging lengths and, ut and vt represents error terms (Işığıçok, 1994: 93).

4.3. Regression and Correlation Analysis

Regression and correlation methods are used in analyzing the relationship among two or more variables. There are two types of regression analysis; the relationships between two variables are known as simple regression analysis and the relationships among more than two variables are known as multiple regression analysis. Generally, the core of regression and correlation analysis is based on determining and measuring form, direction and degree of the relationships among two or more variables. While the form of the relationships between variables are determined numerically in regression, the degree of these relationships are revealed in correlation.

The linear relationship between two variables -one as dependent and one as independent- can be formulated as follows:

$$Y= \alpha+ \beta X+ \varepsilon \qquad (5)$$

In the equation (5), Y is dependent variable, X is independent variable and ε is error term. In order to decide which variable will represent dependent variable and which variable will represent the independent variable, it is required to determine which one affects the other. This can only occur by having information about observations. The method which is generally used in obtaining regression equation is Least Squares Method. The core of Least Squares Method is based on the minimum totals of the squares of the deviations of value Y from regression line. In that sense, Least Squares Method regression line expresses the same result with aritmetic mean (Çakıcı et.al. 2003: 139-167).

On the other hand, correlation coefficient is a measure indicating the degree of the relationship between variables. If its value is between 0 and 1, the correlation is positive; if its value is between 0 and -1, the correlation is negative. When the correlation coefficient is 0, there is no relation between variables and when the correlation is 1 or -1, there is a complete correlation. If the correlation coefficient is between 0 and 0.49, the relationship is weak; if it is between 0.5 and 0.74, the relationship is average and if it is between 0.75 and 1, the relationship is strong. The mark of the correlation coefficient depends on the mark of the β coefficient in the regression equation. If β is positive, the correlation is positive; and if β is negative, the correlation is negative (Akkaya and Pazarlıoğlu, 1998: 85-86).

5. RESULTS

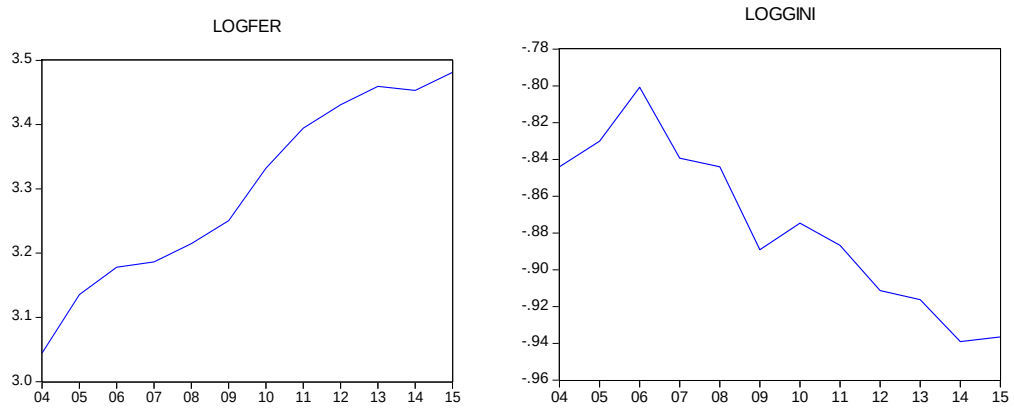
5.1. Data Set and Variables

In this study, the relationship between women's employment rate 2004-2015 in Turkey and GINI coefficient was analyzed with time series analysis and the numerical results were evaluated. First of all, the logarithms of the values were taken in order to ignore the small fluctuations that time series may show. Later, Augmented Dickey Fuller (ADF) test and Phillips Peron (PP) test were made in order to determine if the values related to two variables are stationary or not. After that, Granger Causality test was applied in order to confirm the causality relationship between variables. Finally, Regression and Correlation Analysis were applied in order to determine the direction and degree of the relationship.

In the study, in order to find if the rise in women's employment in Turkey between 2004 and 2015 improves GINI coefficient or not, annual women's employment rate and GINI coefficient data were used. The variables used in the practice were compiled from the database of Turkish Statistical Institute.

The changes in these data over the time are shown in Figure 1. GINI used in the analysis represents GINI coefficient; FER represents Women's Employment Rate.

Figure 1. FER ve GINI Graphics



When the series showing FER and GINI between 2004 and 2015 are examined, the evaluated results are as follows: graphs show opposite directions; thatis, while FER increases, GINI coefficient decreases. As a consequence, there is a negative relationship between two variables. In 2015, FER reaches its highest value and GINI reaches its lowest value.

