EMPIRICAL ANALYSIS OF THE RELATIONSHIP BETWEEN WOMEN'S LABOR FORCE PARTICIPATION RATE AND ECONOMIC GROWTH IN TURKEY IN THE CONTEXT OF KUZNETS CURVE

Buhari DOĞAN *, Mürsel AKYÜZ**
* Süleyman Demirel University, Faculty of Economics and Administrative Sciences, Department of Economics, Isparta/Turkey (Corresponding)
** Munzur University, Faculty of Economics and Administrative Sciences, Department of Economics, Tunceli/Turkey
E-mail: doganbuhari@gmail.com, murselakyuz@hotmail.com

ABSTRACT
In this study, the effect of economic growth in Turkey on the labor force participation rate of women was examined in the context of the Kuznets (1955) curve in the context of the data for the quarter years of 2000Q1-2013Q4. The co-integration test of the series was performed with the ARDL boundary test approach. As a result of the cointegration test, we find that the series move together in the long run. Findings show that economic growth increases women's labor force participation rate first but then it decreases women's labor force participation rate. Findings indicate that there is a reverse "U" relationship between economic growth and female labor force participation. As a result of the short-term analysis, it is found that error correction coefficient of the model is negative and statistically significant.

Keywords: Kuznets Curve, Economic Growth, Women's Labor Force Participation Rate, Turkey.

JEL Classification: J21, O10, O15

ÖZET
Anahtar Kelimeler: Kuznets Eğrisi, Ekonomik Büyüme, Kadınların İşgücü Katılım Oranı, Türkiye

1. INTRODUCTION

One of the important indicators of economic growth and development is the participation rates in the labor force. Participation rates in the labor force, which have vital preventive measures for an economy, are scattered across women across the globe. The economic literature places particular emphasis on the role that women's participation in the labor force plays in the economic development of countries. Structural change of economies from agriculture to industry and services sector reduces the participation of women in the labor force in terms of developing countries. There are many factors that affect women's participation in the labor force. The most important factors affecting women's participation in the labor force are expressed as education level, family and community structure, number of children and economic development level of the country. Women's labor force activity is increasing in the developing universes of economic development with the increase of the dynamics of education and economic activity. As the economy grows, women have easier and better jobs and are therefore encouraged to be more economically active, which in turn increases women's participation in production activities. Women's participation in the labor force is desirable both in terms of equality and productivity. At the point of equality, women's participation in the labor force ultimately improves their economic situation and contributes to economic efficiency by increasing the development potential of the country (Mujahid and Zafar, 2012).

According to modernization theorists, economic growth is related to women's participation in the labor force, through changes in the professional structure and increases in educational opportunities as well as household responsibilities. Modernization process is associated with increased labor demand, socially accepted education and employment of women and lower fertility rates (Heckman, 1978; Standing, 1981; Bauer and Shin, 1987). Some theoretical and empirical studies in the literature have found that female labor force participation has positive and strong links with economic growth (Tansel, 2002; Fatima and Sultana, 2009). Worldwide trends indicate that women have a relatively more stable relationship between labor market participation and economic growth. A large majority of empirical research shows that women's participation in the labor force tends to decline in the first stages of economic growth, whereas after reaching a certain level of per capita positive relationship, women's participation in the labor market is increasing in the process (Lechman and Kaur, 2015). This implies that the relationship is a U-shaped statistical relationship between women’s participation in work and economic growth.

Sinha (1965) suggests that the increase in the number of women in the labor force and the level of economic growth can be defined by a long-run U-shaped relationship. Since then, a significant portion of both theoretical and empirical findings have focused on the above relationship and have continuously updated information on this topic. Although the relationship between women's participation in labor and the level of economic growth is relatively stable and correlated with time, research findings still differ between different countries and groups of countries (Lechman and Kaur, 2015).
Understanding the relationship between economic development and women's participation in the labor force is important for many reasons. The U-shaped hypothesis states that there is some kind of trade-off between gender equality and economic growth in the development of an economy. Examination of this relationship is important for scholars and policy makers to know the trends in participation in the labor force and to design and implement policies from this point (Chapman, 2015).

