DISCOURAGED WORKERS AND THE DOMINANCE OF ADDED WORKER EFFECT: "THE CASE OF TURKEY"

A Master's Thesis

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August 2009

To my family

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WORKER EFFECT:
"THE CASE OF TURKEY"

The Institute of Economics and Social Sciences
of
Bilkent University

by

HANİFE DENİZ KARAOĞLAN

In Partial Fulfillment of the Requirements for the Degree of
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in

THE DEPARTMENT OF
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August 2009

I certify that I have read this thesis and have found that it is fully adequate, in scope and in quality, as a thesis for the degree of Master of Arts in Economics.

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ABSTRACT

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This thesis includes two different studies. In the first chapter, we examine how socioeconomic factors affect the probability of being discouraged for the individuals who do not have a regular job. We find that the factors such as gender, age, marital status, education level, previous work experience, living in urban or rural areas, and Gross Domestic Product per capita level of the region that the individual lives have significant impact on the decision of the individual for leaving the labor force or not. Moreover, the reason of unemployment and the duration of unemployment of the individual who has previous work experience also affect this decision significantly. In the second chapter, we examine the dominance of Added Worker Effect for Turkey. We show that Added Worker Effect is significantly dominant over Discouraged Worker Effect. We also find that, in Turkey, motherhood is an obstacle for married women to participate in labor force. Finally, we conclude that Added Worker Effect is not a completely consequence of the economic crisis in Turkey. Both the income loss of the

household head and the risk that household leader may loose his job drive married women into labor force more and cause them to work for more hours.

Keywords: Non-Employed Individuals, Discouraged Workers, Added Worker Effect, Discouraged Worker Effect, Probit, Tobit.

ÖZET

ÜMİTSİZ İŞÇİLER VE EK ÇALIŞAN ETKİSİNİN ÜSTÜNLÜĞÜ:
TÜRKİYE'NİN DURUMU

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Tez Yöneticisi: Doç. Dr. Çağla Ökten

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Bu tez iki farklı çalışmayı içermektedir. Birinci bölümde Türkiye'de sosyo-ekonomik faktörlerin düzenli bir işi olmayan insanların ümitsiz olma olasılığı üzerindeki etkileri incelenmiştir. Cinsiyet, yaş, medeni durum, eğitim düzeyi, iş deneyimi, kırsal veya kentsel bölgede yaşama ve kişinin yaşadığı bölgede kişi başına düşen Gayri Safi Milli Hasıla gibi faktörlerin kişinin iş gücünü terk etme veya etmeme yönündeki kararının üzerinde anlamlı etkileri olduğu saptanmıştır. Ayrıca, daha önceden iş deneyimi olan insanlar için işten ayrılış nedeni ve işsizlik süresinin de bu kararı anlamlı olarak etkilediği gözlemlenmiştir. İkinci bölümde ise Türkiye'de ek çalışan etkisinin ümitsiz çalışan etkisine göre üstün olup olmadığı incelenmiştir. Çalışmanın sonucunda ise Türkiye'de ek çalışan etkisi ümitsiz çalışan etkisine göre anlamlı olarak üstün bulunmuştur. Anneliğin evli bayanların iş gücüne girmesini engellediği bu çalışmanın başka bir sonucudur. Çalışmamızın sonucunda, ek çalışan etkisinin sadece ülkede görülen ekonomik krizler sonucu oluşmadığı saptanmıştır. Hanehalkı reisinin gelir kaybının veya

hanehalkı reisinin işini kaybetme riskinin evli bayanların iş gücüne girmelerine ve daha fazla saat çalışmalarına neden olduğu gözlemlenmiştir .

Anahtar Kelimeler: Düzenli İşi Olmayan Kişiler, Ümitsiz İşçiler, Ek Çalışan Etkisi, Ümitsiz Çalışan Etkisi, Probit, Tobit.

ACKNOWLEDGEMENTS

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CHAPTER I

ANALYZING DISCOURAGED WORKERS IN TURKEY

1.1. Introduction

According to the definition of International Labor Organization (ILO), discouraged workers are those individuals who are not employed and not searching for a job because they believe there is no work available for them. ILO defines the unemployed people as the ones who are out of work and who are actively looking for work, or are waiting to be recalled for a job after having been laid off. Since discouraged workers are not actively job seekers, they are not counted as unemployed; therefore they are not counted in the labor force, as labor force only includes the people over the age of 15 who are employed or unemployed. Hence, the number of discouraged workers is ignored when unemployment rate of a country is calculated.

The literature generally focuses on the question whether discouraged workers should be counted as unemployed or not. There are different suggestions for this phenomenon in the literature. Suryederma et al (2007) analyze discouraged workers for a developing country, Indonesia, and divide the discouraged people into two groups; the first group includes the people who are

willing to work if they have a chance, and the second group includes the people who do not want to start working even if they have a chance. In the paper, the individuals belong to the latter group are generally referred as the people who have high reservation wage, for instance who inherited wealth, thus do not need to work. The paper concludes that the people who do not wish to work should not be included in the labor force, but the first group should be considered as unemployed. In that paper, it is also argued that ILO does not support the idea of including discouraged workers in the labor force since if these people are involved in the labor force in a country, it makes the calculated unemployment rate of that country incomparable to the others which do not include the discouraged workers to the scope of unemployment. Even if all of the countries add the discouraged workers to the labor force, the comparison of the unemployment rate of the countries will not be reliable since the effect of discouraged workers on unemployment rate significantly differ from one country to another as Hughes and McCormick (1990) suggests. In their study, they argue that if discouraged workers are considered as unemployed, the unemployment rate of USA increase by 14 per cent whereas the unemployment rate of Sweden increase by 35 per cent over 1980s.

Flaim (1984) divides the discouraged workers into two groups; the first group of discouraged people stop searching for work due to job market factors such as they cannot find a job or they think there is no job available for them. The second group of discouraged workers stops looking for a job because of age problems or lack of skill or education. In his study, he takes the recent work experience of discouraged workers as a reference point and finds out that, a large number of discouraged workers have their last work experience a long time ago

using 1979-83 data of USA current population survey. In addition, more than half of those people report that they are not seeking for a job in the following year the survey conducts. Therefore, the paper concludes that discouraged workers with previous work experience do not have strong links with the labor market, thus they should not be included in the labor force. The paper also finds out that the discouraged ones with no previous work experience, will not tend to participate in labor force in subsequent periods, thus they should not be included in the labor force either.

Finegan (1981) also proposes the division of the discouraged workers into two groups, like Flaim (1984), however, unlike Flaim, he concludes that the people who are discouraged for job market reasons should be counted as unemployed, whereas the ones who are discouraged for personal reasons should not be calculated as unemployed since he finds out that the number of people discouraged for job market reasons change during expansion or recession, whereas the number of discouraged workers for personal reasons remain stable during these economic fluctuations by using the 1967-1979 USA Current Population Survey data.

The papers on discouraged workers are generally empirical in the literature. Theoretical papers written on discouraged workers generally focus on the question why people tend to be discouraged, or in other words why they give up job searching. Blundel et al (1998) suggests that people choose to participate in labor force if the expected benefits from job seeking will be greater than the costs of searching for job. Bloeman (2003) suggests the same results as Blundel et al (1998). He considers the marginal benefit and marginal cost of job searching behavior; he suggests that if marginal benefit of job searching exceeds the

marginal cost of job searching, the individuals will tend to participate in labor force. Cave (1983) considers the wage levels in the market and concludes that, if effective minimum wage increases, more skilled marginal workers will participate in labor force whereas the participation of less-skilled marginal workers decreases.

In this thesis, we will analyze the characteristics of discouraged workers in Turkey by using Household Labor Force Survey Data for the years 2000-2008. This is the first study done for the Turkish case. In fact, there is not very much study which focuses on just analyzing the socioeconomic factors, such as age, gender, marital status, education and previous work experience affect someone to become discouraged. Suryedarma et al (2007) analyses how these factors influence the labor force participation decision of the individuals for Indonesia case. Hughes and McCormick (1990) analyzed it for UK case. Nevertheless, these two papers do not strictly focus on analyzing these factors. The focuses of both papers are what kind of people who are out of labor force should be counted as discouraged workers. In contrast, in this thesis, the definition of discouraged workers is determined: The people who do not search for job and who wish to start working in fifteen days if there is a chance, are called as discouraged workers[1]. We will analyze how socioeconomic factors, such as gender, education level, marital status, age and previous work experience of an individual affects the probability of being discouraged of that individual. Besides, we will analyze how the probability of being discouraged changes if the individual lives in urban or rural areas. We will also examine the effect of the reason of unemployment and duration of unemployment of that individual if the individual has previous work

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[1] The definition of discouraged workers is defined deeply in section two.

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experience. The study is done for the first time for Turkish case. Another important contribution of this thesis is, we will see the effects of both 2001 and 2008 crisis on probability of someone to be discouraged. By analyzing these effects, our objective is to implement policies to decrease amount of discouraged workers in Turkey.

The rest of the thesis is organized as follows. Section 2 discusses the data, the relevant factors and the econometric methodology will be followed. In section 3, the thesis will present and analyze the socioeconomic factors that affect people to be discouraged. Section 4 presents the similarities and differences between the results when definition of discouraged worker changes. Finally, in section 5 we will present concluding remarks, and implement some policies.

1.2.   Data and the Methodology

For this research, we will use Turkish Household Labor Force Survey (HLFS) data for the years between 2000 and 2008. HLFS is a cross-sectional data. A household is visited four times in one and a half year. There are 3 months between the first visit and the second visit; 9 months between the second visit and third visit; and 3 months between the last two visits. The results of this partial panel survey are pooled. Finally, the new cross section data, prepared from the results of the panel survey is revealed. The survey is pooled in the following manner: For instance, a household is visited for two times in one year. The first visit is on January, and the second visit is on April. The answers of both visits are revealed in the same year's data set. Although the observations belong to the same household, in the data they seem as if they come from two different households.

In the survey, the answers of all the members of the household are registered. For analyzing the effects of socioeconomic factors on discouragement of the individual, the observations of the members of the household who are under 15 are omitted since they are not counted in the labor force according to the labor force definition of Turkish Statistical Institute (TURKSTAT).

Firstly, the population we consider when running the regressions include the people who are unemployed or discouraged, which we simply call as "non-employed individuals" since we want to analyze how socioeconomic factors and labor market variables affect a non-employed individual's decision to remain in the labor force or not. Probability of being discouraged of an employed individual is already 0. Thus, we do not add employed individuals in the population.

The effect of socioeconomic factors on someone's discouragement will be analyzed by using probit regression. The econometric model can be defined in the following way[2]:

The non-employed individual may be either discouraged (Y=1) or not (Y=0) in the year that the survey takes place. We believe that a set of factors, such as gender, age, marital status, education level, previous work experience and living in urban or rural areas, gathered in a vector **x** explain the probability of being discouraged, so that

$$P(Y = 1 \mid X) = F(x, \beta)$$

$$P(Y = 0 \mid X) = 1 - F(x, \beta)$$

where β refers to the coefficients of the explanatory variables. In probit models, the coefficients give the idea of the direction of change, whether the probability

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[2] The definition of the model is taken from Greene (2008) "Econometric Analysis" p.772.

increases or decreases with the change in explanatory variables. To see the magnitude of the effect we will rather focus on the marginal effects.

Defining the dependent variable Y, discouraged worker, is difficult, since the definition of discouraged worker is questionable. TURKSTAT defines discouraged workers as individuals who do not have a regular job and who are not seeking for work since they believe that there does not exist a job in the region that they live or they do not know from where they could find a job, and who wants to start working in fifteen days if they have a chance. However, this definition seems to be narrow for Turkish case. Because, there can be people who report that they do not want to start working in fifteen days if they have a chance, but then enter the labor force immediately if they have a good opportunity. University students can be good examples of these people. For instance, a graduate student may say that she is not looking for a job because she is a student but she may be ready to work if a job offer comes along. Her choosing to be a student rather than looking for a work may arise from her belief that she does not think she can get a job with her current education status. Hence individuals may choose other options such as being a student or a housewife when they are discouraged and not necessarily state that they do not believe jobs exist in the region as their reason for giving up on job search. Finegan (1981) refers these people as "discretionary workers", and he argued in his paper that Mincer suggests that these people made up of the largest part of cyclical fluctuations in labor supply. As a developing country, we expect for the share of those people to be high, so we widen the definition of discouraged workers as who do not have a regular job and who are not seeking for job and who wants to start working in fifteen days if they have a chance. In the thesis, the people who satisfy   the

second definition will be taken as discouraged workers, and only the results of the analysis based on this definition will be presented. Nevertheless, the analysis with the discouraged worker definition of TURKSTAT will also be made for the sake of convenience in section 4, but the results will not be reported.

For the sample of the people whose ages are over 15 the probit model, in which the dependent variable is probability of being discouraged will be defined as:

$$P(Discouraged) = \beta_0 + \beta X + \varepsilon$$

The vector X includes the following variables: Gender, age, agesquared, married, (gender*married), educmiddle, educhigh, educuni, experience, urban.

Here, "gender" is a dummy variable which takes the value of 1 if the individual is male and 0 if the individual is female. Variable "age" shows the age of the individual. In the HLFS, ages of the people are divided into categories; we take the midpoints of these categories. For instance, for the age group 35-39, the age of the individual is taken as 37. The variable "agesquared" is equal to age*age, used for scale purposes. "Married" is another dummy variable which is equal to 1 if the individual is married and is equal to 0 otherwise. The interaction term (gender*married) is used to see how marital status affects the discouragement of individual who belongs to the same gender. The variable "Educprimary" is omitted category along with the variable "Noneduc". "Educprimary" is a dummy variable, which takes the value of 1 if the person finishes primary school and 0 otherwise and "Noneduc", takes the value of 1 if the individual is not illiterate, but did not take any education. "Educmiddle" is also dummy variable which is equal to 1 if the individual finishes middle school and 0 otherwise. Likewise, the variable "Educhigh" is equal to 1 if the person finishes

high school or equivalent, and is equal to 0 otherwise. Finally, the independent variable "educuni" takes the value of 1, if the person has university or higher degree, and it is equal to 0 otherwise. "Experience" is also a dummy variable. It is equal to 1 if the individual has previous work experience and 0 if he does not. It is important to note that the survey is conducted in both rural and urban areas, we take the observations of both of these areas to be able to see how the area that a person lives affects her to be discouraged or not. The variable "urban" is a dummy variable which is equal to 1 if the person lives in urban area and 0 if he lives in rural area.

In addition, the data for the year 2000-2003 and 2004-2008 are different in some ways. Thus the results will be presented for these data sets separately. For instance, the observations collected from the data of the years 2004-2008 are greater than the observations of 2000-2003. The answers of some questions are given differently in these two data sets, and the most important thing for 2004-2008 data is Turkey is divided into both 12 regions (Level 1) and 26 regions (Level 2). For 2004-2008 data we included an additional explanatory variable, "GDP", which shows the Gross Domestic Product (GDP) per capita of the region in which the individual lives. We make these analysis based on level 2 statistical regions as there are more variety in the division of the regions into provinces thus we will able to see how GDP per capita level of that region affects the probability of a non-employed individual to be discouraged in a more compact way.

Among the non-employed individuals who have work experience previously, the probit regression will be run in the following way:

$$P(Discouraged) = \beta_0 + \beta X + \varepsilon$$

Besides the explanatory variables that are included in the previous probit regression, two new variables are added: "Unemployment" and "DUR", and the variable "experience" is omitted to avoid multicollinearity. "Unemployment" is a dummy variable which is equal to 1 if the individual is fired or laid off from the job he has worked previously, and is equal to 0 for other cases, leaving job for the reasons such as illness or resignation. "DUR" shows the duration of unemployment. We take the mid points of duration of unemployment category in the survey for 2000-2003 data. For the years 2004-2008 duration of unemployment is calculated as follows[3]:

DUR= The year that the survey takes place-the year that the individual has left his job.
In the next section, we will analyze how socioeconomic factors affect a non-employed individual's decision to remain in the labor force or not.

1.3. Effects of Socioeconomic Factors on Non-Employed People To Be Discouraged: Analysis

In this section, we aim to see the effects of socioeconomic factors and labor market conditions on non-employed people's decisions to participate in labor force or not. We begin by presenting the summary statistics of the variables. Since the data shows differences in sample sizes and variables for the year 2000-2003 and 2004-2008, we report the results separately. We will first present the summary statistics and probit results for the years 2000-2003, then we will present those for 2004-2008.

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[3] The difference between calculating the value of variable comes from the difference between two data sets.

Table 1.3.1: Summary Statistics of the variables for the years 2000-2003 for the population that contains individuals who are non-employed and who are over 15[4]

Variable	2000	2001	2002	2003
Gender	0.66 (0.47)	0.70 (0.45)	0.69 (0.46)	0.69 (0.45)
Age	29.30 (11.71)	29.93 (11.43)	30.68 (11.43)	30.65 (11.27)
Married	0.44 (0.49)	0.48 (0.49)	0.50 (0.50)	0.50 (0.50)
Noneduc	0.02 (0.16)	0.02 (0.15)	0.02 (0.14)	0.02 (0.16)
Educprimary	0.42 (0.49)	0.44 (0.49)	0.44 (0.49)	0.44 (0.49)
Educmiddle	0.12 (0.33)	0.13 (0.34)	0.13 (0.33)	0.13 (0.34)
Educhigh	0.28 (0.44)	0.27 (0.44)	0.25 (0.43)	0.22 (0.42)
Educuni	0.08 (0.28)	0.08 (0.27)	0.10 (0.30)	0.10 (0.31)
Experience	0.63 (0.48)	0.73 (0.44)	0.77 (0.41)	0.78 (0.40)
Urban	0.82 (0.38)	0.81 (0.38)	0.82 (0.37)	0.80 (0.39)
Discouraged Workers	0.23 (0.42)	0.14 (0.34)	0.14 (0.34)	0.13 (0.34)
N	8274	10026	12170	11767

Sample means and standard deviations of the independent variables are generally same for these four years. The first significant thing that the table reveals is the number of people who are unemployed or discouraged rises by 18.88% in 2001, crisis year.[5] It continues to rise in 2002, and in the sample it seems as if it decrease by 3.31% in 2003, however, when we look at the whole population of Turkey by taking the weighted factors, we found out that the total number of non-employed people rise by 1% in 2003. From the summary statistics we see that the mean of discouraged workers significantly decreases in 2001, crisis year and remain stable during the immediate post-crisis year.

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[4] Standard Errors are shown in paranthesis.
[5] We take the weighted factors to have consistent results with TURKSTAT

According to the summary statistics, generally men are likely to become non-employed. The statistics also reveal that the results of the survey generally come from urban areas. The means of the variables also disclose that university or higher graduates are less likely to become discouraged or unemployed since they have more chance to be employed, whereas individuals with lower levels of education occupy larger part of this population. Non-educated individuals also do not establish very large place in the sample for all of four years. This can be attributed to the fact that non-educated people do not tend to participate in labor force or they do not want to start working for some reason. Finally, the most important result is that the people who have previous work experience establish at least 80% of population for these years. Table 1.3.2 presents the summary statistics of the people who have previous work experience.

Table 1.3.2: Summary Statistics of the variables for the years 2000-2003, for the population that contains individuals who are non-employed, who are over 15 and who have previous work experience.

Variable	2000	2001	2002	2003
Gender	0.76	0.77	0.76	0.75
	(0.42)	(0.41)	(0.42)	(0.42)
Age	33.19	32.41	32.85	32.60
	(12.23)	(11.65)	(11.54)	(11.47)
Married	0.60	0.59	0.59	0.59
	(0.48)	(0.49)	(0.49)	(0.49)
Noneduc	0.03	0.03	0.02	0.03
	(0.18)	(0.17)	(0.15)	(0.18)
Educprimary	0.52	0.51	0.51	0.50
	(0.49)	(0.49)	(0.49)	(0.49)
Educmiddle	0.13	0.13	0.13	0.13
	(0.33)	(0.34)	(0.33)	(0.33)
Educhigh	0.20	0.21	0.21	0.19
	(0.40)	(0.41)	(0.40)	(0.39)
Educuni	0.05	0.05	0.07	0.06
	(0.22)	(0.22)	(0.25)	(0.25)
Unemployment	0.15	0.26	0.34	0.29
	(0.36)	(0.44)	(0.47)	(0.45)
DUR	0.93	0.81	1.01	0.91
	(1.02)	(0.99)	(1.14)	(0.98)
Urban	0.83	0.81	0.82	0.79
	(0.36)	(0.38)	(0.37)	(0.40)
N	5240	7388	9454	9255

Summary statistics show that married people makes larger proportion of the experienced people who are unemployed or discouraged. The mean of the ages of the individuals of experienced people are greater than the mean of the age of the whole population. Among the experienced non-employed people, individuals who have university or higher degree establish smaller place in the population. According to the statistics, laid off or fired individuals do not occupy very large place in this population. Table 1.3.2 also shows that generally unemployed or discouraged people have lost their jobs in the same year that the survey takes place, however in the post-crisis year 2002, the duration of unemployment exceeds 1 year. Table 1.3.3 presents the probit regression results for the years 2000-2003. In this table, the population used is non-employed people who are above 15 and the dependent variable is the probability of being discouraged of a non-employed individual. Table 1.3.4 presents the marginal effects of the explanatory variables for this regression.

