

**T.C.  
MARMARA ÜNİVERSİTESİ  
SOSYAL BİLİMLER ENSTİTÜSÜ  
İKTİSAT (İNG.) ANABİLİM DALI  
İKTİSAT (İNG.) BİLİM DALI**

**THE DETERMINANTS OF FEMALE LABOR FORCE  
PARTICIPATION: EVIDENCE FROM TURKEY**

**M.A. Thesis**

**DENİZ KESKİN OZBERK**

**İSTANBUL, 2018**

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**ASST. PROF. BURCU DUZGUN ONCEL**

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İsim Soyisim: Deniz KESKIN OZBERK

Ana Bilim Dalı: İktisat (İngilizce)

Programı: İktisat (İngilizce)

Tez Danışmanı: Dr. Öğr. Üy. Burcu DUZGUN ONCEL

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## ÖZ

### **KADININ İŞGÜCÜNE KATILIMININ BELİRLEYİCİLERİ: TÜRKİYE ÖRNEĞİ**

*Bu çalışmanın temel amacı 2002-2015 yılları arasında Türkiye İstatistik Kurumu'nun Hane Halkı İşgücü Yapısı Anketi'ni kullanarak kadının işgücüne katılımının belirleyicilerini değerlendirmektir. Uluslararası Çalışma Örgütü tarafından 2017 yılında 15 yaş ve üstü Türk kadınlarının işsizlik oranı %14,4 olarak hesaplanmıştır. Kadın çalışanların genel profili ve işgücü durumu Uluslararası Çalışma Örgütü ve Türkiye İstatistik Kurumu'nun verileri kullanılarak betimleyici analizler yoluyla sunulmuştur. Kadınların işgücüne katılımının belirleyicilerini değerlendirmek amacıyla ise Pooled OLS modeli kullanılmıştır. Sonuçlar, her yaş grubunda en büyük etkiye sahip olan değişkenin yüksek eğitim olduğunu göstermektedir. Hane halkındaki çocuk sayısındaki artış ise kadınların işgücüne katılımını azaltmaktadır. Ayrıca açıklayıcı değişkenlerden olan yaş ve yaşın karesinin kadınların işgücüne katılımı üzerindeki etkisinin ters U şeklinde olduğu sonucuna varılmaktadır. Yaş arttıkça kadınların işgücüne katılma oranı artmakta ancak bir notadan sonra azalmaya başlamaktadır.*

Name Surname: Deniz KESKIN OZBERK

Field: Economics

Program: Economics (English Medium)

Supervisor: Asst. Prof. Burcu DUZGUN ONCEL

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## **ABSTRACT**

### **THE DETERMINANTS OF FEMALE LABOR FORCE PARTICIPATION: EVIDENCE FROM TURKEY**

*The main purpose of this thesis is to examine the determinants of female labor force participation for the years 2002-2015 in Turkey by using Turkish Statistical Institute's Household Labor Force Survey. The unemployment rate of Turkish women was accounted for %14,4 for age 15 and over in 2017 by International Labor Organization. General profile of females' labor force status is presented via descriptive analysis by using International Labor Organization's and Turkish Statistical Institute's data. Pooled OLS analysis has been employed to assess the determinants of female labor force participation. The results show that high education has the strongest effect on female labor force participation in all age groups. The increase in number of children in the household reduces female labor force participation. It is also found that there is inverse U-shaped relation between age and age square. As the age increases, the labor force participation rate of females increases but after to a certain point, it starts to decrease.*



T.C.  
MARMARA ÜNİVERSİTESİ  
SOSYAL BİLİMLER ENSTİTÜSÜ MÜDÜRLÜĞÜ

TEZ ONAY BELGESİ

İKTİSAT (İNGİLİZCE) Anabilim Dalı İKTİSAT (İNGİLİZCE) Bilim Dalı TEZLİ  
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Öğretim Üyesi Adı Soyadı

İmzası

	Öğretim Üyesi Adı Soyadı	İmzası
1.	Tez Danışmanı Dr. Öğr. Üyesi BURCU DÜZGÜN ÖNCEL	
2.	Jüri Üyesi Prof. Dr. SUUT DOĞRUEL	
3.	Jüri Üyesi Dr. Öğr. Üyesi HANİFE DENİZ KARAOĞLAN	

## **PREFACE**

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Istanbul, 2018

Deniz KESKİN ÖZBERK

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## **LIST OF ABBREVIATIONS**

ANTL: Anatolia  
ASEAN: Association of Southeast Asian Nations  
BRICS: Brazil-Russia-India-China & South African Republics  
CEN: Central  
EU: European Union  
GDP: Gross Domestic Product  
HLFS: Household Labor Force Survey  
ILO: International Labor Organization  
LIS: Luxemburg Income Study  
MEDITERR: Mediterranean  
OECD: Organization for Economic Co-operation and Development  
OLS: Ordinary Least Square  
TURKSTAT: Turkish Statistical Institute  
US: United States  
VECM: Vector Error Correction Model

# CHAPTER 1

## INTRODUCTION

The issue of female labor force participation is crucial especially for developing countries like Turkey. Labor economists concentrate on female labor force participation in their studies due to its contribution to economic development and social welfare. Female labor force participation accounted for %30,4 for the year 2017 in Turkey (ILO). It is also calculated as %33,6 by Turkish Statistical Institute (TUIK, 2018). The main objective of this thesis is to shed light on the factors that affect women's participation in the labor force in Turkey for the period 2002-2015.

Socio-economic and demographic determinants have been selected in order to understand the structure of female employment for the period 2002-2015. Using Turkish Household Labor Force Survey (HLFS), marital status, education level, number of children in a household, age and age square are employed to explain labor force participation decision of females.

The thesis is structured as follows: Literature survey part gives information about women employment studies in general. Particularly, the studies on the United States, European Union (EU) and Organization for Economic Co-operation and Development (OECD) countries' about women employment are detailed. After that, studies which comprise female employment and its determinants in Turkey are summarized.

In the following part Chapter 3, general picture of world labor market is given. Labor force participation ratios of countries in different income groups, some economic and regional integrations and the first five economies are showed by customizing International Labor Organization's (ILO) data. And also, the proportion of labor force participation by gender is highlighted. Another contribution of this section is to analyze the relationship between GDP growth and unemployment.

Chapter 3 also includes descriptive information about Turkish labor market structure for the years 2002-2016. Sectoral distribution, occupational groups, marital

status, and education level of female employment in Turkey are assessed. Furthermore, females' registration position in the economy and employment status in the labor market are attempted to be explained.

Chapter 4 gives information about the Household Labor Force Survey. Additionally, we also explain the methodological structure of the thesis in this part. The main characteristic of Household Labor Force Survey is to demonstrate the labor force structure of the country, to examine the occupations, working hours, and employment status of individuals and to learn job-seeking duration of unemployed people. The data structure which is used in order to cover female labor force participation is Pooled Cross-Section. The composition of surveys which belongs to relevant years is identical. Namely, the cross-sectional data set is arranged by using same questions for different individuals. Ordinary Least Square (OLS) is the estimation method used in the empirical part.

Chapter 5 which is the empirical part of the thesis provides Pooled OLS estimation results of female labor force participation in Turkey for the years 2002-2015. The effect of socio-economic and demographic dynamics on female labor force participation is analyzed. Pooled OLS models are estimated to find the effects of determinants. The first estimation shows the relationship between marital status, age and age square, education, years and female labor force participation at the 15-64 age group.

The second estimation is specified with respect to five different age groups and same factors are used as explanatory variables for the years 2002-2015. The same estimation methodology is repeated for the age groups 15-24, 25-34, 35-44, 45-54 and 55-64 in order to cover relationship between female labor force participation, marital status, education level and number of children in household and year dummies.

The number of children in a household decreases female labor force participation in both specifications. Additionally, the most powerful association between female labor force participation and education belongs to high education among education dummies. There is inverse U-shaped relation between age and age

square in the first model. This means that the probability of female labor force participation increases with age but as age increases at a certain point, the participation of women in the workforce starts to diminish. In the first specification, marital status dummies' results show that married, divorced and widowed females participate in the labor force less than single females. In the second specification, being married decreases the probability of female labor force participation except for the 55-64 age group. Additionally, being divorced or widowed increases female labor force participation at the 15-24, 25-34 and 35-44 age groups.

In order to measure the effect of living in the urban and rural areas on the probability of female labor force participation, we estimate a second model including region variable. Since HLFS 2014 and 2015 do not include the information about region variable, we conduct the second model for the years 2002-2013. Similar to the previous estimations, first specification of the second model explains the effect of variables on female labor force participation at the 15-64 age group. Same estimation methodology is repeated for five different age groups in specification of the second model.

Living in the urban decrease the probability of female labor force participation in both specifications. Stated in other words, women live in rural prefer being in the labor force more than women who live in urban areas in all age groups. Finally, Chapter 6 includes the final conclusions of the thesis.

## **CHAPTER 2 LITERATURE SURVEY**

Unemployment and its consequences are one of the hotly debated issues in the literature on labor economics. This macroeconomic indicator has a profound effect on other indicators in any economy. Female unemployment also plays an important role as much as total unemployment. There are many studies shed light on women labor force participation on a macroeconomic basis. The literature on the female employment and its determinants is widely studied in the World and also in Turkey. High female participation in the work force is desired in the long-run because of many reasons which have positive effect on the economy. However, some factors like market failures, demographic and social structures, labor market conditions and the general climate of the economy can prevent its increasing. Political reasons and market failures can impact negatively women labor force participation. Age, education, number of children, marital status and socio-demographic characteristics are other components which affect female labor supply as well. Macro factors such as sectoral distribution, the prevalence of informal sector and level of human development's effects on female employment should be possessed.

Initially, general literature on determinants of female labor force participation needed to be referred in the scope of this thesis. Women labor supply has been studied especially in United States (US), EU and OECD countries both theoretically and empirically (Killingsworth and Heckman, 1983, p.104). The reason of why women employment is one of the most studied topics by labor economists is its contribution to economic growth.

The studies which are analyzed the evolution of female labor force participation generally tell us, women labor supply has an increasing trend in developed countries. Contrarily, it shows declining trend in developing countries, including Turkey. Even, this variation could be between rural and urban areas of a country.

Using longitudinal data, Hyslop (1999) have concentrated on the intertemporal labor force participation of married women for seven years. The framework of this study consists of linear probability and probit models. Non-labor income, transitory

income, having pre-school and school-age children and age of women has been used as explanatory variables (Hyslop, 1999, p.1272).

According to results of the Hyslop study (1999), non-labor income is more successful to explain dependent variable than transitory income. Additionally, pre-school and school-age children variables are statistically significant (Hyslop, 1999, p.1273).

Bloom and et al. (2007) have assessed the relationship between fertility and female labor force participation for the period 1960-2000 in 97 countries by using the method of the instrumental variable. They have constructed a simple model of fertility and labor supply regression in a logarithmic form. As expected, dependent variable is female labor force participation and explanatory variables are fertility rate, the percentage of population living in urban areas, physical capital per-working-age person, female life expectancy and the average school years of men and women respectively<sup>1</sup>. In the “*Fertility, Female Labor Force Participation and the Demographic Dividend*” study, it has been concentrated on five age groups’ fertility. According to estimation results, fertility on female labor supply decision has the strongest effect during the 20-39 ages (Bloom and et al., 2007, p.2). Regardless age-group, higher fertility causes to lower female participation to the labor market. Additionally, capital per working-age person, female life expectancy and female education are statistically significant and have a positive effect on female labor supply (Bloom and et. al, 2007, p.14). Any increasing in male education level reduces labor supply of female because of the income effect. Contrarily, female education has a positive effect on female labor force participation.

Causality among fertility, education level of female and male and female labor force participation should be stated (Bloom and et al., 2007, p.15). Female education has an effect on the decision about having a child. Well-educated women’s fertility is relatively lower than lower educated women’s. Thus low fertility leads to increasing

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<sup>1</sup> Fertility rate has been used as instrumental variable to explain female labor force participation in Bloom and et al. (2007) study.

female labor supply in theoretically. But in the study of Bloom and et al. (2007), there is no evidence that possible effect on the education of a decline in fertility.

Mammen and Paxson (2000) have been discussed women labor force differences in their study. The main objective of Mammen and Paxson's (2000) essay is to represent women labor supply and work type within development frame. Women labor force participation displays different characteristics in different countries. For example, women labor supply depends on some demographic structure like family relations, particularly in the Middle-East countries. Farm household example is a case labor scholars concentrate on. In this model, there is no any opportunity out of family farm to work for women (Mammen and Paxson, 2000, p.143). Under this condition, they have to supply their labor force only for family. It is generally encountered in this story in low-income countries. Another concept of low-income countries is family enterprises. In this stage, men become blue-collar workers and participation of women in the labor market starts to decline (Mammen and Paxson, 2000, p.143). Lastly, women labor force participation increases in industrialization stage because of high-level education of women.

Mammen and Paxson (2000) have been added several indicators into their study such as investment in education, labor force participation, participation in wage work and fertility in order to understand the relationship between development and female labor force participation. They have found a relationship among education, development and labor force participation. Women labor force participation has been analyzed for 90 countries from 1970 to 1985. Non-parametric regression has been used to obtain empirical results in this study. Further, it has been concentrated on the relationship between work status of women and development by using cross-country data in India and Thailand (Mammen and Paxson, 2000, p.142). Mammen and Paxson (2000) have evaluated the correlation between women's education-women's work activities and education of their spouses-women's work activities specifically in Thailand and India. By using pooled Ordinary Least Square (OLS), female labor force participation has been regressed on the logarithm of per capita Gross Domestic Product (GDP) and its square (Mammen and Paxson, 2000, p.149). The results of Mammen and

Paxson's (2000) study show that tendency of women to supply labor has changed in accordance with income level. Any change in income level leads to fluctuating of women labor supply. Their results have shown that women and their husbands' education level have an important effect on women labor supply as well (Mammen and Paxson, 2000, p.162).

*"The U-Shaped Female Labor Force Function in Economic Development and Economic History"* is another study which has been written by Claudia Goldin in 1995 on the female labor force. Goldin (1995) has constructed this study on married women's labor force participation from 1890 to 1980 in the US and has tried to embody of women labor force participation in the U.S. with the beginning of 19th century. According to the historical record of US, married white women labor force participation was higher than %15 in early nineteenth (Goldin, 1995, p.79). It has been mainly focused on income and substitution effect of income on women labor supply in Goldin's (1995) study. One of the most important components which effects women labor supply of Goldin's (1995) is schooling rate in the US. Additionally, Goldin's (1995) has argued that any increase in secondary schooling leads to increase in substitution effect for female.

Female who has graduated from secondary school has advantages to find office work. Contrarily, female who lack of secondary school education can find a job in manufacturing more than in the office (Goldin, 1995, p.83). This means that occupation selection or decisions of American female have been affected by secondary schooling for the studied years.

Explaining labor force only in relation to the income-leisure model concept cannot be true. Because this kind of analysis excludes other determinants like gender, race, age, education, socio-demographic structure and etc. (Psacharopoulos and Tzannatos, 1989 p. 190). Psacharopoulos and Tzannatos (1989) have examined female labor force by using income, age, fertility, religion, and education in an international perspective. Their descriptive analysis says that female labor force participation is higher in industrial countries than developing countries in the context of income groups. Relationship between development and female labor supply has been alluded to in their

study as well. Psacharopoulos and Tzannatos' (1989) analysis has also supported Tansel's (2001) study in the context of U-shape relation.

Mother workers have to allocate their times between working and child-bearing. During their child bearing, women labor force participation can be relatively low (Psacharopoulos and Tzannatos, 1989, p.193). Psacharopoulos and Tzannatos (1989) have separated age-specific<sup>2</sup> participation rate of women in low, middle and high-income countries in 1980's. They found that female labor force participation is lowest in middle-income countries.

Brinton and et al. (1995) have analyzed married women employment in the case of rapidly industrializing countries. The study has concentrated on married women employment in Taiwan and South Korea due to their geographical proximity and similarity of cultural values (Brinton and et al., 1995, p.1099).

The estimation methodology of the study "*Married Women Employment in Rapidly Industrializing Societies: Examples from East Asia*" is multinomial logit. Level of education (primary school or less, middle school, secondary school and college or more), work before marriage, average earnings of husband, husband employment status, family type (nuclear or extended), age of children and age of women have been used as explanatory variables.

According to Brinton and et al. (1995) study's results, education has a positive effect on married women employment in Taiwan. And also, college degree education has the most powerful effect. On the other side, education does not explain married women employment in a positive way in South Korea. This means that education decreases women employment in this country. There is a negative relationship between husbands' income and married women labor force participation in Taiwan. Moreover, the same relationship between husbands' income and women employment has been observed stronger for the South Korea (Brinton and et al., 1995, p.1117).

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<sup>2</sup> Age-specific groups are 15-19, 20-24, 25-29, 30-34, 35-39, 40-44, 45-49, 50-54, 55-59, 60-64.

Another consequence of the study is that having youngest children has the strong effect on both Taiwan and South Korean women in a negative way. Especially, having a child under two years old causes to decrease the probability of married women labor force participation South Korea (Brinton and et al., 1995, p.1122).

*“The Structure of Women’s Employment in Comparative Perspective”* is another study which focuses on women labor force participation. In the beginning of this study, Pettit and Hook (2005) have discussed women’s work structurally, compared women’s employment approaches and then measured the effect of economic and demographic variables, labor market conditions on female employment by using multi-level analysis (Pettit and Hook, 2005, p.789). They (2005) have used Luxemburg Income Study (LIS) which consists of demographic, income and employment information (Pettit and Hook, 2005, p.785). Moreover, 19 countries which are Australia, Austria, Belgium, Canada, Czech Republic, Denmark, Finland, France, Germany, Hungary, Italy, Luxemburg, Netherlands, Norway, Poland, Russian Federation, Sweden, United Kingdom and the United States have been criticized during the mid-1990s.

They have run two different regression equations in micro-level. Initially, women employment in paid labor force model has been constructed by using logistic regression in the context of economic and demographic features (Pettit and Hook, 2005 p.789). Secondly, national components like sectoral economic growth, unemployment, maternity leave, publicly supported childcare and gender equality have been analyzed to explain women employment have been added to the analysis.

According to Pettit and Hook’s (2005) estimations results, well-educated women are more likely to be in paid employment than others. Other components which have been measured their statistical significance are having children, the presence of children between 0 and age and presence of children between 4 and 6. Having children under age 3 leads to decrease in to be employed of women (Pettit and Hook, 2005, p.792). Parental leave and public provision of childcare which are called as demographic factors also have the significantly positive effect especially on women who have children age 6 (Pettit and Hook, 2005, p. 794). However, Pettit and Hook

(2005) have also emphasized that the relationship between parental leave and women employment is not linear permanently. Long-term paternal leave provided by governments leads to decrease in women labor supply decisions (Pettit and Hook, 2005, p.794). According to Pettit and Hook (2005), the critical threshold of inverse effect of parental leave on women labor supply is three years. There is another familiar case in Pettit and Hook's (2005) study. Presence of men who are out of work increases in the reflex of women labor force participation.

Another study which analyses intertemporal female labor force participation is "*Intertemporal Female Labor Force Behavior in a Developing Country: What We Can Learn from a Limited Panel?*" (Glick and Sahn, 2005, p.23). Unlike other studies, this paper presents information about female labor force behavior of West Africa (Glick and Sahn, 2005, p.23). A multi-period multinomial logit model has been used as the methodology of the paper. Age, age square, schooling years, non-labor income, number of children, marital status, and spouse unemployment have been selected as explanatory variables in order to cover female labor force behavior in West Africa.

According to logit estimation results, the presence of children under 5 increases the probability of self-employment but it decreases wage employment or formal employment of females (Glick and Sahn, 2005, p.27). While age affects the probability female employment positively, the effect of age square on the probability of female labor force behavior is negative.

So far, studies which have summarized refers only determinations of female labor force participation such as education, marital status age and etc. There are also some studies that explain women labor force participation by using economic growth levels. According to Tansel (2002) female labor force participation exhibits U-shape in the different stage of economic development. The basic story behind this notion is that agriculture is the dominant sector of the economy before development. Female participate to the labor market as an unpaid family worker at this level. With the economic progress, production type moves from home to industry. In this regard, the proportion of family production starts to diminish in total. But parallel with this evolution, consumption patterns are also adjusted with respect to novel conditions. Like

the domino effect, these changings lead to expansion of the market, the market expansion brings to new technological method and new technological methods of production help to increase in income (Tansel, 2002, p.12). With income rises, women need work less than before. After this period, sharp declining of women labor supply occurs in the market. In addition, industrial upgrading calls for well-educated labor. Under this condition, women cannot compete against men in this level of development because of their lower educational background.

Increasing income of society also brings together increasing in awareness about education of women. Further, tertiary sectors occur in developing economy. After this level, economic development and high education level supports each other. Women becomes well-educated individuals and tertiary sectors lead to increase their employment. This is the story behind Tansel's (2002) study.

The empirical part of Tansel's study (2002) has been constructed on relationship between female labor force and economic development. Besides, different determinants have been used to explain women employment. In the study of "*Economic Development and Female Labor Force Participation in Turkey: Time-Series Evidence ad Cross-Province Estimates*", female labor force participation has been explained by using both labor market conditions and personal-household features. Further, educations has been used as a proxy variable (Tansel, 2002, p. 11). According to Tansel's (2002) the variable of education has two effects which are income and substitution on women labor supply. She has argued that education provides to earn higher income. Higher income leads to increase female labor force participation.

Tansel (2002) has used males and females earnings as a personal variable. There is positive relationship between higher earnings and women labor supply. It has also been asked to measure the effect of local market conditions on female labor force but discouraged-worker and added-worker effects aggravate this analysis. Other determinant of Tansel's (2002) study is provincial unemployment rate as a local market conditions. Provincial unemployment rate has been differentiated as female provincial unemployment rate and male provincial unemployment rate. Another important part of this study is local industrial composition. The main aim of adding industrial

composition in the regression is to see the influence of service, agriculture and industry on female labor force. Lastly, economic growth of provinces and urbanization are other parameters of this study.

Tansel's (2002) method is OLS to explain female labor force participation in 67 provinces in 1980, 1985 and 1990. Tansel's (2002) found statistically significant results in all models between economic growth of provinces/ per capita gross provincial product of provinces and female labor force. Per capita gross provincial product has positive effect on it. Further, high school graduates has also statistically significant and positive effect on female labor force participation. Contrarily, illiteracy limits high women labor supply. Surprisingly, increasing in urban share of population areas does not have a positive effect on female labor force participation. Among agricultural, industrial and service sectors, only agriculture's coefficient estimation has a positive effect on female labor force participation (Tansel, 2002, p.17).