In this context, the relationship between female labor force participation and economic growth is examined by the Boundary test approach for the Turkish sample in the context of the Kuznets (1955) curve. It is expected that the period covered by the study in this context will contribute to the literature from the method and sample used. In the study, the theoretical background of the relationship between female labor force participation and economic growth will be discussed, and the development of women's labor force participation in Turkey will be informed and a literature review will be conducted. Then, the empirical application section will be passed, and the later findings will be evaluated.

2. THEORETICAL INFRASTRUCTURE
The participation rate of an economy in the labor force is expressed as one of the most important production factors that paves the way for economic growth and development. Participation rates in the labor force, which have vital preventive measures for an economy, are scattered across women throughout the world. Labor participation rates vary widely between men and women (Çatalbaş, 2015). In relation to this, Boserup (1970) argues that men's preferentially access education and new technologies can deprive women from work during their first years of growth. But as growth grows, women have access to education and technology. This situation indicates an increase in the form of female labor force participation rate. Another argument (see Boserup, 1970, 1990, Goldin, 1995) suggests that when the income situation is low, women work in productions on workshops in family farms or near homes. As the economy develops, the focus of production shifts from households to factories and from family companies to other companies, making it more difficult for women to work in a job to carry out reproductive and production activities together. Social norms show that manual work in factories is less useful for women. As the economy further develops, on the other hand, the manufacturing sector is becoming more of a retail production and office work. The work done in this way becomes less, cleaner and more pleasant in various forms. Social stigma for women's employment decreases after marriage. As a result, women's participation in the labor force is increasing (Tam, 2011). Goldin (1995) and Tam (2008) think that income and substitution effect contributes to U-shaped pattern. When income is low and agriculture is dominant, the participation of women in the labor force is high. As the income increases, the demand for child ownership also increases. This kind of income effect leads to a decrease in the labor force participation rate of women. In addition, the increased use of machinery creates a substitution effect (such as men being physically capable) in women's participation in the labor force. Therefore, both income and substitution effects lead to a decline in the labor force participation rate of women and an increase in income (Tam, 2011).

Research shows that in the early stages of economic growth, women's labor force participation rates are falling, while women's labor force participation is increasing in later economic growth (Lechman and Kaur, 2015:246). Research in this regard has revealed that there is a U-shaped relationship between women's participation in labor and economic growth. Findings in the research indicate that there is a U-shaped relationship between labor force participation and economic growth in large proportion of women (Tam, 2011; Lechman and Okonowicz, 2013; Olivetti, 2013; Tsani et al., 2013; Kaur and Tao, 2014).
2.1. Women's Labor Force Participation in Turkey

When the distribution of the female labor force in Turkey is examined, it is seen that most of the women work in the rural areas with unpaid family worker status. This situation is less common in urban areas. For this reason, the participation rates of the female labor force in rural areas and the female labor force participation in urban areas differ. This suggests that women can take part in the labor market in the form of unpaid family workers, which is common in rural areas, but that they can not take part in the labor market with wage workers, which is widespread in urban areas (Özer and Biçerli, 2003; It is clear that the participation rates of women in the labor force between 1990 and 2013 are far behind when Turkey is compared to EU and OECD countries. Participation rates in the labor force in both EU countries and OECD countries, which showed large increases between these years, declined in Turkey. According to the World Bank data, the labor force participation rates in the EU and OECD countries, realized as 65% and 70% respectively in 2013, were only around 55% in Turkey. Although Turkey has grown economically in these years, Turkey has lagged behind the world in terms of participation in its labor force. This situation is expressed as one of the most fundamental problems of the Turkish economy (Çatalbaş, 2015).