5.2. Unit Root Test Results

Time series used in the model must be tested in order to determine if they are stationary or not. As Granger and Newbold (1974) showed, in case of studying with time series that are non-stationary, the spurious regression problem occurs. As it is, the result obtained by regression analysis does not reflect the actual relationship (Gujarati, 1999).

If the series has unit root, it means that it is non-stationary. When the fixed data of ADF and PP test statistics are examined, the following can be said related to FER and GINI series: that they are not in the form of stationarity in the level and that they do not display distribution around a certain average. When their first differences are taken, it is seen that test statistics are bigger than the critical values determined by Mackinnon in terms of

absolute value. As a result, when the first differences of FER and GINI series are taken, that is in I(1), it can be said to provide with stationarity hypothesis (see. Table 3 and Table 4). The graphics of stationary series whose differences in the 1st degree are taken are given in Figure 2.

Figure 2. The Graphics of FER and GINI Series with Taken Differences

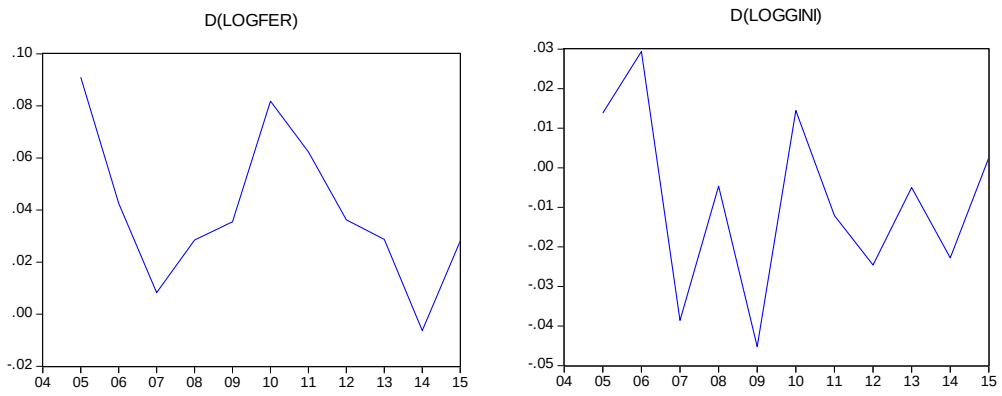


Table 3. ADF Unit Root Test Results

		ADF – t Statistics	
Variables	**MacKinnon Critical Values**	**Level Values**	**First Difference**
FER	%1=- 4.2001 %5 = -3.1753 %10= -2.7289	-1.7037 (0)	-3.6587 (0)**
GINI	%1 = -4.2970 %5 = -3.2126 %10= -2.7477	-0.1110 (1)	-4.1629 (0)**
NOTE: The values in brackets give the lagging length chosen according to SCI criteron. The critical values for ADF were obtained by MacKinnon (1996). ***p<.01, **p<.05, *p<.1.			

Table 4. PP Unit Root Test Results

		PP – t Statistics	
Variables	**MacKinnon Critical Values**	**Level Values**	**First Differences**
FER	%1=- 4.2001 %5 = -3.1753 %10= -2.7289	-1.7037(0)	-3.6587(0)**
GINI	%1 = -4.2970 %5 = -3.2126 %10= -2.7477	-0.3802(0)	-4.5370 (2)***
NOTE: The values in brackets give the lagging length chosen according to SCI criteron. The critical values for PP were obtained by MacKinnon (1996). ***p<.01, **p<.05, *p<.1.			

5.3. Granger Causality Test Results

Granger developed "Granger Causality Test" in order to test if a variable in a model, which is formed in order to predict a variable, is the cause of the other variable or not. The causality relationship between variables are explained with this test. The lagging length in the causality analysis was determined by using Akaike Information Criteron and the length of lagging was taken as 1. The obtained results are displayed in Table 5.

Table 5: Granger Causality Test Results

Hypotheses	**F-statistics**	**Probability**
GINI is not the cause of FER.	7,7942	0.0235
FER is not the cause of GINI.	8.5179	0.0193

According to the Granger Causality Test results, the Ho hypothesis stating that GINI is not the Granger cause of FER is rejected at 5% significancy level (with 0.0235). the Ho hypothesis stating that FEr is not the Granger cause of GINI is rejected at 5% significancy level (with 0.0193). Hence, it is understood that the causality relationship between GINI and FER is bi-directional. As a result, the changes in both variables affect one another.