The study which can be thought to link between Tansel's (2002) U-shaped function is "*On the Future of Female Employment in Turkey*" written by Genc and Sengul in 2015. They refers that female employment cannot be explained by excluding population ratio of Turkey (Genc and Sengul, 2015, p.3). Within this context, Genc and Sengul (2015) highlight the importance of structural transformation of the country. Being transitional economy has powerful effect on the future path of female employment. Shifting from agricultural based form to industry or service oriented one could be used to explained increasing tendency of female labor supply (Genc and Sengul, 2015, p.3). To explain the characteristics of female employment in Turkey, structural transformation model is designed by Genc and Sengul (2015) for the years 1988-2015. The main logic under Genc and Sengul's (2015) quantitative analysis depends on continuity of productivity of sectors. Accordingly, growing of sectors productivity supports female employment possibilities. In order to find the sector which has the most powerful effect on female employment through productivity growing, gender and sector specific employment rates are used (Genc and Sengul, 2015, p.9). The results show that any increasing in service sector productivity generates the most effective rise in female employment.

Using intact house model together with micro data, Tunali and Baslevet (2002) has observed the reasons of the low labor force participation for married women in urban areas of Turkey for the years 1988-1998. 8962 married women have been accepted operational sample in this study. But the majority of these women are non-participants and there are only 1192 women participants with 266 unemployed. Age, education dummies, presence of children in age groups 0-2 and 3-5 and 6-14, self-employed husband, wage gap between market wages of husband-wife and labor market characteristics like distributions the sectors have been used as explanatory variables to explain married women labor force participation (Tunali and Baslevet, 2002, p.19).

The results show that %62 of women who aged 20-54 are potentially active but only %13 of these women are economically active (Tunali and Baslevet, 2002, p.23). Wage gap between market wages of husbands and wives has not statistically significant effect. Additionally, explaining married women by using educational attainment, lower fertility and labor market environments does not make sense.

*“Rise of Services and Female Employment: Strength of the Relationship”* is the recent empirical study which emphasizes service sector importance as a driving force behind the increasing female employment in developed countries, has been written by Genc Ileri and Sengul for the period 1988-2007 in 2016. It focuses on the Turkey in order to demonstrate powerful relationship between structural transformation and female labor force participation (Genc Ileri and Sengul, 2016, p.2). The structural transformation described in the previous article is the same as the structural transformation implied in this study. Structural transformation has been modelled by using two sectors, goods & service and home production. Genc Ileri and Sengul (2016) argue that any productivity increasing in market services leads to moving female labor from home production to service sector. The definition of marketization as a channel supporting women’s employment is being made in this process.

Genc Ileri and Sengul’s (2016) empirical model includes productivity growth, tax rates and the share of female employment rate in service sector. Using average sectoral productivity growth rate for the period 1988-2007 and the tax rates of 2007,

they reaches the results that female employment will rise to %10.8 (Genc Ileri and Sengul, 2016, p.13).

The study of “*Unemployment and Labor Force Participation in Turkey*” aims to explain the long-run relationship between unemployment and labor force participation. Using quarterly data for the period 2005 and after, Tansel and et al. (2015) observe that whether any relationship between labor force participation and unemployment in the long-run. According to their Vector Error Correction Model (VECM), both female and male unemployment rates are independent of labor force participation (Tansel and et al., 2015, p.7).

Uysal Kolasin and et al. (2015) examines empirically effect of high school and university graduation on the decision of female participation to labor market. Conducting a survey of 3600 people in the difference provinces of Turkey, it has been tried to shed light on determinants of well-educated women labor force participation (Uysal Kolasin and et al., 2015, p.8). The context of survey is the same as House Hold Labor Force Survey which is prepared by TurkStat. The study doesn't not only comprise employed women but also women who are not on the labor market.

The method of probit consists of quantitative part of Uysal Kolasin's and et al. (2015) study as well. The dependent variable of the research is decisions of women labor force participation and explanatory variables are education, age, square root of age, marital status, having child, total income composition of household like non-wage income of women, income and non-wage income of husband. Uysal Kolasin and et al. (2015) creates an explanatory variable by scaling the conflict within a household from 1 to 5.

Division of labor within household, value of work and region have been used explanatory variables in the study of Uysal Kolasin and et al. (2015) as well. According to probit analysis results, the most effective variables on decision of women labor force participation are marital status of women and being mother. Except for being student, almost every education level which are bachelor, master degree and associate degree lead to increase the probability of women labor force participation (Uysal Kolasin and

et al., 2015, p.24). However, having children causes to decrease of the probability women labor force participation.

Lastly, non-wage income has statistically significant for both single and married women. Married women are negatively affected when single there is a positive effect of non-wage income on single women.

There is also observed the effect of family background of women (Uysal Kolasin and et al., 2015, p.25). Family background refers that educational status of mother and father and mother working experience of women. Educational status of parent does not statistically significant in accordance with test results. But labor force participation probability of women who has mother who participated to labor market before is higher than others.

Age and square root of age are another statistically significant variable which help to explain dependent variable. There is positive correlation between age and decision of women labor force participation. Conversely, the effect of the age square root statistically significant in a negative way (Uysal Kolasin and et al., 2015, p.24).

Uysal Kolasin and et al. (2015) have emphasized the importance of division of labor, conflict within household and value of working in descriptive part of their study. Test results are parallel with their prediction about these explanatory variable. It has been empirically proved that division of labor within household and value of working lead to rise in probability of women employment. However, conflict within household has prevented participation of women to labor market (Uysal Kolasin and et al., 2015, p.25).

It has been analyzed that regional overview of women labor participation decision in Uysal Kolasin's and et al. (2015) study. The region which has most powerful effect on labor participation decision is West Marmara.

Another comprehensive study about female labor force literature in Turkey is "*Why Do Women Prefer Part-Time Employment in Turkey*" which is written by Duzgun Oncel and Eris Dereli (2015). Duzgun Oncel and Eris Dereli (2015) have

concentrated on structural and demographic factors as determinants of increasing in female part-time employment. Furthermore, basic parameters, which explain female labor supply, have been used. But specifically it has been concentrated on change in probability part-time employment with respect to full-time employment and change in probability part-time employment with respect to being out of the labor force (Duzgun Oncel and Eris Dereli, 2015, p.85).

Demographic features which are age, region and gender have been highlighted and education has been alluded as a main structural variable. The time period of the TurkStat Household Labor Force Survey is between 2005 and 2011. Additionally, models have been estimated by using method of probit.

As mentioned before, Duzgun Oncel and Eris Dereli (2015) have used two model specification in their study. First one is change in probability part-time employment with respect to full-time employment and second one is change in probability part-time employment with respect to being out of the labor force.

According to their models estimation results, age has a negative effect on female part-time employment for the first model (Duzgun Oncel and Eris Dereli, 2015, p.108). Low educated females have preferred to part-time employment more than their well-educated congeneric. Not surprisingly, high regional unemployment causes to increase in preference part-time employment of women in first model. Lastly, age dummies has positive effect and middle level education has negative effect on part-time female employment in the second model specification (Duzgun Oncel and Eris Dereli, 2015, p.108).

The study of “*Labor Force Participation of Married Women in Turkey: Is There an Added or a Discouraged Worker Effect?*” which is written by Karaoglan and Okten in 2012. Karaoglan and Okten (2012) has analyzed the decision of female labor force participation and added worker effect for the period 2000-2012. It has been argued that female labor force participation was higher until 1950’s because of unpaid family working (Karaoglan and Okten, 2012, p.6). When it comes to 1988-2000 period, female labor force participation has remained lower previous period due to the lack of

formal sector experiment of women (Karaoglan and Okten, 2012, p.6). The effect of the massive migration from rural to urban and women traditional role have also been highlighted.

Karaoglan and Okten (2015) analyze married women's Labor supply responses to their husbands job loss and worsening unemployment conditions for the period 2005-2010. They constructed pseudo panels for six two years by using cross-sectional data. Demographic variables such as age of wife and husband, education level of wife and husband, the number of children in the household and the number of adults in the household except for wife and husband are used as explanatory variables in order to assess added and discouraged workers effect on female labor force participation (Karaoglan and Okten, 20015, p.279). And also, rate of change in regional employment and GDP are added into regression.

The results show that added workers effect is statistically significant. Involuntary job loss of husband's leads to increase married women labor force participation (Karaoglan and Okten, 2015, p. 287). Stated in other words, transition of husband from employment to involuntary unemployment positively affects the probabillity of married female employment. Moreover, regional unemployment is used to refer a worsening of total economic condition. It has small and negative effect on married women labor force participation. Another important result is that underemployment status of husbands has positive effect on labor force participation of wives (Karaoglan and Okten, 2015, p.287).

## **CHAPTER 3 DESCRIPTIVE PICTURE FROM THE WORLD & TURKISH ECONOMY**

### **3.1. DESCRIPTIVE PICTURE FROM THE WORLD ECONOMY**

The main purpose of this thesis is to give a general picture about female labor force of Turkey. But firstly, analyzing world labor market (especially developed and developing countries) can contribute to understand the general dynamics of labor market. Because of that world labor market condition is summarized descriptively in this part. And then Turkey labor market's performance indicators and structure will be underlined. Under this context, some basic labor market indicators of the world and Turkey like current employment, labor force participation, unemployment and etc. will be shed light on.

Unemployment defines as the situation of an individual who intends to work on current wage level but couldn't find (Blanchard, 2017, p.47). Blanchard (2017) has argued that unemployment ratio is a significant indicator of an economy for two reasons: first, it has a profound effect on unemployed people welfare. Second, it shows that an economy may use its resources or not.

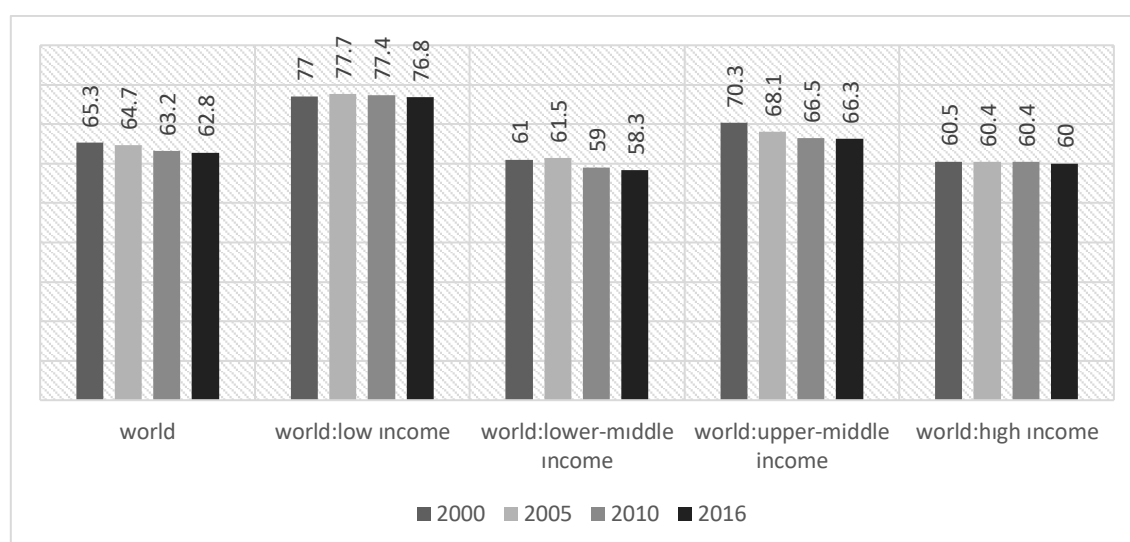
By definition, labor force participation is the proportion of economically active population which is summation of employers and people look for a job and total population exists from people who able to work (Blanchard, 2017, p.47). Working-age that represents able to work can be different for every country but generally it is accepted between 15-64 ages. It is a crucial ratio which shows the probability of individual of a certain age and gender in labor market. So labor force participation which is one of the most important indicators for economic policies reflects individual's decision about his/her labor supply (Karabıyık, 2012, p.233). For example, in order to apply some policies which provide full employment, the number of people who ask to work must be known. And this information comes from labor force participation ratio.

At the beginning of economic growth and industrialization, the productivity of agricultural production increased and it caused to increase in migration from rural areas to urban (Karabıyık, 2012, p.233). These developments led to change in consumption

patterns and increase in living standards. Therefore most of goods and services which had been produced before at home were started to be purchased from the market. Under this condition, both women's and men's tendencies associated with the participation in labor market has went up since then. On the other side, with industrial developments, decreasing in labor force participation has been observed. Because higher living standards and higher welfare conditions have resulted in longer education period and later retirement age. Additionally, these developments that are emphasized above have had an effect like disintegration of agricultural societies. One more result of economic growth and industrialization was also trading between working-leisure times. Labor force participation in agricultural societies is generally high but in modern societies, it had a low trend at the beginning. And then parallel with rising industrialization and urbanization process, it starts to increase (Karabiyık, 2012, p.233).

Figure 1 depicts labor force participation of five different income groups. The first indicator gives world's labor force participation and the second one shows low-income countries' labor force participation between 2002 and 2016. Last three indicators show lower-middle, upper-middle and high-income countries in the world respectively.

**Figure 1 Ratios of Labor Force Participation in the World by Different Income Groups-All Genders (%)**

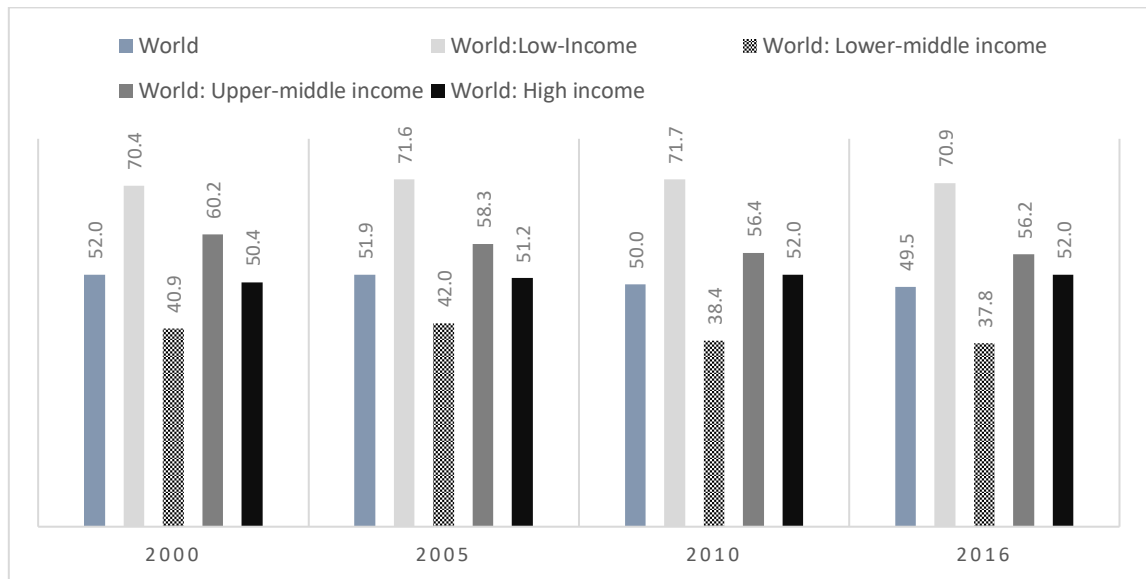


Source: ILO Statistics, 2017 and author's calculation.

According to data which has been taken from International Labor Organization (ILO), labor force participation does not go down below %60 all around the world for the given years in Figure 1.

The share of different income groups' female labor force participation is given in the figure 2 for the years 2000-2016. We observe that the share of female labor force participation is about %50 in the world for the studied years. Female labor force participation in lower-middle and upper-middle income countries follows slightly decreasing trend through the period. One interesting feature of the figure is that the share of female labor force participation in the group of low-income countries is higher than other groups.

**Figure 2 Female Labor Force Participation in the World by Different Income Groups (%)**



**Source:** ILO Statistics, 2017 and author's calculation.

In order to see the difference between woman and man labor force participation clearly, looking from gender perspective can help us. Table 1 shows the proportion of labor force participation by gender in the world, low income, lower-middle income, upper-middle income and high-income countries for the years 2000-2016. The general view is that female participation to labor force is lower than male during the studied years. The highest participation of both males and females belong to low-income

countries. Surprisingly, in high-income countries women labor supply and participation in labor market are not on the expected level.

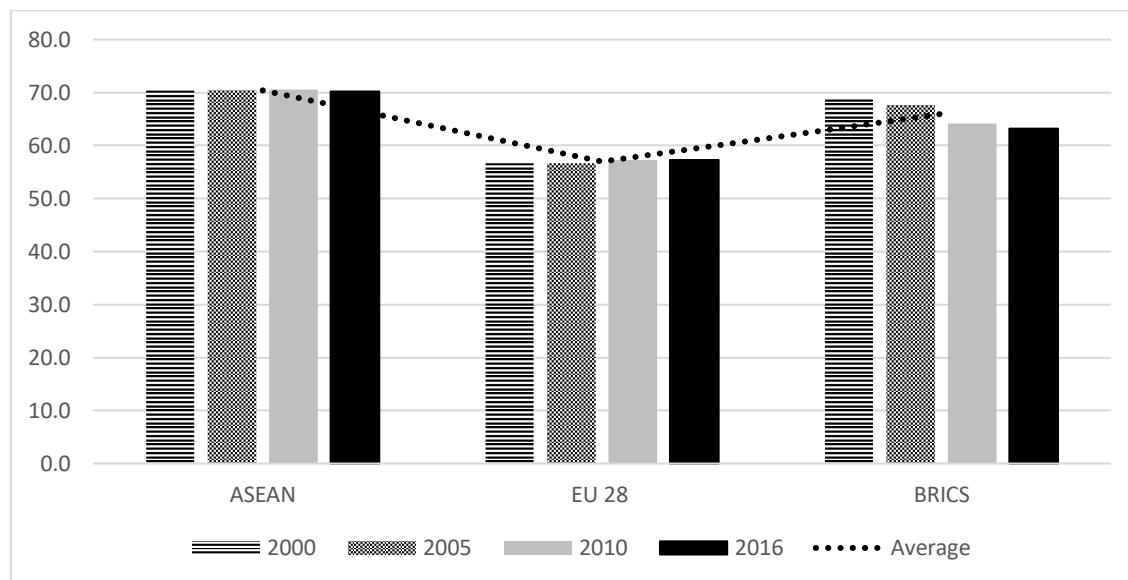
**Table 1 Proportion of Labor Force Participation by Gender (%)**

	2000		2016	
	<i>Female</i>	<i>Male</i>	<i>Female</i>	<i>Male</i>
<i>World</i>	52	78,7	49,5	76,1
<i>World: Low Income</i>	70,4	84	70,9	82,9
<i>World: Lower-Middle Income</i>	61	80,8	78,5	37,8
<i>World: Upper-Middle Income</i>	60,2	80,3	56,2	76,5
<i>World: High Income</i>	50,4	71	52	68,2

Source: ILO Statistics, 2017 and author's calculation.

It would be appropriate to look at the labor force participation rates of the three major economic integrations after a general evaluation of the labor market of the different income group's countries. Figure 3 gives a comparison among European Union 28 (EU 28), Association of Southeast Asian Nations (ASEAN) and Brazil-Russia-India-China&South African Republics (BRICS)'s labor force participation. The possibility of a relationship between economic growth and employment is the reason behind the fact that analyzing labor force participation ratio of these economic associations. Before interpretation of these three economic organization, it would be beneficial to remind that all three groups have different economic performances and structures. But the main aim is only to show a general view of their labor market performance. Figure 3 suggests that ASEAN countries have the highest proportion of labor force participation for the years 2000-2016. As expected, EU countries have lowest labor force participation in this period because of their labor market rigidities. The average value of the economic integrations labor force participation ratios for these years are %70.4, %56.9 and %65.9 respectively.

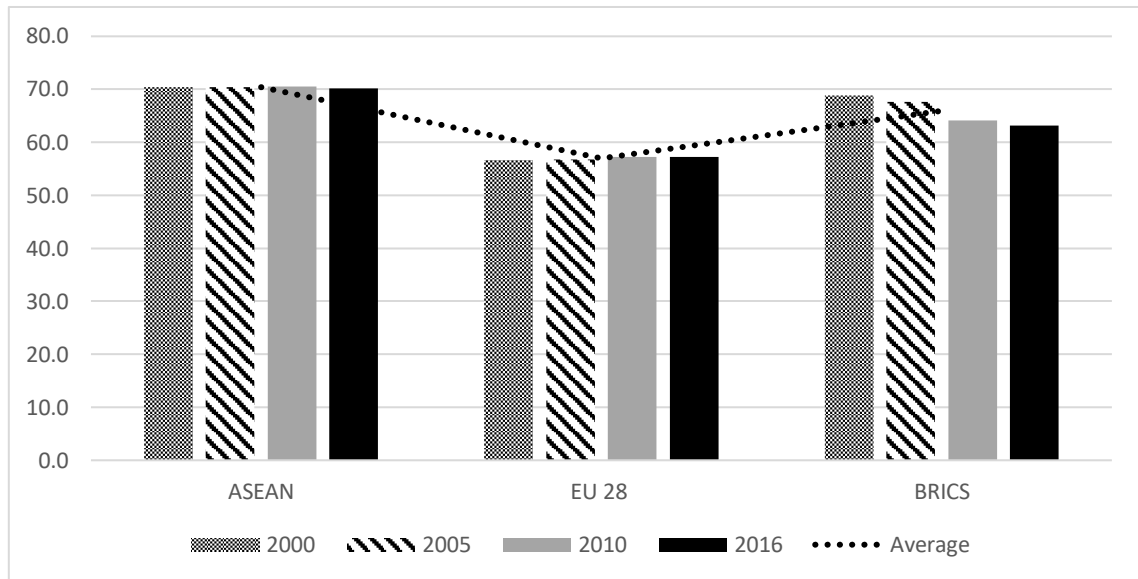
**Figure 3 Labor Force Participation Ratios of EU 28, ASEAN & BRICS-All Genders (%)**



**Source:** ILO Statistics, 2017 and author's calculation.

Figure 4 gives information about the share of female labor force participation in ASEAN, EU 28 and BRICS for the years 2000-2016. It also provides average value of the proportion of female labor force participation for the selected years. The highest female labor force participation ratio belongs to ASEAN. Not surprisingly, the lowest female labor force participation ratio belongs to ASEAN. Not surprisingly, the lowest female labor force participation belongs to EU countries. It changes between %50 and %55 between 2000 and 2016 in the region European Union. On the other hand, female labor force participation is between %69 and %71,9 between 2000 and 2016 in ASEAN. The share of female labor force participation of BRICS follows slightly decreasing trend through the period. It is between %68 and %63 between 2000 and 2016. The average value of female labor force participation is about %70, %55 and %64 in ASEAN, EU 28 and BRICS respectively.