Looking at the participation rates of the female labor force, it seems more sad. Turkey is the lowest OECD country in the labor force participation rate. Female labor force participation rates in the EU and OECD countries were 66.1% and 62.5% respectively in 2013 and 32% in Turkey (Çatalbaş, 2015). In Turkey, women's labor force, which has recently outgrown traditional roles, has become visible in business life, even at low levels. This is mostly true for the urban women labor force. Especially women with a higher rate of tertiary education seem to be determined to come to higher levels in career planning (Gürol, 2007).

On the other hand, it is also expressed as the conclusion of many academic researches that the participation rates of the female labor force are decreasing while the economy based on agriculture is moving to economics based on industry in the developing countries. While the economies are in the enlargement period, women's participation in the labor force is easier. In the early years of economic development, the amount of free labor, especially in the agricultural sector, is increasing. In the following periods, women can adapt to the labor force industry (Mujahid and Zafar, 2010).

3. LITERATURE SUMMARY

When studies on the labor force participation rates of women are examined in literature, factors affecting the entry of women into the labor market and their adaptation generally appear as the level of education, number of children, being urban or rural, perspective of family and community, and development level of the country. Women with higher education levels can find jobs easier and work at higher wages than women with lower education levels. Women with low levels of education usually work in rural areas as family workers and at low wages. The number of children is another factor that directly affects women's participation in the labor force. Many women with children can not access the labor market in terms of children due to domestic work. The fact that your husband is taking all the decisions in the family and the prohibition of the work of the woman is another factor that affects the participation in the female labor force. The level of development of the countries is the most discussed issue in the literature together with education. According to the majority of the studies done, the participation rates of the female labor force in underdeveloped and
developing countries (see Boserup, 1970, Durand, 1975; Psacharopoulos, 1989; Kottis, 1990; Tam, 2011; Tsani et al. are very low compared to the developed countries (See Goldin, 1995, Tansel, 2002, Gaddis, 2013). On the other hand, according to the literature, the rates of female labor force participation are falling in the initial stages of economic development of countries. At later levels of economic development, female labor force participation rates are rising. This is explained by a U-shaped curve between economic development and female labor force participation rates. The following table has been presented with studies related to the subject.

Table 1: Studies on Factors Affecting Labor Participation of Female

<table>
<thead>
<tr>
<th>Writers</th>
<th>Sample</th>
<th>Methods</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Özer ve Bişerli (2003)</td>
<td>12 Regions at the level of İBSS-1 (Turkey)</td>
<td>Panel, Ordinary Least Squares (OLS)</td>
<td>It has been determined that wages, inflation rates, growth rates and unemployment rates are not effective in women's participation in the labor force. It has been determined that wages, inflation rates, growth rates and unemployment rates are not effective in women's participation in the labor force.</td>
</tr>
<tr>
<td>Mujahid ve Zafar (2010)</td>
<td>Pakistan</td>
<td>ARDL</td>
<td>In the long run there is a U-shaped link between economic growth and female labor force participation rates. Increased levels of education and economic dynamics in relation to work increase women's labor participation rates in the later stages of economic growth.</td>
</tr>
<tr>
<td>Yousef and Baratali (2011)</td>
<td>Iran</td>
<td>ANOVA</td>
<td>In comparison, the level of education that women receive provides them to work in better positions. It also affects the chances of employment and promotion.</td>
</tr>
<tr>
<td>Kızılgöl Ayvaz (2012)</td>
<td>Turkey</td>
<td>Logit</td>
<td>The level of education, household income, dependency ratios, ownership of residence and age of women are the factors that affect the participation rate of women.</td>
</tr>
<tr>
<td>Günsoy ve Özsoy (2012)</td>
<td>Turkey</td>
<td>VAR</td>
<td>Participation in the labor force of vocational high school graduates has an important influence on economic growth.</td>
</tr>
<tr>
<td>Bozkaya (2013)</td>
<td>Turkey</td>
<td>VAR</td>
<td>The most important factor determining the participation of women in the labor force in Turkey is the level of education.</td>
</tr>
<tr>
<td>Er (2013)</td>
<td>26 Regions in the Level of İBSS-2 (Turkey)</td>
<td>Ordinary Least Squares (OLS)</td>
<td>Ordinary Least Squares (OLS) The level of education, male participation in the labor force, and the share of women in the agricultural sector affect the female labor force participation positively.</td>
</tr>
<tr>
<td>Tsani et al. (2013)</td>
<td>Southern Middle</td>
<td>General Equilibrium Modeling</td>
<td>The relationship between female labor force participation rates and economic growth supports the hypothesis.</td>
</tr>
</tbody>
</table>
Eastern Countries | (GEM) | Summary
---|---|---
Tan and Subramaniam (2013) | Malaysia | Ordinary Least Squares (OLS) | In Malaysia, women are not part of the labor force not because of their expectation from business life, they are not part of the labor force because of husbands' disapproval and family reasons,