Table 1.3.3: Probit results for the Non-Employed Working Age Population for the Period 2000-2003[6]

Variable	2000	2001	2002	2003
Gender	-0.25*** (0.04)	-0.18*** (0.04)	-0.28*** (0.04)	-0.14*** (0.04)
Age	-0.06*** (0.008)	-0.07*** (0.008)	-0.06*** (0.008)	-0.04*** (0.008)
Agesquared	0.001*** (0.0001)	0.001*** (0.0001)	0.001*** (0.0001)	0.0007*** (0.0001)
Married	0.40*** (0.06)	0.63*** (0.06)	0.49*** (0.05)	0.57*** (0.05)
Gender*married	-0.51*** (0.06)	-0.60*** (0.07)	-0.44*** (0.06)	-0.31*** (0.06)
Educmiddle	-0.11** (0.05)	0.007 (0.05)	-0.18*** (0.04)	0.11** (0.04)
Educhigh	-0.16*** (0.04)	-0.15*** (0.04)	-0.28*** (0.06)	0.07* (0.04)
Educuni	-0.20*** (0.06)	-0.005 (0.06)	0.04 (0.05)	0.19*** (0.05)

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[6] *** indicates the explanatory variable is significant at 1% significance level, ** indicates it is significant at 5% significance level , and * indicates the variable is significant at 10% significance level.

Table 1.3.3 (cont'd)

Experience	-0.69*** (0.04)	-0.40*** (0.04)	-0.51*** (0.03)	-0.79*** (0.04)
Urban	-0.39*** (0.04)	-0.48*** (0.03)	-0.58*** (0.03)	-0.65*** (0.03)
Pseudo R2	0.11	0.10	0.10	0.11

Table 1.3.4 Marginal Effects of explanatory variables[7]

Variable	2000	2001	2002	2003
Gender	-0.07***	-0.03***	-0.05***	-0.03***
Age	-0.01***	-0.01***	-0.01***	-0.008***
Agesquared	0.0003***	0.0002***	0.0002***	0.0001***
Married	0.11***	0.13***	0.09***	0.11***
Gender*married	-0.13***	-0.11***	-0.08***	-0.05***
Educmiddle	-0.03**	-0.01	-0.03***	0.06**
Educhigh	-0.05***	-0.04***	-0.05***	0.04*
Educuni	-0.06***	-0.01	-0.008	0.08***
Experience	-0.21***	-0.08***	-0.12***	-0.19***
Urban	-0.12***	-0.11***	-0.14***	-0.15***

Probit results reveal that among the unemployed and discouraged people, females are likely to become discouraged more than males. In fact, it is an expected result for Turkey since employment opportunities for women are small relative to that of men. For instance, men can work in construction sectors as a worker, whereas women cannot. The regression result also reveals that as the individual gets older, he tends to be discouraged less. We also see that age has a nonlinear effect as the variable "agesquared" is found to be positively significant while age is found to be negatively significant. This result can be explained by the fact that, as the age gets older people have less incentive to work, thus they do not want to start working even if they have a chance, maybe as a consequence of health problems or they want to spend time with social activities. From another point of view, the result may be explained by the fact that younger people may have less likely to find job when they first enter the labor force. However, after a non-employed individual's age reaches a bottom point, probability of an

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[7] Significant variables are indicated with *

individual to be discouraged increases. This result can be attributed to the fact that if the individual is unemployed for a long time, he looses his hope to find job, therefore he leaves the labor force. A surprising result that comes from the regression is that the probability of being discouraged increases, if the individual is married. Nevertheless, the interaction dummy variable satisfies our expectation that married non-employed men tend to leave labor force less. In fact, this is an expected result as married men need to earn money for their family, thus they cannot easily leave the labor force.

In the regression the omitted category for the education dummies is having no education and graduating from primary school. Probit regression results show that in pre-crisis and immediate post crisis year, people who have middle school education are more likely to be discouraged than the people who have primary school education or who are not educated. This can be explained by higher employment opportunities for more educated people in pre-crisis year and immediate post-crisis year. The regression result reveals that as people gets higher education, their chance to become discouraged decreases, except the year 2003. In 2003, passing some time after the crisis, the result is inconsistent with what we expect, probit regression results show that in 2003 educated people are more likely to be discouraged than the omitted category which includes people with no education or have only primary school degree.

The most important result of the regression gives us that, having university or higher degree does not guarantee not to be discouraged. In 2000, the result is what we expected: Among the unemployed and discouraged people university graduates are less likely to be discouraged owing to education and skills they have, whereas in 2001 and 2002 the effect of having university education do not

significantly differ from having no education. In fact, this is an anticipated result of crisis. Many people lost their job, and even the most qualified individuals may not be able to find a good job in crisis, which is a natural result of the economic downturn. Thus having a qualified education or not does not matter very much in crisis years. For the year 2003, the results show that as people have university degree or higher, the probability of being discouraged increases. The same result also applies for high school case. Both of to cases may be consequences of psychological defect of individuals for not finding a job during the crisis and the immediate post-crisis years so they give up looking for job.

The results also suggest that among the non-employed people, the people who have previous work experience are less likely to be discouraged. From this result, we can conclude that non-employed people with previous work experience do not easily loose their hope to find job. Lastly, the probability of a non-employed individual to be discouraged increases if the individual lives in rural areas, which is an expected result as employment opportunities are greater in urban areas than they are in rural areas.

From marginal effects table, we see that if the individual is male, the probability of being discouraged decreases. In 2001, we see that the marginal effect of variable "gender" decreases. This result may be an evidence of "Added Worker Effect" (AWE), which simply implies that if husbands loose their jobs, wives tend to participate in the labor force more[8]. The decrease in the marginal effect of the variable gender may be a sign that women participate in labor force in crisis year more than they participate in pre-crisis year. The marginal effect of the variable "gender" in the post crisis years are less than the marginal effect of

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[8] AWE will be studied in detail in Chapter 2.

that variable in the pre-crisis year, which again can be a sign of added worker effect in post crisis year. Another sign of AWE is the magnitude of the variable "married" decreases in post-crisis year. In other words, the positive effect of being married on being discouraged decreases in the year that immediately follow the crisis, which can be a sign of married women participate in labor force more. As a support of our prediction, the effect of the interaction dummy variable term decreases in post crisis year, and it decreases even more in 2003. Another interesting result is that the marginal effect of the variable "experience" significantly decreases in 2001, it starts to rise in 2002, and it cannot reach its 2000 value even if in 2003.

To find by what percent the probability of being discouraged changes if the explanatory variable changes by 1%, we calculate the elasticities of the explanatory variables. The results are presented in Table 1.3.5.

Table 1.3.5: Elasticities of the explanatory Variables

Variable	2000	2001	2002	2003
Gender	-0.23	-0.21	-0.31	-0.18
Age	-2.45	-3.56	-3.34	-2.44
Agesquared	1.53	2.09	1.99	1.50
Married	0.23	0.51	0.41	0.50
Gender*married	-0.22	-0.38	-0.28	-0.21
Educmiddle	-0.02	-0.01	-0.03	0.06
Educhigh	-0.06	-0.10	-0.11	0.09
Educuni	-0.02	-0.01	-0.007	0.06
Experience	-0.60	-0.49	-0.67	-1.06
Urban	-0.44	-0.65	-0.79	-0.91

Age has the greatest elasticity values among other variables. It has the highest value in crisis year where 1% increase in the age of the person causes the probability of being discouraged of that person decrease by 3.56%. The results suggest that younger people have less chance to get employed in crisis year. The elasticity comes to its 2000 value in 2003. The elasticity of both the variable married and the interaction term significantly increases in crisis and in post- crisis

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years. This result again can be explained by the fact that married women become more actively job seeker, thus less likely to be discouraged. An important result is that 1% change in having previous work experience causes more cut in the individual's probability of being discouraged in post crisis years relative to the crisis years. Hence, we can say that experience is an important factor for determining to be discouraged or not. Like its marginal effect, the elasticity of the variable "experience" decreases significantly in crisis year, in other words, being experienced or not does not change the chance to find job of a non-employed individual very much due to lack of employment opportunities because of crisis. Elasticity of the variable "urban" also increases over time which can be a sign that in rural areas people become discouraged even more as the time pass.

In crisis years, people may be fired from job due to increase in the cost of labor, or the company that the individual work may be bankrupt. In addition, the empirical evidence suggests that as duration of unemployment increases, unemployed people are more likely to become discouraged. To test this effect for Turkish data we run another probit regression to see the effects of those two variables among the non-employed people who have previous work experience.

Table 1.3.6: Probit Results (Population: Non-employed people who are above 15 and who have previous work experience)

Variable	2000	2001	2002	2003
Gender	-0.25*** (0.07)	-0.20*** (0.07)	-0.15*** (0.06)	-0.11** (0.06)
Age	-0.04*** (0.01)	-0.05*** (0.01)	-0.04*** (0.009)	-0.02*** (0.01)
Agesquared	0.0008*** (0.0001)	0.001*** (0.0001)	0.0008*** (0.0001)	0.0005*** (0.0001)
Married	0.35*** (0.08)	0.62*** (0.08)	0.44*** (0.07)	0.48*** (0.07)
Gender*married	-0.36*** (0.10)	-0.53*** (0.09)	-0.40*** (0.08)	-0.18** (0.08)
Educmiddle	-0.08 (0.07)	0.14** (0.06)	0.02 (0.05)	0.19*** (0.06)

Table 1.3.6 (cont'd)

Educhigh	0.13*** (0.05)	-0.01 (0.05)	-0.0006 (0.05)	0.24*** (0.05)
Educuni	0.19** (0.09)	0.20 (0.08)	0.29*** (0.06)	0.53*** (0.07)
Unemployment	-0.84*** (0.09)	-0.68*** (0.06)	-0.64*** (0.04)	-0.41*** (0.04)
DUR	0.11*** (0.02)	0.05*** (0.02)	0.03*** (0.01)	0.12*** (0.01)
Urban	-0.54*** (0.05)	-0.55*** (0.04)	-0.55*** (0.04)	-0.54*** (0.04)
Pseudo R2	0.12	0.14	0.12	0.09

Table 1.3.7: Marginal Effects

Variable	2000	2001	2002	2003
Gender	-0.06***	-0.03***	-0.02***	-0.01**
Age	-0.009***	-0.009***	-0.007***	-0.004***
Agesquared	0.0001***	0.0001***	0.0001***	0.0008***
Married	0.07***	0.09***	0.06***	0.06***
Gender*married	-0.08***	-0.08***	-0.06***	-0.02**
Educmiddle	-0.01	0.02**	0.004	0.03***
Educhigh	0.03***	-0.002	-0.0001	0.04***
Educuni	0.04**	0.03	0.05***	0.10***
Unemployment	-0.13***	-0.09***	-0.09***	-0.05***
DUR	0.02***	0.009***	0.006***	0.01***
Urban	-0.14***	-0.11***	-0.11***	-0.10***

The significance and directions of the education variables change when we run the regression on experienced people among the unemployed and discouraged worker population for different years. Graduating from university or having no education or primary school does not make any difference on individual's decision in crisis year due to lack of employment opportunities. However, this time as the level of education increases, for a non-employed individual probability of being discouraged increases if the individual has previous work experience. This may be due to the fact that experienced and high level educated people search for more qualified jobs, or their ages may be older than it is expected for a job. Graduating from high school and being experienced do not differ from having no education or graduating from primary school and being experienced in crisis year and 2002, however, in 2003, finishing a lower level school is positively

significant on probability of the individual being discouraged, which shows people who have lower level of education tend to leave the labor force more.

As the literature suggests, as duration of unemployment increases, unemployed people tend to leave the labor force and become discouraged. We expect that as the individual gets fired or laid off, he should be more likely to become discouraged, however, the regression results suggest that the probability of people to continue to seek for job increases if they are fired or laid off. This may be because of trusting their previous job seeking activities and hence not loose the hope to find an appropriate job.

The analyses of the marginal effects for experienced non-employed individual population do not differ very much from that of whole working age non-employed population. An important change is; the positive effect of having university degree on probability of discouraged increases over time. Combining many new graduates and lack of employment opportunities, for a university graduate to be discouraged is not a surprising result. The negative effect of being fired or laid off on being discouraged also decreases over time. In fact until the year 2008, in which a crisis occurs in Turkey, as a result of the global crisis in world, we expect the effect to be turn out to be positive. The positive effect of the duration of unemployment decreases significantly in 2001 and continues to decrease in 2002, may be as a result of increase in the unemployed people. Next, in Table 1.3.8 we present the elasticities of the variables.

Table 1.3.8: Elasticities

Variable	2000	2001	2002	2003
Gender	-0.31	-0.29	-0.21	-0.16
Age	-2.36	-3.48	-2.83	-1.80
Agesquared	1.74	2.24	1.93	1.28
Married	0.34	0.67	0.47	0.53
Gender*married	-0.29	-0.49	-0.36	-0.16
Educmiddle	-0.01	0.03	0.006	0.04
Educhigh	0.04	-0.004	-0.0002	0.08
Educuni	0.01	0.02	0.03	0.06
Unemployment	-0.21	-0.33	-0.40	-0.22
DUR	0.16	0.08	0.07	0.21
Urban	-0.73	-0.82	-0.82	-0.81

The elasticity of the variable "unemployment" considerably increases in 2001 and continues to rise in 2002, which shows that if the individual is fired or laid off the probability of being discouraged of that individual decreases more in crisis and post crisis year than it does in pre-crisis year. Likewise, the elasticity of the variable "DUR" decreases in crisis year and 2002. Hence, we can say that may be because of the chaotic labor market conditions, such as many firing and bankruptcy events duration of unemployment and having been fired or laid off do not affect the decision of the individual to remain in the labor force in crisis terms as individuals know that it is a transition term.

Next, we will analyze the socioeconomic factors on probability of being discouraged for the period 2004-2008. Table 1.3.9 shows the summary statistics of the variables of the period 2004-2008.

Table 1.3.9: Summary Statistics of the variables for the years 2004-2008 for the population that contains individuals who are non-employed and who are over 15

Variable	2004	2005	2006	2007	2008
Gender	0.66 (0.47)	0.61 (0.48)	0.58 (0.49)	0.60 (0.48)	0.58 (0.49)
Age	30.20 (11.27)	31.08 (11.77)	31.74 (12.03)	31.94 (12.16)	32.66 (12.33)
Married	0.47 (0.49)	0.51 (0.49)	0.53 (0.49)	0.53 (0.49)	0.56 (0.49)
Noneduc	0.04 (0.19)	0.06 (0.23)	0.06 (0.24)	0.06 (0.25)	0.07 (0.25)
Educprimary	0.39 (0.48)	0.38 (0.48)	0.38 (0.48)	0.36 (0.48)	0.36 (0.48)
Educmiddle	0.14 (0.35)	0.15 (0.36)	0.16 (0.37)	0.16 (0.37)	0.17 (0.38)
Educhigh	0.27 (0.44)	0.25 (0.43)	0.25 (0.43)	0.25 (0.43)	0.23 (0.42)
Educuni	0.10 (0.30)	0.08 (0.28)	0.08 (0.28)	0.09 (0.28)	0.10 (0.30)
Experience	0.69 (0.46)	0.69 (0.45)	0.71 (0.45)	0.73 (0.44)	0.76 (0.42)
Urban	0.74 (0.43)	0.73 (0.44)	0.72 (0.44)	0.72 (0.44)	0.74 (0.43)
Discouraged1	0.34 (0.47)	0.42 (0.49)	0.48 (0.49)	0.45 (0.49)	0.44 (0.49)
N	23907	27166	29342	27420	29646

Table 1.3.9 reveals that total number of non-employed people increases by 20.19% from 2004 to 2008[9], and it increases by 8.19% from 2007 to 2008. In 2008, global crisis hit the world, and mainly by September 2008, the negative effect of the crisis is seen in Turkey, especially the increasing unemployment among the individuals, as many workers were fired and many companies reduced the employment opportunities for the new entrants. In short, global crisis is an important factor that causes an increase the number of non-employed people in Turkey. Like in 2000-2003 data sets, the people who have previous work experience establish a large part of the non-employed workers. Table 1.3.10 presents the summary statistics of working age non-employed population who have previous work experience.

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[9] We take the weighted factors, if the weighted factors are not taken to account, the increase is 24%.

Table 1.3.10 Summary Statistics of the Variables for the population Non-Employed People Who Have Previous Work Experience

Variable	2004	2005	2006	2007	2008
Gender	0.73	0.70	0.67	0.68	0.66
	(0.44)	(0.45)	(0.46)	(0.46)	(0.47)
Age	33.13	33.80	34.22	34.23	34.54
	(11.53)	(11.95)	(12.26)	(12.31)	(12.46)
Married	0.59	0.61	0.62	0.61	0.62
	(0.49)	(0.48)	(0.48)	(0.48)	(0.48)
Noneduc	0.04	0.06	0.06	0.07	0.07
	(0.20)	(0.23)	(0.24)	(0.25)	(0.26)
Educprimary	0.47	0.45	0.43	0.41	0.39
	(0.49)	(0.49)	(0.49)	(0.49)	(0.48)
Educmiddle	0.14	0.15	0.15	0.16	0.17
	(0.35)	(0.35)	(0.36)	(0.36)	(0.37)
Educhigh	0.22	0.21	0.21	0.21	0.21
	(0.41)	(0.41)	(0.41)	(0.41)	(0.41)
Educuni	0.06	0.06	0.07	0.07	0.08
	(0.24)	(0.24)	(0.26)	(0.26)	(0.28)
Unemployment	0.25	0.23	0.20	0.19	0.20
	(0.43)	(0.42)	(0.40)	(0.39)	(0.40)
DUR	1.96	2.20	2.36	2.13	2.26
	(3.35)	(3.82)	(4.13)	(4.18)	(4.50)
Urban	0.74	0.73	0.71	0.72	0.74
	(0.43)	(0.44)	(0.45)	(0.44)	(0.43)
Discouraged1	0.29	0.36	0.42	0.39	0.38
	(0.45)	(0.48)	(0.49)	(0.48)	(0.48)
N	16528	18982	20898	20172	22632

Firstly, we will analyze the impact of socioeconomic factors on giving the decision to remain in labor force or not among non-employed individuals. The explanatory variables are same as in the analysis of 2000-2003. The new explanatory variable for this regression is "GDP", which shows the GDP per capita of the region in which the individual lives. We rank the 26 region according to GDP per capita in order to see how income per capita of the region affects a non-employed person to be discouraged or not. We expect that if income per capita of the region rises, then the probability of being someone to be discouraged will decrease. There are many reasons for GDP per capita differ in size across regions, such as differences in investment, differences in production level or differences in population. If the distinction mainly comes from the investment or

production level, we expect that in the region in which there is more production, employment opportunities will be higher, thus people choose to remain in labor force since there is hope to find a job. Since the GDP per capita data is available until the year 2001 in TURKSTAT web site, we have put these values instead of variable "GDP". We do not think that this will have cause bias in our estimation results, because what matters is the ranking of the regions, not the exact GDP per capita value of the year that is considered. Probit regression results are presented in Table 1.3.11.

Table 1.3.11: Probit Results for the Non-Employed Working Age Population For the period 2004-2008

Variable	2004	2005	2006	2007	2008
Gender	-0.43*** (0.02)	-0.48*** (0.02)	-0.40*** (0.02)	-0.43*** (0.02)	-0.49*** (0.02)
Age	-0.07*** (0.005)	-0.08*** (0.004)	-0.07*** (0.004)	-0.07*** (0.004)	-0.07*** (0.004)
Agesquared	0.001*** (0.00006)	0.001*** (0.00006)	0.001*** (0.00005)	0.001*** (0.00005)	0.001*** (0.00005)
Married	0.75*** (0.03)	0.76*** (0.02)	0.74*** (0.02)	0.68*** (0.02)	0.64*** (0.02)
Gender*married	-0.86*** (0.03)	-0.87*** (0.03)	-0.86*** (0.03)	-0.83*** (0.03)	-0.75*** (0.03)
Educmiddle	-0.10*** (0.02)	-0.07*** (0.02)	-0.07*** (0.02)	-0.06*** (0.02)	-0.09*** (0.02)
Educhigh	-0.30*** (0.02)	-0.21*** (0.02)	-0.22*** (0.02)	-0.21*** (0.02)	-0.17*** (0.02)
Educuni	-0.54*** (0.03)	-0.46*** (0.03)	-0.45*** (0.03)	-0.52*** (0.03)	-0.42*** (0.03)
Experience	-0.36*** (0.02)	-0.37*** (0.02)	-0.43*** (0.02)	-0.52*** (0.02)	-0.49*** (0.02)
Urban	-0.32*** (0.02)	-0.27*** (0.01)	-0.34*** (0.01)	-0.28*** (0.01)	-0.22*** (0.01)
Gdp	-0.0004*** (0.0000009)	-0.0004*** (0.0000009)	-0.0003*** (0.0000008)	-0.0003*** (0.0000009)	-0.0003*** (0.0000009)
Pseudo R2	0.19	0.20	0.19	0.20	0.20

Table 1.3.12: Marginal Effects

Variable	2004	2005	2006	2007	2008
Gender	-0.15***	-0.18***	-0.15***	-0.17***	-0.19***
Age	-0.02***	-0.03***	-0.03***	-0.02***	-0.03***
Agesquared	0.0004***	0.0005***	0.0005***	0.0005***	0.0005***
Married	0.26***	0.29***	0.29***	0.26***	0.24***
Gender*married	-0.27***	-0.31***	-0.33***	-0.31***	-0.28***
Educmiddle	-0.03***	-0.03***	-0.02***	-0.02***	-0.03***
Educhigh	-0.10***	-0.08***	-0.08***	-0.08***	-0.06***
Educuni	-0.16***	-0.16***	-0.17***	-0.19***	-0.15***
Experience	-0.13***	-0.14***	-0.17***	-0.20***	-0.19***
Urban	-0.11***	-0.10***	-0.13***	-0.11***	-0.08***
Gdp	-0.0001***	-0.0001***	-0.0001***	-0.0001***	-0.0001***

If the individual is male, his probability of being discouraged decreases in other words, he continues to look for job whereas women are more likely to leave the labor force. In addition, from probit results we can conclude that new entrants to the job market, perhaps new graduates, become discouraged easier than the older ones, as the variable "age" found to be negatively significant. The results also suggest that married people tend to be discouraged more than the others. However, the negatively significant effect of interaction dummy variable suggests that if a man is married, his chance of being discouraged decreases. The last result may become due to the primary breadwinner role of the man in Turkey.