**Figure 4 Female Labor Force Participation Ratio of EU 28, ASEAN & BRICS (%)**

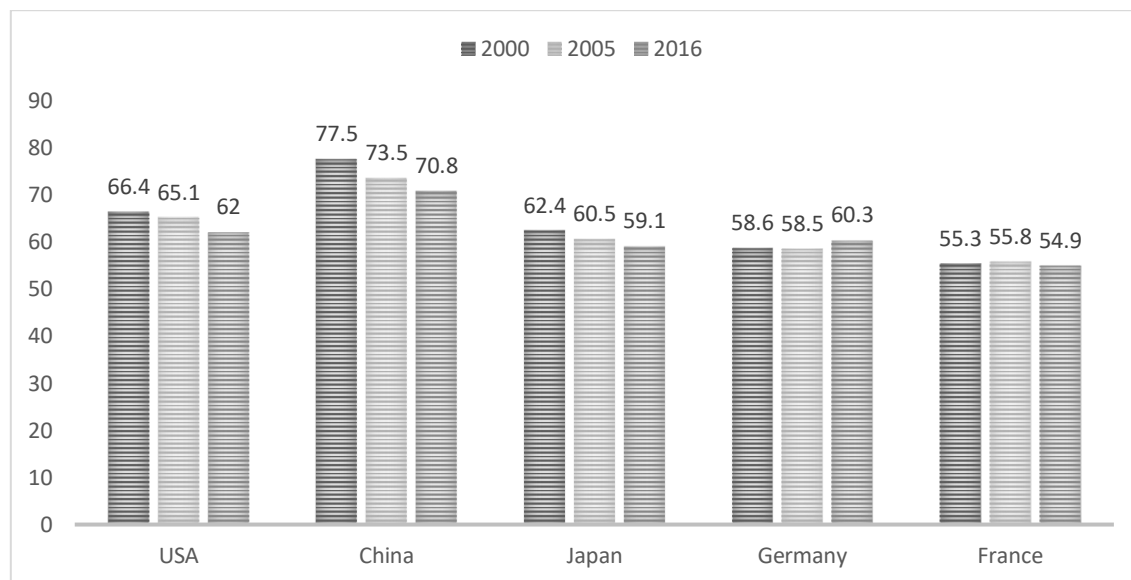


**Source:** ILO Statistics, 2017 and author's calculation.

It is also important to look at labor force participation of some leading countries in the world for this study. Figure 4 depicts the proportion of labor force participation of first five economies of the World. All data has been classified in order to show 15 and above ages for all countries for the given years.

According to Figure 5, the lowest participation proportion belongs to France and the highest participation ratio belongs to China among leading countries. Despite China has the highest labor force participation ratio among leading countries, in the last 16 years the labor force participation rate has decreased by 7 percent. Same tendency has been observed for the US labor market. In the last 16 years, the labor force participation rate has been decreased about 4,5 percent. Similarly, the number of people employed by the labor market has diminished in Japan, which has been in a long-run economic recession. Germany and France have less volatile labor markets when compare with the US, China and Japan.

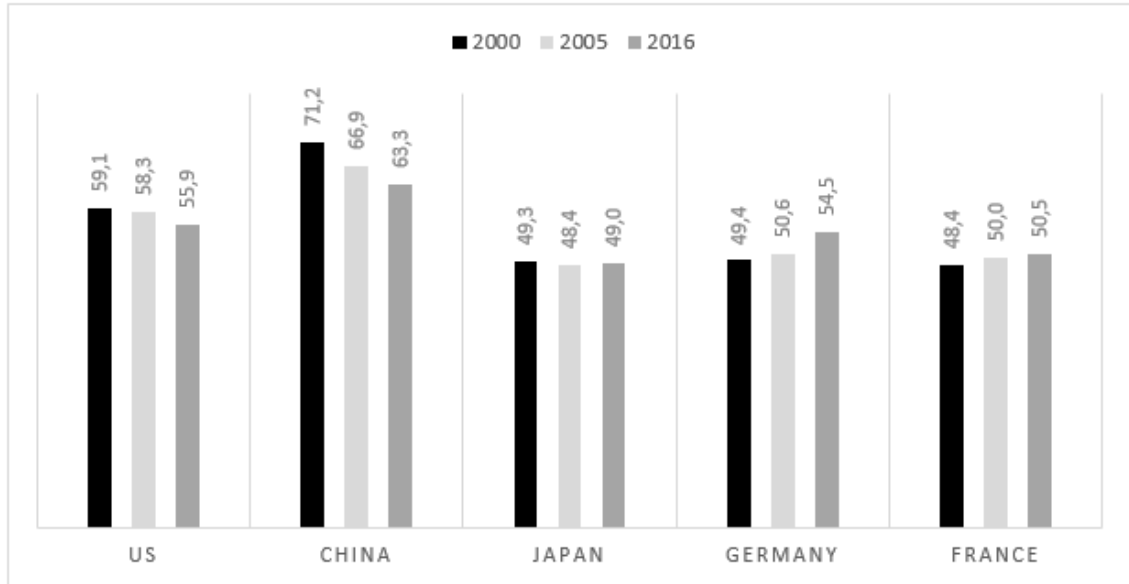
**Figure 5 Proportion of Labor Force Participation of First Five Economies in the World-All Genders (%)**



**Source:** ILO Statistics, 2017 and author's calculation.

Figure 6 includes information about female labor force participation in first five economies in the world. The share of female labor force participation in these countries is low in comparison with the previous figure. In all countries, female labor force participation falls between 2000 and 2016 except for Germany and France. For instance, the share of female labor force participation decreases from %59,1 to %55,9 between 2000 and 2016 in US. It is between %71,2 and %63,3 between 2000 and 2016 in China. There is no significant changing in female labor force participation between 2000 and 2016 in Japan. The share of female labor force participation in Germany and France follows slightly increasing trend through the period. It reaches from %49,4 to %54,4 between 2000 and 2016 in Germany. In France, female labor force participation is % 48, and %50,5 between 2000 and 2016.

**Figure 6 Female Labor Force Participation of First Five Economies in the World (%)**



**Source:** ILO Statistics, 2017 and author's calculation.

There are two phenomena that make women's labor supply prominent. The Second World War was emerged as the first reason for the increasing tendency of women to join labor force over time (Kılıç and Öztürk, 2014, p. 109). Before the Second World War, women were regarded as reserve labor force and their participation in the workforce was not necessary. But the labor force shortage that emerged after Second World War triggered women's participation in the workforce. After this breaking point, the presence of women in labor market continued to increase. The second reason for the increase in female labor supply is that the increase in male participation is not as high as women (Kılıç and Öztürk, 2014, p. 109). Because male employment is stable while female employment is rising.

### **3.1.1. General Concepts of Labor Market**

Labor, labor force, employment, unemployment and labor force participation are the basic concepts with regards to labor economics. The first concept that needs to be defined is labor. Word meaning of labor is usage or recruiting. Employment also refers to the human power or level of work required for economic activities in a country (Özpinar and et al., 2011 p.133). Labor force is another important factor for labor

scholars who work on it. Labor force can be defined as the sum of individuals who are employed or seeking a job. Being economically active is crucial for defined in labor force (Psacharopoulos and Tzannatos, 1989, p. 187). A part of the population of society consists of unemployable people such as children, disabled people, elders and etc. These subpopulations are not included in the labor force.

Unemployment is the percentage of the total workforce that is unemployed and is looking for a paid job. As a formula,  $\text{Unemployment} = (\text{Number of Unemployed} / \text{Total Labor Force}) * 100$ . Labor force participation is also a phenomenal indicator to explain labor market. It is equal to  $(\text{labor force} / \text{population of working age}) * 100$ . Basically, it gives us the percentage of employed people in labor force.

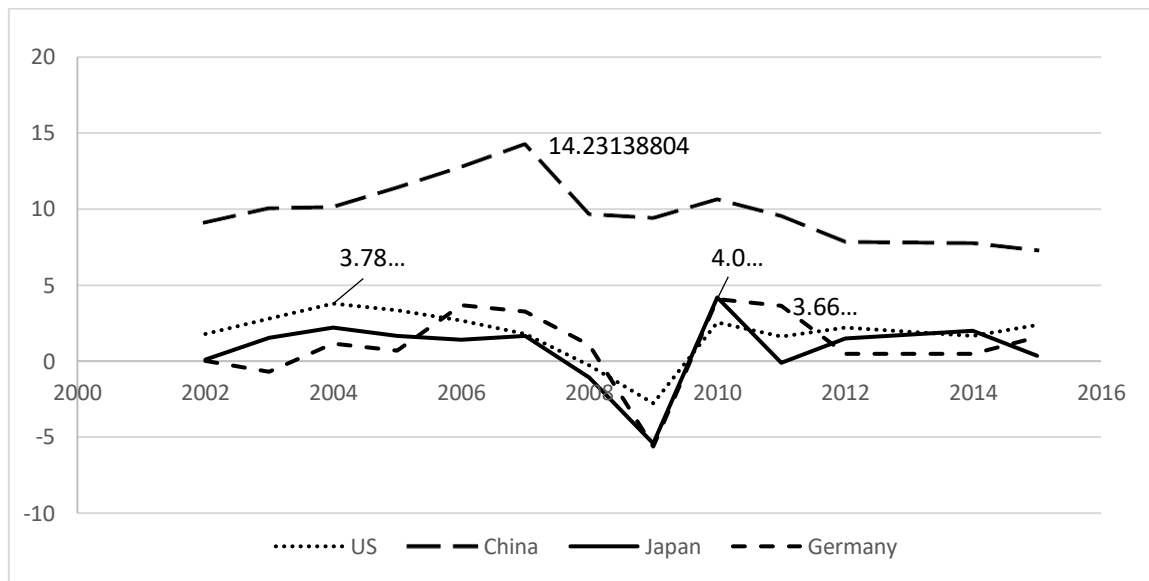
In different parts of the history, unemployment has been interpreted differently for different economic associations. Before great depression, unemployment was evaluated as a volunteer situation by Classical and Neo-Classical Schools. After 1929 economic crises, the question “whether unemployment is voluntary or not” was begun to be questioned (Özpinar and et al., 2011, p.134). In addition to this, following with the great depression, believing about full-employment started to lose its importance and the Keynesian theory which defends that an economy can be in equilibrium in case of underemployment has become popular. As a result, analyzes and arguments of different schools on unemployment are continuing to change and evolve. Apart from the different perspectives of schools on unemployment, it continues to be a problem which needed to be solved for today’s economies especially in the context of women employment.

Labor force participation is a crucial indicator for labor scholars to understand and comment structure of market due to the policy analyses. As mentioned earlier, increase in the presence of women in labor market is important for economies that aim to grow. Female labor force participation can be defined as a ratio of female labor force to the female population. Summation of paid women and unpaid family workers women gives us employed female as well.

### 3.1.2. Unemployment in Developed and Developing Countries

There are many studies that examine the relationship between GDP growth and unemployment. This part of the study gives a comparison between GDP growth and unemployment rates of some selected developed and developing countries. The group of developed countries includes the US, China, Japan and Germany<sup>3</sup>.

**Figure 7 Some Selected Developed Countries' GDP Growth, 2002-2015 (%)**

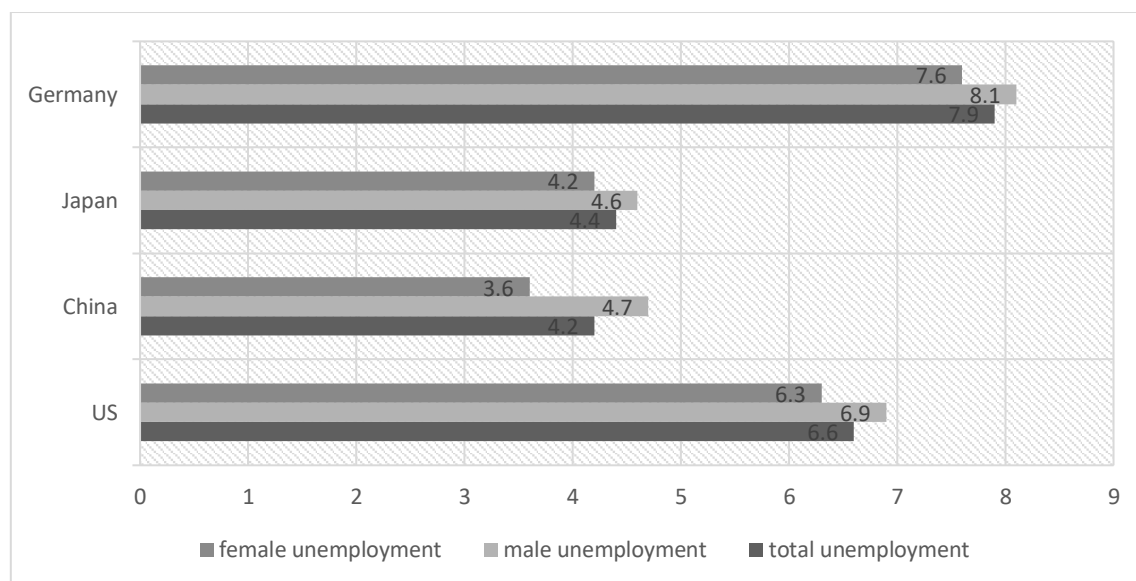


**Source:** World Bank Statistics, 2017, author's calculation.

Figure 7 gives the picture of countries' GDP growth rates for the years of 2002-2015. The aim is to observe general labor market condition of developed countries and make comparison among mostly industrialized and less industrialized countries. The growth rates of all countries exhibit wavy look for the years of 2002-2015. Additionally, the 2008 economic crises appear to negatively effect on the growth of all countries. China is outlier country due to the highest average growth rate which is about %9.9. The rest of the selected developed countries' growth rates are close to each other.

<sup>3</sup> <http://statisticstimes.com/economy/countries-by-projected-gdp.php>, (23.10.2017).

**Figure 8 Developed Countries' Average Unemployment Rates, 2002-2015 (%)**

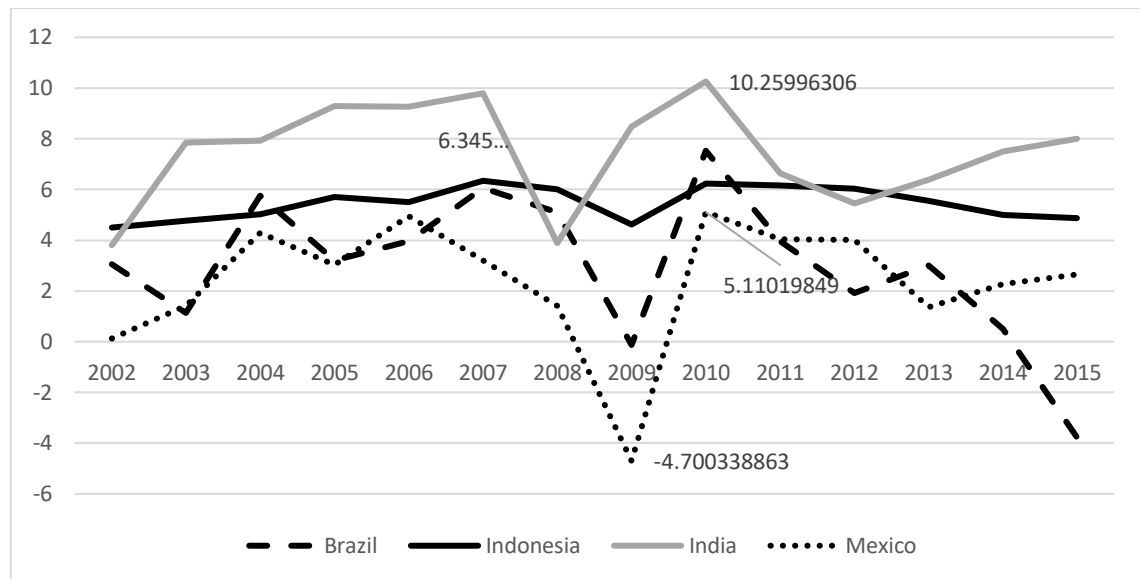


**Source:** World Bank Statistics, 2017, ILO estimation.

Figure 8 shows us some selected developed countries' average unemployment rate for the years of 2002-2015. According to figure 8, the country with the highest unemployment rate among developed countries is Germany. Both female and male in Germany have to struggle with the effect of unemployment more than Japanese, Chinese and U.S. citizens. The average value of total unemployment, male and female unemployment are about %7,6, %8 and %7,4 respectively in this country. On the other hand, Japan is the country which has the lowest unemployment rate in the group for the studied years. Despite the fact that China's total unemployment rate is higher than Japan's total unemployment rate, female unemployment rate of China is lower than Japan's female unemployment rate.

Another remarkable detail is that unemployment ratio of females is lower than males in all countries. The lower unemployment rate of women in selected developed countries can be resulted from the higher development levels of them.

**Figure 9 Some Selected Developing Countries' GDP Growth, 2002-2015 (%)**



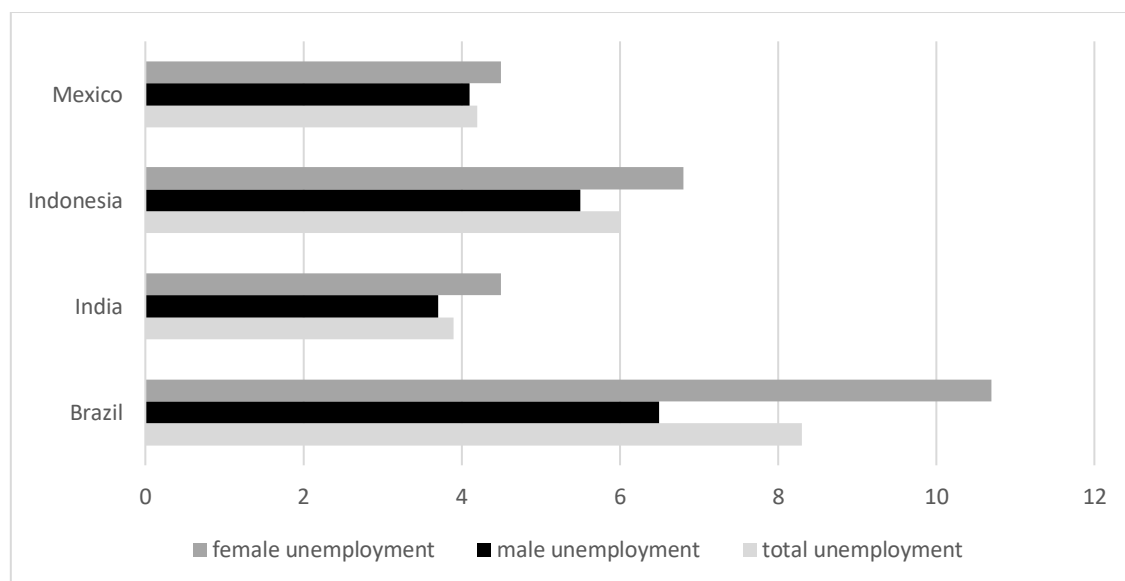
**Source:** World Bank Statistics, 2017, author's calculation.

Figure 9 depicts some selected emerging countries' GDP growth like India, Brazil, Indonesia and Mexico for the years of 2002-2015. The reason why these countries are referred as emerging economies is related to their growth rate. A comparison between two country groups gives the information that emerging countries have more successful economic performance than developed countries.

The growth rate of India which is the most successful country in this group is about %10,5 in 2010. For the 2007, GDP of Indonesia has increased 6,3 percent compared to previous year. It has the least fluctuating GDP growth path for the years 2002-2015. Brazil and Mexico are the two countries which have the lowest average GDP growth rate in the group of selected developing countries. For the year 2010, their growth rates are about %7,5 and % 5,2 respectively.

The 2008 economic crisis has also caused to deterioration in economic growth of the countries in this group like the first group. Whether the successful economic performance of emerging countries absorbs their unemployment rates can be explained by the following figure.

**Figure 10 Developing Countries' Average Unemployment Rates, 2002-2015 (%)**



**Source:** World Bank, 2017, ILO estimation.

Figure 10 focuses on three types of the unemployment rate in Mexico, Indonesia, Brazil, and India for the years 2002-2015. According to the previous chart, India has the highest growth rate among emerging countries. Its total, female and male unemployment rate is in reasonable level with reference to growth rate. The average growth rate of Brazil is about %3.4 for the years of 2002-2015, at the same time this country has the highest female unemployment rate. The proportion of unemployed females in Brazil is equal to %12,5. Indonesia, which has %10 female unemployment rate, is the second country with the highest female unemployment rate after Brazil.

Closing gender gaps in the emerging countries can remain an important challenge in the following years. Besides unemployment issue, many developing countries face to gender gap problem in labor market.

Karaoglan and Okten (2012) have argued that Turkey has lower female labor force participation than OECD countries. *OECD Employment Outlook* (2013) supports this claim. The total female employment rate of OECD countries is %57,2. In this country group, female employment rate of Turkey is only %28.7 (OECD Employment and Labor Market Statistics Database, 2013). According to Karaoglan and Okten's (2012) study, it has highest female unemployment ratio among central Asian countries.

ILO's source of labor statistics (2016) shows that female unemployment rate is %9,4 in Central Asia for 2016. Contrarily, Turkey female unemployment rate is %12,1 for the same year. Besides, Turkey does not have the employment rate that will make a big difference even among Islamic countries (Karaoglan and Okten, 2012, p.5). Even Arab States including low, middle and high-income groups have better performance some kind of employment type (ILO, 2017). For instance, male unemployment rate of the Arab States is %8,3 and total unemployment rate is %10,7 for the year of 2016. For the same year, these rates are %9,5 and %10,3 respectively in Turkey (ILO, 2017). It cannot be claimed that Turkey is outlier country in the category of female unemployment among the Arab States. The level of these ratios are % 12,1 and %21,9 in Turkey and the Arab States respectively (ILO, 2017).

### **3.2. LABOR MARKET STRUCTURE OF TURKEY**

Before the empirical analysis, we investigate the structure and dynamics of the Turkish labor market. Considering the importance of Turkish labor market transformation, we include the effect of this process on female labor force participation in our study.