Lahoti and Swaminathan (2013) | India | Ordinary Least Squares (OLS) | There is no significant relation between economic growth and female labor force participation rates.

William (2014) | USA | Ordinary Least Squares (OLS) | The wages that married women earn from household chores affect their participation in the labor force. The wages they earn from household chores reduce their participation in the labor force because they have a positive impact on their earnings.

Chen et al. (2014) | China | Probit | Factors related to the family are more influential on female labor force participation rates than personal factors.

Çatalbaş Karpat (2015) | 12 zones at the level of IBSS-1 | Panel, Ordinary Least Squares (OLS) | Fertility rate, divorce rates, informal employment, economic crisis and education are the factors that affect female labor force participation rates the most.


Lechman and Kaur (2015) | World-wide 162 Countries | Generalized Method of Moments (GMM) | The relationship between economic growth and female labor force participation is supported by the U hypothesis for countries with high income levels, while it is not supported for low income countries.

Hare (2016) | China | Ordinary Least Squares (OLS) | Women's low education levels and flexibility in wages reduce women's participation in the labor force. It is stated that women with higher education levels can find jobs easier in the labor market.

Cubas (2016) | USA Mexico Brazil | Generalized Method of Moments (GMM) | Women's participation in the labor market is influenced by the fees paid for family work and informal economy entry.

### 4. DATA SET AND MODEL

In the study, the effect of economic growth ($LNGDP$) on female labor force participation rate ($FLPR$) was examined for the quarter years of 2000Q1-2013Q4 in the context of the Kuznets curriculum. Tam (2011); Sarcophagus and Swaminathan (2013); Lechman and Kaur (2015) have been taken into consideration. The $LNGDP$ series was obtained from the Electronic Data Distribution System (EVDS) and the $FLPR$ series was obtained from the Turkish Statistical Institute (TUIK). The $FLPR$ series used to represent the female labor force participation rate is the percentage of female labor force participation as a percentage of the total labor force. In this direction, the series have been tested primarily with unit root tests. The existence of
cointegration between the series, Pesaran et al. (2001) was tested with the ARDL boundary test approach.

As an econometric method for revealing the relationship between variables, Pesaran et al. (2001). This method, called the boundary test (ARDL), is considered to be more flexible and useful when compared to Engle-Granger (1987), Johansen (1988) and Johansen and Juselius (1990) methods. Among the constraints of the mentioned methods, the series that are included in the model should not be stable at the level and they should become stable at the end of the difference operation. However, there is no such limitation in ARDL approach. That is, the series included in the model may be stationary at different levels (Tang, 2003). However, another advantage of the boundary test approach is that it allows estimation of a given model with low number of observations (Narayan and Narayan, 2004). In addition, while internalism is an important problem in other approaches, internalisability in the ARDL approach is a less important problem (Jalil, 2012). In short, ARDL can be defined as a method that indicates whether the dependent variable is I (1), and whether the independent variables are cointegration, even if they are I (1) or I (0) at different stationarity levels. The model to be used in operation is as follows.

\[ FLPR_t = \alpha_0 + \alpha_2LNGDP_t + \alpha_2LNGDP2_t + \epsilon_t \]  

was expressed above. FLPR in the equation; Female labor force participation rate, LNGDP; LNGDP2; The wife of the grown up; Error term. The GDP series were included after the model logarithmic transformation was done. If it is > 0 and <0 in the equation, it is concluded that there is an inverse relationship between economic growth and the labor force participation rate of women. If <0 and> 0, it is concluded that there is a relationship between economic growth and the labor force participation rate of women (Shahbaz et al., 2015).