Unlike the analysis of the period 2000-2003, education variables do not show any inconsistencies in 2004-2008 period. The result is what we have expected: As the individual gets educated, his chance to be discouraged decreases. Table 1.3.12, where the marginal effects are shown, suggests that the variable "Educuni" has the highest marginal effect among the education variables whereas the variable "Educmiddle" has the lowest. This finding implies that as the people gets more educated his likelihood of being discouraged decreases even more. Nevertheless, the contradicting results of the period 2000-2003 may be attributed to the unsatisfying results of 2001 crisis. The results of the year 2008, supports our claim. Compared with the other four years, marginal effect of the variable

"educuni" decreases significantly, which implies that university or higher graduates starts to loose their hope to find the job relative to the previous four years, which may be a consequence of 2008 crisis.

The variable "GDP" is found to be negatively significant, which satisfies our expectation that in the regions where GDP per capita is high, probability of the individual to be discouraged decreases owing to greater employment opportunities. Likewise, people who live in urban areas tend to be discouraged less than the individuals who live in rural areas. Finally, an individual without a previous work experience tends to give up looking for job easier than the one with experience.

The interaction dummy variable term decreases a little bit in 2008 relative to 2007. This can be a sign of AWE, as 2008 is a crisis year. Moreover, the effect of 2008 global crisis was strictly started to be seen in September 2008, so we expect the decrease in marginal effect of interaction dummy variable term even more for the period 2009, where AWE is expected to be seen even more as a result of the income loss in the households.

Table 1.3.13: Elasticities

Variable	2004	2005	2006	2007	2008
Gender	-0.32	-0.28	-0.19	-0.23	-0.25
Age	-2.56	-2.60	-2.05	-2.06	-2.29
Agesquared	1.48	1.55	1.29	1.35	1.49
Married	0.40	0.37	0.32	0.32	0.32
Gender*married	-0.32	-0.27	-0.22	-0.24	-0.22
Educmiddle	-0.01	-0.01	-0.009	-0.009	-0.01
Educhigh	-0.09	-0.05	-0.04	-0.04	-0.03
Educuni	-0.06	-0.03	-0.03	-0.04	-0.03
Experience	-0.28	-0.24	-0.25	-0.34	-0.34
Urban	-0.27	-0.18	-0.20	-0.18	-0.14
Gdp	-1.16	-0.96	-0.72	-0.83	-0.81

Elasticities of the explanatory variables are more or less the same over the whole period. The elasticity of GDP per capita level of the region changes

significantly between the years 2005 and 2006, then increases but cannot reach its 2004-2005 levels. From this result, we can conclude that employment opportunities changes in the regions from year to year.

Another important suggestion of the Table 1.3.13 is, 1% increase in the probability of having previous work experience causes more decrease in the probability of being discouraged in 2007 and 2008 relative to the previous years. This result implies that having work experience gain more importance for a non-employed person to find a job over the years. Table 1.3.14 below presents the probit results for the non-employed individuals who have previous work experience. Here, the dependent variable is the probability of being discouraged.

Table 1.3.14: Probit Results (Population: Non-Employed People Who Are Above 15 and Who Have Previous Work Experience)

Variable	2004	2005	2006	2007	2008
Gender	-0.51***	-0.49***	-0.40***	-0.46***	-0.50***
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Age	-0.06***	-0.07***	-0.06***	-0.06***	-0.07***
	(0.006)	(0.005)	(0.005)	(0.005)	(0.005)
Agesquared	0.0009***	0.001***	0.001***	0.001***	0.001***
	(0.00008)	(0.00007)	(0.00006)	(0.00006)	(0.00006)
Married	0.58***	0.62***	0.62***	0.53***	0.52***
	(0.04)	(0.03)	(0.03)	(0.03)	(0.03)
Gender*married	-0.54***	-0.65***	-0.65***	-0.55***	-0.51***
	(0.05)	(0.04)	(0.04)	(0.04)	(0.04)
Educmiddle	-0.04	-0.07**	-0.06**	-0.07***	-0.10***
	(0.03)	(0.03)	(0.02)	(0.02)	(0.02)
Educhigh	-0.17***	-0.09***	-0.12***	-0.14***	-0.09***
	(0.03)	(0.02)	(0.02)	(0.02)	(0.02)
Educuni	-0.25***	-0.17***	-0.22***	-0.27***	-0.21***
	(0.05)	(0.04)	(0.03)	(0.04)	(0.03)
Unemployment	-0.59***	-0.57***	-0.58***	-0.46***	-0.48***
	(0.03)	(0.02)	(0.02)	(0.02)	(0.02)
DUR	0.06***	0.05***	0.05***	0.06***	0.05***
	(0.003)	(0.003)	(0.002)	(0.003)	(0.002)
Urban	-0.39***	-0.28***	-0.37***	-0.32***	-0.24***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Gdp	-0.0003***	-0.0003***	-0.0003***	-0.0003***	-0.0003***
	(0.00001)	(0.00001)	(0.0001)	(0.0001)	(0.0001)
Pseudo R2	0.20	0.21	0.19	0.19	0.20

Table 1.3.15: Marginal Effects

Variable	2004	2005	2006	2007	2008
Gender	-0.17***	-0.18***	-0.15***	-0.17***	-0.19***
Age	-0.01***	-0.02***	-0.02***	-0.02***	-0.02***
Agesquared	0.0003***	0.0004***	0.0004***	0.0004***	0.0004***
Married	0.17***	0.21***	0.23***	0.19***	0.19***
Gender*married	-0.17***	-0.23***	-0.24***	-0.20***	-0.19***
Educmiddle	-0.01	-0.02**	-0.02**	-0.02***	-0.03***
Educhigh	-0.05***	-0.03***	-0.04***	-0.05***	-0.03***
Educuni	-0.07***	-0.06***	-0.08***	-0.10***	-0.07***
Unemployment	-0.17***	-0.19***	-0.21***	-0.16***	-0.17***
DUR	0.01***	0.01***	0.02***	0.02***	0.02***
Urban	-0.13***	-0.10***	-0.14***	-0.12***	-0.09***
Gdp	-0.0001***	-0.0001***	-0.0001***	-0.0001***	-0.0001***

Like in 2000-2003 period, non-employed people tend to be discouraged less if they are fired or laid off, which may be due to the fact that the fired or laid off person should seek for job to earn money, hence do not give up searching for job. Nevertheless, as we have expected, as the duration of unemployment of the individuals increase, their probability of being discouraged increase.

The marginal effect of the increase in university education level decreases in 2008 compared to 2007 among the experienced part of the population. However, the decrease in the marginal effect for this variable for the experienced part of the population is as not as high as the decrease in marginal effect for the whole population. This shows that, in crisis year employers prefer individuals who have high education levels with experience other than those who do not have experience.

Table 1.3.16: Elasticities

Variable	2004	2005	2006	2007	2008
Gender	-0.48	-0.38	-0.26	-0.32	-0.33
Age	-2.55	-2.80	-2.20	-2.30	-2.52
Agesquared	1.53	1.75	1.41	1.50	1.62
Married	0.44	0.41	0.36	0.33	0.33
Gender*married	-0.31	-0.32	-0.26	-0.25	-0.22
Educmiddle	-0.008	-0.01	-0.009	-0.01	-0.01
Educhigh	-0.04	-0.02	-0.02	-0.03	-0.02
Educuni	-0.02	-0.01	-0.01	-0.02	-0.01
Unemployment	-0.19	-0.14	-0.11	-0.09	-0.10
DUR	0.15	0.13	0.12	0.13	0.13
Urban	-0.36	-0.22	-0.25	-0.23	-0.18
Gdp	-1.22	-1.14	-0.80	-0.86	-0.86

Table 1.3.16 suggests that while 1% increase in the probability of being fired or laid off causes 0.19% decrease in the probability of being discouraged in 2004, it will cause 0.09% decrease in 2007, and 0.10% decrease in 2008, which shows that if the individual is fired or laid off the probability of being discouraged of that individual increases more in pre-crisis and crisis years than the increase in previous years.

1.4. What Happens When the Definition of Discouraged Worker Changes: Comparison

TURKSTAT defines the discouraged worker as an individual who is not employed and not seeking for job as he believes that there does not exist a job appropriate for him in the region that he lives or who does not know where to look for job and is ready to work in fifteen days if he has a chance. In this thesis, we do not use this definition as we think that this definition is a narrow definition for the Turkish case.[10] However, for the sake of convenience we examine the effects

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[10] The explanation why we think that this definition is a narrow definition is explained in section 2.

of socioeconomic factors on a non-employed individual's discouragement by taking the definition of discouraged worker as what TURKSTAT suggests.

As the new definition is more restricted, sample sizes are smaller relative to the previous case. Especially for the period 2000-2003, the results based on the TURKSTAT's definition of discouraged workers show some differences from the previous case. Firstly, unlike the results that are based on the previous definition, the gender and the marital status of an individual do not have impact on someone's decision to remain in the labor force or not.

Secondly, while we find that reason of unemployment of a non-employed individual is negatively related with the probability of being discouraged in the previous case, in this case we find that it does not have an impact on probability of being discouraged except for the years 2006-2008. In those years, it is found to be negatively significant like in the previous case. Another important difference between two results is related with the education variables for the year 2003. While the education dummies for the period 2000-2008 are generally found to be negatively significant, in contrast with the previous case, the variable "educuni" is found to have negatively significant impact on probability of someone's discouragement in 2003 as it is expected. From this result, we can conclude that non-employed individuals who have university degree or higher do not easily believe there does not exist a job in the region that they live, thus they are less likely to become discouraged.

The signs and significances of the previous work experience, living in urban areas, duration of unemployment of the individual and GDP per capita of that region do not differ between two analyses. Therefore, we can conclude whichever the definition we take, our results are consistent with literature. As

duration of unemployment increases non-employed individuals are more likely to become discouraged. Another important suggestion of this result is experienced non-employed individual do not easily believe that there does not exist any work in the region that they live. Finally, living in urban areas or in a region where GDP per capita is higher decreases the probability of being discouraged for both of two definitions of discouraged workers. Therefore, we can say that as the employment opportunities become higher, people are less likely to give up seeking for job .

1.5. Conclusion

This thesis examines the effect of socioeconomic factors on a non-employed individual's probability of being discouraged for Turkey for the periods 2000-2008. Although most of the results satisfy our expectations, some of the findings of the thesis are to our surprise.

The most interesting result is having been fired or laid off does not make a non-employed individual discouraged, on the contrary, the probability of being discouraged decreases among those people. This result may be due to the fact that the need to earn money. As fired or laid off people need to work, they do not easily give up searching for job. However, consistent with our expectations, we find that as the duration of unemployment increases, non-employed individuals are more likely to become discouraged.

Another surprising result is related with education variables. Although for most of the years we conclude that education level is inversely related with the probability of being discouraged, for some years we find that having a high level of education causes a non-employed individual to be discouraged more. This

result may be due to the fact that more educated people are searching for more qualified jobs, hence when they cannot find a job appropriate for them, they leave the labor force. However, in general, the conclusion of the thesis is as people get more educated, their probability of being discouraged decreases. Hence, having higher degree of education should not be ignored. Both the government and Non-Governmental Organizations (NGOs) should support the poor children in order to have education.

We also see that non-employed individuals, who live in rural areas or in the regions where the GDP per capita level is lower, have more tendencies to become discouraged. This reason is due to the fact that employment opportunities are low in those places. There are two ways to solve this problem: The first one is to immigrate to urban areas, and the second one is to induce investment in rural areas. The first solution does not give satisfying results as far as we observe in the Turkish case. The immigrants do not always succeed in finding jobs in urban areas and unemployment rates in those areas become even higher when people immigrate from rural to urban areas. Therefore, the second policy seems to be the best way to minimize the probability of being discouraged. The investment does not have to be in business sector only; it can be also in agriculture sector to increase the employment opportunities in rural areas.

CHAPTER II

DISCOURAGED OR ADDED WORKER EFFECT:
A REEXAMINATION OF THE TURKISH CASE

2.1. Introduction

Added Worker Effect (AWE) has been an important phenomena in the economics literature. According to Baslevent and Onaran (2003), AWE simply implies that if husbands loose their jobs or there is a risk of job loss of the household head, wives tend to participate in the labor force more. If the reverse case occurs, i.e. if the wives tend to leave the labor force even more when husbands loose their jobs, then discouraged worker effect (DWE) is found to be dominant.

The existing literature suggests different results for AWE versus DWE. Maloney (1991) has found no evidence for AWE among married couples in the USA using Panel Study of Income Dynamics (PSID) data for 1982 recession. His findings are in favor of DWE, in other words, Maloney claims that spouses of unemployed men are more likely to be out of labor force than spouses of employed men. In contrast, Spletzer (1997) has found AWE significant by using monthly longitudinal micro data from the Current Population Survey (CPS) for

USA case for two different periods, December 1988- June 1989 and December 1990-June 1991. He claims that especially in times of unexpected unemployment of the husbands, wives tend to participate in labor force more. However, when he controls for the possible correlation between unemployment tendency of the husbands and unobserved characteristics of the households, like the couple's wish to have more leisure, he does not find AWE as significant as he finds before controlling this relationship. Moreover, as a recent study, Stephens Jr. (2002) focuses on households in which husband looses his job, i.e no resignation or leave the job for personal reasons such as illness by using PSID data for the period 1968-1992. He concludes that there will be an increase in Labor Force Participation of wife as a result of husband's displacement. He also claims that, as the job loss probability of the husband increases, labor force participation of the wife will also increase. He predicts the probability of job loss of the husband by regressing a job loss variable on husband's experience, occupation, residence and industry.[11] In other words, his findings support the AWE. However, he notes that the dominance of AWE will change according to the timing of the information (job lost probability) arrived and the magnitude of the wealth loss.

Little evidence of AWE in the literature is explained by different findings. For instance, Cullen and Gruber (2000) find that AWE is not significant due to Unemployment benefits by using the 1984-88 and 1990-92 panels of the Survey of Income and Program Part Participation (SIPP) data for the USA case. Nevertheless, the significance of AWE differs from developed countries to developing countries. While most of the literature suggests AWE is not significant for USA, a developed country, Felicio and Fernandes (2005) suggest that AWE is

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[11] In fact, his way of estimating the relationship between job loss probability and labor force participation of wife is not clear in the paper. In the paper, he asserts that the results for this part of the paper will be revealed upon request.

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highly significant in Brazil, a developing country, despite the fact that the duration of unemployment is low by using Pesquisa Mensal del Emprego (PME; montly employment survey) for the years 1985, 1993 and 1999.They conclude that these different results exist since income loss of the husband in developing countries will result in more poverty than in developed countries even if duration of unemployment is not too high, since the burden of unemployment of the head of the household on the family is great in developing countries relative to the developed countries.

In contrast, Serneels (2002) find that AWE is not significant in Ethiopia, which is not a developed country. The paper concludes that households try other ways to deal with unemployment such as consumption smoothing or selling assets. Nevertheless, in his paper Serneels considers the effect of income loss of the young male members of the household on labor force participation of young female members, rather than the effect of job loss of the husband on labor force participation of wives.

In this thesis, the significance of AWE will be tested for another developing country, Turkey. An important study for the significance of AWE in Turkey has been made by Baslevent and Onaran (2003). They use the Turkish Household Labor Force Survey data for the years 1988 and 1994, and find that in the economic crisis year, 1994 AWE is significantly dominant in Turkey. In this thesis, we will examine the dominance of AWE by using Turkish Household Labor Force Survey (HLFS) data for the years from 2000 to 2003, to be able to see the effect of 2001 economic crisis on the labor force participation decision of wives. Moreover, in order to see the dominance of AWE in 2008 crisis, we will use HLFS for the years from 2004 to 2008. Besides the wives of unemployed and

out of labor force husbands, we will also consider the effect of underemployment of the husband on the labor force participation decision of wives. Maloney (1986) has found that when underemployment of the husband is taken into consideration, AWE is found to be significant in USA by using PSID data for the year 1975. Since in the Turkish data, there are significant amount of underemployed husbands, it is noteworthy to test the effect of underemployment of the husband to the labor force participation decision of wives. This is the first study that will be done not only done for the Turkish case but also for a developing country.

We contribute to the literature on AWE by also examining the effects of having people in the household who are not employed, and hence are potential candidates to take care of children such as grandparents or other relatives. We expect that the significance of AWE will be even more if other people in the household can take care of children. This study will be the first study done for the Turkish Case. Similar study has been done by Chiuri (2000) for Italy case using 1993 Bank of Italy Survey of Household Income and Wealth (SHIW), to see the effect of help from the other family members on the labor force participation decision of women. She concludes that as the quality of formal childcare increases, in other words, if there exists more crèches or kindergartens in the country, labor force participation of married women will also increase.

The traditional role of women, the motherhood, can prevent them from participating in labor force as Chevalier and Viitanen (2002) suggest using 1992:1-1999:4 Quarterly Labor Force Survey Data for the UK case. In the paper, they test the relationship between female labor force participation and having young children by using Granger Causality methods, unlike the previous studies which are done by micro-level data. A contradicting result for the correlation

between labor force participation of women and having children is suggested by Agüero and Marks (2008) using cross-sectional data from the Demographic and Health Surveys (DHS) for Peru, Guatemala, Colombia, Bolivia, Nicaragua and the Dominican Republic[12]. They conclude that having children is not barrier to labor force participation for women who do not control their fertility. In other words, even if the woman has a baby out of desire, she does not leave the labor force.

In this thesis, we claim that as long as individuals other than husband, wife and children; such as grandparents or other relatives exist in the household, then labor force participation of women will increase even more since those members can take care of children if they do not have a regular job. In addition, owing to same reason, we expect the wives to work more when other relatives are able to look after the children.

The rest of the thesis is organized as follows. Section 2 considers theoretical framework. In section 3 we describe the data and the methodology we use. Section 4 presents the descriptive statistics. Section 5 presents the probit regression results, where the dependent variable is Labor Force Participation (LFP) of wife and section 6 presents the tobit regression results where the dependent variable is Total Hours of Work by wife. Section 7 discusses the sensitivity analysis. Finally, In section 8, paper reveals concluding remarks and suggest some policies.

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[12] The survey conducted in Peru in 1996, Guatemala in 1998, Colombia in 1995, Bolivia in 1994 and 1998, Nicaragua in 1998 and the Dominican Republic in 1996.

2.2. Theoretical Framework

The literature on AWE is generally empirical. One of the most important theoretical papers on AWE is written by Ashenfelter (1980). In his model, the objective is utility maximization of a household subject to the budget constraint of that household. The utility of the household is a function of leisure of the household members and their demands for commodities. The budget constraint of the household implies total consumption of the household is equal to the total earned and unearned income of the household members. In his model, an individual's labor supply is a function of his wage, non- labor household income, labor supply of the other household members, labor income of the other household members and prices of the commodities.

In the model, he suggests that a decrease in the employment of a family member tends to raise the labor supply of family members if their non-market time is substitutable with that family member. On the contrary, if the other members' non-market time is complementary with the non-market time of that family member, then a decrease in employment of this family member leads to a decrease in labor supply of the remaining family members. For instance, if the husband is not unemployed, then the non-market times of the couple in a household can be substitutes. Therefore, what the model suggests is, if the husband becomes unemployed, then through a pure substitution effect, wives will tend to participate in labor force more. The suggestion of the model is consistent with the dominance of AWE. In this thesis, we will examine the validity of the model's suggestion with the Turkish Household Labor Force Survey (HLFS) data for the period 2000-2008.