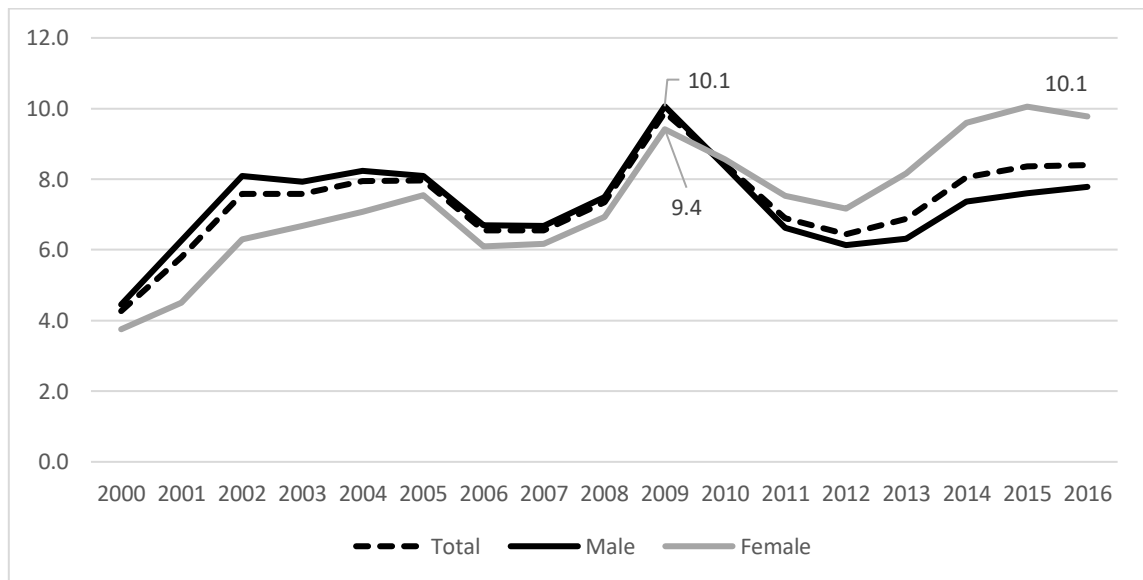
Data shortage does not allow analyzing Turkish labor market since the foundation of the Republic. Therefore, it is difficult to reach to the data which belongs to the years before 1920. Until 1950's general structure of Turkish labor market is agricultural-based to a large extent. According to Ilkcaracan and Tunali (2008), agricultural sector's income has composed nearly %40 of national income. When it comes to 1970's, the share of agricultural income starts to decrease. 1970's are considered the years that the beginning and become prominent of industrialization thrust in Turkey. Due to the industrialization thrust, agricultural-based Turkish labor market structure started to change because government cut subsidies and reduced loans of agricultural production in 1980's. Additionally, agricultural investments began to decrease (Berber and Yılmaz Eser, 2008, p.3). The mobility of population shifted from rural to urban. Agricultural commodities started to be produced in small-scale areas. Labor need of urban economy increased contrary to the rural economy (Ilkcaracan and Tunali, 2008, p.104). This process can be evaluated as an internal dynamic which has an effect on labor market of Turkey. In conclusion, this transformation of Turkey has caused the differentiation in labor relations, composition of production, occupation types and distribution of genders in labor market. A woman who was employed before as an unpaid family worker also has been affected by this transformations.

Unemployment plays an important role in the construction of the social structure in today's economies (Karabulut, 2007, p.2). This phenomenon could be a driving force to grow for countries. High or low unemployment rates have many effects on both economic and social life. For example, low unemployment rate means high employment, high production and high level of prosperity under normal condition. On the contrary, high unemployment rate means low production, low income per capita and low level of prosperity. It can be said that unemployment directly affects both the

individual's and family's life. Like many other countries, Turkey also aims to grow by using the current employment potential.

According to data of International Labor Organization's (ILO), unemployment rate of 15 and over age group is %10,8 and 25 and over age group %8,9 in Turkey for the year 2016 (ILO, 2017). If the unemployment rate is calculated separately for age 15 and over men and women, we observe that these ratios are %9,8 and %7 respectively for the same year (ILO, 2017).

**Figure 11 Unemployment Ratio in Turkey by 25+ Age Group, 2000-2016 (%)**

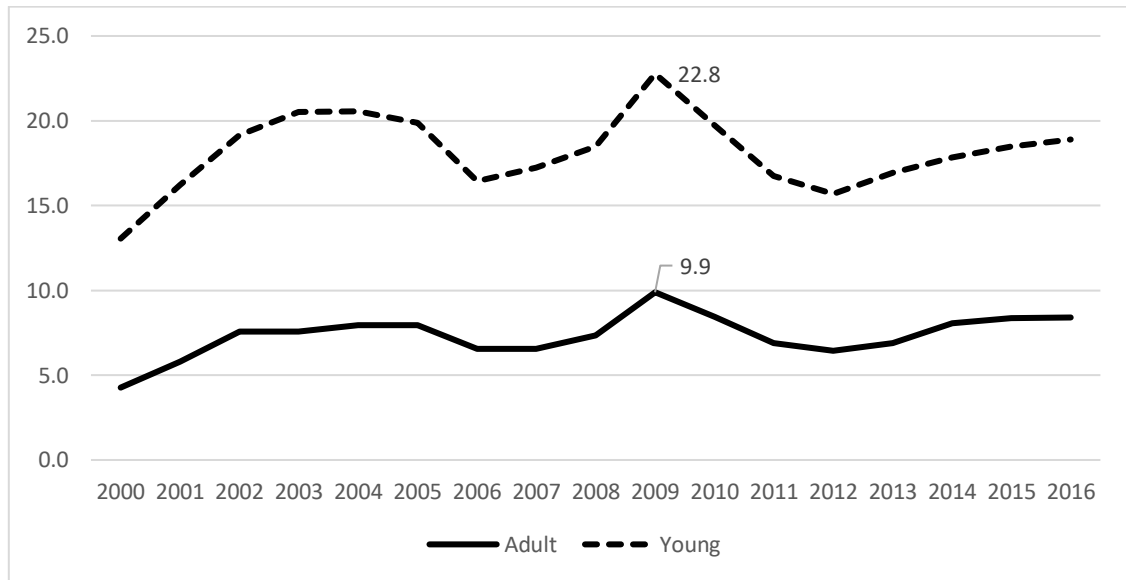


**Source:** ILO Statistics, 2017 and author's calculation.

Figure 11 can give an idea about the unemployment ratios for men and women aged 25 years and over in the long run. Interestingly, female unemployment rate is lower than males for the pre-crisis period. In the year of 2009, both male and female unemployment rates have been close to each other. However, the post-crisis period indicates that male unemployment has increased dramatically but increase in the rate of female unemployment is lower than increase in the rate of male unemployment. This means that during the years of economic crises, both women and men have suffered from job losses. However, after the crisis, men's participation in the labor force increased significantly, women were unable to compensate for the job losses they experienced. According to the figure 11, total unemployment and unemployment of

male taken highest ratios are %9,9 and %10,1 respectively in 2009. In 2000, while women unemployment is only %3,8, it does not fall to the same level again after 2001 economic crisis. Contrarily, it tended to increase gradually after this date.

**Figure 12 Unemployment Ratio of Young & Adult, 2000-2016 (%)**



Source: ILO Statistics, 2017 and author's calculation.

Figure 12 allows the assessment of adult and young unemployment rates separately for the years 2000-2016. Young unemployment rate gives the rate of unemployment for individuals aged between 15-24 and adult unemployment gives the unemployment rate for individuals aged over 25 years. There is a dramatic difference between two types of unemployment rate that is given in the figure. The youth unemployment rate is always higher than adult unemployment rate for the studied years. In addition, it is also seen that youth unemployment is more volatile than adult unemployment. To sum up, individuals between 15-24 ages live unemployment more severe than adults.

### 3.2.1. Sectoral Distribution of Employment in Turkey

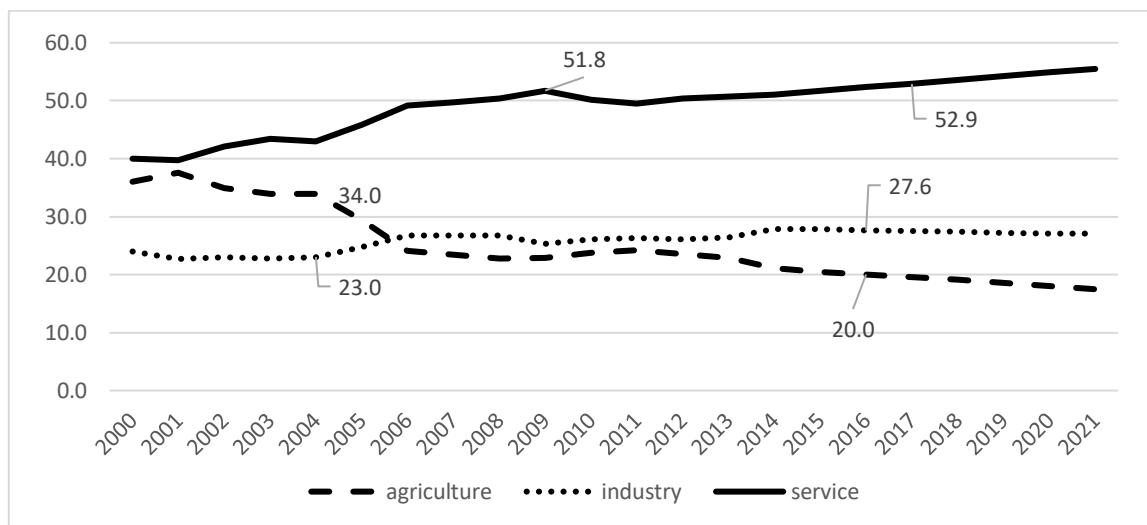
Details of sectoral distribution of employment in Turkey can give clear remark about the labor market. The structure of sectoral distribution of labor market gives the gender-specific concentration and composition of production. In this part of the thesis,

agriculture, industry and service sectors of Turkey will be displayed by using some graphs which are obtained from International Labor Organization.

Both in developing and developed countries, the sectoral share of agriculture and industry have a decreasing trend. At the same time, the share of service sector in the World GDP has risen. Distribution of the sectors in the World income in 1980's as follows: %7 agriculture, %38 industry, and %56 service. In 2000, the shares of agriculture, industry and services were %4, %28 and %68 respectively (Directorate General of Economic Research, 2007, p.2). The share increasing of services sector is more apparent in developed countries than developing countries.

Same structural transformation which includes shifting from industry to services is also valid for Turkey the in studied years. Figure 13 depicts the proportion of employment by sectors from 2000 to 2021 in Turkey. People were who employed in agriculture, industry and service sector have accounted for %24,9, %25,9 and %49,2 respectively for the years of 2000-2021. The highest proportion belongs to service among three sectors. It is also observed that the number of employed people in service sector continues to increase. In comparison with other sectors among given years in figure 13, the path of industry has more stable structure.

**Figure 13 The Proportion of Employment by Sectors, 2000-2021 (%)**



**Source:** ILO Statistics, 2017 and author's calculation.

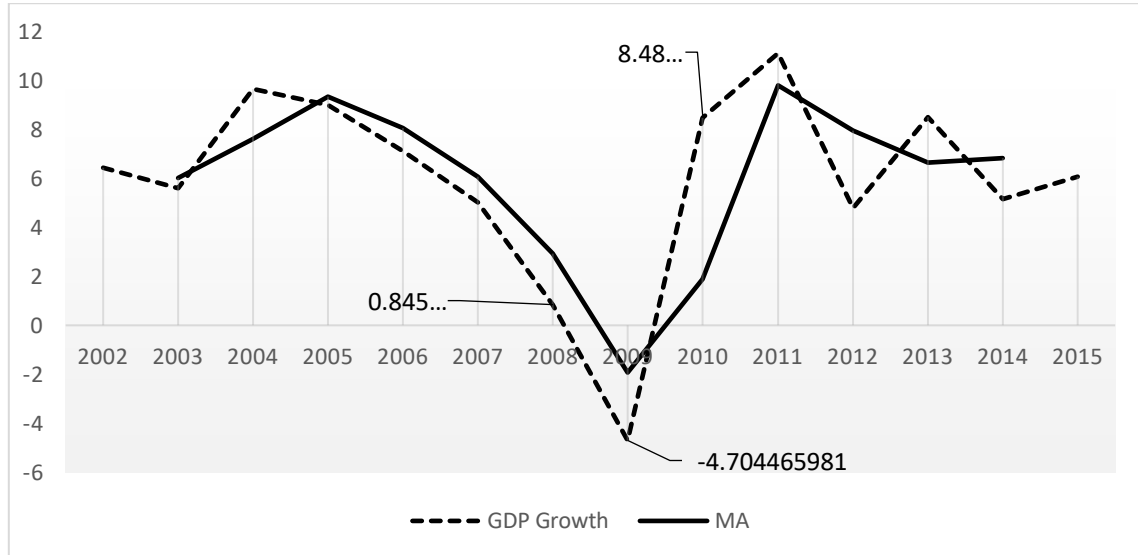
### **3.2.2. Relationship between Economic Growth & Unemployment in Turkey**

The presence of any possibility between employment and growth has been the subject of many studies. The expectation is that economic growth will increase employment or vice versa. But there is also a growing literature on employment-free growth or non-employment growth (Erdayı, 2009, p.135). Non-employment growth means that despite the fact that the economies are growing, the employment rate does not increase as expected level. That is, economic growth does not create any positive effect on employment. Although it could not be said whether the assumption of employment-free growth is valid for Turkey, it can be assumed that the growth in GDP has not the effect of reducing unemployment.

Capital accumulation, employment, and technological development could be ranked as the main determinants of economic growth (Özeren, 2012, p. 1). There are some ideas that the economic growth in Turkey is not related to employment increasing. Özeren (2012) claims that economic growth in Turkey after 2001 economic crises does not depend on employment increasing, the main factor of it closely related to capital accumulation. According to the same study, fixed capital investments have decreased over the last twenty-five years in Turkey. Decreasing fixed capital investment has also been affected employment increasing in a negative way (Özeren, 2012, p.2).

After Economic Stabilization Program has been implemented in 2000, Turkey has started to display high economic growth rate with respect to previous years (Yılmaz Eser and Terzi, 2008, p.229). But it is hard to say that high labor force participation followed this high economic growth rates. When relatively high economic growth rates and unemployment are compared, Figure 14 (a) which is below coming up.

**Figure 14 (a) Time Series Path of GDP Growth in Turkey & Moving Average, 2002-2015 (%)**

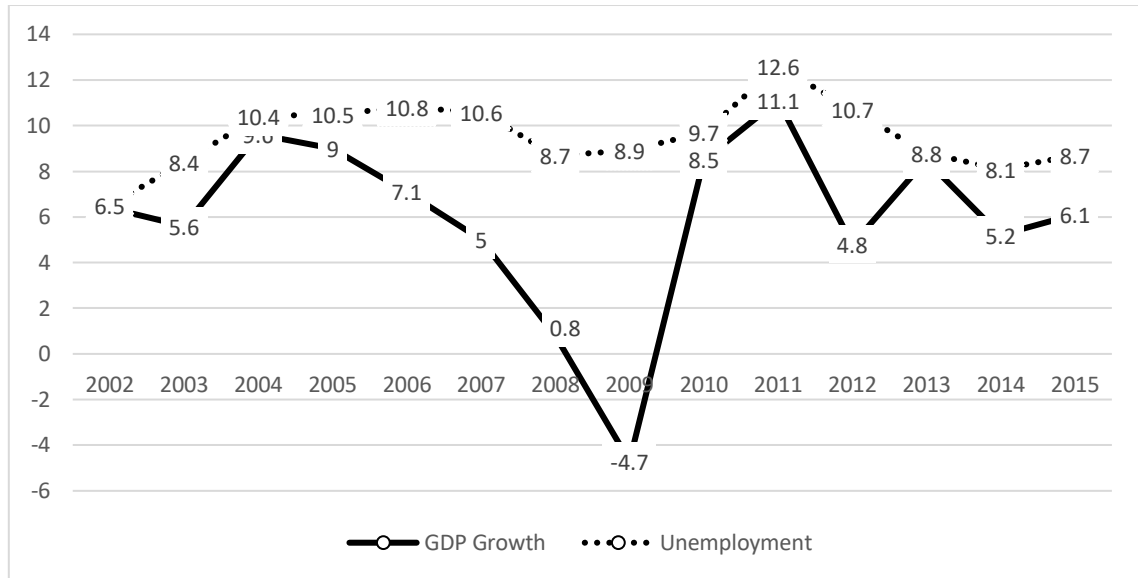


**Source:** World Bank Statistics, 2017 and author’s calculation.

Figure 14 (a) gives Times Series Path of GDP in Turkey and its Moving Average for the years 2002-2015. Moving average is generally used to determine a trend or to follow a trend. This indicator generally helps to technical analysts in order to forecasting. Being non-static is the main feature of moving average. Using moving average, it is aimed to obtain smoother path of GDP. But for the period 2002-2015, GDP of Turkey has many deep and climax points due to the effect of economic crises.

As mentioned earlier, GDP growth of Turkey is highly volatile between studied years. For the year 2008 which is the beginning of the global economic crises, growth rate is only %0,84. This is called a recession. The main deterioration of the economy comes to exist in the 2009. In this year, the growth rate of Turkish economy is about %-4,8 which is the worst economic performance in studied years.

**Figure 14 (b) Unemployment and GDP Growth Rate in Turkey, 2002-2015 (%)**



**Source:** ILO Statistics, 2017, World Bank Statistics 2017 and author’s calculation.

Figure 14 (b) shows unemployment ratio of 15 and over age group and growth rate of GDP for the years of 2002-2015. The unemployment rate is %6,5 for the year 2002 and it is %8,7 for the year 2015. It has moved between %7 and %12,6 over the past thirteen years. On the other hand, the growth rate is highly volatile between 2002 and 2015. It has dropped dramatically in 2008 and 2009 due to economic crisis. After the economic crisis, Turkish economy has been undergoing a fast recovery process. GDP growth is %8,5 in 2010 and %%11,1 in 2011. It has fallen down to %4, 8 in 2012 and then it has increasing tendency again.

Altering of employment structure and becoming widespread of informal employment are the impacts of globalization on economies (Özpinar and et al., 2011, p.134). It can be argued that high economic growth has not any mitigating effect on unemployment. In contrast, the fluctuation of growth led to unstable continuity of employment in Turkey (Yılmaz Eser and Terzi, 2008 p.230).

When it comes to relationship between women employment and growth, studies which intercountry indicate that potential economic growth and women employment are strongly interrelated in a positive way (Gursel and et al., 2011, p.1).

Contribution of woman labor force participation on economic growth can exist in two dimensions. Firstly and direct effect is increasing pattern in savings of households. Secondly and indirect effect is that fertility rate of employed woman is relatively low. Consequently, household expenditure of women on education and health is higher (Gursel and et al., 2011, p.1).

### **3.3. FEMALE LABOR SUPPLY**

Raising women labor supply is one of the hotly debated issues for labor economists in these days. In this context, integrating women into labor force is an important parameter for development (Karabıyık, 2012, p.231). Women labor force participation should be supported in order to increase economic and social development.

The level of effectiveness and productivity of women determines the quality of social development. On the one hand, the appearance of women in both social and business life is necessary to prevent gender gap (Uysal Kolasin and et al., 2015, p.1). Additionally, economically strong woman is also necessary for social welfare. There are many dimensions of positive externalities of employed woman in both macro and micro basis. Employment of woman can positively effect on household savings, child education or health and domestic violence (Uysal Kolasin and et al., 2015, p.1).

Sustainability of economic development is the unique aim of all modern societies in this era. It is not possible to think sustainable development without the position of women in labor market. Additionally, every regulation to raise women labor supply helps to disappearing poverty, supporting better living standards and etc.

The model of Turkish family does not generally consist of double-earner. This type of family structure brings some risks. For example, economic crises can lead to job loss for men. As a result, the households suffer income shortage. Not only during economic crises but also in cases of a work accident, illness, incapacity to work and etc., income shortage can arise. But the double-earner family model does not have to struggle with the abovementioned risks.

Being in the labor force and having wage earning provide economic independence to women. Economic independence decreases violence against women and prevents marriage at early ages (Karabıyık, 2012, p.240). Furthermore, the position of women in both family and society becomes stronger. Women who do not face with violence can use their creativity as well. In conclusion, the appearance of women in labor market or business life arranges both social and economic life for the benefit of people.

As mentioned before, labor force participation of women is high in agricultural society due to the fact that the concept of unpaid family worker. But with the beginning of the industrialization and urbanization, women labor force decreases firstly and then increases parallel with raising education of women. Historical process of women employment has followed this chronology in Turkey as well.

In every period of Turkish history, labor force participation of male has been higher than female. Female employment which is crucial for sustainable development has a decreasing tendency in comparison with male. In this context, it can be said that there is a rooted trouble with regard to employment of women. According to Karabıyık (2012), if labor force participation of females remains low, economy will not use its capacity for growth and this will be a serious problem in the years of 2020's in the context of development.

Active participation of women to labor market started in 1950's in the World. But in recent years, the increase has have low ratio. Contrary to general trend, labor force participation of women has decreased permanently starting from the mid-1950 in Turkey (Karabıyık, 2012, p.235). The reason of this, Turkish economy had an agriculture-based till the end of 1950's.

The structure of women labor supply in Turkey cannot be evaluated independent from internal migration. Expecting to high labor supply from low educated women who migrated from rural to urban cannot be reasonable. Because low educated women is generally responsible for childbearing and housework. However, the shortages of childbearing unit in workplaces is additional reason of low labor supply. Gender-based division of labor is also the most effective component on the decision of mothers' labor supply. Lastly, limited support of public sources can be added into women labor force structure as a determinant. The possible impact of economic crises on women labor force participation shouldn't be forgotten especially in the studied period in this thesis. Turkey struggled with an important economic crises in 2001 and there was also a global financial economic crisis in 2008. As expected, economic crises cause both women and men to lose their jobs and harm labor market.

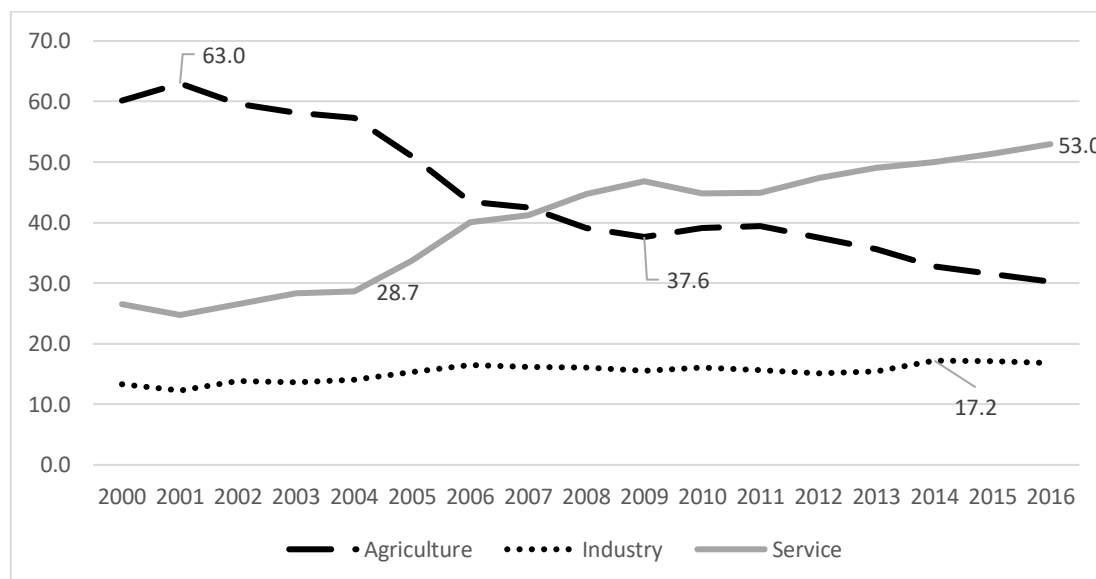
### 3.3.1. Sectoral Distribution of Female Employment

The distribution of employment by sectors has been discussed in the former parts of the study. In this part, sectoral distribution of women employment will be summarized as well. Participation of female to the labor market is a problematic because of the low proportion. So women labor force participation is worked on to be increased by using different instruments. Some of them is policy regulations like maternity leave, the right of part time leave and unpaid leave and etc.

