

# Trends in Long-Term Unemployment and Determinants of Incidence of Long-Term Unemployment in Turkey

H.Mehmet Taşçı\* & Ali Rıza Özdemir\*\*

**Abstract.** Long-term unemployment, defined as people continuously out of work for a year or over (or for more than six months with another definition) has been one of the most disturbing factors for the labor market performance, the economy, in general as well as for the individual and social well-being. This paper examines the factors that has effect on the incidence of long-term unemployment in Turkey using individual level data taken from Household Labor Force Surveys of 2000 and 2001 and probit model with two-step estimation procedure that considers the sample selection problem. The results show that differences in individual and labor market characteristics such as gender, age, education, residency, region, status in the household and profession have importance in determining the incidence of long-term unemployment. In fact, being female, older and unemployed, having a degree lower than university and living in rural area increases the probability of being long-term unemployed, while being head of household reduces it.

**JEL Classification Codes:** J41, J64.

**Keywords:** Long-term Unemployment, Sample Selection, Gender, Turkey.

## 1. Introduction

Long term unemployment (LTU), defined as people continuously out of work for a year or over (or for more than six months with another definition) has been one of the most disturbing factors for the labor market performance, the economy, in general as well as for the individual and social well-being (OECD, 2002). Unemployment, particularly LTU, in fact, is the

---

\* Department of Econometrics, Balikesir University, Bandirma/Balikesir, TURKEY. E-mail: [mtascil@yahoo.com](mailto:mtascil@yahoo.com)

\*\* Department of Public Finance, Balikesir University, Bandirma/Balikesir, TURKEY. E-mail: [arozdemir@hotmail.com](mailto:arozdemir@hotmail.com)

main cause for the loss of earnings and deterioration of individuals' skills and abilities (i.e. human capital loss), and consequently a fall in the probability of receiving a new job offer (Lynch, 1989; Vishwanath, 1989; Foley, 1997; Arulampalam 2001 and Arulampalam et al., 2001). LTU is also one of the causes for the loss of individuals' motivation "necessary to engage in job-search" (Price et al., 2002, p.304) and work, depression, poor health, divorce, alienation from society, drug addiction, crime, and even suicide (Sinclair, 1987; Lynch, 1989; Bulutay, 1996; and Price et al., 2002). LTU with these effects makes the long-term unemployed "less effective in reducing wage pressure thereby causes a rise in overall unemployment rate itself" (Machin and Manning (1998:1) and macro economic imbalances such as budget deficits and high debt burden (Cameron, 1978, Hicks and Swank 1992, Partridge and Rickman 1998, and Garret, 2000).

Long term unemployment with serious consequences has also a market rise trend in recent decades and is at high level currently in many European (Machin and Manning, 1998)<sup>1</sup> and OECD countries (OECD, 2002), and perhaps regardless of the development level in many other countries of the world as well. For instance, in OECD countries, the rate of unemployment has been about 6.85 percent between the years 1995 and 2004, about 32.27 percent of it is unemployed over 12 months or longer. These statistics also vary widely from gender to gender, age to age as well as country to country. For instance, it ranges between 2.0 (1.4) percent and 61.8 (62.4) percent among prime aged males (females), while it varies between 0.5 (0.9) percent and 57.3 (59.1) percent for young males (females) among OECD countries (OECD Database, 2005). As indicated with the relevant statistics, the problem of long term unemployment that has recently become more acute and variant country to country has attracted a particular attention in international literature both theoretically and empirically (Patton and Donohue, 1998; Partridge and Rickman, 1998; Layard, 1997; Kokko et al., 2000; Chapman and Kapusciski, 2000; Obben et al., 2002 and etc.).

To best of our knowledge, however, there does not exist many studies to investigate the important causes of this problem in literature using Turkish case<sup>2</sup>. This study therefore aims to contribute to the literature by

---

<sup>1</sup> The high proportion of the unemployed who have been unemployed for a long period of time is in fact, stated as one of the distinctive features of many current European labor markets (Machin and Manning, 1998:1).