2.3. Data and the Methodology

For this research, we will use Turkish Household Labor Force Survey (HLFS) data for the years between 2000 and 2008. HLFS is a cross-section data. A Household is visited 4 times in 1.5 year. There are 3 months between the first visit and the second visit; 9 months between the second visit and third visit; and 3 months between the last two visits. The results of this partial panel survey are pooled. Finally, the new cross section data, prepared from the results of the panel survey is revealed. The survey is pooled in the following manner: For instance, a household is visited for two times in one year. The first visit is on January, and the second visit is on April. The answers of both visits are revealed in the same year's data set. Although they belong to the same household, in the data they seem as if the observations come from two different households.

In addition, the data for the year 2000-2003 and 2004-2008 are different in some ways. Thus the results will be presented for these data sets separately. For instance, the number of observations collected from the data of the years 2004-2008 is greater than the number of observations of the years 2000-2003. The answers of some questions are given differently in these two data sets, and the most important difference between these two data sets is, in the data that is collected from the period 2004-2008 Turkey is divided into both 12 regions (Level 1) and 26 regions (Level 2). For 2004-2008 data we include an additional explanatory variable, "GDP", which shows the Gross Domestic Product (GDP) per capita of the region in which the household lives. We make these analysis based on level 2 statistical regions as there are more variety in the division of the regions into provinces thus we will able to see how GDP per capita level of that region affects the dominance of AWE in that region.

To see the dominance of AWE in Turkey over the years, we first aim to be consistent with Başlevent and Onaran (2003) criteria while adjusting the data. That is, we take the households in which both husband and the wife are at the ages between 20 and 54. The households are taken from urban areas in Turkey, and the households in which husband or wife is employed in agriculture sector or enrolled in education are excluded.

The labor force participation decision (LFP) of wife will be analyzed by using probit regression. The econometric model can be defined in the following way:

The wife may either participate in labor force (Y=1) or not (Y=0) in the year that the survey takes place. We believe that a set of factors, such as ages of both husband and wife, education levels of both husband and wife, employment status of the husband, i.e if he is underemployed or not, or why he left his job if he is unemployed, the number of children in the household, and the number of members in the household who can take care of the children explain the probability of the wife will participate in labor force. These explanatory variables are gathered in a vector x, so we can define the probit model as follows:

$$P(Y = 1 \mid X) = F(x, \beta)$$

$$P(Y = 0 \mid X) = 1 - F(x, \beta)$$

where β refers to the coefficients of the explanatory variables. In probit models, the coefficients give the idea of the direction of change, whether the probability increases or decreases with the change in explanatory variables. To see the magnitude of the effect we will rather focus on the marginal effects, and to see the effect of 1 per cent change in the explanatory variables on LFP of wife we will focus on the elasticities of explanatory variables.

In the second part of the econometric model, we will run tobit regression to see the effect of explanatory variables defined above on the total hours of work of the wife. In the tobit model, the data is censored from the observations in which wives will work for 0 hours. The general formulation of the tobit model can be written as follows:

$$y_i^* = x_i^{'}\beta + \varepsilon_i$$
$$y_i = 0 \Leftarrow y_i^* \leq 0$$
$$y_i = y_i^* \Leftarrow yi^* > 0$$

In our model the condition $y_i^* \leq 0$ is binding since the total hours of work of the wife cannot be negative.

The probit model can be written as follows:

$$LFP = \beta_0 + \beta X + \varepsilon$$

The vector X includes the following variables: Age of the husband, age of the wife, $(ageofhusband)^2 / 100$, $(ageofwife)^2 / 100$, education levels of both husband and wives (which are defined as educprimaryhusband, educmiddlehusband, educuniwife, etc…), why the husband left his job if he is unemployed, underemployment status of the husband, number of children in the household, and the number of members who can take care of the children in the household.

The tobit model can be written as follows:

$$THwife = \beta_0 + \beta X + \varepsilon$$

where the variable "THwife" refers to the total hours of work done by wife in a week. The vector X includes the same variables as in probit regression. Before running the regressions, discussion of the explanatory variables and our expectations are presented below.

In the HLFS, ages of the people are divided into categories; we take the midpoints of these categories. For instance, for the age group 35-39, the age of the individual is taken as 37. The variables $(ageofhusband)^2/100$ and $(ageofwife)^2/100$ are used for scale purposes. We expect that as the age of the wife gets older, she will participate in labor force more, and work for more hours as the children grow up or she will gain more experience.

Education levels of both wife and the husband are expected to be significant variables on the labor force participation decision of wives and total hours of work by the wife. The variable "educprimary husband (wife)" takes 1 if the husband (wife) graduated from primary school, 0 otherwise. Similarly, "educmiddle husband (wife)" takes the value 1 if the husband (wife) finishes middle school, 0 otherwise. Likewise, "educhigh husband (wife)" is equal to 1 if the husband (wife) finishes high school, 0 otherwise. Finally, "educuni husband (wife)" is equal to 1 if the husband (wife) has university or higher level of education, 0 otherwise. We expect that if the wives have some education they tend to work more or participate in the labor force more and to work for more hours. As the level of education that the wives get increases, the probability of the wives will attend to labor force will also increase. On the contrary, as the level of education that the husband gets increases, we expect that wives will tend to involve in labor force less and they are less likely to work. Because, as education level of husbands increase, husbands will more likely to become employed and earn income for the household, thus, we expect that wives tend to work less to get more involved in their traditional roles.

In the regressions, the variable child1 refers to the number of children whose ages are between 0 and 4, child2 shows the number of children in the household

who are at the ages between 5 and 11 and child3 shows the number of children in the household whose ages are between 12 and 14. We expect that as the number of children of the household increases, wives will involve in labor force less or they work less. This effect is expected to be even higher if the age of the children gets smaller as a result of traditional role of women, motherhood.

One of the important variables that explains the significance of AWE is "unemployment husband", it takes the value 1 if the husband is fired or the firm he works gets bankrupt, and 0 if he leaves the job for other reasons, such as retirement or resignation. If the husband is fired, AWE idea supports that the wife will tend to participate in the labor force more due to income loss in the household. In a developing country like Turkey, if the household does not have high reservation wage, we expect that unexpected unemployment of the husbands brings about an increase in labor force participation of married women and a rise in the total hours of work by married women, since income loss of the primary breadwinner is expected to affect the welfare of the household negatively.

Another important variable is "Underemployment husband" which is a dummy variable; it takes 1 if the husband in the household is underemployed, 0 otherwise. Turkish Statistical Institute (TURKSTAT) defines underemployment in the following manner:

An individual is considered to be underemployed, if the individual has a job but does not work during the week before the survey takes place due to technical or economical reasons or because there is no work to do or if the individual works less than 40 hours during the week due to technical or economic reasons or because, there is no work to do or he is new entrant to the job or he cannot find a full time job, and he wants to work more than 40 hours or if the individual wants

to change his job or he looks for extra job because, earnings from the job is low or he does not work in his profession. In our study, we expect that as long as the husband in the household is underemployed, wives will tend to participate in labor force more and work more.

Finally, the variable "caretaker" refers to the number of people in the household who do not work and capable of taking care of children, such as grandparents or other relatives. In accordance with the existing literature, we make the assumption that motherhood is an obstacle for married women to be included in the labor force, thus we expect that if the number of child care takers increase in the household, married women will participate in labor force more, and their total hours of work will increase.

Since the objective of our study is to see the effects of 2001 and 2008 crisis on labor force participation of women and total hours of work of women, year dummy variables establish an important part in our study. For the 2000-2003 period, we introduce a year dummy variable "year dummy crisis", which takes the value of 1 for the years 2000 and 2001 and which takes 0 for the other years. We take the economic crisis in 2001 as structural change, and we give the value of 1 to the year dummies for the year in which structural change occurs and for the year before the structural change occurs. Another year dummy variable is "yeardummy02" which is equal to 1 if the year is 2002 and is equal to zero for the other years, and similarly the dummy variable "yeardummy03" is equal to 1 if the year is 2003 and 0 for the other years. By pooling the data for each year, we want to see in which year the AWE is seen in Turkey. We expect that in crisis year AWE should be dominant over DWE as a result of income loss of the household head as there are many firing and lay off cases. To see the effects of loosing job of

the husband or underemployment of the husband, we interact the variables "underemploymenthusband" and "unemploymenthusband" with year dummies in the pooled data in order to see how these variables affect the labor force participation of married women for each year. Lastly, to see the effect of job loosing of the household head on LFP of wife, we consider the households in which husbands are employed but not underemployed. By doing this, we aim to see whether the dominance of AWE, if it exists, should be attributed to the underemployment or unemployment of the household head, or the economic crisis.

Similar study is done for the period 2004-2008. The new explanatory variable for this period is "GDP", which shows the GDP per capita of the region in which the household lives. We rank the 26 region according to GDP per capita in order to see how income per capita affects the labor force participation decision of wife. We expect that if income per capita rises, then the probability of the wife participating in labor force will increase. There are many reasons for GDP per capita differ in size across regions, such as differences in investment, differences in production level or differences in population. If the distinction mainly comes from the investment or production level, we expect that in the region in which there is more production employment opportunities will be higher, thus married women tend to participate in labor force since the hope for finding job in these regions is greater relative to the hopes to find job in other regions . As the GDP per capita data is available until the year 2001 in TURKSTAT web site, we have put these values instead of variable "GDP". We do not think that this will cause bias in our estimation results, because what matters is the ranking of the regions, not the exact GDP per capita value of the year that is considered. For this period,

the dummy variable "yeardummy04" is equal to 1 if the year is 2004, 0 for the other years. Other year dummies "yeardummy05, yeardummy06, yeardummy07, yeardummy08" are defined in the same manner. We do not expect to see the effect of AWE in 2008 crisis on either LFP of wife or total hours of work by wife as much as we expect to see in 2001 crisis, as the effects of global crisis occur mostly by September 2008. We expect to see the effect of the crisis mostly in 2009, which we cannot observe because the data are not available.

2.4. Descriptive Statistics

2.4.1. Period 2000-2003

As being a developing country, we expect that the burden of income loss of the husband is high for the household, thus wives tend to participate in labor force to find a job to compensate the income loss of the household. Figure 2.4.1 shows the percentage of husbands who are employed, unemployed and out of labor force and Figure 2.4.2 shows the same units for the wives of the same household. Here LFPhusband(wife), Employmenthusband(wife), Unemploymenthusband(wife) are calculated in the following manner:

LFPhusband (wife)=(Total number of employed husbands (wives)+ Total number of unemployed husbands (wives))/Total number of husbands (wives)*100

Employmenthusband (wife) =Total number of employed husbands (wives)/Total number of husbands (wives) who are in the labor force*100

Unemploymenthusband (wife) =Total number of unemployed husbands(wives)/Total number of husbands (wives) who are in the labor force*100

	2000	2001	2002	2003
LFPhusband	88.47	87.60	86.68	86.65
Employment Husband	95.14	93.02	90.94	91.06
Unemployment Husband	4.86	6.98	9.06	8.94
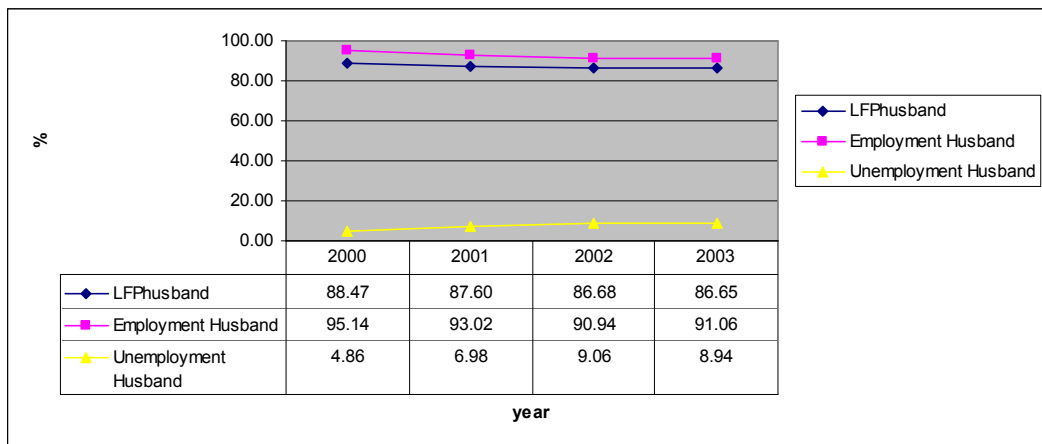
Figure 2.4.1: Participation, Employment and Unemployment Rates (%) of the Husbands for Period 2000-2003.

	2000	2001	2002	2003
LFPwife	13.39	13.56	15.09	14.63
Employment wife	91.36	89.10	87.26	87.73
Unemployment Wife	8.64	10.90	12.74	12.27

Figure 2.4.2: Participation, Employment and Unemployment Rates (%) of the Wives for Period 2000-2003.

Figure 2.4.2 indicates that labor force participation of married women increases after 2000, where employment rate of the husband decreases and unemployment rate of the husband rises. This result is consistent with the AWE

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argument. The increase in unemployment rate of the women can be attributed to the increase labor force participation of women after the crisis. There is a significant increase in labor force participation of the wives in 2002. Thus, we expect to see the dominance of AWE mostly in post crisis year, 2002, rather than 2001.

Table 2.4.1 shows the summary statistics of the explanatory variables and the dependent variable LFP of wife, defined in section 3.

Table 2.4.1: Summary Statistics of the Variables for the period 2000-2003[13]

Variables	2000	2001	2002	2003
Ageofhusband	39.29	39.35	39.52	39.56
	(8.02)	(8.03)	(8.09)	(8.13)
Ageofwife	35.34	35.46	35.64	35.72
	(8.19)	(8.22)	(8.28)	(8.34)
Child1	0.39	0.40	0.40	0.38
	(0.61)	(0.61)	(0.61)	(0.61)
Child2	0.71	0.70	0.69	0.67
	(0.86)	(0.85)	(0.84)	(0.83)
Child3	0.31	0.30	0.30	0.29
	(0.54)	(0.54)	(0.53)	(0.52)
Noneduchusband	0.02	0.02	0.01	0.01
	(0.13)	(0.13)	(0.12)	(0.11)
Educprimaryhusband	0.51	0.51	0.49	0.48
	(0.49)	(0.49)	(0.49)	(0.49)
Educmiddlehusband	0.13	0.13	0.13	0.13
	(0.33)	(0.33)	(0.33)	(0.33)
Educhighhusband	0.21	0.20	0.21	0.22
	(0.40)	(0.40)	(0.40)	(0.41)
Educunihusband	0.12	0.12	0.13	0.13
	(0.32)	(0.32)	(0.33)	(0.34)
Noneducwife	0.03	0.03	0.03	0.03
	(0.18)	(0.17)	(0.17)	(0.17)
Educprimarywife	0.57	0.58	0.57	0.56
	(0.49)	(0.49)	(0.49)	(0.49)
Educmiddlewife	0.07	0.07	0.08	0.08
	(0.25)	(0.26)	(0.26)	(0.26)
Educhighwife	0.14	0.14	0.14	0.15
	(0.34)	(0.34)	(0.35)	(0.36)
Educuniwife	0.06	0.06	0.07	0.07
	(0.24)	(0.24)	(0.25)	(0.26)
LFPwife	0.13	0.13	0.15	0.14
	(0.34)	(0.34)	(0.35)	(0.35)
Totalhoursofworkwife	4.77	4.72	5.28	5.18
	(13.96)	(13.84)	(14.82)	(14.66)
Unemploymenthusband	0.01	0.03	0.05	0.04
	(0.20)	(0.23)	(0.26)	(0.26)

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[13] These summary statistics are not weighted, as we do not weight the probit regressions, because those iweights in the data are the importance weights which do not have formal statistical definition, programmers use iweights
to compute a certain computation, such as the exact unemployment rate in Turkey.

Table 2.4.1 (cont'd)

Underemploymenthusband	0.07 (0.26)	0.06 (0.24)	0.06 (0.23)	0.05 (0.20)
Caretaker	0.06 (0.30)	0.06 (0.30)	0.07 (0.32)	0.06 (0.31)
N	35289	36128	35881	35828

The means of the variables also indicate that LFP of wife and total hours of work by wife increase especially in post crisis year 2002 where the mean of the variable "Unemploymenthusband" also indicates that the probability of the husband is fired or laid off is higher, thus we expect to see the significance of AWE in 2002.

2.4.2. Period 2004-2008

We expect the married women to participate in labor force more in 2008 as the result of global crisis. Figure 4.3 below shows the labor market conditions of the husbands and figure 4.4 shows the labor market conditions of the wives for this period.

	2004	2005	2006	2007	2008
LFP husband	87.32	87.57	87.41	87.16	87.52
Employment Husband	91.90	92.08	92.66	92.66	91.72
Unemployment Husband	8.10	7.92	7.34	7.34	8.28
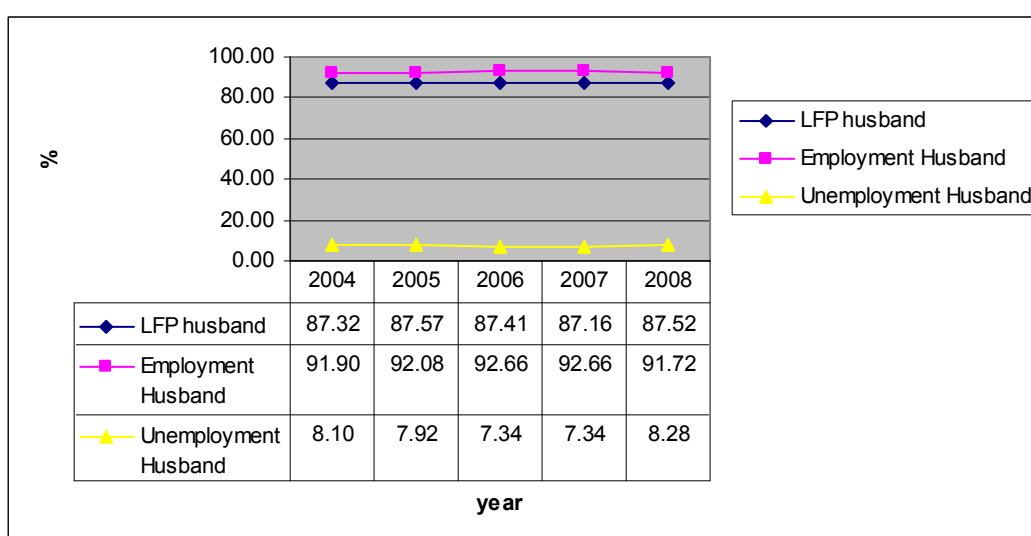
Figure 2.4.3: Participation, Employment and Unemployment Rates (%) of the Husbands for Period 2004-2008.

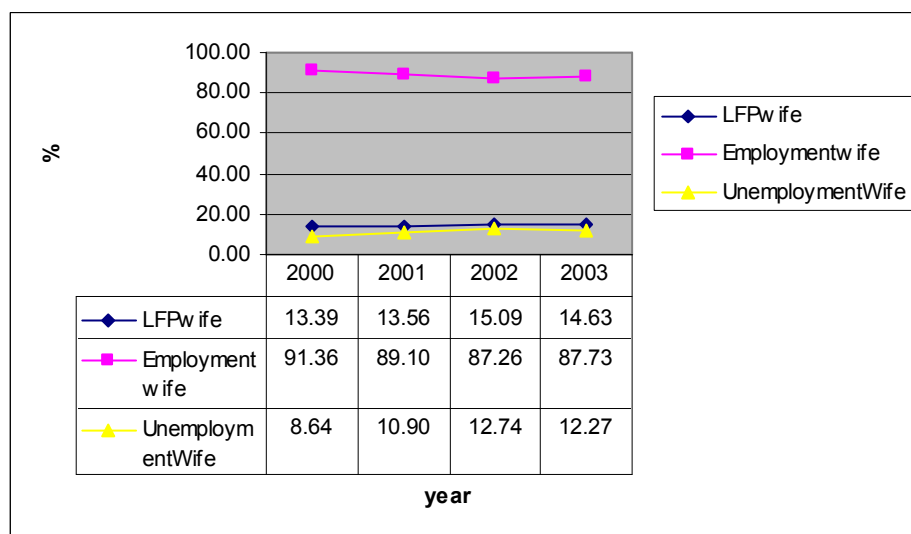|	2004	2005	2006	2007	2008
LFP wife	14.03	14.87	15.70	16.13	17.75
Employment Wife	88.99	88.04	88.28	88.37	87.34
Unemployment Wife	11.01	11.96	11.72	11.63	12.66
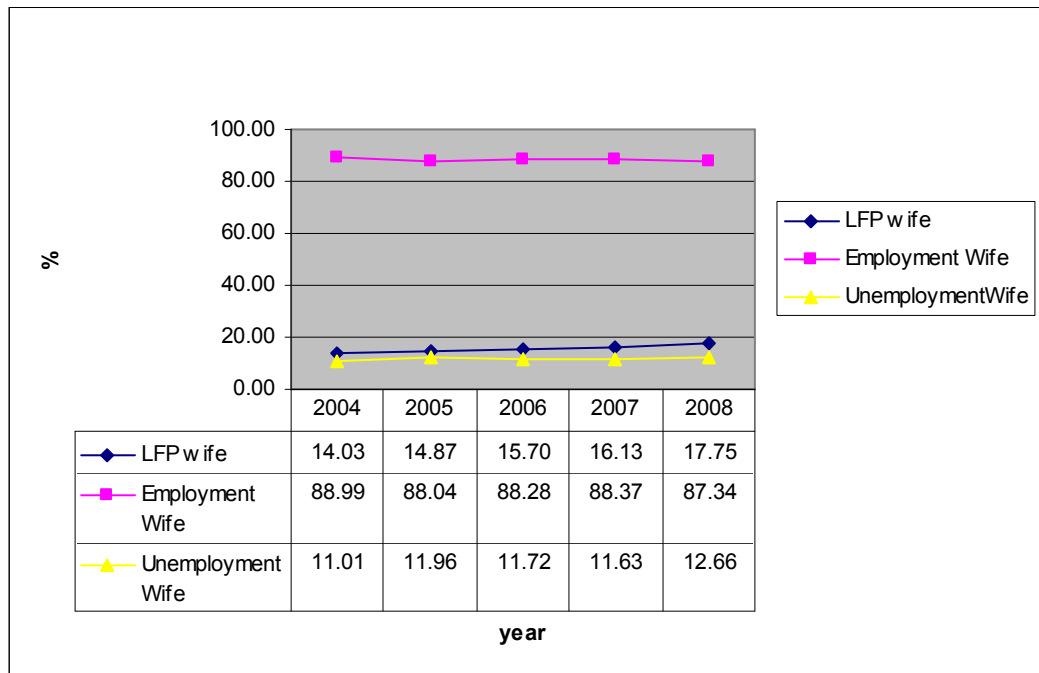
Figure 2.4.4: Participation, Employment and Unemployment Rates (%) of the Wives for Period 2004-2008.