The sectoral statistics with regard to women employment gives important information about development level of a country. In underdeveloped and developing countries, employment concentrates on agriculture, industry and service sector respectively.

Recent trend about sectoral distribution in the World is that the share of service sector continues to increase. The population employed in agriculture is decreasing although there is no reducing in agricultural production.

**Figure 15 Sectoral Distribution of Female Employment in Turkey, 2000-2016 (%)**



**Source:** ILO Statistics, 2017 and author's calculation.

In underdeveloped and developing countries, females are generally employed as unpaid family workers. With economic development, sectoral distribution of women labor supply starts to change. Women labor supply starts to shift from agriculture to industry and service sector.

Figure 15 displays the sectoral distribution of women employment in Turkey for the years of 2000-2016. Firstly, the proportion of women who work in agriculture sector has dropped year by year. In the beginning of 2000's, % 60 of women who were in working-age group were employed in agriculture. In the mid-2000's, this ratio has decreased to %39,1 and at the end of 2016 the proportion of women who supply their work force in agricultural sector fell %30. There is no any crucial fluctuation of women labor supply or women labor force participation in industry for the studied years. Finally, when the movement of women employment in service sector is analyzed, it is seen that there is an increasing tendency. The ratio of female employment in service sector was doubled between 2000 and 2016.

It has been predicted that the proportion of women workers will be %24 in agriculture, %16,4 in industry and %60 in service sector at the end of the 2021 in Turkey by ILO. To sum up, agricultural sector will lose its significance, there will be no remarkable change in the distribution of industry proportionally and employment ability of service sector will increase in the context of women employment.

After the period 1990's there is stagnation in agricultural sector (Ilkcaracan and Tunalı, 2008, p.118). Female employment in this sector had higher volatility than male until 2000's. In other words, while the number of male employed in agriculture remained stable, the number of female who employed in the same sector exhibited fluctuating course. According to Ilkcaracan and Tunalı (2008), sectoral technological development leads to abolish female worker need. As a result, agricultural transformation pushes particularly women workers out of the labor force and decreases labor force participation.

Massive migration from rural to urban can be a factor which shifts female employment from agriculture to service sector. Another consequence of the migration is that decreasing in labor force participation of unpaid family worker women.

Genc and Sengul (2015) emphasizes the importance of sectors' productivity on female employment. According to their study, women employment was historically low share in industry for the period of 1988-2013 in Turkey. This claim is valid for the years 2000-2015. Additionally, Genc and Sengul (2015) argue that agriculture and service sectors which helps to obtain female employment path, moves together away. The rising productivity of agriculture leads to decrease in female employment of service sector. Any development which cause to productivity rising in service sector directly effect on the number of employed female in agricultural sector in a negative way (Genc and Sengul, 2015, p.13).

Genc Ileri and Sengul (2016) highlighted the importance of some sub-sectors of service about female employment in Turkey. Health and social work, education and financial intermediation are one of the most important sub-service sectors respectively. The sector share of education is % 0,084 and the share of women in education is % 0,438. And the sector share of health and social work is % 0,054, the female has % 0,438 share in this sector (Genc Ileri and Sengul, 2016, p.17).

According to Gunalp and et al. (2013), sectoral distribution of women is strongly related to rapid urbanization of Turkey. In the study of "*Male-Female Labor Market Participation and the Extent of Gender-Based Wage Discrimination in Turkey*", it is claimed that rapid urbanization of Turkey after 1980's brings the need of high skilled workers. Women who migrated to urban from rural provides this condition partly. On the other hand, women labor force participation is higher in rural areas where agricultural production is carried out due to unpaid family working (Gunalp and et al., 2013, p.4).

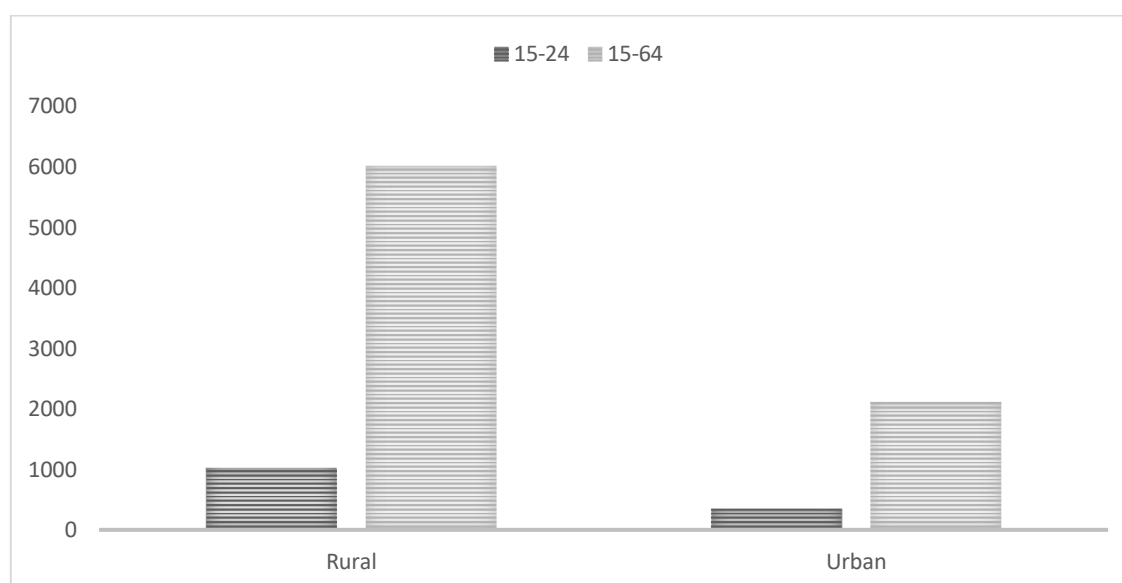
**Table 2 Participation of Women in Labor Force According to Regions in Turkey (%)**

	West Marmara	Aegean	Mediterr.	Southeastern Antl.	Northeastern Antl.	Cen.An tl.
<b>2014</b>	38.6	41	32.2	17.5	37.5	29.4
<b>2015</b>	40.4	41.7	32.8	19.2	37.9	32.6
<b>2016</b>	42	42.9	35.4	21.1	35.4	33.5

**Source:** Turkish Statistical Institute, 2017, <https://biruni.tuik.gov.tr/medas/?kn=102&locale=tr>.

Table 2 also supports the idea of Genc Ileri and Sengul (2016) about the effect of services sector productivity on female employment. It depicts us information about regional distribution of female employment in Turkey for the three years. High concentration of industry and services sectors in the western part of the country is behind the fact that female employment is higher in these regions. According to the Table 2, women are mostly employed in the region of Aegean. Contrarily, female labor force participation in Southeastern Anatolian is less than other regions. The results of the Table 2 are parallel with the Figure 15.

**Figure 16 Female Employment by age and rural/urban areas in Turkey for the Year 2016 (Thousands)**



**Source:** ILO Statistics, 2017.

Figure 16 illustrates distinction of female employment between rural and urban areas in Turkey for the year 2016. The figure also indicates women employment at the 15-24 and 15-64 age groups in accordance with region. In 2016, the number of employed women at the 15- 64 ages group is 6 million in rural areas. At the same age group, there are 2.1 million women is employed in urban. Furthermore, women who employed in rural areas are more than women who employed in urban areas at early middle ages. We argue that the number of employed women working in agricultural production is still high. Industry and services sectors generally locate in urban areas. Working in these sectors requires being well-educated. Relatively low education level of women in Turkey explains why women are employed in agriculture more than industry or services sectors.

### **3.3.2. The View of Occupational Groups of Women in Turkey**

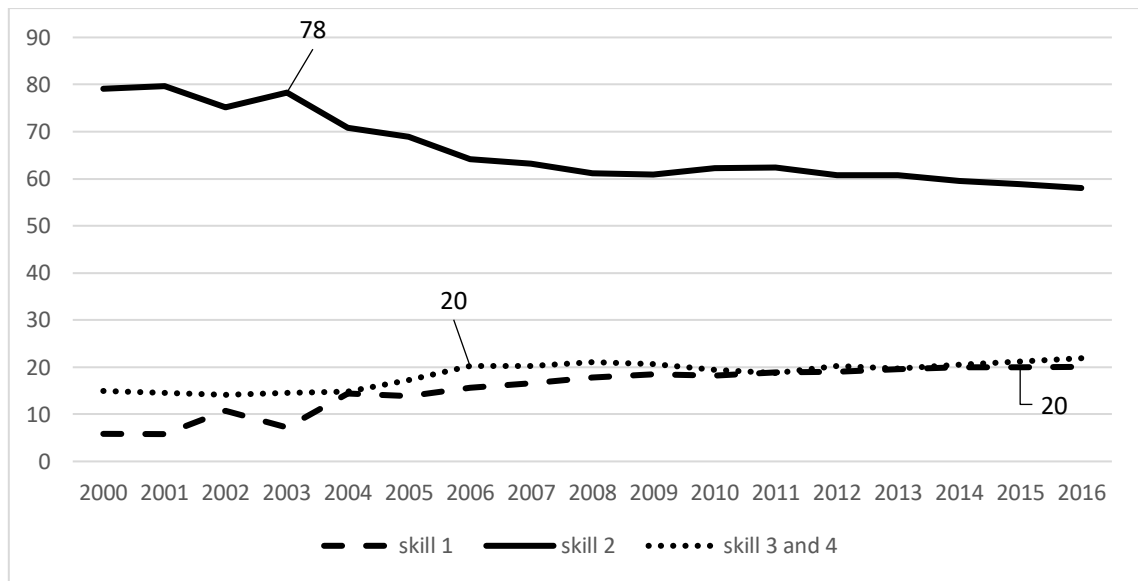
In this part, the distribution of female employment by occupational groups is addressed. Occupation is the work of individual regardless her/his status or economic action (Karabıyık, 2012, p.243). Occupational distribution contains information about the level of social and economic structure of a country. We predict that there is a strong relationship between education level and occupation selection.

In the international literature, there are three categories by occupations, including skill levels. First one is called *skill 1* which includes sales workers in the retail industry; factory process workers in the manufacturing industry; accommodation, farm, forestry, and garden workers in agriculture; and cleaners and laundry workers in administration. This category consists of jobs which require relatively low level of skill. Second one is called *skill 2* which includes technicians and trade workers in the construction, manufacturing, and other services industries. Last one is also *skill 3 & 4* which includes managerial and professional roles mainly in these industries: education and training (teachers); professional and technical services; health and social assistance; and agriculture (farmers and farm managers).

Figure 17 shows the distribution of female workers by occupational groups from 2000 to 2016 in Turkey. According to figure 17, the proportion of *skill 2* is always higher than *skill 1* and *skill 3 & 4* between 2002 and 2016. It means that women who are

employed as trade workers in the construction, manufacturing, and other services industries more than agricultural workers and managers. Furthermore, the proportion of women working in professional jobs and the proportion of women working in low-skilled jobs are very close to each other.

**Figure 17 Distribution of Female Employment by Occupational Groups, 2000-2016 (%)**



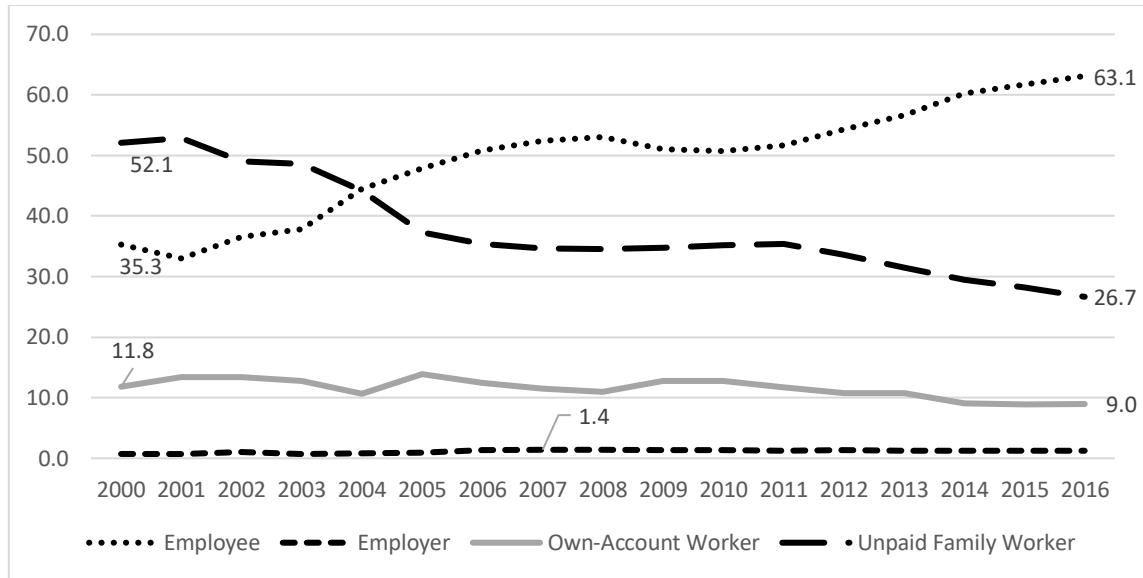
**Source:** ILO Statistics, 2017 and author’s calculation.

According to the study of Uysal Kolasin and et al. (2015), most of women who are inactive in the labor market state that material conditions are not important to them. For these women, the jobs which provide prestige are more encouraging to supply their labor. Additionally, women who are employed in professional occupation groups care about their rights more than others. Maternity leave, breast-feeding leave, childcare leave at work, weekend and overtime work affect the decisions of women labor force participation in the categories *skill 3 & 4*.

### 3.3.3. Employment Status of Female in Turkey

Employment status is the legal status of individuals in employment either as employee, employer, unpaid family worker or working on their own account. This part provides a profile of women employment status for the years 2000-2016 in Turkey.

**Figure 18 Distribution of Female Employment by Status, 2000-2016 (%)**



**Source:** ILO Statistics, 2017 and author's calculation.

Figure 18 displays distribution of female employment status for the given years in Turkey. The proportion of unpaid family workers and own account workers have decreased in recent years. Conversely, the share of employee women have increased. The category of employer women is stable through the period. The share of employees is %35,3 and %63,1 between 2000 and 2016. The ratio of employer females does not change in relevant years. The share of employers in the distribution of female employment falls from %52,1 to %26,7 between 2000 and 2016.

### 3.3.4. Registered Status of Female Employment

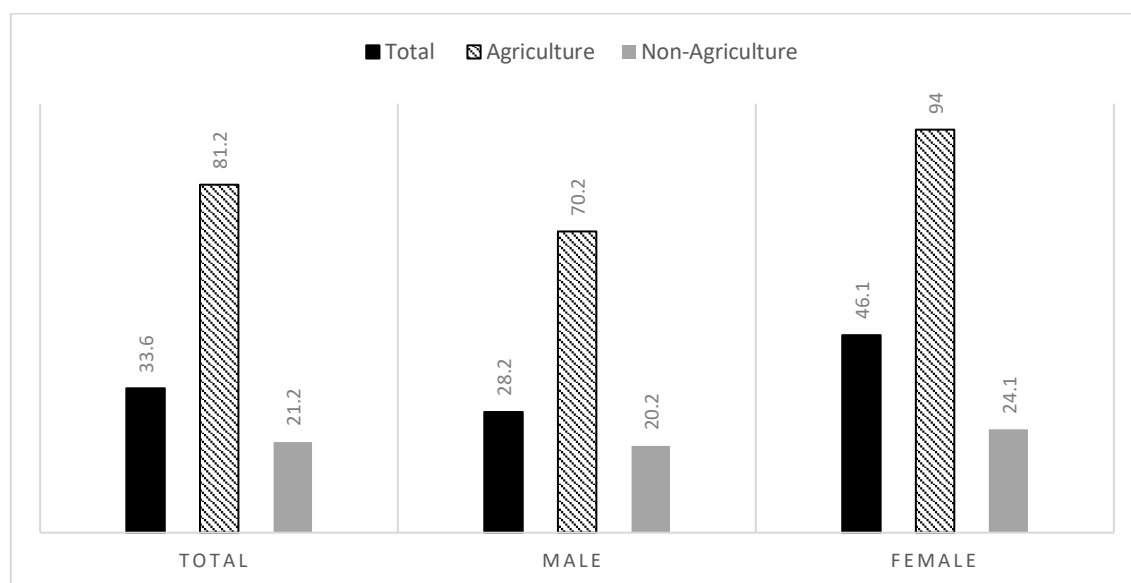
Unregistered economy defines as an economy which does not include any taxation and monitoring system by government (Sarılı, 2002, p.32). At the same time, people employed as unregistered are deprived of social rights which must be provided by employers. General features of informal or unregistered economy can be ranked as;

- i. Low wage rates,
- ii. Social security shortages,
- iii. Job security shortages.

Informal economy has massive impact on economic and social life of societies because individuals, households, firms and states face to loss of right. The proportion of employed people in informal economy in developing countries is more than developed countries. On the other hand, the number women employed in informal economy is higher than men because women provide low-cost labor (Karabıyık, 2012, p.246).

Figure 19 focuses on informal economy of Turkey for both genders and sectors for the year 2015. Informal economy shows the share of informal employment to total employment, the share of employed people in the informal sector and the share of informal employment outside the informal sector in total employment. According to figure 19, unregistered women employment is always higher than men in all fields.

**Figure 19 Informal Economy of Turkey by Genders and Sectors for the Year 2015 (%)**



Source: ILO Statistics, 2017 and author's calculation.

According to results of figure 19, informal economy is also trouble for Turkey. Existence of informal economy leads to inferior earning and wage inequality (Tansel and Kan, 2012, p.2). In the context of women employment, employment registration status of women is crucial because being registered provides using the rights which are given by labor law to women.

A woman who is employed in formal economy automatically has rights such as maternity leave, part-time and unpaid employment which are defined by Labor Law. According to report of The Ministry of Family and Social Policies for the year 2014, the share of unregistered women employment is more than men across the Turkey and women employed in informal economy in rural areas are more frequently than in urban areas (Toksöz and et al., 2014, p.48). We argue that working as an unpaid family worker leads to increase in unregistered female employment in rural.

Another reason of high unregistered women employment is that total unemployment has been increased for both women and men. So, the informal sector is a source of both women and men but more so for women (Department of Economic and Social Affairs, 2010, p.2). Additionally, the cost of women as a labor is lower than men. This situation causes to increase in prevalence of unregistered women employment. The number of unregistered employed women is higher than men in the sectors of industry and agriculture. But the proportion of registered employed men in service sector is lower than women (Toksöz and et al., 2014, p.48).

**Table 3 The Proportion of Women Employment in Informal Economy (%)**

<i>Year</i>	<i>Total</i>	<i>Agriculture</i>	<i>Non- Agriculture</i>
2011	56,7	-	21,6
2012	53,0	-	20,3
2013	50,1	-	19,8
2014	47,5	-	20,1
2015	46,1	94	24,1

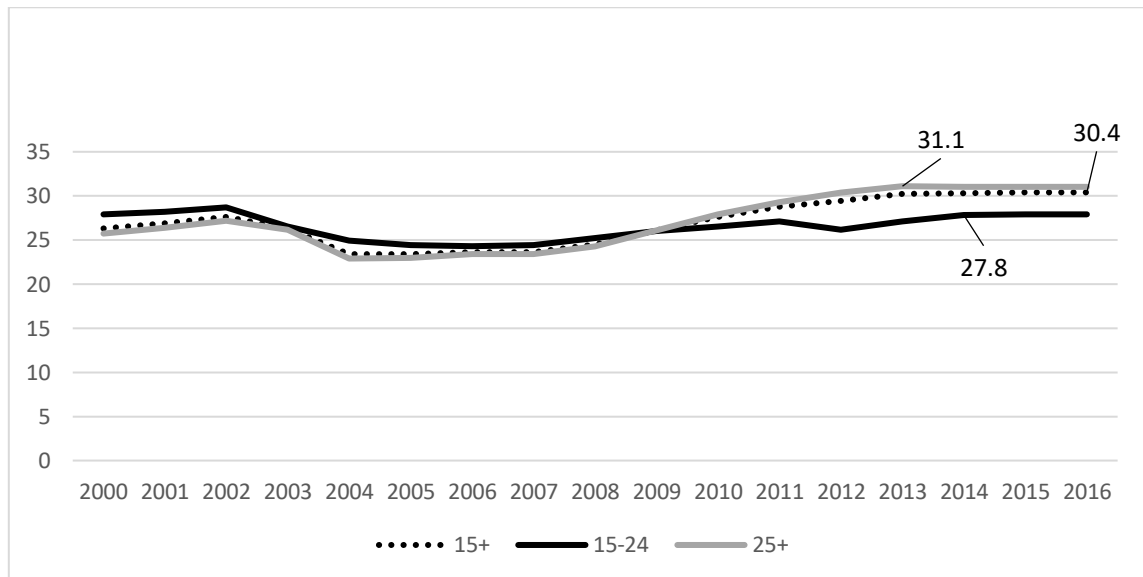
**Source:** ILO Statistics, 2017 and author's calculation.

Table 3 shows the status of women employment in informal economy between 2011 and 2015 in Turkey. There is a decreasing trend of the proportion of women employment in informal economy. In 2011, the share of women employed in informal sector is %57 and the proportion of unregistered women in non-agricultural sector is %21. In 2015, the ratio of unregistered women employment is %10 lower than in 2011.

### 3.3.5. Employment Status of Women in Turkey by Age

Age which helps to explain female labor force participation is an important demographic dynamic. In order to summarize the distribution of employment by age for both male and female, 15+, 15-24 and 25+ age groups are used by International Labor Organization. Using International Labor Organization's data, we aim to give a picture of the distribution female employment by age in this part of the thesis. Both certain number and percentage of female population which belong to three age groups has been calculated as well.