<sup>2</sup> In Turkey, although studies such as Bulutay (1996), Gürsel and Ulusoy (1999), Tunali (2003), Tansel and Tasci (2004) are done on the unemployment problem at the micro level, none of them focused on the incidence of the long-term

investigating real causes of long-term unemployment at individual level using Turkish data for household labor statistics. For this aim, we examine the recent trends in long-term unemployment in the country on its own and on comparison with the OECD countries. We then plan to use probit model with the Heckman (1979)'s two-step estimation procedure in which takes the sample selection problem into account. The factors, such as residency, gender, marriage, region, education, profession, age, the rate of unemployment and the type of work are tested carefully in determining LTU in Turkey.

The study proceeds as follows. The data and its sources and measurement are discussed in the next section. The recent trends on long-term unemployment in Turkey are discussed in section 3 and compared with the data of some of the OECD countries in Section 4. The econometric model is presented in section 5. The estimation results are provided in section 6. Concluding remarks and some policy implications are given in the final section.

## 2. Data

Turkish Household Labor Force Survey (HLFS), which is carried out by the Turkish Statistical Institute (TUIK), is the main source of data for this study. This survey has been conducted on a quarterly basis since 2000 with about 23,000 households in every round<sup>3</sup>. The data taking out of this survey is good representative of the population and provides rich information about all the members of the household. Thus, in this study we use this data set, we were however be able to get the period that starts with the first quarter of 2000 and ends with the the second quarter of 2001.<sup>4</sup>

In measuring unemployment, we count the individuals who were above 14 years of age and satisfy the following three decisive factors simultaneously: not employed during the reference period, have used at least one of the job search channels for seeking a work during the last three months and available to start job in two weeks (SIS, 2001a:XXIV).

---

unemployment in Turkish labor market.

<sup>3</sup> Prior to this date, it was conducted two-times in a year, in April and October, in the period between 1988 and 1999 (SIS, 2001a,b).

<sup>4</sup> Q3 of 2000 not included due to unavailability at the TUIK when this study was conducted

Specifically, for the long-term unemployment, we use the conventional definition that is mostly accepted by OECD countries covers all individuals who have been searching for a job twelve months or over - (OECD, 2002, Employment Outlook). We refer to this definition of long-term unemployment definition as the “narrow definition.” As Partridge and Rickman (1998) did, we also use a broader definition. “Broad definition” of long-term not only includes the individuals who have been searching for a job twelve months or over but also individuals who have been looking for a job between six months and twelve months. In the empirical application part of this study we use both definitions of long-term unemployment to see whether there are significant differences. The main variables in explaining long-term unemployment have also been taken from the same data source and defined in Appendix 1.

### **3. Trends in the Long-Term Unemployment in Turkey**

Trends in macroeconomic performance and demographic and social characteristics of labor force shed some light on long-term unemployment in Turkey. This country’s economic performance; growth rates of productivity and Gross Domestic Product (GDP) over the period between 1988 and 2004, is shown in Figure 1. This figure shows that there are four deep down rates of growth in GDP over this period. The first one is in 1991 and is due to the negative effects of Gulf War. The second one is in 1994 and is related to governments handling of public sector borrowing. The third negative rate of negative GDP growth is because of Russian economic crisis and earthquakes happened in Turkey in 1999. The last dramatic fall in GDP happened in 2001 with the collapse of financial markets (Tunalı, 2003).

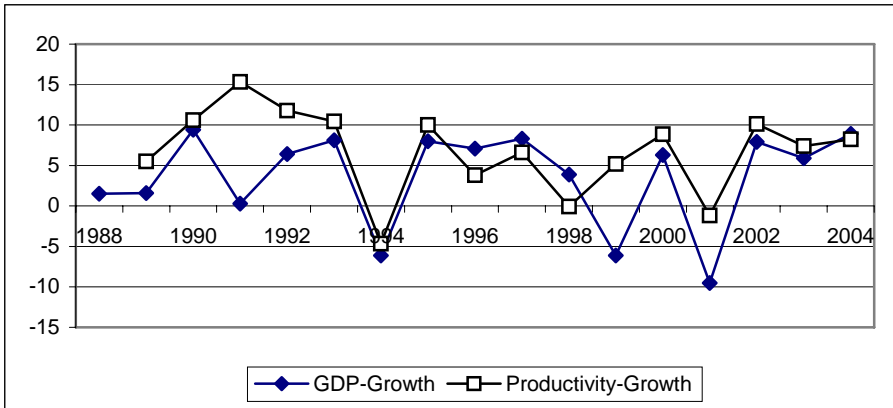
The trends on unemployment rates by age and gender show some stability (see Figure 2) however. For instance, unemployment rates for young males (i.e. 15-24) and prime-aged (i.e. 25-54) males and females have been relatively stable for the most part of the period of 1988 and 2004. In addition, young individuals, regardless of being male or female, have always larger unemployment rates than the prime-aged individuals and females as well throughout the period. Moreover, the rate of unemployment for both prime-aged males and females is very close to each other and move together, particularly between the period of 1990 and 2000. The trends in long-term unemployment over the same period follow quite different path from the previous trends (see Figure 3). That is, long-term unemployment has a decreasing tendency until 2000, albeit it has some fluctuations than after.