Figure 2.4.3 shows that number of employed husbands decrease and number of unemployed husbands increase in 2008 crisis. Figure 2.4.4 reveals that labor force participation of women increases in 2008. The figure shows that unemployment level of the married women increases in 2008. This is also a sign for increase in labor force participation of wives in 2008. In contrast with 2000-2003 period, labor force participation of women increases significantly also in pre-crisis term, even if when number of employed husbands increase. Then there is a possibility that AWE occurs due to not only crisis but also risk of loosing job of the household head like in 2000-2003 period. Another interesting result that figure 2.4.4 suggests is Labor force participation of married women in period 2004-2008 seems to be higher than 2000-2003 period. In fact, these differences in

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percentages can be as a result of the differences in the two data sets. That result can be attributed to increasing job opportunities for married women in this period as well. Table 2.4.2 below shows the summary statistics of explanatory and dependent variables used in both probit and tobit regressions.

Table 2.4.2 Summary Statistics of Variables for the Period 2004-2008

Variables	2004	2005	2006	2007	2008
Ageofhusband	39.63 (8.01)	39.69 (8.06)	39.75 (8.12)	39.87 (8.09)	39.88 (8.06)
Ageofwife	35.89 (8.28)	35.98 (8.32)	36.07 (8.44)	36.24 (8.43)	36.30 (8.33)
Child1	0.39 (0.62)	0.40 (0.62)	0.40 (0.62)	0.39 (0.61)	0.40 (0.62)
Child2	0.68 (0.85)	0.70 (0.86)	0.69 (0.86)	0.67 (0.84)	0.66 (0.84)
Child3	0.29 (0.53)	0.28 (0.53)	0.27 (0.52)	0.27 (0.52)	0.27 (0.52)
Noneduchusband	0.02 (0.14)	0.02 (0.15)	0.02 (0.15)	0.02 (0.15)	0.02 (0.14)
Educprimaryhusband	0.47 (0.49)	0.47 (0.49)	0.46 (0.49)	0.45 (0.49)	0.45 (0.49)
Educmiddlehusband	0.13 (0.33)	0.13 (0.33)	0.13 (0.34)	0.13 (0.33)	0.13 (0.34)
Educhighhusband	0.22 (0.41)	0.22 (0.41)	0.22 (0.41)	0.23 (0.42)	0.22 (0.42)
Educunihusband	0.13 (0.33)	0.13 (0.33)	0.13 (0.34)	0.14 (0.34)	0.14 (0.35)
Noneducwife	0.03 (0.18)	0.04 (0.20)	0.04 (0.21)	0.04 (0.21)	0.05 (0.22)
Educprimarywife	0.56 (0.49)	0.54 (0.49)	0.53 (0.49)	0.53 (0.49)	0.52 (0.49)
Educmiddlewife	0.07 (0.26)	0.07 (0.26)	0.07 (0.27)	0.08 (0.27)	0.08 (0.27)
Educhighwife	0.15 (0.35)	0.14 (0.35)	0.15 (0.35)	0.15 (0.36)	0.16 (0.36)

Table 2.4.2 (cont'd)

Educuniwife	0.06 (0.24)	0.06 (0.25)	0.07 (0.26)	0.07 (0.26)	0.08 (0.27)
LFPwife	0.14 (0.34)	0.14 (0.35)	0.15 (0.36)	0.16 (0.36)	0.17 (0.38)
Totalhoursofworkwife	5.45 (15.15)	5.63 (15.40)	5.98 (15.88)	6.12 (15.95)	6.71 (16.68)
Unemploymenthusband	0.03 (0.25)	0.03 (0.25)	0.02 (0.24)	0.02 (0.24)	0.03 (0.25)
Underemploymenthusband	0.03 (0.18)	0.01 (0.10)	0.01 (0.11)	0.01 (0.10)	0.01 (0.10)
Caretaker	0.08 (0.34)	0.08 (0.35)	0.09 (0.36)	0.08 (0.36)	0.08 (0.36)
N	50089	50267	50546	50537	50546

Table 2.4.2 reveals that both labor force participation of wives and the hours of the work done by wives significantly rise compared to 2000-2003 period, although the means of other variables do not differ, and even smaller than 2000-2003 period. This difference may occur due to sample size differences or the increase in job opportunities for females but more conveniently, the risk of the job loosing of the household head may induce wives to participate in labor force more or to work more.

2.5. Probit Results

As the data for the period 2000-2003 and 2004-2008 differ in size, we will present the probit results for two periods separately.

2.5.1. Period 2000-2003

Probit Results for the period 2000-2003 are presented in Table 2.5.1. To analyze the magnitudes of the changes over the years marginal effects are presented in

table 2.5.2, and finally, to see how 1 per cent change in the explanatory variables lead to change in probability of the wife to participate in labor force, Table 2.5.3 presents the elasticities.

Table 2.5.1.1: Probit Results for Period 2000-2003 (Dependent Variable:LFPwife)

Variable	2000	2001	2002	2003
Ageofhusband	0.13*** (0.01)	0.09*** (0.01)	0.07*** (0.01)	0.06*** (0.01)
Ageofhusbandsquared/100	-0.20*** (0.01)	-0.15*** (0.01)	-0.12*** (0.01)	-0.10*** (0.01)
Ageofwife	0.09*** (0.01)	0.11*** (0.01)	0.14*** (0.01)	0.15*** (0.01)
Ageofwifesquared/100	-0.13*** (0.01)	-0.15*** (0.01)	-0.21*** (0.01)	-0.22*** (0.01)
Child1	-0.37*** (0.02)	-0.39*** (0.02)	-0.39*** (0.01)	-0.37*** (0.01)
Child2	-0.16*** (0.01)	-0.17*** (0.01)	-0.18*** (0.01)	-0.22*** (0.01)
Child3	-0.07*** (0.01)	-0.08*** (0.01)	-0.08*** (0.01)	-0.10*** (0.01)
Educprimaryhusband	-0.12** (0.06)	-0.21*** (0.06)	-0.14** (0.06)	-0.08 (0.06)
Educmiddlehusband	-0.25*** (0.07)	-0.32*** (0.06)	-0.26*** (0.07)	-0.14** (0.07)
Educhighhusband	-0.24*** (0.06)	-0.35*** (0.06)	-0.28*** (0.06)	-0.21*** (0.06)
Educunihusband	-0.18*** (0.07)	-0.32*** (0.07)	-0.32*** (0.07)	-0.15** (0.07)
Educprimarywife	0.14*** (0.03)	0.30*** (0.03)	0.22*** (0.03)	0.10*** (0.03)
Educmiddlewife	0.51*** (0.04)	0.54*** (0.05)	0.54*** (0.04)	0.39*** (0.04)
Educhighwife	0.97*** (0.04)	1.04*** (0.04)	0.91*** (0.04)	0.72*** (0.04)
Educuniwife	2.25*** (0.05)	2.33*** (0.05)	2.15*** (0.05)	1.98*** (0.04)
Unemploymenthusband	0.33** (0.07)	0.34*** (0.05)	0.23*** (0.03)	0.29*** (0.04)
Underemployedhusband	0.13*** (0.03)	0.19*** (0.03)	-0.02 (0.04)	0.28*** (0.04)
Caretaker	0.11*** (0.02)	0.06** (0.03)	0.07*** (0.02)	0.10*** (0.02)
Pseudo R2	0.23	0.22	0.20	0.20

From probit regression results, we see that if the husband is underemployed, the probability of the wife will participate in the labor force will significantly increase except for the year 2002. The insignificance of underemployment

husband on LFP of wife in post crisis year, in fact, is a surprising result. However, in general we observe that wives will tend to participate in labor force more if their husbands are underemployed, which is consistent with our expectations.

Probit results support the hypothesis that income loss of the household head as a result of being fired or laid off causes the wife to participate in labor force for all of the four years. This result is also consistent with our expectations. In a developing country, the burden of income loss of the household is high on members of household, thus an alternative bread winner should search for job and work to earn the household's living.

For these four years probit regression results give expected results for both the relationship between number of children in the household and labor force participation decision of wife, and the correlation between education levels of both husband and wife, and labor force participation decision of wife. The results indicate that number of children is negatively significantly related with the labor force participation decision of the wife. In other words, as the number of children of the household increases, wives will involve in labor force less. Education levels of both wife and the husband are significant variables to explain the labor force participation decision of wives. The probit regression results show that if the wives are educated more, they are included in the labor force more. In contrast, if the husband is educated, the wife will tend to participate in labor force less. This result can be explained by the fact that since husband is educated, he is able to find a good job to earn the household's living, hence the wife involves in her traditional roles; housework and motherhood more.

Ages of the husbands and wives are found to be positively significant on the labor force participation decision of the wives in all four years. This result implies

that as the ages of both the husband and wife increases, the wife in the household will more likely to work or participate in the labor force. The finding can be attributed to the fact that as the couples get older, since the children are growing up and since the needs of the children get bigger, the income of the household head may not be enough for them. As a result, the wife will have a propensity to participate in labor force more. The variables $(ageofhusband)^2/100$ and $(ageofwife)^2/100$ are found to be negatively significant, which suggests that after ages of the couples reach a peak point, married women participate in labor force less.

Finally, for all of four years, the variable caretaker is found to be positively significant. This result implies that, as the number of people who can take care of children in the household increases, the wife will tend to participate in labor force more. This consequence proves the fact that traditional role of women; motherhood is an obstacle for them to be included in the labor force.

In the probit regression, we have shown that AWE is significantly dominant in Turkey. To see whether DWE also exists or not in crisis years, it is better to analyze the marginal effects for these regressions presented in Table 2.5.1.2.

Table 2.5.1.2 Marginal Effects[14]

Variables	2000	2001	2002	2003
Ageofhusband	0.02***	0.01***	0.01***	0.01***
Ageofhusbandsquared/100	-0.03***	-0.02***	-0.02***	-0.02***
Ageofwife	0.01***	0.01***	0.02***	0.03***
Ageofwifesquared/100	-0.02***	-0.02***	-0.04***	-0.04***
Child1	-0.06***	-0.06***	-0.07***	-0.07***
Child2	-0.02***	-0.03***	-0.03***	-0.04***
Child3	-0.01***	-0.01***	-0.01***	-0.02***
Educprimaryhusband	-0.02**	-0.03***	-0.02**	-0.01
Educmiddlehusband	-0.03***	-0.04***	-0.04***	-0.02**
Educhighhusband	-0.03***	-0.05***	-0.05***	-0.03***
Educunihusband	-0.02***	-0.04***	-0.05***	-0.02**
Educprimarywife	0.02***	0.05***	0.04***	0.01***
Educmiddlewife	0.11***	0.12***	0.13***	0.08***

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[14] Significant variables are indicated with stars.

Table 2.5.1.2 (cont'd)

Educhighwife	0.24***	0.27***	0.24***	0.18***
Educuniwife	0.71***	0.73***	0.69***	0.64***
Unemploymenthusband	0.06***	0.07***	0.05***	0.06***
Underemployedhusband	0.02***	0.03***	-0.005	0.06***
Caretaker	0.02***	0.01**	0.01***	0.01***

Table 2.5.1.2 suggests that in 2001, marginal effect of the reason of unemployment of the husband is highest among these four years. This result can be attributed to the fact that individuals are more likely to become fired or laid off in crisis years. Both the positive significance of the variable "Unemploymenthusband" and the increase in marginal effect of this variable in 2001 tells us that women do not become discouraged as a result of job loss of the husband; instead they tend to look for job more. Thus, we can conclude that discouraged worker effect (DWE) is not dominant during 2001 crisis.

The marginal effect of the reason of unemployment of the husband on labor force participation decision of wife is smallest in 2002. This result implies that although AWE is still significant, DWE can also be seen among wives, in fact it is mostly seen in 2002 among these four years. This result may exist due to the fact that wives become discouraged because of not having an acceptable job during the crisis year. In other words, as she cannot find job, she looses her hope to find a job that is appropriate for her, or she believes that there does not exist a work in the region that she lives, thus she leaves the labor force.

In 2000, 2001 and 2003 the wife tends to participate in labor force more if the husband is underemployed (for example, if the husband is not satisfied with his job due to not having enough salary or not working in his profession). The marginal effect of underemployment husband on labor force participation decision of wife increases in 2001, and it will even increase more in 2003. We can attribute

the increase in 2001 to the fact that underemployed husbands are more likely to loose their jobs in 2001 crisis, since most of them already do not have regular jobs, or more conveniently, they do not have regular working hours. Therefore, we can say that since there is more risk for the household leader to loose his job when he is underemployed in the crisis year, the effect of underemployed husband on LFP of women will increase more than the effect in the pre-crisis year. In 2003, marginal effect of underemployed husband is larger than the effect in 2001. As the risk of loosing job of the underemployed husband is observed in the crisis year, then in the post crisis year, the effect of that risk may be taken into account by the households, and the wife will involve in labor force more when the husband is underemployed.

The highest marginal effect of children variables belongs to variable "Child1" which shows the number of children at the ages from 0 to 4 in the household. The high marginal effect of this variable suggests that the negative effect of having children on labor force participation decision of wife is higher if the children in the household are small. Traditional role of women, motherhood, explains the result well. As small children need more care, the decrease in the labor force participation of women if the children are small is an expected result.

Marginal effects also suggest that, as the level of education the wife gets increases, the probability of the wives will attend to labor force will also rise more than the probability of those who have less education, as the marginal effect of variable "Educuniwife" is highest among four education variables for wives.

Table 2.5.1.3 Elasticities

Variables	2000	2001	2002	2003
Ageofhusband	9.44	6.70	5.29	4.23
Ageofhusbandsquared/100	-5.76	-4.45	-3.46	-3.02
Ageofwife	5.92	7.05	9.00	9.75
Ageofwifesquared/100	-3.11	-3.65	-4.91	-5.16
Child1	-0.25	-0.28	-0.26	-0.24
Child2	-0.21	-0.21	-0.21	-0.25
Child3	-0.03	-0.04	-0.04	-0.05
Educprimaryhusband	-0.11	-0.19	-0.11	-0.07
Educmiddlehusband	-0.05	-0.07	-0.05	-0.03
Educhighhusband	-0.08	-0.12	-0.10	-0.08
Educunihusband	-0.03	-0.06	-0.07	-0.03
Educprimarywife	0.15	0.31	0.21	0.09
Educmiddlewife	0.06	0.07	0.07	0.05
Educhighwife	0.24	0.25	0.22	0.19
Educuniwife	0.25	0.26	0.25	0.24
Unemploymenthusband	0.007	0.01	0.01	0.02
Underemployedhusband	0.01	0.02	-0.002	0.02
Caretaker	0.01	0.007	0.009	0.01

Although marginal effects of the variables "Educhighwife" and "Educuniwife" differ significantly, elasticities of these variables do not differ very much in pre-crisis, crisis years and they do not either differ so much in 2002, which implies that in crisis years labor market opportunities are not so elastic for university graduate wives owing to lack of employment opportunities due to crisis. However, in 2003 the gap between the elasticities of these two variables start to widen, maybe as a result of increasing employment opportunities for women, of course the opportunities are even higher for those who have higher education level.

Similar case occurs for the variables "Child1" and "Child2". The elasticities of these two variables do not differ so much. The tendency of involving in the labor force do not differ very much for the women who have children between ages 0 and 4 and who have children between ages 5 and 11, as both of the groups of children need mother care more than the children of the third group. But, for the women whose children belong to the third group, the labor market participation decision is not very elastic. This can be related with age of the

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women. As they have older children, the ages of these women are also older, thus employment opportunities for these women may not show variation.

To see the effect of crisis terms on labor force participation decision of wives, we pool the data for these four years and introduce year dummies in it. In addition to see how underemployment and reason of unemployment of the husband affects the labor force participation of wife in different years we introduce interaction year dummies. The results are presented in Table 2.5.1.4

Table 2.5.1.4 Pooled Sample Probit Results

Explanatory Variables	Probit Results (Dependent Variable:LFPwife)	Marginal Effects	Elasticities
Age of Husband	0.09*** (0.007)	0.01	6.27
Ageofhusbandsquared/100	-0.14*** (0.009)	-0.02	-4.09
Ageofwife	0.13*** (0.006)	0.02	8.05
Ageofwifesquared/100	-0.18*** (0.008)	-0.03	-4.27
Child1	-0.38*** (0.009)	-0.06	-0.26
Child2	-0.19*** (0.006)	-0.03	-0.22
Child3	-0.08*** (0.009)	-0.01	-0.04
Educprimaryhusband	-0.13*** (0.03)	-0.02	-0.12
Educmiddlehusband	-0.23*** (0.03)	-0.03	-0.05
Educhighhusband	-0.27*** (0.03)	-0.04	-0.09
Educunihusband	-0.24*** (0.03)	-0.03	-0.05
Educprimarywife	0.19*** (0.01)	0.03	0.19
Educmiddlewife	0.49*** (0.02)	0.11	0.06
Educhighwife	0.91*** (0.02)	0.23	0.22
Educuniwife	2.17*** (0.02)	0.69	0.25
Unemployment husband	0.30*** (0.04)	0.06	0.01
Underemployment husband	0.30*** (0.04)	0.06	0.03
Caretaker	0.08*** (0.01)	0.01	0.01

Table 2.5.1.4 (cont'd)

Yeardummycrisis(=1 for 2000 and 2001)	-0.01 (0.01)	-0.003	-0.01
Yeardummy02(=1 for 2002)	0.05*** (0.01)	0.01	0.02
Unemployment husband*yeardummycrisis	0.02 (0.05)	0.004	0.0004
Unemployment husband*yeardummy02	-0.04 (0.05)	-0.008	-0.001
Underemployment husband* yeardummycrisis	-0.15*** (0.04)	-0.02	-0.009
Underemploymenthusband* Yeardummy02	-0.31*** (0.05)	-0.04	-0.007
Intercept	-4.63*** (0.12)		
Pseudo R2	0.21		

For the pooled sample, unemployment husband and underemployment husband is both positively significant on LFP of wife and their marginal effects are exactly the same. Thus, for the pooled sample unemployment and underemployment have exactly the same effect on LFP of wife. However, the elasticity of these two variables differ somewhat. While 1 per cent change in the probability of the husband being fired or laid off brings about 0.01 per cent change in labor force participation decision of the wife, the same effect for the probability of the underemployment of the husband brings about 0.03 per cent change in labor force participation decision of the wife. Maybe, the wives of underemployed men do not demand jobs with very high salaries, as their husbands are already employed, job market opportunities for these women are more variant than for those whose husbands are unemployed.

For pre-crisis and crisis years, the year dummy is insignificant relative to year dummy 2003, whereas for the post crisis year 2002, year dummy is positively significant relative to year dummy 2003 on LFP of wives. Thus, we can conclude that the expected consequence of AWE is mostly seen in 2002.

The interaction of two dummy variables; unemployment of the husband and year dummy for pre-crisis and crisis years is found to be insignificant relative to interaction of unemployment of the husband and year dummy for 2003. Moreover, the interaction of unemployment of the husband and the year dummy 2002 is also found to be insignificant relative to 2003 case. From this result, we can reach the fact that whether the husband is fired or laid off in pre-crisis, crisis or post-crisis year does not affect the LFP of wife. There will be still positive impact of unemployment of the husband on LFP of wife if the husband looses his job in another year. Thus, the AWE is not seen due to crisis, it exists because of the income loss of the household.