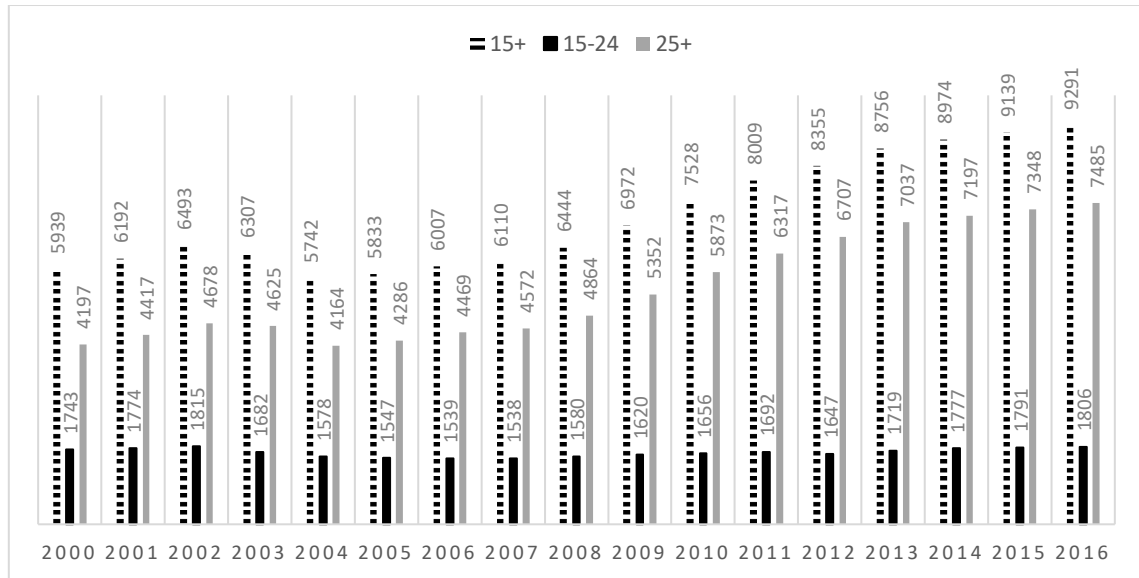
**Figure 20 (a) Distribution of Female Employment by Age, 2000-2016 (%)**



**Source:** ILO Statistics, 2017 and author's calculation.

The average value of the women employment is % 30 for 15 and over ages, %26,6 for 15-24 ages and %31 for 25 and over ages group. While the employment rate in 2001 has hovered around 26 percent in the 15+ and 25+, this ratio is over 26 percent for the remaining group.

**Figure 20 (b) Distribution of Female Employment by Age, 2000-2016 (Thousand)**



**Source:** ILO Statistics, 2017 and author's calculation.

Women's participation in work varies by age. Female labor force participation at 15 age and over is higher in Turkey. Figure 20 (b) verifies higher female employment at 15 age and over women in Turkey for the years 2002-2016. As we mentioned before, marriages concentrate on early and early-middle ages in Turkey. According to figure 20 (b), women at the 15-24 age group prefer being in the labor force less than others. We claim that responsibilities of women in household decrease their employment. The women employment in the third group which is 25<sup>+</sup> age has an upward sloping. To sum up, distribution of female employment by age concentrates on 15<sup>+</sup> and 25<sup>+</sup> aged groups in accordance with figure 20 (b) for the years 2000-2016 in Turkey.

### 3.3.6. Educational Status of Female Employment

One of the most important parameter which is thought to affect labor force participation of women is also education. In many research, school enrollment has been used a determinant to analyze both men and women labor force participation (Uysal Kolasin and et al., 2015, p.). Education directly influences the quality of labor force. Stated in other words, population affects labor force quantitatively, education also affects qualitatively (Karabıyık, 2012, p.249).

Well-educated labor force means that more quality social and more productive economic life. Additionally, well-educated labor force which means high level of human capital supports economic growth through increasing labor productivity and provides improving income and earnings distribution (Tansel, 1992, p.1). According to study “*Wage Employment, Earnings and Returns to Schooling for Men and Women in Turkey*”, education has been found an important determinant of labor force participation (Tansel, 1992, p.1).

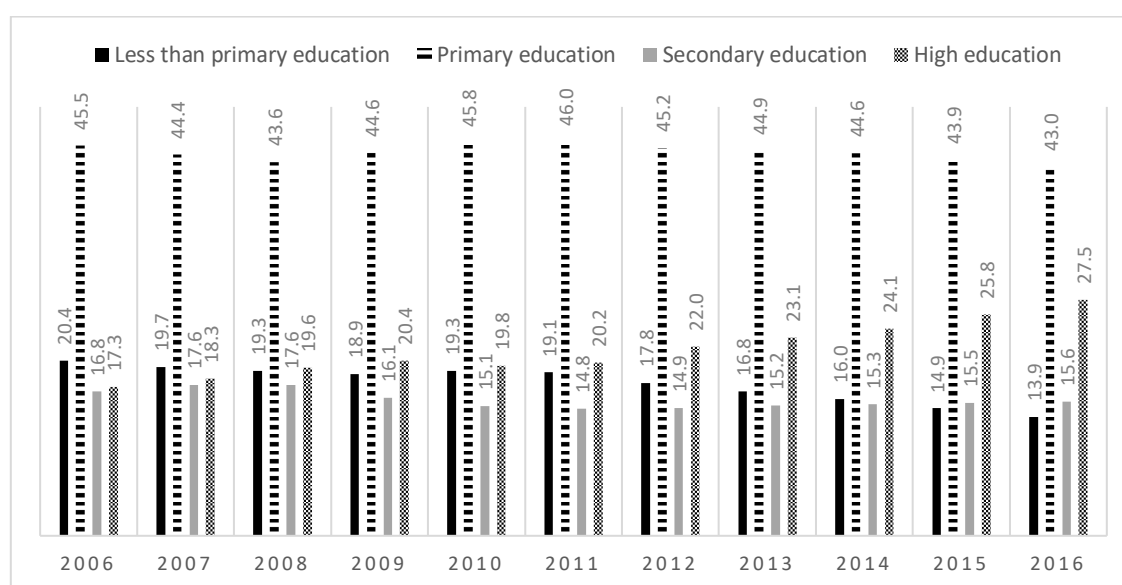
Tunalı and Baslevent (2002) support Tansel’s idea about relationship among education, human capital, labor force participation and economic growth in the study of “*Married Women’s Participation Choices and Productivity Differentials: Evidence from Turkey*”. Besides, diversity of women educational level creates productivity differentials in accordance with Tunalı and Baslevent (2002). Furthermore, differences between men and women labor force participation is linked to differences in educational attainment (Tunalı and Baslevent, 2002, p.2). Tunalı and Baslevent (2002) underline the missing point in the study that women educational attainment is determined by resource allocation of parent. This mention may explain some part of low educational level of women and women labor force participation in Turkey.

Turkish educational system consists of primary, secondary, high school and universities. Primary, secondary and high schools are compulsory and total training duration of these schools is 12 years. 12 years compulsory education which is publicly funded consists of 4 years primary, 4 years secondary and 4 years high school. Using statistics of women educational level, it may be inferenced about employment quality. There are four education level classifications which are illiterate, primary, secondary, high school and university of ILO.

Figure 21 displays the distribution of the numbers of female employment by educational level. The aim is to make comparative analysis of the distribution female employment with respect to education level which are less than primary, primary, secondary and high school or university for the years 2006-2016.

The category less than primary education gives information about females who did not graduate even primary school and about females who only have early childhood education. Primary education category shows women who graduate from primary school or have lower secondary education. The third category secondary education includes information about females who have upper and post-secondary education. Finally, high education category presents female who have tertiary education and includes university graduates and over degrees.

**Figure 21 Distribution of Female Employment by Education - 15+, (%)**



**Source:** ILO Statistics, 2017 and author's calculation.

Primary level education constitutes the largest share among education categories in figure 21. Recent statistics show that female labor force participation for the category primary education is about %43 in 2016. The share labor force participation of highly educated females is about %27,5 in the same year. We should emphasize that the number of women who have high education level increases over the studied years. Less than primary education and secondary education have the smallest share among education level categories.

According to Uysal Kolasin and et al. (2015), education level has substitution effect on women labor force participation. High level of education leads to increase labor force participation of women. Bachelor or associate degree graduation provides an

advantage to women in the labor market. However, it can be said that female students constitute exceptional group. Because of the ongoing training, women who are in these groups do not supply their labor (Uysal Kolasin and et al., 2015, p.35). Namely, education level of individuals designates occupation selections of them.

In the previous parts of this thesis, it has been given information about occupational status of women, including *skill 1*, *skill 2* and *skill 3 and 4*. We believe that there is a link between occupation groups and educational level of women. High concentration in less than basic and basic level of education means that women employed in *skill 1* more than others. In contrast, high numbers of well-educated women is employed in *skill 3 and 4* occupation group.

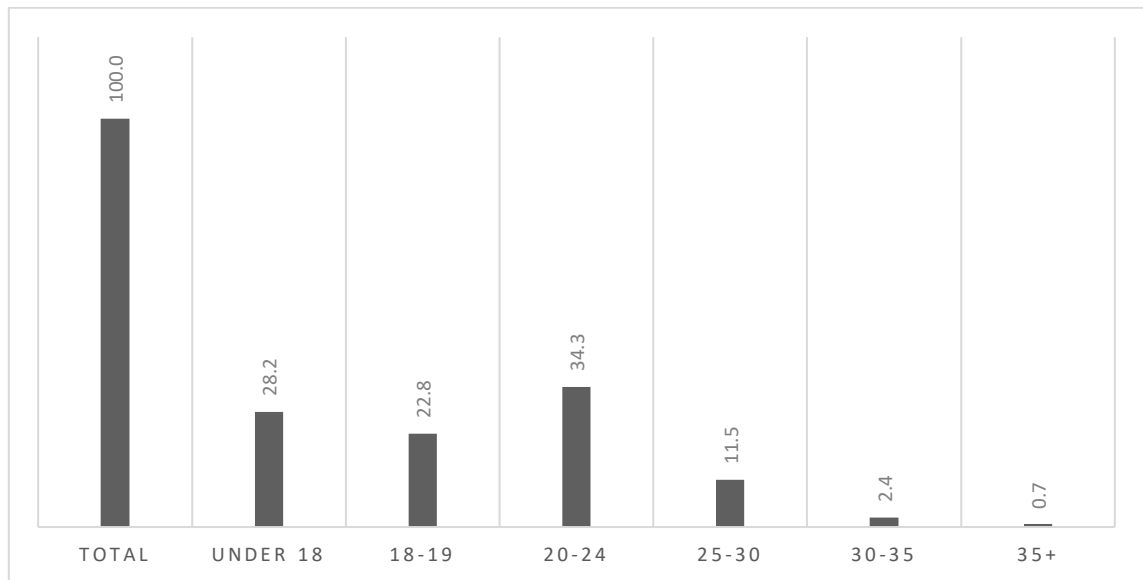
### **3.3.7. Distribution of Female Employment by Marriage Status**

We predict that female labor force participation is strongly affected by marital status. Therefore we use marital status as a demographic variable in our analysis. According to TurkStat's (2016) survey which is *Decision of Marriage by sex, age, educational status Level 1 and the three major provinces (Istanbul, Ankara and Izmir)*, it has been reported that %27.1 percentages of women have married by their own decision. And the families have supported their decisions. The proportion of women who married with their own decision without family consent is %2.6 in 2016. The highest rate belongs to women who have been married through family arrangement which is %47.8. Women in this category also agree with their family in the decision of marriage. Furthermore, 14.8 percent of women have married with only their family decision (TurkStat, Family Structure Survey, 2016). This research also shows us education level affect the decision of marriage. According to the same research (2016), highly educated women generally take the decision of marriage with respect to their own. However, women who have low educated are not allowed to take their own decision about marriage. In this example, marriages mostly realize and arrange by family decision. Type of marriage decision would also give an idea about the impact of women labor force participation decisions. The family structure affect not only marriage decision of woman but also labor force participation decision. In this point, Uysal Kolasin and et al. (2015) emphasize the importance of family structure and gender roles

on the decision of female labor force participation. Decisions about wife’s labor supply in household are taken together by spouses (Uysal Kolasin and et al., 2015, p.13).

Figure 22 illustrates the age at first marriage of women in five categories for the year 2016 in Turkey. In accordance with the data which has been obtained from three major provinces, marriages mostly concentrates at the 20-24 age group. Nearly, 30 percent of women has married under 18 age in these provinces. Marriages under the ages of 18 are followed by marriages made at 20-24, 18-19, 25-30 and 30- 35 respectively. As a result, marriage at early and early middle ages is high in Turkey.

**Figure 22 Age at First Marriage of Women in Three Major Provinces, 2016 (%)**



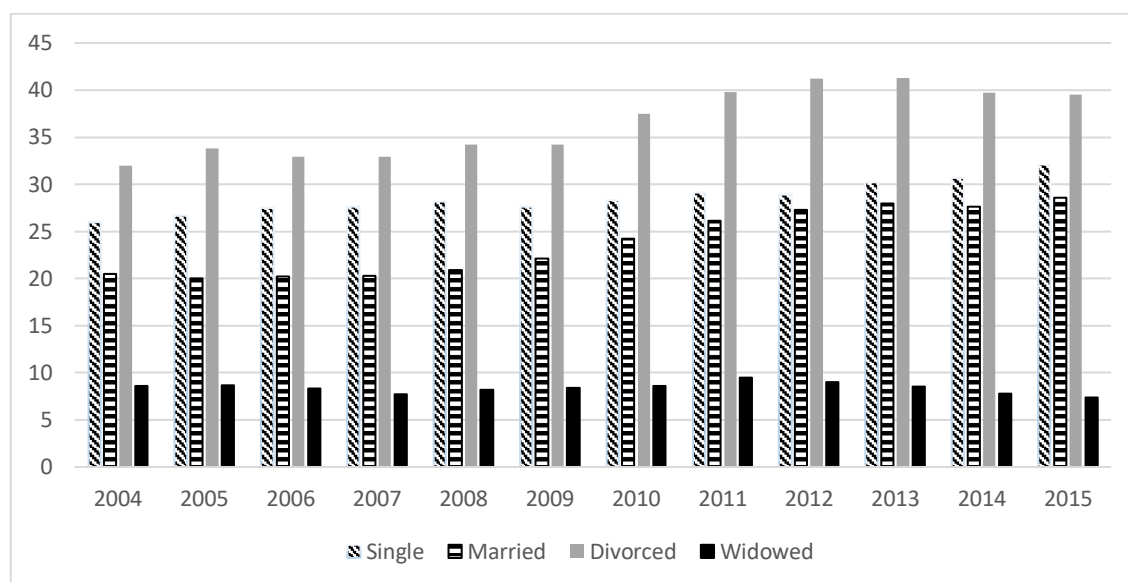
**Source:** TurkStat, Family Structure Survey, 2016.

Considering population highly concentrates on Istanbul-Ankara-Izmir, these three provinces provide a good visualization about marriage age of all segments in the society. According to result of TurkStat survey which is *Age at First Marriage of Women in Three Major Provinces*, nearly half of women marry under 20 age. And also, the share of women who marry under age 25 is about %84,3. In conclusion, women are getting married at the ages that their education needs to ongoing.

Tunali and Baslevent (2002) have evaluated importance of the effect of marriage age on fertility and education that marriages at later ages lead to decrease in

fertility. Low fertility rate supports women labor force participation in a positive way. In the same study, the impact of marriage on education has been emphasized. According to Tunalı and Baslevant (2002), marriages at early age damage women education.

**Figure 23 Employed Rate by Marital Status of Female, 2004-2015 (%)**



**Source:** TurkStat, Labor Force Statistics, 2017.

Figure 23 shows the proportion of female employment, differentiated by marital status for the years 2004-2015 in Turkey. There are four subpopulations which are single, married, divorced and widowed. The highest employment rate belongs to divorced women. The decrease in the non-labor income such as family support or child support payment increases divorced females' encourages to work. Single women have the second highest labor force participation ratio in relevant years. According to figure 23, widowed women prefer being in the labor force less than single, married and divorced women.

Labor force participation rate of single women exceeds labor force participation rate of married women for the years 2004-2015 in the figure. This difference supports Tunalı and Baslevant's (2002) hypothesis which is about negative effect of marriage.

The labor division into household is one of the most important factors which affect married women labor force participation. Uysal Kolasin and et al. (2015) have measured labor division into household as a parameter by using specific questions to explain women labor supply in Turkey. The indices which are using to determine labor division into household as follows;

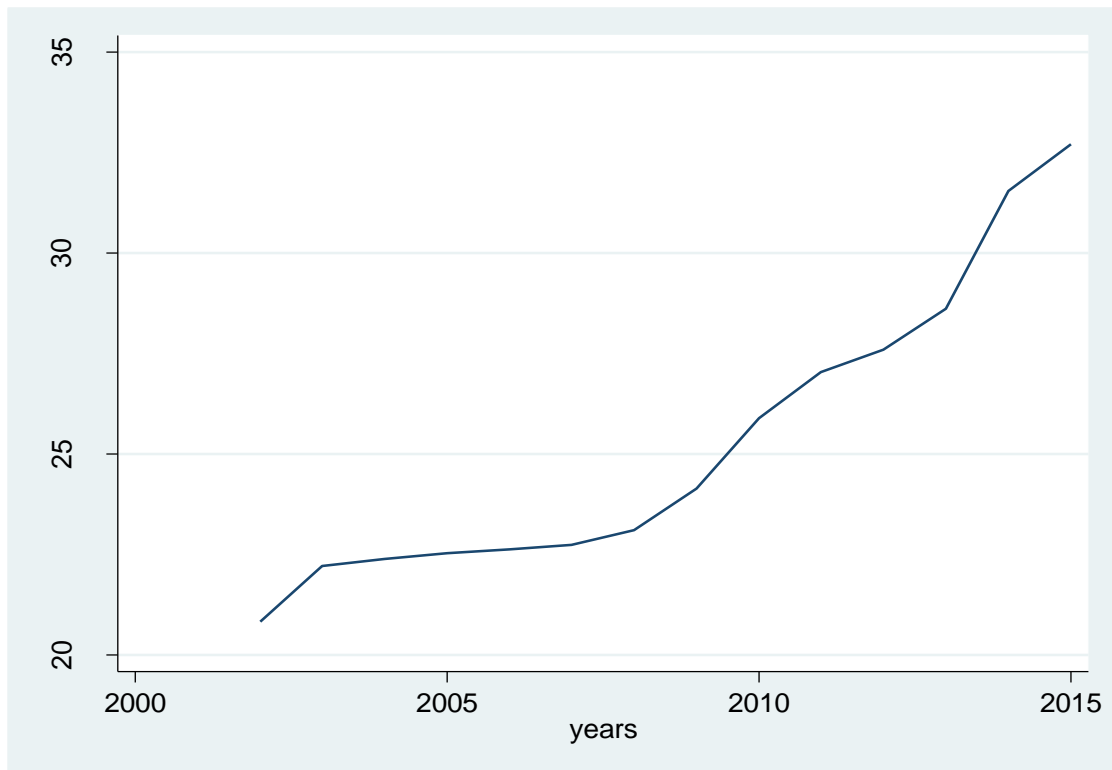
- When one of the parents has to quit the job, this should be women,
- Women who want to work should have husband permission,
- Domestic products like cleaning, washing up or etc. should be shared between women and men,
- Women look after children better than men (Uysal Kolasin and et al., 2015, p.15).

### 3.4. FEMALE LABOR FORCE STATISTICS FROM TURKISH HOUSEHOLD LABOR FORCE SURVEY

In the previous sections of the study, we presented descriptive statistics of female labor force participation which obtained from ILO. We also presents some basic statistics of female labor force participation from Turkish Household Labor Force Survey 2002-2015 in this part.

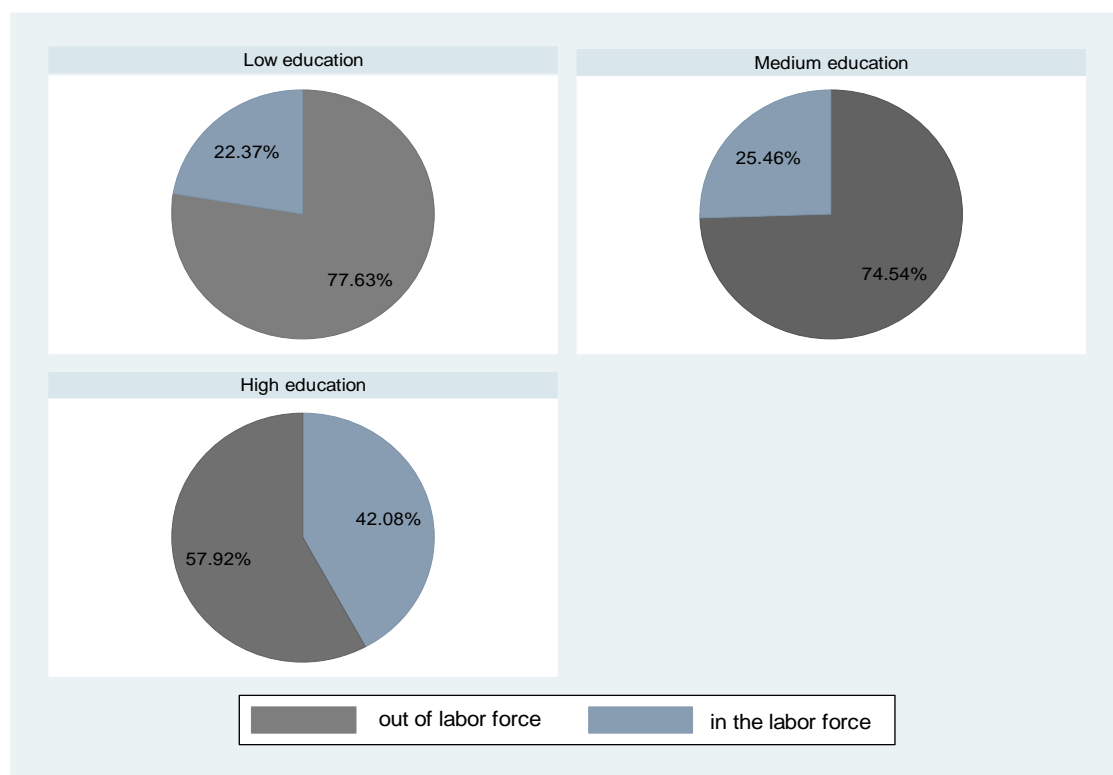
Figure 24 depicts the proportion of female labor force participation in Turkey for the years 2002-2015. In relevent years, female labor force participation follows increasing trend. In 2002, the share of females in the labor force is %22,22. It increases by 2 percent in the following year. It moves between %22 and %32,71 between 2002 and 2015.