Also, long-term unemployment for both young and prime-aged individuals runs larger for females than for males over the sampling period. In addition, the proportion of the long-term unemployed for prime-aged individuals is larger than the values for early-aged individuals in most cases.<sup>5</sup>

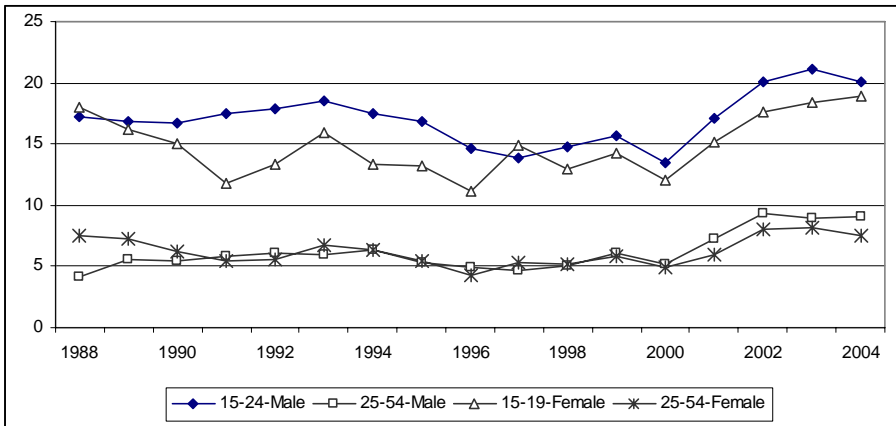
---

<sup>5</sup> Similar results are also observed for OECD countries by Machin and Manning (1999) and in OECD Employment Outlook (2002). Further, it is worth to mentioning that in the years between 1999 and 2000, the proportion of the long-term unemployed individuals declined by a considerable amount. This decrease however can be due to the change in the definition of unemployment, rather than the changes in the economic conditions. Indeed, until 2000 an individual were accepted as an unemployed if he or she used one of the job search method within the last six months. For international comparison purposes this criterion changed by the TUIK in 2000. After 2000 an individual were accepted as an unemployed if he or she used one of the job search method within the last three months. The effects of this change on the rate of unemployment can not be calculated from the “macro” level data provided by TUIK on the website. However, one can calculate the approximate effect by using the “raw” data. For example, the computed unemployment rate with the new definition were 8.85 and 9.16 in the first quarters of 2000 and 2001, respectively. Whereas the rate of unemployment with the old definition were 10.58 and 10.18 in the same period, in the same order.

**Figure 1: Trends in GDP and Productivity Growth, 1988-2004<sup>6</sup>**



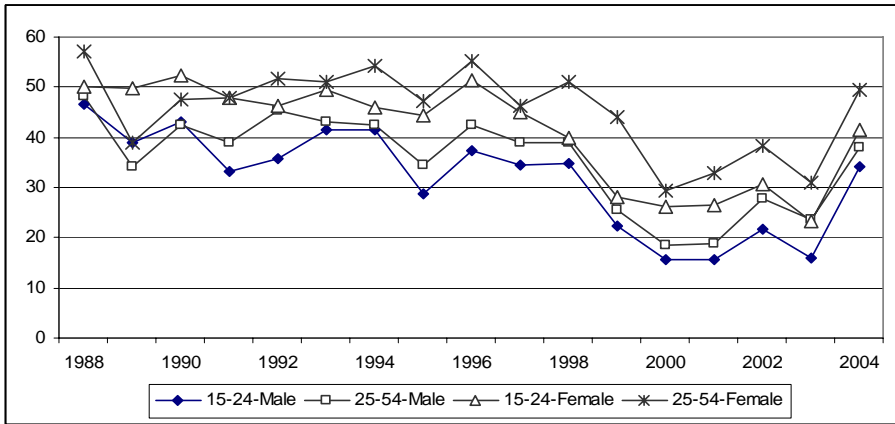
**Figure 2: Trends in Unemployment by Gender and Broad Age Group, 1988-2004<sup>7</sup>**



<sup>6</sup> Computed from the website of “Turkish Treasury”, i.e. see: [www.hazine.gov.tr](http://www.hazine.gov.tr).