Finally, the interaction of underemployment of the husband with both year dummy crisis and year dummy 2002 have a negative and significant effect on LFP of wives relative to the interaction of underemployment of the husband with year dummy 2003. This result implies that if the husband is underemployed in 2000,2001 or 2002, wives tend to participate in labor force less compared to 2003. From this, we can conclude that underemployment of the husband will make the wife discouraged in those years.

In crisis years, individuals face the risk of loosing their jobs. Then the question is; will this risk induce AWE? To see this effect we will take the households in which husbands are employed, they can be either underemployed or not, into consideration, and run the probit regression. The results are presented in Table 2.5.1.5.

Table 2.5.1.5: Pooled Sample Probit Results (Population: Households in which husbands are employed)

Explanatory Variables	coefficients	Marginal Effects	Elasticities
Age of husband	0.09*** (0.008)	0.01	6.40
Ageofhusbandsquared/100	-0.15*** (0.01)	-0.02	-4.02
Ageofwife	0.11*** (0.006)	0.02	6.49
Ageofwifesquared/100	-0.15*** (0.009)	-0.02	-3.23
Child1	-0.38*** (0.01)	-0.07	-0.28
Child2	-0.20*** (0.007)	-0.03	-0.26
Child3	-0.10*** (0.01)	-0.02	-0.05
Educprimary husband	-0.13*** (0.04)	-0.02	-0.10
Educ middle husband	-0.23*** (0.04)	-0.03	-0.05
Educhighhusband	-0.26*** (0.04)	-0.04	-0.10
Educunihusband	-0.22** (0.04)	-0.03	-0.05
Educprimarywife	0.21*** (0.02)	0.03	0.20
EducmiddleWife	0.49*** (0.02)	0.11	0.06
Educhighwife	0.93*** (0.02)	0.24	0.25
Educuniwife	2.24*** (0.02)	0.72	0.28
Underemploymenthusband	0.31*** (0.04)	0.07	0.03
Caretaker	0.11*** (0.01)	0.02	0.01
Yeardummycrisis (=1 for 2000 and 2001)	-0.01 (0.01)	-0.001	-0.009
Yeardummy02(=1 for 2002)	0.06*** (0.01)	0.01	0.02
Underemploymenthusband*yeardummycrisis	-0.16*** (0.04)	-0.02	-0.01
Underemploymenthusband*yeardummy02	-0.31*** (0.05)	-0.04	-0.009
Intercept	-4.49*** (0.14)		
Pseudo R2	0.23		
N	115691		

LFP of women does not significantly differ from 2003 in pre-crisis and crisis years, but in 2002 it is found to be positively significant relative to 2003 among the households in which husband is employed. The expected increase in

LFP of wife due to AWE is largely seen in post-crisis year, 2002. The increase in LFP of wife during 2002 can be explained by the perceived risk that the husband is more likely to loose his job due to the 2000-2001 crisis.

The interaction of the variable underemployment husband both with the 2000 and 2001 year dummies and 2002 year dummy are negatively significant relative to the interaction with 2003 year dummy. In other words, marginal effect of the interaction term is negative in both crisis and post crisis year compared to 2003. Therefore, we can conclude that the expected positive effect of underemployed husband on LFP of wife is higher in 2003 than in 2000-2001 crisis years and the immediate post crisis year. This result is consistent with the analysis of marginal effects derived for each year separately.

In the previous analyses we observe higher positive effect of 2002 year dummy relative to other year dummies on LFP of women. The results in Table 2.5.1.5 reveal that it is not coming from unemployed husband since husbands are employed in these samples; it also looks like it is not coming from the underemployment status of the husband as the interaction term of the underemployed husband and 2002 year dummy is found to be negatively significant. To see whether it is higher perception of unemployment risk for the husband that drives women into the labor force, we restrict the sample to wives whose husbands are employed and not underemployed and run the probit regression. The results are presented in Table 2.5.1.6.

Table 2.5.1.6: Pooled Sample Probit Results (Population: Households in which husbands are employed but not underemployed)

Explanatory Variables	coefficients	Marginal Effects	Elasticities
Age of husband	0.09*** (0.008)	0.01	6.40
Ageofhusbandsquared/100	-0.15*** (0.01)	-0.03	-4.07
Ageofwife	0.11*** (0.006)	0.02	6.49
Ageofwifesquared/100	-0.15*** (0.009)	-0.02	-3.21
Child1	-0.38*** (0.01)	-0.07	-0.27
Child2	-0.21*** (0.007)	-0.04	-0.25
Child3	-0.11*** (0.01)	-0.02	-0.05
Educprimary husband	-0.14*** (0.04)	-0.02	-0.11
Educ middle husband	-0.25*** (0.04)	-0.04	-0.05
Educhighhusband	-0.28*** (0.04)	-0.05	-0.11
Educunihusband	-0.24** (0.04)	-0.04	-0.06
Educprimarywife	0.20*** (0.02)	0.03	0.19
EducmiddleWife	0.48*** (0.02)	0.11	0.06
Educhighwife	0.93*** (0.02)	0.24	0.25
Educuniwife	2.24*** (0.03)	0.72	0.30
Caretaker	0.12*** (0.01)	0.02	0.01
Yeardummycrisis (=1 for 2000 and 2001)	-0.01 (0.01)	-0.001	-0.008
Yeardummy02(=1 for 2002)	0.06*** (0.01)	0.01	0.02
Intercept	-4.47*** (0.14)		
Pseudo R2	0.23		
N	107120		

Table 2.5.1.6 reveals that LFP of women does not significantly differ from 2003 in pre-crisis and crisis years, but in 2002 it is found to be positively significant relative to 2003 among the households in which husband is employed. The expected increase in LFP of wife due to AWE is largely seen in immediate post-crisis year. The increase in LFP of wife during 2002 can be explained by the

increased risk of husband's loosing his job after the crisis takes place. We can conclude that even if the husbands are not underemployed, they are faced with the risk of losing their jobs in the crisis year. As a result of that risk, wives tend to participate in labor force more in the post crisis year. Therefore, we can say that the thing that drives women into the labor force is the higher perception of unemployment risk for the husband. The higher positive effect of 2002 year dummy relative to other year dummies on LFP of women is coming from neither unemployed husband nor underemployed husbands.

2.5.2. Period 2004-2008

For the period 2000-2003, we observe that the significance of AWE especially appears in immediate post-crisis year 2002. Likewise, we expect AWE to be dominant in post-crisis year 2009, but we cannot observe it. However, in 2008 we expect the wives to participate in labor force more as the result of job loss or the risk of job loss of the household heads due to the global crisis occurred in that year. As Figure 2.4.4 indicates, LFP of married women in this period is greater relative to the period 2000-2003. This result may occur because of the differences between the two data sets, nevertheless it can be a consequence of the increase in the job opportunities in Turkey for females during this period.

Table 2.5.2.1: Probit Results for Period 2004-2008 (Dependent Variable: LFPwife)

Variable	2004	2005	2006	2007	2008
Ageofhusband	0.05*** (0.01)	0.06*** (0.01)	0.10*** (0.01)	0.07*** (0.01)	0.09*** (0.01)
Ageofhusbandsquared/100	-0.09*** (0.01)	-0.10*** (0.01)	-0.15*** (0.01)	-0.11*** (0.01)	-0.12*** (0.01)
Ageofwife	0.16*** (0.01)	0.17*** (0.01)	0.14*** (0.01)	0.15*** (0.01)	0.14*** (0.01)
Ageofwifesquared/100	-0.24*** (0.01)	-0.24*** (0.01)	-0.20*** (0.01)	-0.22*** (0.01)	-0.21*** (0.01)
Child1	-0.41*** (0.01)	-0.39*** (0.01)	-0.43*** (0.01)	-0.45*** (0.01)	-0.43*** (0.01)
Child2	-0.17*** (0.01)	-0.17*** (0.01)	-0.17*** (0.01)	-0.20*** (0.01)	-0.22*** (0.01)
Child3	-0.05*** (0.01)	-0.08*** (0.01)	-0.07*** (0.01)	-0.04*** (0.01)	-0.05*** (0.01)
Educprimaryhusband	-0.09* (0.05)	-0.15*** (0.04)	-0.13*** (0.04)	-0.11** (0.05)	-0.12** (0.05)
Educmiddlehusband	-0.19*** (0.06)	-0.22*** (0.05)	-0.20*** (0.05)	-0.14*** (0.05)	-0.12** (0.05)
Educhighhusband	-0.24*** (0.05)	-0.30*** (0.05)	-0.23*** (0.05)	-0.26*** (0.05)	-0.18*** (0.05)
Educunihusband	-0.24*** (0.06)	-0.25*** (0.05)	-0.21*** (0.05)	-0.25*** (0.05)	-0.29*** (0.05)
Educprimarywife	0.18*** (0.03)	0.12*** (0.02)	0.19*** (0.02)	0.25*** (0.03)	0.25*** (0.02)
Educmiddlewife	0.51*** (0.04)	0.42*** (0.03)	0.46*** (0.03)	0.50*** (0.03)	0.44*** (0.03)
Educhighwife	0.89*** (0.03)	0.74*** (0.03)	0.78*** (0.03)	0.83*** (0.03)	0.84*** (0.03)
Educuniwife	2.18*** (0.04)	1.97*** (0.04)	1.99*** (0.04)	2.12*** (0.04)	2.10*** (0.04)
Unemploymenthusband	0.26*** (0.04)	0.19*** (0.04)	0.20*** (0.04)	0.20*** (0.04)	0.19*** (0.04)
Underemploymenthusband	0.20*** (0.04)	0.31*** (0.06)	0.28*** (0.06)	0.20*** (0.07)	0.30*** (0.06)
Caretaker	0.06*** (0.02)	0.03* (0.02)	-0.004 (0.02)	0.006 (0.02)	-0.02 (0.02)
GDP	0.00008*** (0.000007)	0.00007*** (0.000007)	0.00006*** (0.000007)	0.00004*** (0.000007)	0.00004*** (0.000007)
Pseudo R2	0.21	0.19	0.19	0.20	0.19

The results are consistent with what the results of the period 2000-2003 suggest except the variable "Caretaker". To our surprise, the variable "caretaker" is found to be insignificant for the years 2006-2008, which implies that having members who are capable of taking care of the children in the household, does not affect the labor force participation of wives.

The signs and significances of the other explanatory variables for period 2004-2008 do not show differences from those for the periods 2000-2003. Like in

2000-2003 period, the ages of the couples are positively significant on labor force participation decision of the wives; while the education level of the husband has negatively significant impact on labor force participation decision of the wives, the education level of the wife has positively impact on it and number of children are also found to be negatively significant on LFP of wife in 2004-2008 period.

In this period, the new variable GDP is found to be positively significant as it is expected. In other words, as the GDP per capita of the region that the household lives increases, the probability of married women to participate in labor force increases as well, owing to greater employment opportunities in more developed regions.

Table 2.5.2.2: Marginal Effects

Variable	2004	2005	2006	2007	2008
Ageofhusband	0.01***	0.01***	0.02***	0.01***	0.02***
Ageofhusbandsquared/100	-0.01***	-0.01***	-0.03***	-0.02***	-0.02***
Ageofwife	0.02***	0.03***	0.02***	0.03***	0.03***
Ageofwifesquared/100	-0.04***	-0.04***	-0.04***	-0.04***	-0.04***
Child1	-0.07***	-0.07***	-0.08***	-0.09***	-0.09***
Child2	-0.03***	-0.03***	-0.03***	-0.04***	-0.05***
Child3	-0.009***	-0.01***	-0.01***	-0.009***	-0.01***
Educprimaryhusband	-0.01*	-0.03***	-0.02***	-0.02**	-0.02**
Educmiddlehusband	-0.03***	-0.03***	-0.03***	-0.02***	-0.02**
Educhighhusband	-0.03***	-0.05***	-0.04***	-0.04***	-0.03***
Educunihusband	-0.03***	-0.04***	-0.03***	-0.04***	-0.05***
Educprimarywife	0.03***	0.02***	0.03***	0.05***	0.05***
Educmiddlewife	0.11***	0.10***	0.11***	0.12***	0.11***
Educhighwife	0.22***	0.18***	0.20***	0.22***	0.24***
Educuniwife	0.69***	0.64***	0.65***	0.69***	0.69***
Unemploymenthusband	0.05***	0.04***	0.04***	0.04***	0.04***
Underemploymenthusband	0.04***	0.07***	0.06***	0.04***	0.07***
Caretaker	0.01***	0.007***	-0.0009	0.001	-0.005
GDP	0.00001***	0.0001***	0.0001***	0.000009***	0.00001***

From the marginal effects presented above, we cannot decide whether AWE is seen due to reason of unemployment of husband or underemployment of husband for the whole period. The marginal effect of the variable "Unemployment Husband" in crisis year, 2008, is same as with the previous three years, it is even a bit smaller to that of year 2004. Thus we cannot say that in crisis years married

women will participate in labor force more due to job loss of the household head for this period.

Likewise, we cannot surely say that underemployed husbands will drive married women into the labor force more in crisis years, although the marginal effect of the variable "Underemploymenthusband" is the highest in 2008, as the value of the marginal effect in 2008 is the same with the marginal effect in year 2005, in which there is no economic downturn in Turkey. In short, for the period 2004-2008 we cannot attribute the significance of the AWE in crisis year to reason of job loss or underemployment status of the husbands.

The marginal effects of the variable "unemploymenthusband" are smaller in period 2004-2008, relative to the period 2000-2003. This result suggests that although AWE is still dominant, DWE is seen in period 2004-2008 more than it is seen in 2000-2003 period. In period 2004-2008 married women have more tendencies to become discouraged as a result of income loss of the husband relative to the period 2000-2003.

In contrast, the marginal effect of the variable "underemploymenthusband" is greater in period 2004-2008, relative to the period 2000-2003. This result suggests that in period 2004-2008 AWE due to underemployment of the husband is seen larger than it is seen in period 2000-2003.

Table 2.5.2.3: Elasticities

Variable	2004	2005	2006	2007	2008
Ageofhusband	4.07	4.09	6.77	5.22	5.79
Ageofhusbandsquared/100	-2.69	-2.85	-4.14	-3.22	-3.35
Ageofwife	10.39	10.70	8.59	9.32	8.46
Ageofwifesquared/100	-5.73	-5.72	-4.70	-5.23	-4.84
Child1	-0.28	-0.27	-0.29	-0.30	-0.28
Child2	-0.21	-0.21	-0.20	-0.23	-0.24
Child3	-0.02	-0.04	-0.03	-0.02	-0.02
Educprimaryhusband	-0.07	-0.12	-0.10	-0.08	-0.09
Educmiddlehusband	-0.04	-0.04	-0.04	-0.03	-0.02
Educhighhusband	-0.09	-0.11	-0.08	-0.09	-0.06
Educunihusband	-0.05	-0.05	-0.05	-0.05	-0.06
Educprimarywife	0.18	0.11	0.17	0.22	0.21
Educmiddlewife	0.06	0.05	0.06	0.06	0.05
Educhighwife	0.23	0.18	0.19	0.22	0.21
Educuniwife	0.24	0.23	0.24	0.26	0.27
Unemploymenthusband	0.01	0.01	0.01	0.009	0.009
Underemploymenthusband	0.01	0.005	0.006	0.003	0.005
Caretaker	0.009	0.005	-0.0007	0.001	-0.003
GDP	0.41	0.34	0.30	0.20	0.20

Although marginal effect of the variable "GDP" is not high, its elasticity is sufficient to make comments. In 2004, 1 per cent increase in GDP per capita of the region that the household head causes 0.41 per cent increase in labor force participation of the married women. The elasticity decreases over time, and it has its lowest value 2007 and 2008. The reason may be explained by the decrease in the elasticity of demand for women labor.

Another significant implication of Table 2.5.2.3 shows is the gap between the elasticities of the variables "Educuniwife" and "Educhighwife" is wider relative to those of period 2000-2003, except for the year 2004. We can say that if married women are more educated, because they are more likely to find a job, they will participate in labor force more. Job opportunities for the women who have higher level of education are also greater relative to the women with low level of education. This can be another reason of our finding that married women who are graduated from a university have more tendencies to participate in labor force.

The elasticity of the variable "Unemploymenthusband" is low. For the years 2004-2006 1 per cent increase in the probability of the husband is fired or laid off results with only 0.01 per cent increase in women's labor force participation. The rise in women's labor force participation is even smaller in 2007 and 2008. This is also a sign for what drives women into the labor force is not the job loss of the husband in crisis year. The same logic also applies for the variable "Underemploymenthusband", whose elasticity is not high either. Although it seems to be highest in crisis year, as the elasticity is the same as of the year 2005, we cannot conclude that 1 per cent increase in probability of the husband being underemployed results with more per cent increase in labor force participation of married women.

To see the effect of crisis terms on labor force participation decision of wives, we pool the data for these five years and introduce year dummies in it. In addition, to see how underemployment and reason of unemployment of the husband affects the labor force participation of wife for the years we introduce interaction year dummies. The results are presented in Table 2.5.2.4.

Table 2.5.2.4: Pooled Sample Probit Results

Variable	Coefficients	Marginal Effects	Elasticities
Ageofhusband	0.07*** (0.005)	0.01	5.22
Ageofhusbandsquared/100	-0.11*** (0.006)	-0.02	-3.26
Ageofwife	0.15*** (0.004)	0.03	9.40
Ageofwifesquared/100	-0.22*** (0.006)	-0.04	-5.20
Child1	-0.42*** (0.007)	-0.08	-0.28
Child2	-0.19*** (0.004)	-0.03	-0.22
Child3	-0.06*** (0.007)	-0.01	-0.03
Educprimaryhusband	-0.12*** (0.02)	-0.02	-0.09
Educmiddlehusband	-0.17*** (0.02)	-0.03	-0.03
Educhighhusband	-0.24*** (0.02)	-0.04	-0.09
Educunihusband	-0.25*** (0.02)	-0.04	-0.05
Educprimarywife	0.20*** (0.01)	0.03	0.18
Educmiddlewife	0.46*** (0.01)	0.11	0.06
Educhighwife	0.81*** (0.01)	0.21	0.21
Educuniwife	2.07*** (0.01)	0.67	0.25
Unemploymenthusband	0.25*** (0.04)	0.05	0.01
Underemploymenthusband	0.19*** (0.04)	0.04	0.005
Caretaker	0.01 (0.009)	0.002	0.002
GDP	0.0006*** (0.000003)	0.00001	0.28
YearDummy05	0.05*** (0.01)	0.01	0.01
YearDummy06	0.08*** (0.01)	0.01	0.02
YearDummy07	0.09*** (0.01)	0.01	0.03
YearDummy08	0.14*** (0.01)	0.03	0.05
Unemploymenthusband*yeardummy05	-0.05 (0.05)	-0.01	-0.0005
Unemploymenthusband*yeardummy06	-0.04 (0.05)	-0.009	-0.0004
Unemploymenthusband*yeardummy07	-0.04 (0.05)	-0.008	-0.0004

Table 2.5.2.4 (cont'd)

Unemploymenthusband*yeardummy08	-0.06 (0.05)	-0.01	-0.0006
Underemploymenthusband*yeardummy05	0.12* (0.07)	0.02	0.0004
Underemploymenthusband*yeardummy06	0.09 (0.07)	0.01	0.0004
Underemploymenthusband*yeardummy07	0.009 (0.08)	0.001	0.00003
Undermploymenthusband*yeardummy08	0.11 (0.07)	0.02	0.0003
Intercept	-5.05*** (0.09)		
Pseudo R2	0.20		

From Table 2.5.2.4, we can conclude that in years 2005, 2006, 2007 and 2008 labor force participation of women significantly increases relative to the year 2004. The increase is highest in crisis year, 2008, since marginal effect of the year dummy variable is highest in this year. Thus, a rise in labor force participation of women is seen during the period 2005-2008, and the raise is highest in crisis year. Hence, we can conclude that in crisis year married women participate in labor force more. However, this result cannot be explained by the job loss of the husband or by the fact that husband is underemployed as we find that interaction terms are insignificant relative to interaction terms for year 2004. The only variable that we have found at 10 per cent level of significance is the interaction term of underemploymenthusband and yeardummy05, which implies that if the husband is underemployed, the wife will participate in labor force more in 2005.

Therefore, as a conclusion we can say that if the husband is fired or laid off, wives tend to participate in labor force more to compensate the income loss of the household. The increase in labor force participation of women is largely seen in crisis year. However, the two reasons that explain the increase in labor force participation of wives are not related with each other, although we expect that

household leaders may be fired or laid off in crisis years and the combination of job loss and crisis may result with a rise in labor force participation of wife. It seems as if the increase in labor force participation of wife comes from a fear that the husband may loose his job. To test this fact, we restrict our population to households in which husbands are employed and run the probit regression. The results are presented in Table 2.5.2.5.