Establishment of unconstrained error correction model (UECM) is required before the boundary test approach. Thereafter, a boundary test can be performed. Pesaran et al. (2001) showed that the variance of variance, autocorrelation, and so on in the unrestricted error correction model, Stressing that there should be no problems. The model created in this direction is formulated below.

\[ \Delta FLPR_t = \alpha_0 + \sum_{i=1}^{m} \alpha_{1i}\Delta FLPR_{t-i} + \sum_{i=0}^{L} \gamma_{2i}\Delta LNGDP_{t-i} + \sum_{i=0}^{L} \gamma_{3i}\Delta LNGDP2_{t-i} + \gamma_4FLPR_{t-4} + \gamma_5LNGDP_{t-4} + \gamma_6LNGDP2_{t-4} + \epsilon_t \]  

(2)

The expressions of the independent variables expressed in the equation are the same as those of the number 1 equation. Others are m; Optimum delay length; The difference processor. The delay length to be used in the ARDL model is important for both long-term and short-term analysis. In the study, it was tried not to determine the optimum delay length according to Schwarz Information Criteria (SIC). Considering that the series are quadrants, the delay limitation is set to a maximum of five.

The H0: \( \alpha_4 = \alpha_5 = \alpha_6 = 0 \) hypothesis has been tested in the boundary test approach. The acceptance or rejection of this hypothesis is determined by the F test and Pesaran et al. (2001)
are compared with the lower and upper critical values of the table. If the sample is small, the critical values of Narayan (2005) study can be taken into consideration. If the calculated value is above the upper critical value, it is determined that there is a cointegration relation between the series. If the calculated value is between two critical values, no comment on cointegration can be made. If the calculated value is smaller than the lower limit, it can not be decided that there is no cointegration between the series (Morley, 2006).

Cointegration analysis examines the long-run cohort. If the series are acting together in the long run, they are determined by the error correction model in which a sticker that may emerge is eliminated (Tari, 2011). In other words, the error correction model shows how long the series are converging after an aberration (Jalil, 2012). However, the error correction model may not always work (Tari, 2011). Short term analysis between variables was investigated with ARDL error correction model. The model is adapted to work as follows.

\[
\Delta FLPR_t = \alpha_0 + \sum_{i=2}^{n} \alpha_i \Delta FLPR_{t-i} + \sum_{i=2}^{n} \beta_i \Delta LNGDP_{t-i} + \sum_{i=2}^{n} \gamma_i \Delta LNGDP^2_{t-i} + \text{ECT}_t + \epsilon_t
\]  

(3)

The ECT in the equation is the term error correction. Error correction refers to a lagged value of error terms obtained in the long run. The error correction term gives information about how much of the difference between the series can be corrected after a certain period and it is also possible to calculate how many periods the deviation will end up after considering the relevant coefficient.

5. EMPIRICAL FINDINGS

Empirical analysis was carried out in the form of stationarity tests, cointegration tests, short and long term analyzes, respectively.