<sup>7</sup> The values for 2004 are computed from OECD’s database, 2005.

**Figure 3: Trends in Long-Term Unemployment by Gender and Broad Age Group, 1988-2004<sup>8</sup>**



A careful comparison of movements in GDP, unemployment and long-term unemployment leads to a couple of important remarks. First, the effects of early economic crises in Turkish economy, i.e. the crisis of 1991 and 1994, are not seen in the unemployment rates of both males and females, nor are they seen in the proportion of the long-term unemployed among the unemployed individuals, except for prime-aged women in 1994. However, regardless of gender and age the latest crises, i.e. the crisis of 1999 and 2001, seem to have obvious positive effects on the unemployment rates. Likewise, starting from the prime-aged women, the incidence of the long-term unemployment for all groups seems to increase between 2000 and 2002. For instance, it increased from about 15.7 (18.5) percent to 21.67 (27.86) percent for young (prime-aged) males and from about 26.1 (29.4) percent to 30.7 (38.3) percent for the young (prime-aged) females. In the year 2004, although Turkish economy grew about 10 percent,<sup>9</sup> there was not much of a fall in the unemployment rates in general.<sup>10</sup> As a matter of fact, there was a large increase in the incidence of long-term unemployment of all individuals of all age groups. The higher rate of productivity growth in the recent years may explain why GDP and unemployment in both general and long-term rise at the same. When productivity increases labor is substituted with capital more and cause higher GDP growth but more unemployment.<sup>11</sup>

<sup>8</sup> The values for 2004 are computed from OECD's database, 2005.

<sup>9</sup> It is the highest growth rate among the OECD countries (OECD, 2005:1).

<sup>10</sup> Unemployment rate for young female even seems to increase during this year.

<sup>11</sup> Although this relation suggested by the theory is important it is not applicable for

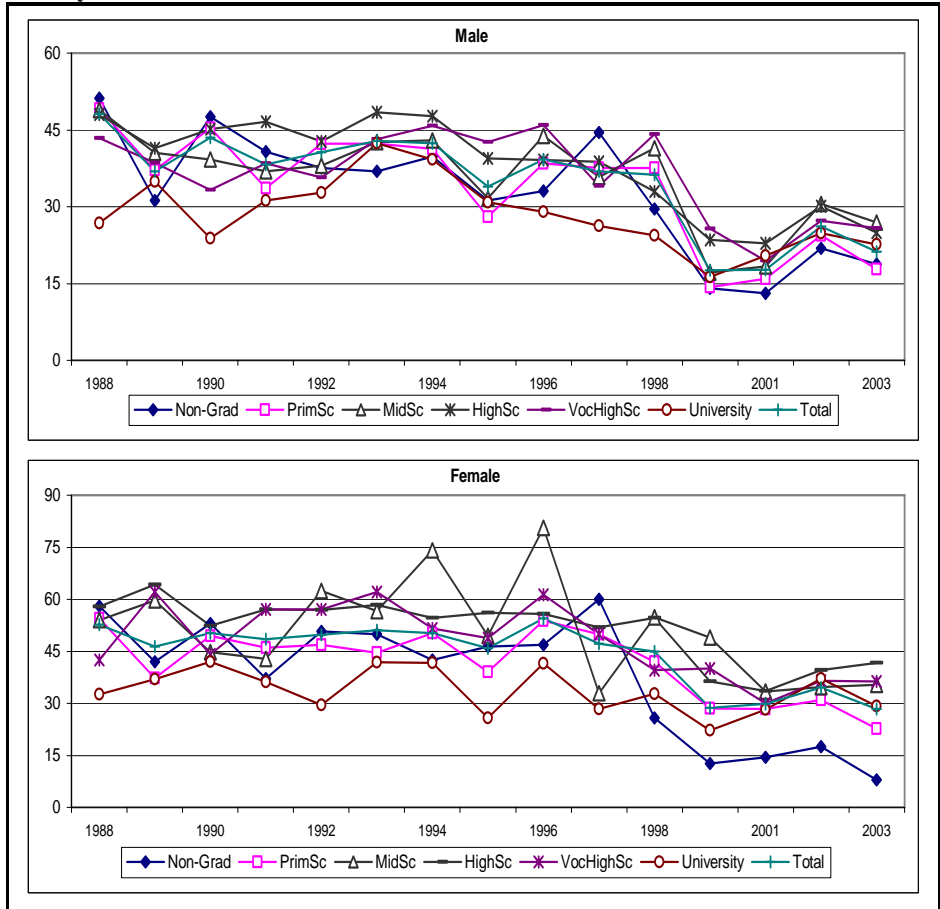
The incidence of the long-term unemployment by education level for both males and females over the period between 1988 and 2003 in Turkey<sup>12</sup> is shown in Figure 4. It seems that, regardless of education level, there is a general declining tendency in the proportion of the long-term unemployed. The tendency is more remarkable for the non-graduates starting with a highest level then ending with a lowest one. The incidence of the long-term unemployment for the non-graduates decreases from 51.21 percent to 18.8 percent for men and from 58.08 percent to 7.99 percent for women over the sampling period (see SIS Database, 2004). The incidence of LTU for female is the lowest one for the university graduates until 1998, after this year, the same is observed for the non-graduates. Similarly, prior to 1999, university graduated males in most of the observation period, have the lowest incidence of LTU but starting with this year the lowest values are observed for the non-graduates and primary school graduates. Furthermore, during the period we examined, regardless of being male or female, the incidence of LTU is mostly higher than the country average for both high and vocational high school graduates.