Table 2.5.2.5: Pooled Sample Probit Results (Population: Households in which Husbands are Employed)

Variable	Coefficients	Marginal Effects	Elasticities
Ageofhusband	0.06*** (0.006)	0.01	4.22
Ageofhusbandsquared/100	-0.10*** (0.007)	-0.02	-2.59
Ageofwife	0.14*** (0.005)	0.03	8.46
Ageofwifesquared/100	-0.21*** (0.007)	-0.04	-4.45
Child1	-0.43*** (0.007)	-0.09	-0.30
Child2	-0.20*** (0.005)	-0.04	-0.23
Child3	-0.07*** (0.007)	-0.01	-0.03
Educprimaryhusband	-0.07*** (0.02)	-0.01	-0.05
Educmiddlehusband	-0.12*** (0.03)	-0.02	-0.02
Educhighhusband	-0.19*** (0.03)	-0.03	-0.07
Educunihusband	-0.19*** (0.03)	-0.03	-0.04
Educprimarywife	0.21*** (0.01)	0.04	0.18
Educmiddlewife	0.47*** (0.01)	0.12	0.06
Educhighwife	0.82*** (0.01)	0.22	0.22
Educuniwife	2.11*** (0.02)	0.69	0.27
Underemploymenthusband	0.20*** (0.04)	0.04	0.005
Caretaker	0.02*** (0.01)	0.006	0.004
GDP	0.0006*** (0.000003)	0.00001	0.28
YearDummy05	0.05*** (0.01)	0.01	0.01
YearDummy06	0.09*** (0.01)	0.02	0.03

Table 2.5.2.5: (cont'd)

YearDummy07	0.09*** (0.01)	0.02	0.03
YearDummy08	0.14*** (0.01)	0.03	0.04
Undermploymenthusband*year dummy05	0.15* (0.08)	0.03	0.0005
Undermploymenthusband*year dummy06	0.10 (0.07)	0.02	0.0004
Undermploymenthusband*year dummy07	0.01 (0.08)	0.004	0.00007
Undermploymenthusband*year dummy08	0.11 (0.08)	0.02	0.004
Intercept	-4.83*** (0.10)		
Pseudo R2	0.20		

Firstly, the variable "Caretaker" is found to be positively significant on labor force participation decision of the married women, when we consider the households in which husbands are employed. So, another way to explain the insignificance of the number of members of household who can take care of the children on labor force participation decision of wife by the fact that if husbands are unemployed or out of labor force, husbands may look after the children thus number of other relatives or grandparents who can capable of looking after the children do not affect the labor force participation decision of the wife.

The year dummies are found to be positively significant relative to the year dummy for 2004, which implies that married women participate in labor force more between the years 2005 and 2008, and the labor force participation increase even more in the crisis year. Interaction year dummies are not found to be significant except the interaction term of underemployment husband and year dummy of 2005, like in the previous case.

The result suggests that labor force participation of married women increases over time although their husbands are employed. The increase in labor

force participation of women is even more in crisis year. This finding may imply two facts: The first one is that wives of employed husbands search for job in case the household heads may loose their jobs. The second implication is increasing job opportunities for females in this period. This sample contains underemployed household heads as well. Despite the fact that the previous two results show the increase in labor force participation of women is not attributed to underemployed husbands during the period 2004-2008, to be certain we lastly restrict our sample to the households in which husbands are employed but not underemployed. The probit regression results are presented in Table 2.5.2.6.

Table 2.5.2.6: Pooled Sample Probit Results (Population: Households in which husbands are employed, but not underemployed)

Variable	Coefficients	Marginal Effects	Elasticities
Ageofhusband	0.06*** (0.006)	0.01	4.23
Ageofhusbandsquared/100	-0.10*** (0.007)	-0.02	-2.61
Ageofwife	0.14*** (0.005)	0.03	8.51
Ageofwifesquared/100	-0.21*** (0.007)	-0.04	-4.46
Child1	-0.42*** (0.007)	-0.09	-0.30
Child2	-0.20*** (0.005)	-0.04	-0.23
Child3	-0.07*** (0.008)	-0.01	-0.03
Educprimaryhusband	-0.07** (0.03)	-0.01	-0.05
Educmiddlehusband	-0.11*** (0.03)	-0.02	-0.02
Educhighhusband	-0.18*** (0.03)	-0.03	-0.07
Educunihusband	-0.18*** (0.03)	-0.03	-0.04
Educprimarywife	0.21*** (0.01)	0.04	0.18
Educmiddlewife	0.47*** (0.01)	0.12	0.06
Educhighwife	0.82*** (0.01)	0.22	0.23
Educuniwife	2.11*** (0.02)	0.69	0.28
Caretaker	0.03*** (0.01)	0.006	0.004

Table 2.5.2.6 (cont'd)

GDP	0.00006*** (0.000003)	0.00001	0.28
YearDummy05	0.05*** (0.01)	0.01	0.01
YearDummy06	0.09*** (0.01)	0.02	0.03
YearDummy07	0.09*** (0.01)	0.02	0.03
YearDummy08	0.14*** (0.01)	0.03	0.04
Intercept	-4.85*** (0.10)		
Pseudo R2	0.20		

The results are consistent with our expectations. The last results also suggest that married women tend to participate in labor force even more in crisis year. Nevertheless, the higher positive marginal effect of 2008 year dummy relative to other year dummies on LFP of women is coming from neither unemployed husband nor underemployed husbands. Therefore, we can say that the thing that drives women into the labor force is the higher perception of unemployment risk for the husband. In other words, AWE is dominant in Turkey due to risk of unemployment of the household head.

2.5.3. Effect of 2001 Crisis on LFP of Wives: Analysis of the Two Periods Together

Figure 4.4 indicates that LFP of married women continues to increase in 2004-2008 period. This finding may occur as a result of increase in job opportunities for women or a persistent change in LFP behavior of married women due to 2001 crisis. Although the data sets of the two periods show differences in sample sizes, we pool both periods in order to see whether the crisis results with persistent change in LFP behavior of wives. To do this, we define a dummy variable "crisis", which is equal to 1 in post-crisis years, except 2008, as

it is also a crisis year, and 0 in 2000 and 2001, then we look whether the variable "crisis" is significant or not. The results for this regression are not presented. What we find is that the variable "crisis" is positively significant on LFP of wife which suggests that after 2001 crisis, married women choose to participate in labor force more. From this result, we can reach the fact that the crisis causes persistent increase in LFP of married women. This result may be a sign of increase in the job opportunities for females especially during the period 2004-2008.

2.6. Tobit Results

Similar to our probit estimations, we will do our tobit analysis for the periods 2000-2003 and 2004-2008 separately.

2.6.1. Period 2000-2003

In this section, we will study the increase in the percentage of employed married women, shown in figure 4.2, and increase in total hours of work done by the married women, shown in Table 4.1 in immediate post-crisis year can be explained by the reason of the job loss of the husband or by the underemployed husbands, or this increase is due to the effect of crisis. Table 6.1 shows the tobit results for each year separately.[15] , where the dependent variable is total hours of work done by married women.

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[15] The marginal effects and the coefficients in tobit regression are the same. Since the data contains more observations of out of labor force and unemployed married women, STATA could not calculate elasticities of the variables on total hours of work of married women in tobit regression since the data is censored. Thus, we do not present the elasticities for each year seperately.

Table 2.6.1.1: Tobit Regression Results for Period 2000-2003 (Dependent Variable: Total Hours of Work of Wife)

Explanatory Variables	2000	2001	2002	2003
Ageofhusband	7.77*** (0.91)	5.83*** (0.89)	4.98*** (0.93)	2.40*** (0.93)
Ageofhusbandsquared/100	-11.35*** (1.15)	-9.16*** (1.13)	-7.67*** (1.18)	-4.64*** (1.18)
Ageofwife	5.09*** (0.69)	5.69*** (0.69)	8.67*** (0.82)	11.78*** (0.85)
Ageofwifesquared/100	-6.96*** (0.92)	-7.56*** (0.92)	-12.12*** (1.12)	-16.10*** (1.16)
Child1	-21.64*** (1.24)	-22.04*** (1.23)	-23.46*** (1.22)	-21.85*** (1.23)
Child2	-9.63*** (0.81)	-9.58*** (0.81)	-11.33*** (0.83)	-13.93*** (0.86)
Child3	-3.62*** (1.15)	-4.30*** (1.15)	-5.90*** (1.18)	-7.36*** (1.21)
Educprimaryhusband	-6.69* (3.97)	-13.99*** (3.93)	-3.46 (4.45)	-6.74 (4.28)
Educmiddlehusband	-14.88*** (4.31)	-21.03 (4.23)	-10.94** (4.71)	-8.57** (4.54)
Educhighhusband	-12.32*** (4.20)	-21.61*** (4.16)	-11.24*** (4.63)	-13.41*** (4.49)
Educunihusband	-12.07*** (4.40)	-20.10*** (4.36)	-15.51*** (4.82)	-10.97*** (4.66)
Educprimarywife	10.89*** (2.25)	18.55*** (2.38)	17.64*** (2.39)	10.18*** (2.32)
Educmiddlewife	30.51*** (3.03)	32.15*** (3.12)	36.65*** (3.04)	28.46** (3.01)
Educhighwife	60.39*** (2.74)	62.69*** (2.85)	57.65*** (2.84)	48.20*** (2.76)
Educuniwife	110.57*** (3.30)	116.42*** (3.38)	112.51*** (3.34)	103.41*** (3.24)
Unemployment husband	16.24*** (4.72)	16.18*** (3.14)	8.08*** (2.53)	14.03*** (2.62)
Underemployment husband	2.86 (2.39)	-0.93 (2.56)	-9.17*** (2.84)	9.92*** (2.68)
Caretaker	7.14*** (1.79)	4.76*** (1.83)	6.42*** (1.73)	6.18*** (1.78)
Pseudo R2	0.08	0.08	0.06	0.07

To be able to conduct the tobit regression, the data is censored from the observations of the wives who work for 0 hours during the week in which the survey takes place. For the pre-crisis and crisis years, all of the explanatory variables, except the "underemployment husband" are found to be statistically significant in tobit regression, whereas in probit regression analysis we have

shown that the variable is significant for the 2000-2003 period. The reason why the underemployment of the husband is insignificant in the tobit regression unlike Maloney (1986) can be attributed to the fact that Turkey is a developing country where finding a job is more difficult than it is in a developed country. In other words, a married woman who participates in the labor force after the husband becomes underemployed, may not find job easily. Thus, our tobit results do not contradict with the significance of AWE. For the year 2002, underemployment husband is found to be negatively significant on the total hours of work of the wife, which implies as husband gets underemployed, wives tend to work less, which is not an expected result for the post-crisis year. On the other hand, if the husband is underemployed in 2003, we see that total hours of work of the wife increases, as it is expected. We can say that as the economic conditions in Turkey improve, married women who participate in labor force find job easier and work more.

If the husband is fired, AWE idea supports that the wife will tend to participate in the labor force more due to income loss in the household. The tobit regression results suggest that as a result of income loss of the husband, wives will work for more hours in a year with improved economic conditions. The marginal effect of whether the husband gets unemployed because of being fired or laid off on total hours of work done by the wife considerably decreases in year 2002. One of the reason for this result can be the fact that wives loose their jobs due to crisis in 2001, thus the unemployment reason of the husband does not affect the total hours of work done by the wife as much as we expect. Another explanation can be given by the existence of DWE. Recall that, from probit results, from Table 4.3, we have also seen that the marginal effect of the reason of

the job loss of the husband on LFP of wife decreases in 2002 relative to other years. Combining the probit results and tobit results, we can say that DWE due to income loss of the household head is seen largely in 2002 but AWE is still dominant over DWE, as the variable "Unemploymenthusband" is found to be positively significant on both LFP of wife and total hours of work of the wife.

For the period 2000-2003, the tobit regression results show us that number of children is negatively significantly related with hours of the wife works. As the number of children of the household increases, married women work for fewer hours. This effect is even higher if the age of the children gets smaller. As small children need more care, the decrease in the labor force participation of women if the children are small is a natural result. From this consequence, we can state that motherhood is an obstacle for women to work more. The significance of the variable "caretaker" supports our previous statement. The variable caretaker is found to be positively significant on total hours of work of wife. Tobit results indicate that marginal effect of having members in the household, who can take care of the children, increases in post-crisis years relative to the crisis year. This result implies that in the post-crisis years, wives will tend to work even more if there is a person in the household who can take care of the children. This may be a sign of the risk of the job loss of the husband forces the wife to work more, since after observing the crisis, wives work for more hours if there is a child care taker in the household, in other words, if they have a chance, they leave their motherhood duties, and become employed.

The regression results show that if the wives have some education they tend to work more. As the level of education they get increases, the hours of working done by the wife will rise. In contrast, as the level of education that the husband

gets increases, wives are less likely to work. This reason can be explained by the fact that as education level of husbands increase, husbands will more likely to become employed and earn income for the household, thus wives tend to work less to get more involved in their traditional, housewife roles.

Age of the husbands and wives are positively significant on the working hours of the wives for the whole period. This result implies that as the ages of the husband and wife increases, the wife in the household will more likely to work. The finding can be attributed to the fact that as the couples get older, since the children are growing up and since the needs of the children get bigger, the income of the household head may not be enough for them. As a result, the wife will tend to work more. However, after age of the couple reaches a peak point, total hours of work done by the wife decreases, which implies that after a certain age married women tend to work less.

To see the effect of the crisis and post-crisis years, we pool the data and introduce year dummies, we also introduce interaction terms of the variables "Unemploymenthusband" and "Underemploymenthusband". Both of the variables are interacted with year dummies, to see whether the change in the total hours of work by the married women can be explained by the reason of unemployment of the husband or whether the husband is underemployed or not in the year that the variables are interacted with. The pooled data tobit regression results are presented in Table 2.6.1.2.

Table 2.6.1.2: Pooled Sample Tobit Results

Explanatory Variables	Tobit Results (Dependent Variable:totalhoursofworkwife)
Age of Husband	5.53*** (0.45)
Ageofhusbandsquared/100	-8.57*** (0.58)
Ageofwife	7.39*** (0.37)
Ageofwifesquared/100	-10.08*** (0.51)
Child1	-22.26*** (0.61)
Child2	-11.04*** (0.41)
Child3	-5.15*** (0.58)
Educprimaryhusband	-7.70*** (2.07)
Educmiddlehusband	-13.72*** (2.22)
Educhighhusband	-14.59*** (2.18)
Educunihusband	-14.64*** (2.27)
Educprimarywife	14.44*** (1.16)
Educmiddlewife	32.17*** (1.52)
Educhighwife	57.30*** (1.40)
Educuniwife	110.83*** (1.65)
Unemployment husband	14.20*** (2.57)
Underemployment husband	10.40*** (2.62)
Caretaker	6.09*** (0.89)
Yeardummycrisis(=1 for 2000 and 2001)	-0.46 (0.71)
Yeardummy02(=1 for 2002)	2.98*** (0.81)
Unemployment husband*yeardummycrisis	1.49 (3.68)
Unemployment husband*yeardummy02	-5.24 (3.57)
Underemployment husband* yeardummycrisis	-9.98*** (3.14)
Underemploymenthusband*yeardummy02	-18.53*** (3.81)
Intercept	-289.32*** (7.88)
Pseudo R2	0.07

Unemployment husband and underemployment husband are both positively significant on total hours of work wife for the pooled sample. As husbands get laid off or fired or if the husbands are underemployed, wives tend to work more. The married women tend to work even more if the husband looses his job, since the marginal effect of unemployment husband is higher than the marginal effect of the underemployment of the husband.

Like in probit results, the year dummy for pre-crisis and crisis years is found to be insignificant whereas it is found to be significant for the year 2002, relative to year dummy for the year 2003. Thus the expected AWE is likely to be seen in 2002.

The interaction terms of the variables that show the reason of unemployment of the husband and the year dummies, are found to be insignificant for both crisis years and immediate post-crisis year relative to the year 2003. Thus, we can again conclude that whether the husband loses his job in crisis years or another year does not affect the total hours of work of wife. Therefore, we can say that the dominance of AWE is not seen because of crisis, it is seen due to income loss of the household.

In contrast, interaction of underemployment of the husband with both year dummies is found to be negatively significant relative to its interaction with 2003 year dummy. Thus, we can say that if the husband gets underemployed in crisis year, wives work less. They work even less in 2002, where the effects of the crisis are immediately seen. This result can be explained by two possibilities, the first one is the wives of underemployed husbands loose their jobs during the crisis, and the second one is they become discouraged due to their underemployed husbands and leave the labor force.

To analyze the effects of the risk of loosing the job of the household head, we restrict our sample to the households in which husbands are employed, and run the tobit regression accordingly. The results are presented in Table 2.6.1.3.

Table 2.6.1.3: Pooled Sample Tobit Results (Population: Households in which husbands are employed)

Explanatory Variables	Coefficients
Age of husband	5.15*** (0.48)
Ageofhusbandsquared/100	-8.02*** (0.62)
Ageofwife	6.34*** (0.39)
Ageofwifesquared/100	-8.42*** (0.54)
Child1	-21.67*** (0.63)
Child2	-11.50*** (0.43)
Child3	-5.90*** (0.62)
Educprimary husband	-7.26*** (2.43)
Educ middle husband	-13.55*** (2.57)
Educhighhusband	-14.30*** (2.53)
Educunihusband	-14.33** (2.61)
Educprimarywife	14.11*** (1.31)
EducmiddleWife	30.25*** (1.67)
Educhighwife	56.31*** (1.53)
Educuniwife	109.49*** (1.79)
Underemploymenthusband	9.84*** (2.55)
Caretaker	7.36*** (0.94)
Yeardummycrisis (=1 for 2000 and 2001)	-0.30 (0.74)
Yeardummy02(=1 for 2002)	2.88*** (0.84)
Underemploymenthusband*yeardummycrisis	-9.84*** (3.06)
Underemploymenthusband*yeardummy02	-18.04*** (3.71)
Intercept	-264.28*** (8.44)
Pseudo R2	0.07
N	115691

The tobit regression results reveal that wives of the employed husbands have tendency to work more in immediate post crisis year. Therefore, we can say that after observing the risk of job loosing of their husbands in crisis year, married women are likely to work more in post-crisis year. Another important finding that is not reported is, among the households in which husbands are employed, underemployment husband is found to be negatively significant in 2002 and positively significant in 2003. The expected positive impact of underemployment husband on total hours of work wife is seen in 2003. Similar to our probit results, as the risk of loosing job of the underemployed husband is observed in the crisis year the effect of that risk may be taken into account by the households in the post-crisis year, and the wife will work more when the husband is underemployed.

Since the effect of risk on working hours of the wives can be clearly seen in the households in which husbands are fully employed, i.e there is no observed risk due to being underemployed, like in the previous case, we pool the data and restrict the population in which households are employed, but not underemployed. The results are presented in Table 2.6.1.4.

Table 2.6.1.4: Tobit Results (Population: Households in which husbands are employed but not underemployed)

Explanatory Variables	Coefficients
Age of husband	5.12*** (0.50)
Ageofhusbandsquared/100	-8.02*** (0.64)
Ageofwife	6.33*** (0.40)
Ageofwifesquared/100	-8.37*** (0.55)
Child1	-21.38*** (0.65)
Child2	-11.64*** (0.45)
Child3	-6.30*** (0.64)
Educprimary husband	-8.08*** (2.66)
Educ middle husband	-14.55*** (2.79)
Educhighhusband	-15.24*** (2.75)
Educunihusband	-15.15*** (2.82)
Educprimarywife	13.79*** (1.39)
EducmiddleWife	30.17*** (1.74)
Educhighwife	56.07*** (1.60)
Educuniwife	108.75*** (1.84)
Caretaker	8.02*** (0.96)
Yeardummycrisis (=1 for 2000 and 2001)	-0.28 (0.73)
Yeardummy02(=1 for 2002)	2.87*** (0.84)
Intercept	-261.64*** (8.69)
Pseudo R2	0.07
N	115691

Table 2.6.1.4 reveals that total hours of work done by married women does not significantly differ from 2003 in pre-crisis and crisis years, but in 2002 it is found to be positively significant relative to 2003 among the households in which husband is employed. The expected increase in total hours of work done by wife due to AWE is largely seen in immediate post-crisis year. The increase in total

hours of work done by wife during 2002 can be explained by the perception that the risk of job loss of the husband has increased as a result of the crisis. We can conclude that even if the husbands are not underemployed, they are faced with the risk of losing their jobs in the crisis year. As a result of that risk, wives tend to work more in the post crisis year, after observing the risk of losing the job of the husband in the crisis year. Therefore, we can say that the thing that drives women into more hours of work is the higher perception of unemployment risk for the husband. The higher positive effect of 2002 year dummy relative to other year dummies on total hours of work done by married women is coming from neither unemployed husbands nor underemployed husbands.

2.6.2. Period 2004-2008

Figure 2.4.4 indicates that although labor force participation of women increases in 2008, married women are less employed relative to previous four years, however the mean of the hours of work of the wife increases in 2008 as Table 2.4.2 suggests. Although it seems as a contradicting result, in fact it may not, because extra hours work by the employed wives may increase the total hours of work done by the wife.