**Figure 24 Proportion of Female Labor Force Participation in Turkey**



**Source:** Turkstat HLFS 2002-2015 and author's calculation. Percentages are adjusted by sample weights.

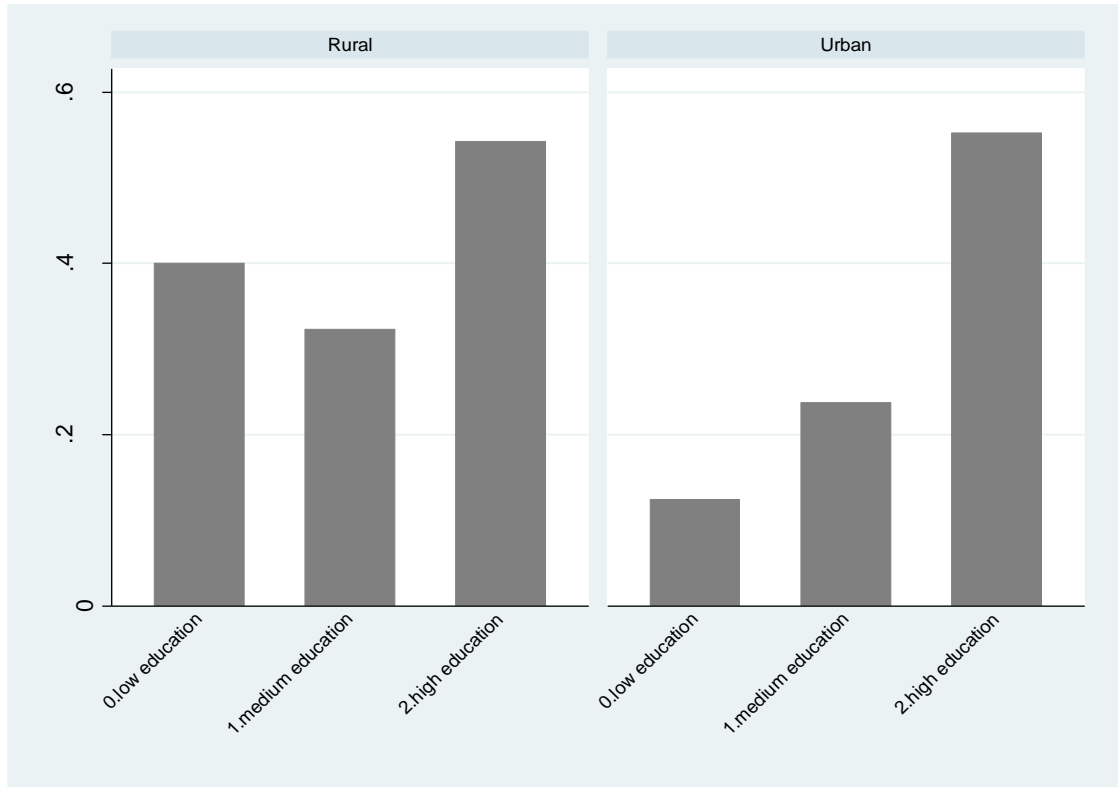
**Figure 25 Female Labor Force Participation by Education Level, 2002-2015**



**Source:** Turkstat 2002-2015 HLFS and author's calculation.

Figure 25 gives a picture of female labor force participation for the period 2002 and 2015 in accordance with education categories. In low education category, the share of females who out of labor force is equal to %77,63 and the share of females who in the labor force is equal to %22,37. Additionally, the share of women who in the labor force is about %25,46 in medium education category. The largest share of female labor force participation belongs to high education category. In conclusion, female labor force participation in Turkey increases with education level in the studied years. Females who graduated from primary, secondary or high schools prefer being in the labor force less than females who have bachelor, master and over degrees graduation.

**Figure 26 Female Labor Force Participation by Education Level (Rural/Urban Distinction)**



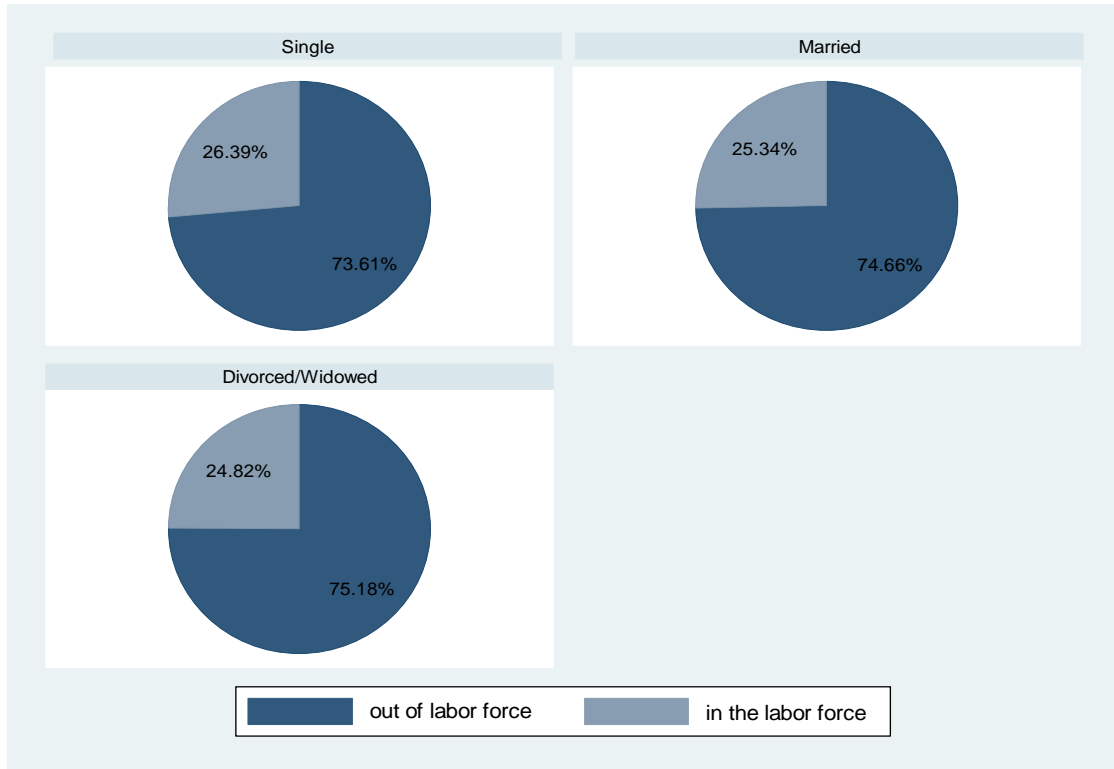
**Source:** Turkstat 2002-2013 and author's calculation.

In order to see the difference between female labor force participation in rural and urban areas according to education level, we created figure 26. This figure gives us general trend of female labor force participation until 2013 in rural and urban areas according to education level. Because HLFS 2014 and 2015 does not include information about region. According to results of rural areas, the biggest proportion of female labor force participation belongs highly educated females. However, labor force participation of females in the category low education and medium education is also high. The second biggest share of female labor force participation belongs to low educated females. So, the condition that female labor force participation increases with age does not valid in rural areas in Turkey for the period 2002-2013.

We observe that females in low and medium education categories prefer being in the labor force less than well-educated females. When we compare the share of female labor force participation in low and medium education in both areas, females

who has low and medium education in rural prefer being in the labor force more than females who live in urban areas in the same education categories.

**Figure 27 Female Labor Force Participation by Marital Status, 2002-2015**

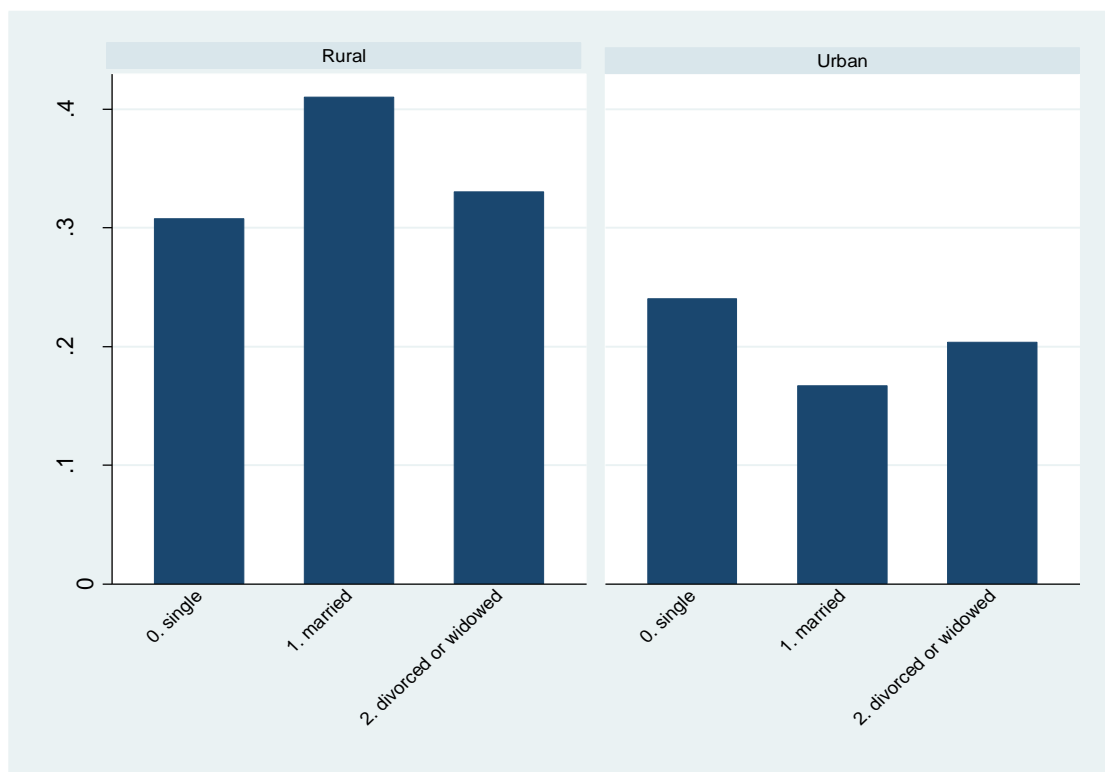


**Source:** Turkstat HLFS 2002-2015 and author’s calculation.

Using HLFS, we classified marital status of females as single, married and divorced or widowed for the period 2002-2015. Figure 27 illustrates the share of female labor force participation according to marital status in relevant years.

Results show that, single females being prefer in the labor force more than married and divorced or widowed females through the period. This result is consistent with our expectations. The shares of single, married and divorced/widowed females who in the labor force are %26.39, %25.34 and %24.82 respectively.

**Figure 28 Female Labor Force Participation by Marital Status (Rural/Urban Distinction)**



**Source:** Turkstat 2002-2013 and author's calculation.

We predict that the tendency of female labor force participation according to marital status in rural and urban areas differentiate from each other. Figure 28 gives us a good visualization of female labor force participation according to marital status between rural and urban areas. According to results, labor force participation of females in rural areas is higher than in urban areas in all categories. The largest share of female labor force participation belongs to married females and the lowest share belongs to single females in rural areas. Furthermore, single females mostly prefer being in the labor force in rural areas for the period 2002-2013. Additionally, being married leads to decrease in female labor force participation in urban.

## **CHAPTER 4 DATA STRUCTURE, THE METHOD OF ESTIMATION & MODEL**

### **4.1. DATA & ESTIMATION METHODOLOGY**

#### **4.1.1. Time-Repeated Cross Section**

TURKSTAT publishes regularly some kind of micro data set such as Household Labor Force Survey, Household Budget Survey, Income Earning Research and Domestic Violence against Women etc. The type of data set which is used in this thesis is Household Labor Force Survey. The main purpose of Household Labor Force Survey (HLFS) is to demonstrate the labor force structure of the country, to examine the occupations, working hours, and employment status of individuals and to learn job seeking duration of unemployed people. The content of Household Labor Force Survey which is micro data set compiled by TURKSTAT as follows;

- Labor force structure of country,
- The number of jobless,
- Labor force statistic at regional level,
- Economic activity, occupation, employment status and employment duration of people who are employed,
- Duration of seeking work of jobless, type of occupation which are looking for of jobless and etc.

Household Labor Force Survey has been constructed by using three types of forms. First one includes demographic structures like age, gender, education and marital status of all individuals. Second form has been also used to measure of all individuals' labor force situation. In another form defined as Form C, there are questions about the reason why the questionnaire does not take place and about the sample household. Furthermore, the method of weighting has been used to reach at the values to represent the mass form the data set. Lastly, the research is conducted by face-to-face by interviewers and recorded directly on laptop computers during field application.

300,690 individuals' information which has been obtained from 78,453 households has presented in the data set HLFS 2002 which is compiled by TURKSTAT

and presented to users. Additionally, all data in HFLS 2002-2015 are quantitative. The sample of this thesis consists of females who are in Household Labor Force Survey.

In order to estimate the determinants of female labor force participation for the given years, time repeated cross-sectional data is used in this study. Cross-sectional data can be basically defined as the data for a single time point. It means that this data set includes a sample of individuals, firms, states or countries at a certain time points (Wooldridge, 2013, p.5). Basic feature of cross-sectional data sets is obtaining randomly sampling (Wooldridge, 2013, p.6). According to Wooldridge (2013), cross-sectional data sets widely use to analyze micro econometrics fields such as labor economics, urban economics and etc. Pooled cross-sectional or time repeated cross-sectional data is designed by applying the same survey to a new sample of interviewees at consecutive time points (UK Data Service, 2015, p.4). It shows both cross-sectional and time series features (Wooldridge, 2013, p.9).

Pooled cross-sectional data structure can be analyzed by following cross-sectional data procedures to obtain change in relationship among variables over time (Wooldridge, 2013, p.9). This feature is an advantage of pooled cross-sectional data set because a single cross-sectional data does not allow a measurement of change over time (UK Data Service, 2015, p.9). Furthermore, repeated cross-sectional micro data helps to overcome some problems such as multi-collinearity which cause from aggregate level time series by conducting sophisticated analysis.

#### **4.1.2. Pooled OLS Estimation**

The goal of this section is to measure the contribution of all variables to female labor force participation in Turkey for the years 2002-2015. Initially, basic linear regression will be explained and then OLS estimation will be derived in this part.

Basic linear regression is following;

$$(1) y = \beta_0 + \beta_1 X_i + u_i$$

Equation (1) shows basic linear regression which includes dependent or explained variable  $y$ , constant parameter  $\beta_0$ , explanatory variable  $X_i$  with its intercept  $\beta_1$  and error term  $u_i$  for the observation  $i$ .

To derive OLS estimator, it is needed to assume that expected value of  $u$  is zero and covariance between  $x$  and  $u$  is also zero (Wooldridge, 2013, p.28).

$$(2) E(u) = 0,$$

$$(3) Cov(x, u) = E(xu) = 0,$$

Equation (2) and (3) provides the assumption of uncorrelated  $u$  with  $x$ . To observe  $y$  and  $x$  with unknown  $\beta_0$  and  $\beta_1$ , following two equalities should be written.

$$(4) E(y - \beta_0 - \beta_1 x) = 0,$$

$$(5) E[x(y - \beta_0 - \beta_1 x)] = 0,$$

These equalities reflect two constraints on the joint probability distribution of  $x$  and  $y$  in the population because of unknown parameters  $\beta_0$  and  $\beta_1$ . In order to attain good estimators of  $\beta_0$  and  $\beta_1$  Methods of Moments approach might be applied (Wooldridge, 2013, p.28).

$$(6) n^{-1} \sum_{i=1}^n (y_i - \widehat{\beta}_0 - \widehat{\beta}_1 x_i) = 0$$

$$(7) n^{-1} \sum_{i=1}^n (y_i - \widehat{\beta}_0 - \widehat{\beta}_1 x_i) x_i = 0$$

If equations (6) and (7) is solved for  $\widehat{\beta}_0$  and  $\widehat{\beta}_1$ , it is reached to equation (8) ;

$$(8) \bar{y} = \widehat{\beta}_0 + \widehat{\beta}_1 \bar{x}^4,$$

---

<sup>4</sup>  $\bar{y}$  denotes sample average which is of  $y_i$ . It is equal to  $n^{-1} \sum_{i=1}^n y_i$

Writing sample average of  $\bar{y}$  and  $\bar{x}$  and by making some rearrangements, it is obtained following equalities;

$$(9) \sum_{i=1}^n x_i [y_i - (\bar{y} - \widehat{\beta}_1 \bar{x}) - \widehat{\beta}_1 x_i] = 0$$

$$(10) \sum_{i=1}^n x_i (y_i - \bar{y}) = \widehat{\beta}_1 \sum_{i=1}^n x_i (x_i - \bar{x}).$$

Under condition that,

$$(11) \sum_{i=1}^n (x_i - \bar{x})^2 > 0,$$

$$(12) \widehat{\beta}_1 = \frac{\sum_{i=1}^n (x_i - \bar{x})(y_i - \bar{y})}{\sum_{i=1}^n (x_i - \bar{x})^2}$$

Equation (12) is called the *Ordinary Least Squares* estimate of  $\beta_1$ . Furthermore, fitted value for  $y$  is necessarily written for  $\widehat{\beta}_0$  and  $\widehat{\beta}_1$  to confirm previous equations.

$$(13) \widehat{y}_i = \widehat{\beta}_0 + \widehat{\beta}_1 x_i$$

In the equation (13), it is assumed that  $x = x_i$  to predict  $y$  for the given intercept and slope. Additionally, difference between actual  $y_i$  and its fitted value gives the residual for observation  $i$ .

$$(14) \widehat{u}_i = y_i - \widehat{y}_i = y_i - \widehat{\beta}_0 - \widehat{\beta}_1 x_i$$

Thus OLS regression line is written as<sup>5</sup>;

$$\widehat{y} = \widehat{\beta}_0 + \widehat{\beta}_1 x.$$

---

<sup>5</sup> All equations about Ordinary Least Square estimation have been taken from J. M. Wooldridge's Introductory Econometrics: A Modern Approach.

### 4.1.3. Model

In the previous section, econometric base of the study has been explained. In this part, all variables which are dependents and independent of the model will be detailed. As mentioned before, the main purpose of the thesis is to find and explain determinants and factors of women employment in Turkey for the years of 2002-2015. Because of that female labor force participation is used as dependent variable. This variable has been calculated by using the questions asked by the researcher in the questionnaire of HLFS for the years 2002-2015.

Age is the parameter that affects the lives of individuals in almost every field. So the variable *age* is used as first explanatory variable of women labor force participation. Also, *age\_sq* denotes square of females' ages. The variables age and age square are expected to have an inverse-U shaped effect on female employment in this model.

The other independent variable *education* demonstrates graduation level of individuals. It has been indexed from 0 to 2. 0 represents "*low education*", 1 represents "*medium education*", 2 represents "*high education*". Reference category 0 (low education) gives the information about illiterate or literate females and females graduated from primary school (5 years). Category 1 (medium education) also shows the education level of females graduated from primary school (8 years), secondary and high school. The last category 2 (high education) indicates highly-educated women. This category provides the information about university graduation, master and doctorate degree of females.

The other important variable which supports to explain the women labor force status is *marital-status*. Marital status dummy includes three different categories. First category is 0 which shows "*single*" females in the sample. This category is also called reference category of marital status variable. The category 1 is the marital status dummy which provides "*married*" females' information. Lastly, "*divorced or widowed*" females are included in category 2.

The data structure does not allow to obtain the information about the number of children of a woman. But the number of children in the household can be derived from the data set after some rearrangements. Using information of household and individual number which are given in the survey, id number has been created for each person and household. Using 15 age threshold, the variable child has been created. Lastly, child and id number have been rearranged together to obtain number of children in household. The variable *nrchildren* shows the number of individuals who age 15 and below in the household. Year dummies are used to explain whether there are structural changes over time.

The model of this thesis as follows:

$$(15) \quad flbr\_force_{it} = \beta_{0it} + \beta_1 marital\_status_{it} + \beta_2 education_{it} + \beta_3 age_{it} + \beta_4 age\_sq_{it} + \beta_5 nrchildren_{it} + D_1 year_{it} + \varepsilon_{it}$$

The Pooled OLS model of the thesis has been given via equation 15. Dependent variable *flbr\_force* is equal to 1 if female is in labor force and it is equal to 0 if female is out of work force in the equation 15,  $\beta_0$  shows the constant term of the model and the following variables are independent components of the model. The variable *education* is an education level dummy in which low education is reference category as well. The variable *marital\_status* is a marital status dummy which provides information about, single, married, divorced and widowed women. Furthermore, *nrchild* gives the number of children under 15 living in the household. The variables *age* and *age\_sq* show women's age and age square in the sample. Finally model specification includes time dummies to understand the changes of female labor force by years and  $\epsilon$  is also error term of it.

$$(16) \quad flbr\_force_{it} = \beta_{0it} + \beta_1 marital\_status_{it} + \beta_2 education_{it} + \beta_3 age_{it} + \beta_4 age\_sq_{it} + \beta_5 nrchildren_{it} + \beta_6 region_{it} + D_1 year_{it} + \varepsilon_{it}$$

Equation 16 gives another variation of the same estimation. The only difference is that the variable *region* has been added in the equation. This model includes the categorical variable region in addition to other explanatory variables for the years 2002-

2013. Because HLFS 2014 and HLFS 2015 do not provide information about where individuals live in. Region is equal to 0 if individuals live in rural and is equal to 1 if individuals live in urban.

Estimating a model using pooled or time repeated cross-sectional data can cause heteroscedasticity. In order to prevent this issue, vce (robust) option has been added in the estimations of two model specifications.

## CHAPTER 5 ESTIMATION RESULTS

### 5.1. POOLED OLS ESTIMATION RESULTS

In this section the effect of socio-economic and demographic factors on female labor force participation is tried to be explained. The estimation which is conducted is Pooled OLS and the data used in this estimation belongs to TurkStat HLFS 2002-2015. The explanatory variable education is equal to 0 if female has low education, it is equal to 1 if female has medium education and it is equal to 2 if female has high education. Marital status dummy is equal to 0 if female is single, it is equal to 1 if female is married and it is equal to 2 if female is divorced or widowed. Moreover, age and age square variables have been used only in the first model specification. Second model specification includes age thresholds. Thus, the variable age and age square has been excluded from the model which design according to age of women. In order to assess change in female labor force participation over time, all estimations include time dummies from 2002 to 2015.