---

our analysis. Because for an empirical analysis at the individual level accounting productivity effect requires separate productivity measure each individual that is almost impossible.

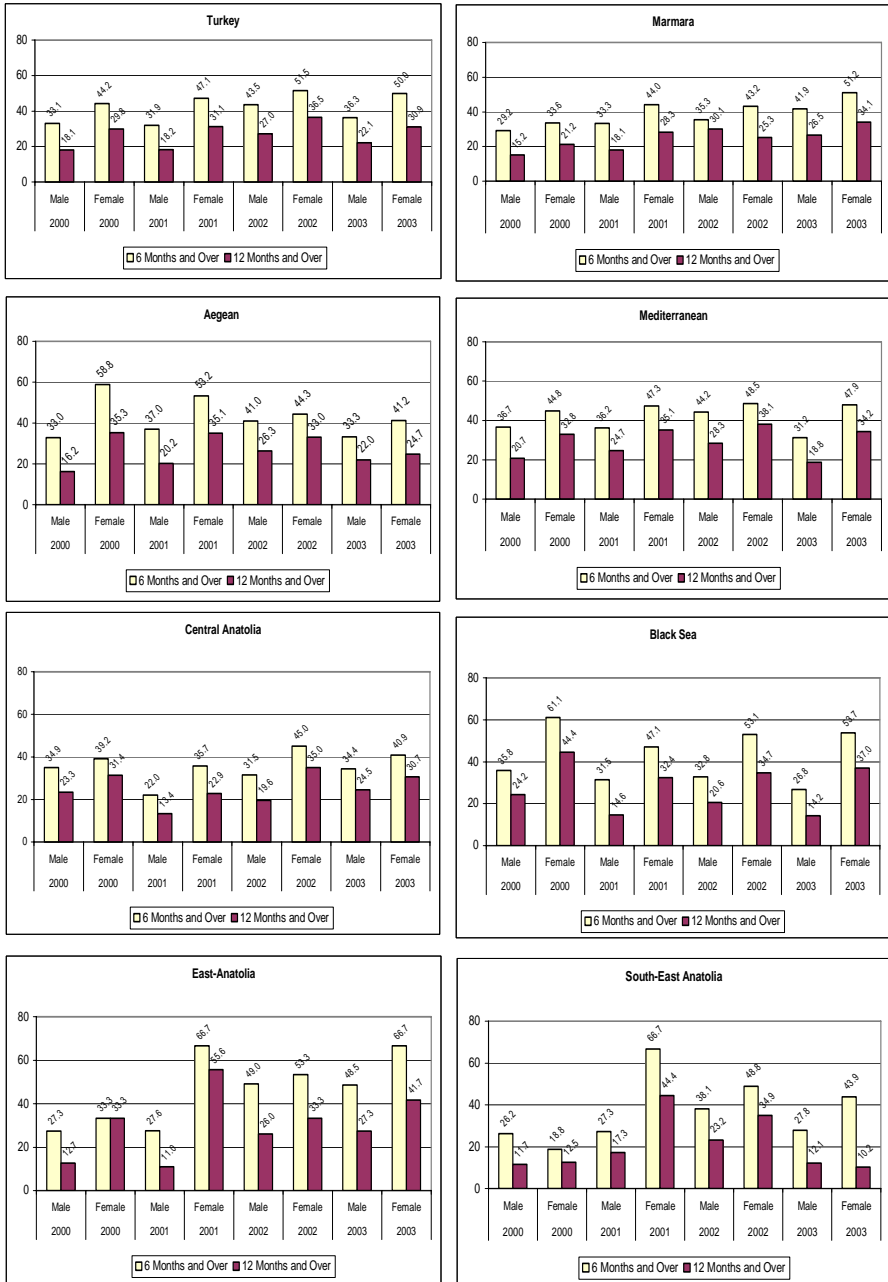
<sup>12</sup> Since the duration data by education for the young individuals are not available we could not consider the young separately.