For this period, we introduce a new variable "GDP" which shows the GDP per capita value of the region that the household lives. We expect this variable to be positively significant on total hours of work done by the wife due to greater employment opportunities for women in more developed regions and due to the fact that married women are more educated in developed regions so employment opportunities for women in these regions are higher than they are in the other

regions. Table 2.6.2.1 presents the tobit regression results for the years 2004-2008.

Table 2.6.2.1: Tobit Results for Period 2004-2008 (Dependent Variable: Total Hours of Work of Wife)

Explanatory Variables	2004	2005	2006	2007	2008
Ageofhusband	4.11***	3.76***	5.61***	4.84***	5.08***
	(0.80)	(0.76)	(0.73)	(0.71)	(0.69)
Ageofhusbandsquared/100	-6.30***	-6.17***	-8.36***	-6.97***	-6.95***
	(1.01)	(0.96)	(0.91)	(0.90)	(0.97)
Ageofwife	10.05***	10.68***	8.47***	9.32***	8.99***
	(0.72)	(0.68)	(0.61)	(0.62)	(0.62)
Ageofwifesquared/100	-14.28***	-14.67***	-11.74***	-13.41***	-13.08***
	(0.98)	(0.93)	(0.82)	(0.84)	(0.83)
Child1	-23.48***	-22.26***	-24.75***	-25.71***	-23.71***
	(1.06)	(1.01)	(1.00)	(0.98)	(0.92)
Child2	-10.62***	-10.43***	-10.47***	-11.75***	-12.88***
	(0.72)	(0.68)	(0.66)	(0.66)	(0.65)
Child3	-3.28***	-5.22***	-5.02***	-3.47***	-3.75***
	(1.01)	(0.99)	(0.98)	(0.94)	(0.91)
Educprimaryhusband	1.35	-5.37*	-5.81*	-3.76	-8.09***
	(3.80)	(3.15)	(3.13)	(3.25)	(3.05)
Educmiddlehusband	-4.32	-9.70***	-9.63***	-4.92	-6.84**
	(4.02)	(3.39)	(3.35)	(3.43)	(3.22)
Educhighhusband	-6.73*	-13.08***	-12.01***	-10.94***	-11.53***
	(3.96)	(3.33)	(3.29)	(3.38)	(3.18)
Educunihusband	-7.00*	-10.67***	-11.29***	-11.45***	-17.20***
	(4.11)	(3.49)	(3.44)	(3.53)	(3.32)
Educprimarywife	13.34***	7.83***	11.97***	14.71***	17.08***
	(2.02)	(1.80)	(1.79)	(1.84)	(1.78)
Educmiddlewife	33.92***	25.97***	29.65***	29.82***	26.59***
	(2.59)	(2.38)	(2.34)	(2.35)	(2.28)
Educhighwife	55.27***	45.28***	47.73***	47.98***	51.15***
	(2.39)	(2.16)	(2.13)	(2.15)	(2.07)
Educuniwife	116.51***	103.77***	104.80***	107.33***	107.48***
	(2.86)	(2.60)	(2.54)	(2.55)	(2.43)
Unemployment husband	12.60***	7.86***	6.16***	9.26***	6.16***
	(2.53)	(2.54)	(2.63)	(2.57)	(2.39)
Underemployment husband	4.06	8.29**	8.25**	1.97	8.04**
	(2.76)	(4.35)	(3.89)	(4.58)	(3.99)
Caretaker	4.99***	2.89**	0.41	2.48**	0.29
	(1.40)	(1.34)	(1.33)	(1.31)	(1.28)
GDP	0.005***	0.004***	0.004***	0.003***	0.003***
	(0.0004)	(0.0004)	(0.0004)	(0.0004)	(0.0004)
Pseudo R2	0.07	0.07	0.06	0.07	0.07

Tobit regression results show that the "underemployment husband" is found to be statistically significant in 2004 and 2007, whereas probit regression results

suggest that the variable is significant for both of these years. The reason can be explained by the fact that Turkey is a developing country where finding a job is more difficult than it is in a developed country. In other words, a married woman who participates in the labor force after the husband becomes underemployed, may not find job easily. The variable is found to be significant in the crisis year, however the marginal effect of the husband being underemployed or not is small relative to the years 2005 and 2006. Therefore, we can say that what cause women to work more in crisis year are not the underemployed husbands.

Table 2.6.2.1 reveals that as a result of income loss of the husband, wives will work for more hours in years 2004-2008. The marginal effect of whether the husband gets unemployed because of being fired or laid off has its highest value in year 2004. The effect decreases in the following two years, increases a bit in 2007, and return to its 2006 value in crisis year. Thus, we can say that whether the husband is fired or laid off is not a determinant that has a consistent significant effect on wife's work hours.

For the period 2004-2008, the tobit regression results show that number of children is negatively significantly related with hours of the wife works. As the number of children of the household increases, married women work for fewer hours like the case in 2000-2003 period. This effect is even higher if the age of the children gets smaller. As small children need more care, the decrease in the labor force participation of women if the children are small is a natural result. From this result, we can state that motherhood is an obstacle for women to work more in this period too. The significance of the variable "caretaker" supports our previous statement for the years 2004, 2005 and 2007. The variable "caretaker" is found to be positively significant on total hours of work of wife in these years. However, in

2006, and in the year of crisis the variable is found to be insignificant as they are found to be in probit regressions. The insignificance of the number of household members who can take care of the children on wife's total hours of work can be explained by the wife's need to work due to negative income effects of the crisis on household. In other words, the burden of the crisis on the household is so high that married women with children do not care whether there are experienced members in the household who can look after the children or not and they choose to work more, their role as breadwinner is one step further than their role as mother. In Table 6.1, we see that in another crisis year, in 2001, despite being significant, the marginal effect of the variable "caretaker" on total hours of work done by the wife has its smallest value among those four years in period 2000-2003. This result also supports the idea that in crisis years the primary objective of the married women with children is to work more to minimize the burden of the crisis.

The regression results show that if the wives have some education they tend to work more. As the level of education they get increases, the hours of working done by the wife will rise, as the marginal effect of the wife has university degree or higher, is highest among all the education variables for the whole period. In contrast, as the level of education that the husband gets increases, wives are less likely to work. This reason can be explained by the fact that as education level of husbands increase, husbands will more likely to become employed and earn income for the household, thus wives tend to work less to get more involved in their traditional, housewife roles.

Age of the husbands and wives are positively significant on the working hours of the wives for the whole period. This result implies that as the ages of the

husband and wife increases, the wife in the household is more likely to work. The finding can be attributed to the fact that as the couples get older, since the children are growing up and since the financial needs of the children are increasing, the income of the household head may not be enough for them. As a result, the wife will tend to work more. Moreover, the variables $(ageofhusband)^2/100$ and $(ageofwife)^2/100$ are found to be negatively significant, which implies that as the couples get older, the wife works for more hours, but after reaching a "peak" level of age, the hours of work done by the wife starts to decrease. This is a sensible result since the work efficiency of the wife may decrease after a certain age so they choose to work less after that age.

Lastly, the new variable GDP is found to be positively significant as it is expected. In other words, as the GDP per capita of the region that the household lives in increases, the hours of work done by married women increase as well owing to greater employment opportunities in more developed regions

To see the effect of the crisis and pre-crisis years, we pool the data and introduce year dummies, we also introduce interaction terms of the variables "Unemploymenthusband" and "Underemploymenthusband". Both of the variables are interacted with year dummies, in order to see whether the change in the total hours of work by the married women can be explained by the reason of unemployment of the husband or whether the husband is underemployed or not in the year that the variables are interacted with. The pooled data tobit regression results are presented in Table 2.6.2.2.

Table 2.6.2.2: Pooled Sample Tobit Results

Explanatory Variables	Tobit Results (Dependent Variable:totalhoursofworkwife)
Age of Husband	4.72*** (0.33)
Ageofhusbandsquared/100	-6.99*** (0.41)
Ageofwife	9.39*** (0.29)
Ageofwifesquared/100	-13.29*** (0.39)
Child1	-24.01*** (0.44)
Child2	-11.21*** (0.30)
Child3	-4.10*** (0.43)
Educprimaryhusband	-4.73*** (1.45)
Educmiddlehusband	-7.27*** (1.54)
Educhighhusband	-11.09*** (1.51)
Educunihusband	-11.93*** (1.58)
Educprimarywife	13.03*** (0.82)
Educmiddlewife	28.96*** (1.06)
Educhighwife	49.32*** (0.97)
Educuniwife	107.64*** (1.15)
Unemployment husband	11.75*** (2.45)
Underemployment husband	3.41 (2.66)
Caretaker	2.12*** (0.59)
GDP	0.004*** (0.0002)
Yeardummy05(=1 for 2005)	2.34*** (0.66)
Yeardummy06(=1 for 2006)	4.33*** (0.65)
Yeardummy07(=1 for 2007)	4.36*** (0.65)
Yeardummy08(=1 for 2008)	6.87*** (0.64)
Unemployment husband*yeardummy05	-4.08 (3.49)
Unemployment husband*yeardummy06	-5.58 (3.58)
Unemployment husband*yeardummy07	-2.15 (3.57)
Unemployment husband*yeardummy08	-5.01 (3.47)

Table 2.6.2.2 (cont'd)

Underemployment husband* yeardummy05	5.18 (5.04)
Underemploymenthusband*yeardummy06	4.97 (4.69)
Underemploymenthusband*yeardummy07	-0.98 (5.34)
Underemploymenthusband*yeardummy08	5.00 (4.90)
Intercept	-320.01*** (4.81)
Pseudo R2	0.07

Whether the husband is laid off or fired is found to be positively significant on total hours of work wife for the pooled sample, whereas the underemployment of the husband is found to be insignificant. As we expect when husbands get laid off or fired wives tend to work more. However, in contrast to Maloney (1986) whether the husband is underemployed or not do not affect the total hours of working of married women, which is not a surprising result for a developing country where finding a job or increasing work hours for an individual is difficult even though she chooses to participate in labor force.

The year dummy variables for pre-crisis and crisis years are found to be significant relative to year dummy for the year 2004. The total hours of the work done by the wife increases during the 2004-2008 period. But, the increase is highest in crisis year as the marginal effect for the year dummy 2008 has its highest value relative to other year dummies. Therefore, in crisis years married women tend to work for more hours. Combining the probit results and tobit results of these periods, we can say that AWE is highly seen in crisis year in Turkey.

The interaction terms of the variables that show the reason of unemployment of the husband and the year dummies, are found to be insignificant for both crisis and pre-crisis year relative to the year 2004. Thus, we can again conclude that whether the husband loses his job in crisis years or another year does not affect

the total hours of work of wife. Thus, we can say that the dominance of AWE is not seen because of the unemployment of the husband in crisis year, it is seen due to income loss of the household. This finding also supports that the dominance of AWE may also be seen due to risk of loosing job, which will be tested in the following regression analysis.

Likewise, interaction of underemployment of the husband with the year dummies is found to be insignificant relative to its interaction with 2004 year dummy. Therefore, we can conclude that whether the husband is underemployed in crisis year or in another year does not affect the total hours of work of wife

To analyze the effects of the risk of loosing the job of the household head, we restrict our sample to the households in which husbands are employed, and run the tobit regression accordingly. The results are presented in Table 2.6.2.3.

Table 2.6.2.3: Pooled data tobit results (Population: Households in which husbands are employed)

Explanatory Variables	Tobit Results (Dependent Variable:totalhoursofworkwife)
Age of Husband	3.67*** (0.35)
Ageofhusbandsquared/100	-5.51*** (0.45)
Ageofwife	8.68*** (0.31)
Ageofwifesquared/100	-12.10*** (0.43)
Child1	-23.13*** (0.45)
Child2	-11.23*** (0.31)
Child3	-4.36*** (0.46)
Educprimaryhusband	-2.89*** (1.77)
Educmiddlehusband	-5.57*** (1.86)
Educhighhusband	-9.03*** (1.83)
Educunihusband	-9.57*** (1.89)
Educprimarywife	12.90*** (0.92)

Table 2.6.2.3 (cont'd)

Educmiddlewife	27.73***
	(1.16)
Educhighwife	48.10***
	(0.97)
Educuniwife	105.66***
	(1.24)
Underemployment husband	2.33
	(2.65)
Caretaker	2.73***
	(0.63)
GDP	0.003***
	(0.0002)
Yeardummy05(=1 for 2005)	2.27***
	(0.68)
Yeardummy06(=1 for 2006)	4.31***
	(0.68)
Yeardummy07(=1 for 2007)	4.11***
	(0.67)
Yeardummy08(=1 for 2008)	6.48***
	(0.67)
Underemployment husband* yeardummy05	5.42
	(5.18)
Underemploymenthusband*yeardummy06	5.54
	(4.72)
Underemploymenthusband*yeardummy07	1.09
	(5.38)
Underemploymenthusband*yeardummy08	5.29
	(4.92)
	-290.20***
Intercept	(6.20)
Pseudo R2	0.07

The tobit regression results reveal that wives of the employed husbands have tendency to work more in the whole period relative to 2004, and the increase in total hours of the work done by the married women whose husbands are employed is largely seen in the crisis year, as the marginal effect for the year dummy for 2008 is highest. Therefore, we can say that observing the increased risk of job loss of their husbands in crisis year, married women are likely to work more. The underemployment of the husband does not appear to have a different effect on wife's work hours across years.

Lastly, we pool the data and restrict the population in which households are employed, but not underemployed to see the exact effect of the crisis on total

hours working of women with no extra cases in the household, such as underemployed husbands. The results are presented in Table 6.8.

Table 2.6.2.4 Tobit Results (Population: Households in which husbands are employed but not underemployed)

Explanatory Variables	coefficients
Age of husband	3.65*** (0.35)
Ageofhusbandsquared/100	-5.51*** (0.45)
Ageofwife	8.69*** (0.31)
Ageofwifesquared/100	-8.37*** (0.55)
Child1	-23.04*** (0.45)
Child2	-11.23*** (0.32)
Child3	-4.47*** (0.46)
Educprimary husband	-2.78 (1.82)
Educ middle husband	-5.46*** (1.90)
Educhighhusband	-9.03*** (1.87)
Educunihusband	-8.64*** (1.93)
Educprimarywife	12.93*** (0.94)
EducmiddleWife	27.78*** (1.17)
Educhighwife	48.19*** (1.08)
Educuniwife	105.78*** (1.26)
Caretaker	2.82*** (0.63)
GDP	0.003*** (0.0002)
Yeardummy05 (=1 for 2005)	2.27*** (0.68)
Yeardummy06(=1 for 2006)	4.30*** (0.68)
Yeardummy07 (=1 for 2007)	4.11*** (0.67)
Yeardummy08 (=1 for 2008)	6.47*** (0.67)
Intercept	-290.07*** (6.25)
Pseudo R2	0.07
N	199377

Table 2.6.2.4 reveals that total hours of work done by married women increases over the period 2005-2008 relative to the year 2004. The expected increase in total hours of work done by wife as a result of AWE is largely seen crisis year as the marginal effect of year dummy for the year 2008 on total working hours of the married women is highest. For the sake of convenience, we run classical F-test to see whether the differences between the coefficients of the year dummy for 2008 and the year dummies for the remaining years are equal to zero or not. We find that the differences between the year dummy coefficients are not equal to zero. Hence, we can surely conclude that the marginal effect of the year dummy for the crisis year is significantly different from the other years and it is the largest among these five years. Therefore, we can confidently say that increase in total hours of work done by married women is seen largely in the crisis year. The increase in total hours of work done by wife during 2008 can be explained the observed risk that the husband can loose his job in the crisis year. We can conclude that even if the husbands are not underemployed, they face with the risk of losing their jobs in the crisis year. As a result of that risk, wives tend to work more in crisis year. Therefore, we can say that the thing that drives women into more hours of work is the higher perception of unemployment risk for the husband. The higher positive effect of 2008 year dummy relative to other year dummies on total hours of work done by married women is coming from neither unemployed husband nor underemployed husbands.

2.6.3. Effect of 2001 Crisis on Total Hours of Work of the Wives Analysis of the Two Periods Together

Like in the probit regression analysis, in order to see whether crisis results with persistent increase in total hours of work of the wife, we define a dummy variable "crisis", which is equal to 1 in post-crisis years, except 2008, since it is also a crisis year, and 0 in 2000 and 2001, then we look whether the variable "crisis" is significant or not. The results for this regression are not presented. What we find is that the variable "crisis" is positively significant on total hours of work of wife which suggests that after 2001 crisis, married women choose to participate in labor force more. From this result, we can reach the fact that the crisis causes persistent increase in total hours of work of married women. This result may be a sign of increase in the job opportunities for females especially during the period 2004-2008.

2.7. Sensitivity Analysis

In probit models the dependent variable that shows the labor force participation of women and the independent variables, the number of children in the household may cause endogeneity problems, as labor force participation decision of the married women may affect the number of children that they make. Likewise, in tobit models we may also face with endogeneity problems as total hours of working of married women may determine the number of children that they have. Therefore, in this section we run the previous regressions again without having any children variables as the explanatory variables. The results are not presented.

When we exclude the variables that show the number of children in different age groups in the household, our results do not change. For the period that contains the years 2000-2003 AWE is largely seen in immediate post-crisis year, in which DWE is also seen, however AWE is dominant over DWE. For the period, 2004-2008 LFP of married women and total hours of work done by married women increase during this period. The largest increase is seen in the crisis year 2008.

2.8. Conclusion

This thesis examines the significance of AWE in Turkey for the years 2000-2008. The most important finding of this paper is the fact that in Turkey, a developing country, the AWE is dominant over DWE. Wives do not become discouraged as a result of job loss of the husbands, instead they tend to work more. This result can be attributed to the fact that income loss of the household head will result with more poverty in a developing country.

Due to the differences in the data set, we divide the whole period into two different periods. For the first period which contains the years 2000-2003, we examine the significance of AWE in 2001 crisis. We find that the expected AWE is seen in immediate post crisis year, rather than the crisis year. Married women tend to participate in labor force more and similarly, they tend to work for more hours in immediate post-crisis year, rather than the crisis year.

The fact that husband is underemployed, and whether the husband is laid off or fired affects the labor force participation of married women. In other words, the income loss of the household head or insufficient incomes of the household head

due to being underemployed forces women to participate in labor force more. Whether the husband looses his job or is underemployed in crisis year or in another year does not matter for the women's labor force participation decision. The married women choose to participate in labor force more whenever the household faces an income loss. Likewise, the job loss of the husband causes married women to work more, but whether the husband is underemployed or not do not affect married women's working hours in pre-crisis and crisis years. In fact, this is not a surprising result as Turkey is a developing country where finding job is not easy as soon as an individual participates to the labor force.

The significant increases in labor force participation and total hours of work of married women in 2002 are likely to have occurred as a result of risk of income loss of the household due to the 2000-2001 financial crisis as the pooled data where data is restricted to employed and not underemployed husbands results suggest. We observe that the risk of the job loss of the household head drives wives into the labor force more and causes them to work more in the households in which the husbands are employed.

For the period that contains the years 2004-2008. AWE is also found to be significantly dominant. During this period, there is an increase in both labor force participation of married women and total hours of work of them. The increase in both of the variables is largely seen in the crisis year, 2008. As in the results of 2000-2003 period, whether the husband is fired or laid off in crisis year or in another year does not have a differential impact on the labor force participation decision or work hours of wives. Our results are similar when husband is underemployed. The married women choose to participate in labor force more whenever the household are faced with income loss but the effect of this loss does

not vary significantly across years. The increase in LFP of women is higher in this period relative to the period 2000-2003. This result can be a consequence of increase in job opportunities for females in this period relative to the period 2000-2003.

The significant increase in labor force participation and total hours of work of married women in 2008 are likely to have occurred as a result of risk of income loss of the household due to existing crisis. In fact when we restrict our sample to wives whose husbands are employed we see that married women tend to participate in labor force more and they tend to work more in immediate post crisis year. Hence, we argue that the risk of the job loss of the household head drives wives into the labor force more and causes them to work more.

Another important result that the thesis finds that motherhood seems to be an obstacle for women to participate in labor force or to work more. The results show that if married women can leave their small children to another people, the labor force participation of women may significantly increase. To increase the labor force participation of women the government and Non-Governmental Organizations (NGOs) can implement some policies. For instance, the government can establish kindergartens in the certain regions of the provinces, and mothers can leave their small children there. This policy may help women to be included in labor force more and it will give employment opportunities to young women since they can work as a nurse or teacher in those kindergartens. However, it is difficult for the policy to be applied only by government, especially in large provinces, as it will cause high budget deficits. Thus, NGOs such as AÇEV (Mother Child Education Foundation) and similar foundations may play important role for applying such policies.

Finally, the thesis shows us that education is really an important phenomenon for the women to participate in labor force and to work for more hours. A university graduate woman has more opportunity to find a job in Turkey. Thus, the families should not ignore the education needs of the girls. Moreover, the campaigns such as "Haydi Kızlar Okula" should be supported by NGOs and governments.

In conclusion, generally women do not become discouraged as a result of the income loss of the household, they tend to search for job more and they will likely to work more. However, their traditional roles and the low education levels are obstacle for them to participate in labor force more and to work more. Thus, the obstacles should be minimized by applying sensible policies for women in order to be seen in labor force more.

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