5.1. Unit Root Tests (Stability Tests)

The series were performed with Expanded Dickey Fuller (ADF) and Phillips Perron (PP) tests with and without unit root. The results obtained are presented below.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Augmented Dickey-Fuller (ADF) Test statistic</th>
<th>Philips-Perron (PP Test statistic)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Level</td>
<td>First Difference</td>
</tr>
<tr>
<td>FLPR</td>
<td>0.7021(4)</td>
<td>0.0323(4)**</td>
</tr>
<tr>
<td>LNGDP</td>
<td>0.0542(5)***</td>
<td>-</td>
</tr>
<tr>
<td>LNGDP2</td>
<td>0.0434(5)**</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Significance Level</th>
<th>%1</th>
<th>%5</th>
<th>%10</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-4.198</td>
<td>-3.605</td>
<td>-3.192</td>
</tr>
<tr>
<td></td>
<td>-3.523</td>
<td>-2.936</td>
<td>-2.606</td>
</tr>
</tbody>
</table>

Note: The values in brackets in the ADF test are the selected delay lengths using the Schwarz Information Criterion (SCI) and the maximum delay length is 9. In PP test, optimal delay length, Bartlett kernel (default) spectral estimation method and Newey-West Bandwidth (Automatic Selection) criteria were used. *, At the 1% level of significance, **, 5%, ***. It represents stability at the level of 10% significance.
Given the results in Table 2, the ADF and PP tests are at the level of the applied series or at the first difference. That is, it is possible to think of the series as any combination of I (0) and I (1) for all tests. There is no disadvantage in implementing the ARDL border test in this direction.

5.2. Cointegration Analysis
The Schwarz Information Criteria (SIC) for determining the delay length model for the boundary test is given in Table 3. It has been decided that the optimum delay length according to SIC is 1 when the maximum delay length is 5. Because 1 delay, the SIC takes the minimum value and there is no autocorrelation problem.

<table>
<thead>
<tr>
<th>Model</th>
<th>SIC</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>15.77986*</td>
<td>ARDL (1,3,4)*</td>
</tr>
<tr>
<td>2</td>
<td>15.79004</td>
<td>ARDL (1,4,3)</td>
</tr>
<tr>
<td>3</td>
<td>15.81022</td>
<td>ARDL (1,3,5)</td>
</tr>
<tr>
<td>4</td>
<td>15.81486</td>
<td>ARDL (1,5,3)</td>
</tr>
<tr>
<td>5</td>
<td>15.82140</td>
<td>ARDL (1,4,4)</td>
</tr>
</tbody>
</table>

Note: The model is the delay length expressed in equation 2. * SIC (Schwartz Information Criteria) value is the minimum delay length.

For the realization of the cointegration test, the Unrestricted Error Correction Model (UECM), which is included in equation 2, is estimated. The F statistic of the model predicted in this direction is compared with the critical values of Pesaran et al. (2001) and Narayan (2005). The findings were reported in Table 4.

<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Lower Level</td>
<td>Upper Level</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Lower Level</td>
<td>Upper Level</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>5.43</td>
<td>%1</td>
<td>4.94</td>
<td>5.58</td>
<td>5.89</td>
</tr>
<tr>
<td></td>
<td></td>
<td>%5</td>
<td>3.62</td>
<td>4.16</td>
<td>4.13</td>
</tr>
<tr>
<td></td>
<td></td>
<td>%10</td>
<td>3.02</td>
<td>3.51</td>
<td>3.73</td>
</tr>
</tbody>
</table>

Note:**%5 shows meaningfulness. Critical values shows, Pesaran et al. (2001; 300), and Narayan (2005, 1988), the critical values for Case III, k = 2. The UECM has been taken as a maximum of "5" since the quadrant is being worked on. Estimation results are obtained according to Schwarz Information Criteria (SIC).

When the table 4 is examined, it is seen that the calculated F statistic is above the critical values at the level of significance of 1% according to Pesaran et al. (2001) and 5% according to Narayan (2005). It is decided that there is cointegration between the
series with this movement. The co-integration indicates that the series of entities move together in the long run.

5.3. Long-term Analysis
In studying the maximum latency of 5, the best long-term model according to the SIC Schwarz information criteria is the non-autocorrelated ARDL (1,3,4) model expressed in equation (3). Figure 1 presents graphs of the statistics of the 20 most appropriate ARDL models for long-term analysis.