**Figure 4: Proportion of the Long-Term Unemployed by Education Level:  
Turkey 1988-2003**



Source: Taşçı, 2005.

**Figure 5: Incidence of LTU by Geographical Region under Different Definitions, 2000-2003**



The incidence of LTU with respect to geographical regions of Turkey for the years between 2000 and 2003 is shown in Figure 5, but now employing two alternative definitions of LTU, namely “broad” and “narrow” definitions. It is clear from this figure that for most of the observed period, the incidence of long-term unemployment for women is larger than that for males in all geographical regions of Turkey under both definitions. The difference between men and women is particularly high in 2001 in the East and South-East Anatolia regions. For instance, while the incidence of LTU with narrow definition for females in East (South-East) Anatolia is about 55.6 (44.4) percent, the same value for males, that is lower than the country’s average, in East (South-East) Anatolia is about 11.0 (17.3) percent. It is also clear from Figure 5 that in the Marmara region that is the most developed region of Turkey, for both males and females the incidence of LTU is larger than the country’s average with broad definition while it is the opposite with narrow definition. Regarding Aegean region, as compared to the country’s average, the incidence of LTU with broad definition is lower in the first-two years and higher in the last-two years, while it is lower in 2002 and 2003 with narrow definition of LTU for both males and females. Regarding Black Sea region the incidence of LTU are mostly lower than the country’s average for males, while it is mostly higher than the country’s average for females in whole period.