5.4. Correlation and Regression Analysis Results

Before starting regression analysis, the causality relationship between GINI and FER must be revealed. If there isn't any causality relationship between these two series, the results of the regression analysis can be statistically significant; however, it won't have any significance in terms of economics.

The regression analysis results between these two variables for the sample period are shown below.

Table 6. Regression Analysis Results (Dependent Variable = FER)

VARIABLES	**COEFFICIENT**
FIXED	0.7526 (1.7426)*
GINI	-2.9042 (-5.8977)*
R^2	0.7767
DW	1.9590
F st.(Prob.)	0.0157

NOTE: The numbers in brackets are t statistics. The * mark indicates significancy at 5% level.

By using equation (5), regression analysis results are given in Table 6. When the regression analysis results obtained as a result of solving equation (5) are evaluated; as the probability values of coefficients are smaller than 5%, H_0: rejected, H_1: accepted and the coefficients are significant. F probability is considered for the total significancy of the model and as it is smaller than 5%, H_0: rejected, H_1: accepted and the model can be accepted as significant. It is obvious that the "t" value belonging to GINI is statistically significant at a level which is close to 5% and that the relationship is in the negative direction. Also, it is found

that the determination coefficient (R^2) of the model is close to a high rate such as 0.77. On the other hand, the D.W (Durbin-Watson) statistic value obtained from regression analysis (1.95) refers to the situation that there isn't any sequential dependency problem between error terms of the model.

When the results of regression analysis are economically evaluated, it is understood that in Turkey GINI-FER relationship is in the negative direction. The mark of the GINI coefficient is negative and this situation supports the statement. In 2004-2015 period, 1% increase in GINI in Turkey is expected to create a 2.90% decrease in FER. Also, when GINI is fixed, FER is expected to be 0.7526.

The positive relationship between variables that are obtained via regression analysis is also seen in Correlation analysis (see. Table 7). Correlation analysis is an analysis that is made in order to determine the direction and the strength of the relationship between two variables. The correlation coefficient takes values between -1 and +1.

Table 7. Correlation Analysis Results

Variables	**GINI**	**FER**
GINI	1.0000	-0.8813
FER	-0.8813	1.0000

When the data in Table 7 are evaluated, it is seen that the correlation between GINI and FER is negative (-0.88) and that there is a strong level of relationship between them.

6. CONCLUSION

Economic stabilization and providing social order are among the duties of a government. The meeting point of these duties is keeping employment in a certain level. Although keeping employment in a certain level seems easy, actually it is not as simple as it seems. Inasmuch as, a government uses employment policies in other important issues such as providing a fair income distribution along with economic stabilization and providing social order. Besides, employment policy is affected by socio-economic factors such as wages earned by women and men in terms of gender and at the same time employment policy affects this situation. The effect of women's employment on income distribution which is the subject of our study can be seen as an example of this situation.

Women's employment took place with Industrial Revolution in Europe; and increased due to the wars in Europe, the rapid progress of technology, leaving agricultural sector for service industry and the increase in the education level of women. In Turkey, women's employment mainly started with the migrations from villages to cities in 1950s. However, Turkey couldn't gain speed in women's employment as Europe did. For example, while women's employment in European Union during the years 1994, 2004 and 2014 was in order of 49.4%, 59.3% and 63.5%, these rates for the same years in Turkey was 30.4%, 21.0% and 31.6%. As it is seen, Turkey fell behind of EU and even in 2004 EU was three times more and in 2014 EU was twice more than Turkey's results. The reasons why Turkey fell behind were; that women with children do not work even if they are educated, that women work as unpaid

family workers in the Turkish society which has been more prone to agricultural activities since time immemorial and unregistered employment.

In the econometric sense, the relationship between the women's employment rate in Turkey and GINI coefficient were studied via time series analysis by using the data of 2004-2015 period. The relationship between two variables were found to be in a very strong level with 81% correlation. As a result of Granger causality analysis, a bi-directional causality between women's employment and GINI was found. The Regression analysis revealed that women's employment rate affacted GINI in a negative way. Also, for 2004-2015 period, 1% increase in women's employment rate in Turkey led to an aproximately 3% decrease in GINI coefficient.

Both econometric analysis and the data in the presented tables revealed that the women employment in Turkey is lower when compared to the data of European Union. However, it is clearly understood that women's employment in a developing country like Turkey will reduce the income inequality. Therefore, the regulations related to women's employment should be rapidly improved; yet the regulations alone will not be sufficient. It shouldn't be forgotten that the rates related to women's education requires an immediate increase in order to employ more females as qualified employee.

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