![Figure 1: Top 20 Models for Long Term Analysis by SIC](image)

After the findings, the long term relation was estimated by ARDL (Autoregressive Distributed Lag) model. The results obtained are the result of the optimal delayed long-term ARDL Model (1,3,4) and reported as follows.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>t-statistic</th>
<th>Possibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>FLPR</td>
<td>0.718</td>
<td>9.751</td>
<td>0.000</td>
</tr>
<tr>
<td>LNGDP</td>
<td>-1.081</td>
<td>-1.445</td>
<td>0.155</td>
</tr>
<tr>
<td>LNGDP2</td>
<td>2.155</td>
<td>1.525</td>
<td>0.134</td>
</tr>
<tr>
<td>C</td>
<td>9.293</td>
<td>1.891</td>
<td>0.065</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Long-term Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>LNGDP</td>
</tr>
<tr>
<td>LNGDP2</td>
</tr>
<tr>
<td>C</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Diagnostic Tests</th>
</tr>
</thead>
<tbody>
<tr>
<td>R²= 0.93</td>
</tr>
<tr>
<td>F = 55.422 (0.00)</td>
</tr>
<tr>
<td>χ²BG = [4.13] (0.25)</td>
</tr>
<tr>
<td>F = 0.16 (0.30)</td>
</tr>
<tr>
<td>χ²JB = [1.17] (0.00)</td>
</tr>
<tr>
<td>χ²BPG = [2.24] (0.03)</td>
</tr>
</tbody>
</table>

Note: DW, Durbin-Watson statistic in diagnostic tests; BG, Breusch-Godfrey autocorrelation test, RR; Ramsey model Failure to set up; JB, Jaque-Bera normality test; BPG is Breusch-Pagan-Godfrey varying variance statistics. The values in parentheses represent the probability values. *; At the 1% level of significance, **; 5%, ***; Represents a level of significance of 10%.
Diagnostic tests performed at the end of the obtained results are given under Table 5. It shows that the model established in this direction is quite acceptable. The coefficients of the economic growth \( (LNGDP) \) series are positive and the coefficient of the economic growth \( (LNGDP^2) \) ratio is negative. This suggests that economic growth reduces women's labor force participation rate first. Findings indicate that there is a reverse "U" relationship between economic growth and female labor force participation rate. Lechman and Kaur (2015) and Tsani et al. (2013) finds that there is an inverse "U" relationship between female labor force participation and economic growth. The model's Cusum test also shows that the regression coefficients are stable (Figure 2).

5.4. Short Term Analysis (Error Correction Model)

After deciding that the series were co-integrated in the long run, a short-term analysis was undertaken. The error correction model predicted result is the most suitable model \((1,3,4)\) and the related results are reported in Table 6.
6. CONCLUSION

Participation ratio in labor is among the most important economic indicators of countries. This ratio, which is found by the ratio of the unemployed in the active population to the employed, is lower in Turkey than in other OECD countries. In this study, the effect of economic growth in Turkey on the labor force participation rate of women was examined in the context of Kuznet's curriculum in line with the data covering the quarter years of 2000Q1-2013Q4. It has been determined that there is a co-integration relationship between economic growth and the labor force participation rate of women, and based on this, a long and short term ARDL analysis has been conducted. Some studies in the literature have resulted in a "U" relationship between economic growth and female employment. This shows that the increase in education level of women, a reflection of the structural changes in the economy, is the shift in the effects of income and substitution effect. In our analysis, such a result is not obtained. Findings show that economic growth increases women's labor force participation rate first but then it decreases women's labor force participation rate. Findings indicate that there is a reverse "U" relationship between economic growth and female labor force participation. The results obtained are shown in Lechman and Kaur (2015) and Tsani et al. (2013). As a result of the short-term analysis, the error correcting coefficient of the model was found to be negative and statistically significant. In this respect, short-term deviations are close to long-term equilibrium values. It is expected that women's participation in labor force and earning an economy will make an important contribution to the gain, development and acceleration of growth for any country. In this context, it is necessary to take necessary precautions to participate in the labor force of female.
REFERENCES