#### **4. Trends in Long Term Unemployment in OECD Countries**

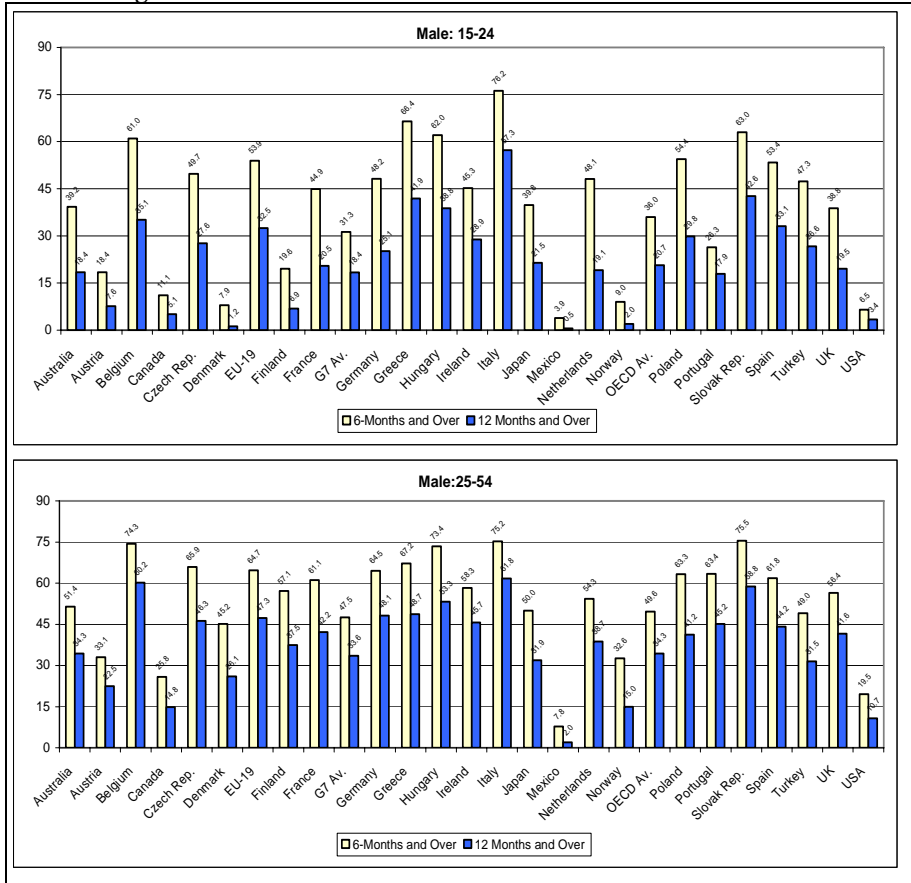
The incidence of long-term unemployment (LTU) in Turkey is compared with some of the OECD countries by plotting the average values for the period between 1995 and 2004 (i.e. ten years’ average) under two alternative definitions of LTU for males in Figure 6, and for females in Figure 7, respectively.<sup>13</sup> It is observed from the figures that the incidence of LTU varies widely from gender to gender, age to age as well as country to country. For instance, it ranges between 0.5 (3.9) percent and 57.3 (76.2) percent under narrow (broad) definition for young males (OECD Database, 2005). Among young males (females), on average, it is 20.7 (22.8) percent under the narrow definition while it is 36.0 (38.1) percent under the broad definition. Among prime aged males (females) it is, on average, 34.3 (49.6) percent under narrow definition, while it is 37.3 (52.9) percent under narrow definition. In addition, the incidence of LTU, regardless of definition, for

---

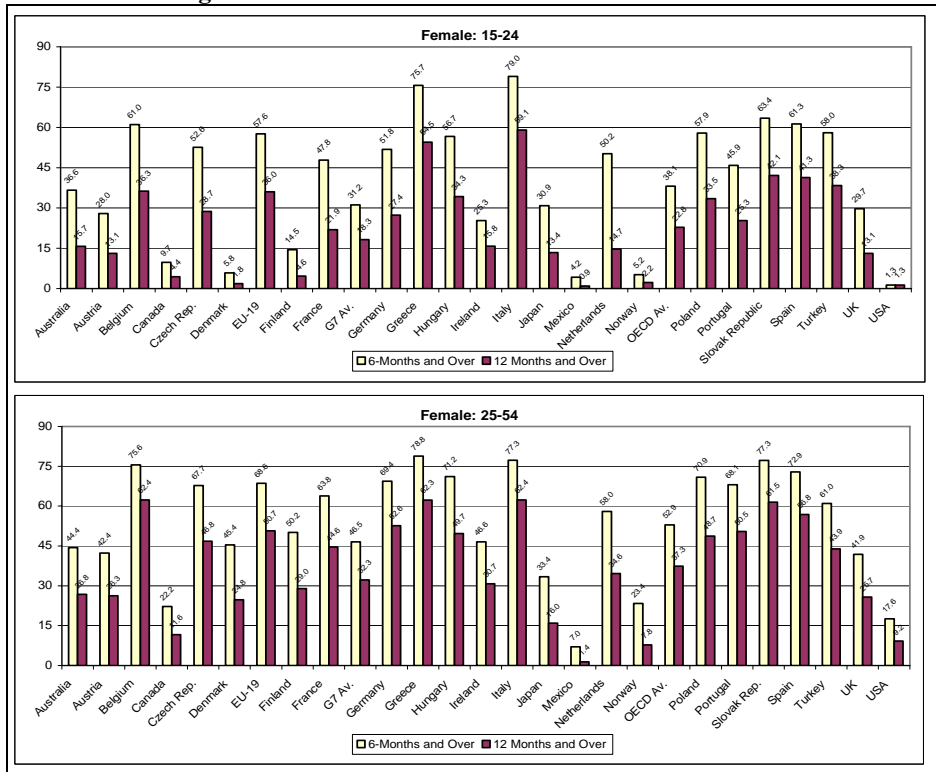
<sup>13</sup> The values are computed from the database of OECD (2005).