**Table 4 Pooled OLS Estimation Results, 2002-2015**

<b>Explanatory Variables</b>	<b>Coefficients</b>
Age	0.030*** (0.0001)
Age square	-0.000*** (0.000)
Medium education	0.014*** (0.0008)
High education	0.307*** (0.0012)
Married	-0.080*** (0.0009)
Divorced/ Widowed	-0.060*** (0.0014)
Number of children	-0.006*** (0.0002)
<b>Observations</b>	<b>2,183,697</b>

Robust standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Year dummy results are reported in Appendix 1

Table 4 shows the Pooled OLS estimation results at the 15-64 age group for the period 2002-2015 in Turkey. The results show that there is inverse U-shape relation between age and age square. The probability of female labor force participation increases with age but as age increases at a certain point, the participation of women in the workforce starts to diminish.

Women who have medium education prefer being in the labor force %1 more than low educated women. Also, highly educated females supply their labor force more than low educated females. The labor force participation of high educated women is 30 percent higher than low educated women at 15-64 age group.

The probability of labor force participation of married females is lower than single females which is reference category. Being married decreases the probability of female labor force participation which is about %8. This is also means that single females prefer being in the labor force %8 more than married females. Being divorced or widowed has the smallest effect on the female labor force participation. Comparison between being single and being divorced or widowed shows that married or divorced females prefer being in the labor force %6 lower than single females. This result is in line with expectations. Because labor force participation decision of married women is effected by some factors like child bearing, labor division into household, income of husbands and etc.

Number of children in the household is also statistically significant. Increase in the number of children in the household leads to decrease in female labor force participation.

The year dummy results show that year 2003 is statistically significant. There is a negative relationship between year 2003 and explained variable. Female labor force participation in 2003 is lower than reference year 2002. Except for 2003 and 2007, females prefer being in the labor force in all years more than 2002. For example, female labor force participation in 2015 is 7,8 percent higher than reference year 2002.

**Table 5 Pooled OLS Estimation Results According to Age Groups, 2002-2015**

	Age 15-24	Age 25-34	Age 35-44	Age 45-54	Age 55-64
Medium education	0.023 *** (0.0013)	0.064*** (0.0016)	0.038*** (0.0020)	-0.039*** (0.0023)	-0.098*** (0.0024)
High education	0.244*** (0.0029)	0.382*** (0.0020)	0.438*** (0.0024)	0.211*** (0.0033)	-0.013*** (0.0037)
Married	-0.035 *** (0.0011)	-0.099*** (0.0018)	-0.012*** (0.0028)	-0.012*** (0.0038)	0.022*** (0.0043)
Divorced/ Widowed	0.051 *** (0.0064)	0.050*** (0.0041)	0.072*** (0.0039)	-0.024*** (0.0042)	-0.055*** (0.0045)
N.of child	-0.011 *** (0.0003)	-0.015*** (0.0005)	-0.012*** (0.0004)	0.015*** (0.0006)	0.018*** (0.0008)
<b>Observations</b>	545,888	509,387	469,192	388,664	270,566

Robust standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Year dummy results are reported in Appendix 2

Table 5 gives the Pooled OLS estimation results with respect to five age groups. It is repeated same estimation methodology for different ages in order to understand the effect of socio-economic and demographic factors on female labor force participation in different periods of life.

Firstly, explanatory power of marital status on female labor force is presented for all age groups. Being married decreases the probability of female labor force participation in all age groups except for 55-64 age group. The most powerful relationship between being married and female labor force participation is observed at the 25-34 age group. Being married decreases the probability of female employment about %10 at the 25-34 age group. At the 15-24 age group, married female labor force participation is % 3,5 lower than single females. At the 35-44 and 45-54 age groups, single females prefer being in the labor force more than married females.

There is a positive relationship between being divorced or widowed and female labor participation at the 15-24, 25-34 and 35-44 age groups. Conversely, the probability of female labor force participation is negatively affected by being divorced

or widowed at the 45-54 and 55-64 age groups. Being divorced or being widowed decreases female labor force participation about %2,5 and %5,5 respectively. However, this category increases the probability of female labor force participation for the first three age groups about %5,1, %5,2 and %7,2 respectively.

The category of medium education increases the probability of female labor force participation at the 15-24, 25-34, 35-44 age groups and it decreases female labor force participation at the 45-54 and 55-64 age groups. For example, being graduated from primary school (8 years) or from secondary school increases female labor force participation about %6,4 at the 25-34 age group. Contrarily, it decreases female labor force participation approximately %10 at the 55-64 age group. And also, there is a negative association between medium education and dependent variable the 45-54 age group. The probability of female labor force participation in this age group is %4 lower than low educated females at the same age group.

The strongest relationship between education and dependent variable belongs to high education category in all age groups. High education has increases female labor force participation in all age groups except for 55-64. Retirement can cause decreasing female labor force participation in the category of high education at 55-64 age group. Well-educated females at the 35-44 age group prefer being in the labor force %44 more than low educated females at the same age group. Furthermore, the effect of high education on female labor force participation is %39 at the 25-34 age group.

Number of children in the household is statistically significant in all age groups. Increasing in number of children in household decreases the probability of female labor force participation at the first three age groups. However at the 45-54 and 55-64 age groups, the relationship between number of children and female labor force participation is positive.

At the age group 15-24, only year 2015 is not statistically significant. Remaining years decrease female labor force participation at the same age group. At the 25-34 age group, only year 2003 is statistically significant. All years from 2009 to 2015 are statistically significant at the same age group. At the 35-44 age group, all year

dummies are statistically significant except for 2003. For example, female labor force participation in 2015 is %12 higher than year 2002. In 2014 and 2015, only females in the 15-24 age group prefer being in the labor force less than reference year.

**Table 6 Pooled OLS Estimation Results, 2002-2013**

<b>Explanatory Variables</b>	<b>Coefficients</b>
Age	0.031*** (0.0001)
Age square	-0.0004*** (0.0000)
Medium education	0.057*** (0.0008)
High education	0.360*** (0.0014)
Married	-0.071*** (0.0009)
Divorced/ Widowed	-0.034*** (0.0015)
Number of children	-0.015*** (0.0002)
Urban	-0.241*** (0.0007)
<b>Observations</b>	1,837,638

Robust standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Year dummy results are reported in Appendix 3

HLFS 2014 and HLFS 2015 do not consist information about the region which individuals live in. So, Table 6 reports same estimation according to 15-64 age group for the years 2002-2013. Pooled OLS estimation results 2002-2013 includes the results of categorical variable region in addition to other explanatory variables in Table 6. The dummy variable region is equal to 0 if individuals live in rural and it is equal to 1 if individuals live in urban. Similar to the previous results which is reported in Table 4, coefficient of age is positive and coefficient of age square is negative. For example, female labor force participation at the 15-64 age group increases about %3 with age.

Medium and high education increase female labor force participation decision. Highly educated females prefer being in the labor force %36 more than low educated

females. Coefficients of being married and being divorced or widowed are statistically significant and negative. Single females prefer being in the labor force %7 more than married females. Living in urban areas decreases female labor force participation which is about %24. Finally, increase in the number of children decreases female labor force participation at the 15-64 age group for the years 2002-2013.

According to dummy variable results, all years are statistically significant. For example, in 2003 females prefer being in the labor force %2 less than reference year. However, year 2014 and 2015 increases the probability of female labor force participation.

**Table 7 Pooled OLS Estimation Results According to Age Groups, 2002-2013**

	Age 15-24	Age 25- 34	Age 35-44	Age 45- 54	Age 55-64
Medium education	0.044*** (0.0014)	0.097*** (0.0018)	0.095*** (0.0022)	0.036*** (0.0025)	-0.016*** (0.0026)
High education	0.266*** (0.0032)	0.429*** (0.0023)	0.514*** (0.0028)	0.266*** (0.0037)	0.061*** (0.0040)
Married	-0.036*** (0.0012)	-0.084*** (0.0020)	0.000 (0.0031)	-0.013*** (0.0041)	0.020*** (0.0044)
Divorced/ Widowed	0.048*** (0.0066)	0.058*** (0.0045)	0.090*** (0.0043)	-0.0018 (0.0046)	-0.026*** (0.0046)
Urban	-0.151** (0.0013)	-0.199*** (0.0016)	-0.273*** (0.0017)	-0.334*** (0.0017)	-0.297*** (0.0018)
N.of child	-0.015*** (0.0003)	-0.023*** (0.0005)	-0.021*** (0.0004)	-0.0008 (0.0006)	0.002*** (0.0007)
<b>Observations</b>	467,861	435,521	392,772	322,246	219,238

Robust standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Year dummy results are reported in Appendix 4

Table 7 gives Pooled OLS estimation results according to five age groups for the years 2002-2013. The effect of medium education is positive in all age groups except for 55-64. At the same time, high education increases the probability of female labor force participation in all age groups. For example, highly educated females at the 25-34

age group prefer being in the labor force %43 more than low educated females at the same age group.

Being married does not statistically significant only at the 35-44 age group. Marriage decreases female labor force participation at the 15-24, 25-34 and 45-54 age groups whereas it increases female labor force participation at the 55-64 age group. Single females at the 25-34 age group prefer being in the labor force %8 more than married females at the same age group. However, married females prefer being in the labor force %2 more than single females at the 55-64 age group. Number of children in the household is statistically significant in all age groups except for 45-54. Coefficient of number of children is negative indicating that female labor force participation decreases with increasing number of children. Similar to the previous result, living in the urban decreases female labor force participation. Living in the urban areas decreases female labor force participation about %28 at the 35-44 age group.

At the 15-24 age group, all year dummies are statistically significant. In 2007, females labor force participation approximately %3 less than 2002. In 2012, female labor force participation is %2,5 less than 2002 at the same age group. Similar to the previous age group, year 2003 decreases the probability of female labor force participation at the 25-34 age group. In contrast, female labor force participation is %6 more than in 2013 with respect to 2002.

2003, 2004 and 2005 are not statistically significant at the 35-44 age group. Remaining years are statistically significant and increase female labor force participation at the same age group. At the 45-54 age group, all years are statistically significant except for 2005 and 2008. Lastly, only six years are statistically significant at the 55-64 age group.

## CHAPTER 6 CONCLUSION

In Turkey, men tend to participate in labor market more frequently than women. The ratio of female labor force participation in Turkey accounted for %30,4 in 2017. The unemployment ratio of females is also %14,4. Considering in terms of economic development and social welfare, we find that female labor force participation is not in a sufficient level in Turkey. In this respect, the thesis aims to understand the structure of female employment and to analyze the socio-economic and demographic factors that affect female labor force participation in Turkey by using Pooled cross-section data for the period 2002-2015.

ILO data visualizations provide a picture of labor force participation, employment status, education level, marital status, and occupation selections of females descriptively for the relevant years. Distribution of female employment according to sectors shows that females are mostly employed in services sector. Proportion of women who employed in agriculture sector has downward sloping for the years 2002-2016. Besides, female labor force participation in west regions of the country is higher than east regions. For example, West Marmara and Aegean are the regions that have highest female labor force participation. Not surprisingly, Southeastern Anatolia is the region that has lowest female employment ratio.

In 2016, distribution of female employment with respect to urban and rural areas in Turkey shows that females supply their labor in rural more than urban. Stated in other words, women are mostly employed as unpaid family workers in rural areas. Distribution of female employment by status demonstrates that the proportion of unpaid family workers is second among employment status categories. Leading category is employee as well.

Total number of females employed in informal economy exceeds the number of males for the year 2015. Proportion of unregistered female workers in agriculture and non-agriculture sector is about %95 and %24 respectively.

Age is the one of the most important factor that provides descriptive picture about female employment. According to ILO, at the 25 and over age women are

active in labor market more than women at the 15-24 age group for the years 2002-2016. Ongoing education can cause to decrease female labor force participation at the 15-24 age group.

The highest employment rate among education categories belongs to women who graduated from primary school for the years 2006-2015. We find that the number of highly educated women have an increasing trend in recent years. The effect of being graduated from secondary school on the decision of female labor force participation does not change dramatically between 2006 and 2015. Lastly, employment rate of single and divorced females' labor force participation is higher than married and widowed women for the years 2004-2015.

In order to understand the determinants of female labor force participation, Pooled OLS method is used and two specifications are estimated for both two models. First model helps to assess female labor force participation at the 15-64 age group for the years 2002-2015. Second specification of the first model also explains the effect of socio-economic and demographic variables on five different age groups.

Estimation results show that age and age square are both statistically significant in the first specification of the first model. The probability of female labor force participation increases with age but as age increases at a certain point, female labor force participation starts to diminish. The association between female labor force participation and high education is also positive. Moreover, being married and being divorced or widowed decrease female labor supply. Stated in other words, single females prefer being in the labor force more than married or divorced females. As expected, increase in number of children in the household leads to decrease in female labor force participation. Surprisingly, change in number of children does not create much of an impact.

On the other hand, coefficients of medium education are positive at the first three age groups in the second specification. Again, high education accounts for the largest influence among education categories. Coefficients of high education are positive indicating that the probability of female labor force participation increases with

high education. There is a negative association between high education and the probability of female labor force participation at the 55-64 age group. Being married and being divorced or widowed decrease the probability of female labor force participation at the 45-54 and 55-64 age groups.

Number of children in the household is statistically significant in all age groups. Increase in the number of children decreases the probability of female labor force participation at the first three age groups. However it increases labor force participation at the 45-54 and 55-64 age groups.

The year dummy results show that year 2003 is statistically significant. Labor force participation of females in 2003 is lower than 2002. Except for 2003 and 2007, in remaining years females prefer being in the labor force more than 2002.

In the second specification, at the 15-24 age group, only year 2015 is not statistically significant. Nearly all remaining years decrease female labor force participation at the same age group. The effect of year dummies at the 25-34 age group can be summarized as: only year 2003 is statistically significant and decreases female labor force participation. All years from 2009 to 2015 are statistically significant and coefficients of years are positive

In the first specification of the second model, according to Pooled OLS estimation which includes region variable in addition to other variables results, living in the urban areas decreases female labor force participation. Similar to the previous results, increase in the number of children decreases female labor force participation at the 15-64 age group for the years 2002-2013. Age and age square are also statistically significant and there is U-shaped relation for the studied period. Coefficients of being married and being divorced or widowed are statistically significant and negative. Medium and high education increase female labor force participation decision. Lastly, all year dummies are also statistically significant.

In the second specification of the second model, medium education increases the probability of female labor force participation in all age groups except for 55-64. At the same time, the results show that the most powerful relationship between dependent

variable and education categories belongs to high education in all age groups. Also, living in the urban decreases the probability of female labor force participation for the years 2002-2013.

Being married does not statistically significant only at the 35-44 age group. Marriage decreases female labor force participation at the 15-24, 25-34 and 45-54 age groups whereas it increases female labor force participation at the 55-64 age group. Coefficient of number of children is negative indicating that female labor force participation decreases with increasing number of children except for 55-64 age group.

## APPENDIX

### Appendix 1: Pooled OLS Estimation Results, 2002-2015

#### Pooled OLS Estimation Results, 2002-2015

Explanatory Variables	Coefficients
Age	0.030*** (0.0001)
Age square	-0.000*** (0.000)
Medium education	0.014*** (0.0008)
High education	0.307*** (0.0012)
Married	-0.080*** (0.0009)
Divorced/ Widowed	-0.060*** (0.0014)
Number of children	-0.006*** (0.0002)
<b>Years</b>	
2003	-0.016*** (0.0017)
2004	0.006*** (0.0016)
2005	0.003* (0.0016)
2006	0.003** (0.0016)
2007	-0.002 (0.0016)
2008	0.003** (0.0016)
2009	0.011*** (0.0016)
2010	0.026*** (0.0016)
2011	0.034*** (0.0016)
2012	0.036*** (0.0016)
2013	0.043*** (0.0017)
2014	0.070*** (0.0016)
2015	0.078*** (0.0016)
<b>Observations</b>	2,183,697

Robust standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

## Appendix 2: Pooled OLS Estimation Results According to Age Groups, 2002-2015

### Pooled OLS Estimation Results According to Age Groups, 2002-2015

	Age 15-24	Age 25-34	Age 35-44	Age 45-54	Age 55-64
Medium education	0.023 *** (0.0013)	0.064*** (0.0016)	0.038*** (0.0020)	-0.039*** (0.0023)	-0.098*** (0.0024)
High education	0.244*** (0.0029)	0.382*** (0.0020)	0.438*** (0.0024)	0.211 *** (0.0033)	-0.013*** (0.0037)
Married	-0.035 *** (0.0011)	-0.099*** (0.0018)	-0.012*** (0.0028)	-0.012*** (0.0038)	0.022*** (0.0043)
Divorced/ Widowed	0.051 *** (0.0064)	0.050*** (0.0041)	0.072*** (0.0039)	-0.024*** (0.0042)	-0.055*** (0.0045)
N.of child	-0.011 *** (0.0003)	-0.015*** (0.0005)	-0.012*** (0.0004)	0.015*** (0.0006)	0.018*** (0.0008)
<b>Years</b>					
2003	-0.021*** (0.0032)	-0.015*** (0.0036)	-0.007** (0.0039)	-0.016*** (0.0043)	-0.018*** (0.0051)
2004	-0.005* (0.0029)	0.004 (0.0033)	0.020*** (0.0036)	0.012** (0.0040)	0.008* (0.0047)
2005	-0.011*** (0.0029)	-0.000 (0.0033)	0.023*** (0.0036)	0.017*** (0.0040)	-0.005 (0.0046)
2006	-0.014*** (0.0029)	0.001 (0.0033)	0.029*** (0.0036)	0.013*** (0.0039)	-0.005 (0.0045)
2007	-0.018*** (0.0029)	-0.003 (0.0033)	0.021*** (0.0036)	0.005 (0.0039)	-0.010** (0.0045)
2008	-0.012*** (0.0029)	0.000 (0.0033)	0.028*** (0.0036)	0.013*** (0.0039)	-0.009** (0.0045)
2009	-0.017*** (0.0029)	0.008** (0.0033)	0.043*** (0.0036)	0.026*** (0.0039)	0.005 (0.0045)
2010	-0.016*** (0.0029)	0.024*** (0.0033)	0.072*** (0.0036)	0.046*** (0.0039)	0.012*** (0.0044)
2011	-0.012*** (0.0030)	0.032*** (0.0034)	0.083*** (0.0036)	0.066*** (0.0039)	0.010** (0.0044)
2012	-0.021*** (0.0030)	0.037*** (0.0034)	0.088*** (0.0036)	0.074*** (0.0039)	0.006 (0.0044)
2013	-0.011*** (0.0034)	0.066*** (0.0039)	0.100*** (0.0041)	0.075*** (0.0043)	0.021*** (0.0047)
2014	-0.011*** (0.0030)	0.036*** (0.0036)	0.115*** (0.0037)	0.139*** (0.0040)	0.070*** (0.0045)
2015	-0.002 (0.0031)	0.034*** (0.0036)	0.128*** (0.0037)	0.151*** (0.0040)	0.077*** (0.0045)
<b>Observations</b>	545,888	509,387	469,192	388,664	270,566

Robust standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

### Appendix 3: Pooled OLS Estimation Results, 2002-2013

#### Pooled OLS Estimation Results, 2002-2013

Explanatory Variables	Coefficients
Age	0.031*** (0.0001)
Age square	-0.0004*** (0.0000)
Medium education	0.057*** (0.0008)
High education	0.360*** (0.0014)
Married	-0.071*** (0.0009)
Divorced/ Widowed	-0.034*** (0.0015)
Number of children	-0.015*** (0.0002)
Urban	-0.241*** (0.0007)
<b>Years</b>	
2003	-0.015*** (0.0016)
2004	-0.0094*** (0.0015)
2005	-0.014*** (0.0015)
2006	-0.014*** (0.0015)
2007	-0.017*** (0.0015)
2008	-0.009*** (0.0015)
2009	-0.000 (0.0015)
2010	0.016*** (0.0015)
2011	0.026*** (0.0015)
2012	0.029*** (0.0015)
2013	0.035*** (0.0017)
<b>Observations</b>	1,837,638

Robust standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

## Appendix 4: Pooled OLS Estimation Results According to Age, 2002-2013

### Pooled OLS Estimation Results According to Age, 2002-2013

	Age 15-24	Age 25-34	Age 35-44	Age 45-54	Age 55-64
Medium education	0.044*** (0.0014)	0.097*** (0.0018)	0.095*** (0.0022)	0.036*** (0.0025)	-0.016*** (0.0026)
High education	0.266*** (0.0032)	0.429*** (0.0023)	0.514*** (0.0028)	0.266*** (0.0037)	0.061*** (0.0040)
Married	-0.036*** (0.0012)	-0.084*** (0.0020)	0.000 (0.0031)	-0.013*** (0.0041)	0.020*** (0.0044)
Divorced/ Widowed	0.048*** (0.0066)	0.058*** (0.0045)	0.090*** (0.0043)	-0.0018 (0.0046)	-0.026*** (0.0046)
Urban	-0.151** (0.0013)	-0.199*** (0.0016)	-0.273*** (0.0017)	-0.334*** (0.0017)	-0.297*** (0.0018)
N.of child	-0.015*** (0.0003)	-0.023*** (0.0005)	-0.021*** (0.0004)	-0.0008 (0.0006)	0.002*** (0.0007)
<b>Years</b>					
2003	-0.019*** (0.0031)	-0.015*** (0.0035)	-0.005 (0.0037)	-0.014*** (0.0039)	-0.0016*** (0.0045)
2004	-0.015*** (0.0028)	-0.008** (0.0032)	0.002 (0.0034)	-0.008** (0.0036)	-0.009 (0.0042)
2005	-0.023*** (0.0028)	-0.014*** (0.0032)	0.003 (0.0034)	-0.005 (0.0036)	-0.025*** (0.0042)
2006	-0.026*** (0.0028)	-0.014*** (0.0032)	0.008** (0.0034)	-0.011*** (0.0036)	-0.026*** (0.0041)
2007	-0.028*** (0.0028)	-0.018*** (.0032)	0.003 (0.0034)	-0.014*** (0.0036)	-0.028*** (0.0041)
2008	-0.021*** (0.0029)	-0.012*** (0.0032)	0.011*** (0.0034)	-0.004 (0.0036)	-0.024*** (0.0041)
2009	-0.023*** (0.0029)	-0.0004 (0.0032)	0.027*** (0.0034)	0.008** (0.0036)	-0.011*** (0.0040)
2010	-0.021*** (0.0028)	0.014*** (0.0032)	0.059*** (0.0034)	0.029*** (0.0036)	-0.002 (0.0040)
2011	-0.017*** (0.0029)	0.024*** (0.0033)	0.071*** (0.0035)	0.052*** (0.0036)	0.001 (0.0040)
2012	-0.025*** (0.0029)	0.031*** (0.0033)	0.076*** (0.0035)	0.060*** (0.0036)	-0.003 (0.0039)
2013	-0.012*** (0.0033)	0.066*** (0.0038)	0.089*** (0.0040)	0.052*** (0.0041)	0.000 (0.0043)
<b>Observations</b>	467,861	435,521	392,772	322,246	219,238

Robust standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

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