prime-aged males and females are larger than that for the young individuals in almost all OECD countries. The average rate of incidence of

**Figure 6: Incidence of LTU for Males in OECD Countries by Broad Age: 1995-2004 Average**



**Figure 7: Incidence of LTU for Females in OECD Countries by Broad Age: 1995-2004 Average**



LTU under narrow (broad) definition for young males however, were 3.4 (6.59) in the USA, 0.5 (3.9) percent in Mexico and 25.1 (48.2) percent in Greece (OECD Database, 2005).

The incidence of long-term unemployment in Turkey on average is much higher than the OECD countries regardless of gender, age and definition. For instance, the rate of the incidence of LTU in Turkey is 31.5 (49) percent for prime-aged males, while it is 26.6 (47.3) percent for young males under the narrow (broad) definition. In addition, regardless of gender difference, the lowest proportion of the LTU is observed in Mexico under both definitions of LTU. The observation of lower than ten percentage incidence of LTU means that more than 90 percent of the unemployed persons in this country are “short-term” unemployed. Similarly, the lowest proportion of LTU is observed in the USA for the youth female, while the

same is observed again in Mexico for the youth male. Further, the highest proportion of LTU, regardless of the definition employed, is observed in Italy for both youth males and females. The values are 57.3 (76.2) percent and 59.1 (79.0) for males and females, respectively, under the narrow (broad) definition of LTU. Similarly, the highest values are observed in Greece with 78.8 percent, then in Italy and Slovak Republic with 77.3 percent and then in Belgium 75.6 percent for the prime-aged females under the broad definition. With regards to highest values for prime-aged men, the incidence of LTU was 75.5 percent in Slovak Republic, 75.2 percent in Italy and 74.3 percent in Belgium under the broad definition (OECD Database, 2005).

## 5. Model

We estimated the effects of individual and labor market characteristics on becoming long-term unemployed using “selectivity corrected” probit model (Greene (1997) and Lee (2001)). We choose this model because the way that LTU is measured acquires a potential selection problem. We indeed, know from the definitions of both LTU that one must be unemployed in order to be accounted as long-term unemployed. The fact long-term unemployment is seen only among individuals who are unemployed leads to sample selection problem. Regular estimation procedures using data with selection problem in terms lead to biased results. We solve this problem using selectivity corrected probit model with two step procedure (Heckman (1979), Greene (1997) and Lee (2001))<sup>14</sup>.

The equation for the first-step estimation, i.e. for the unemployment choice can be written as:

$$U_i^* = \beta_1' X_{i1} + \varepsilon_{i1}, \text{ where } \varepsilon_{i1} \sim N(0,1) \quad (1)$$

where  $U_i^*$  is a dummy variable which takes the value of 1 if the individual is unemployed, zero otherwise;  $\beta_1$  is a parameter vector;  $X_{i1}$  is a vector of covariates for individual  $i$ ; and finally,  $\varepsilon_{i1}$  is a normally distributed error term with a zero mean and unit variance. The equation for the second step estimation, i.e. for the long-term unemployment observation, can be written as:

---

<sup>14</sup> This procedure is also used in Dolton et al. (1989), Palme and Wright (1998), Konseiga (2006).

$$LTU_i^* = \beta_2' X_{i2} + \varepsilon_{i2} \quad (2)$$

where  $LTU^* = LTU$  can only be observed if  $U_i^* > 0$ , and  $(\varepsilon_{i1}, \varepsilon_{i2}) \sim$  bivariate normal  $[0, 0, 1, \sigma_{\varepsilon_2}, \rho]$  where  $\sigma_{\varepsilon_2}$  is the covariance of  $\varepsilon_{i1}$  and  $\varepsilon_{i2}$ . Thus, the model becomes:

$$E[LTU | U_i^* = 1] = \beta_2' X_{i2} + \rho \sigma_{\varepsilon_2} \lambda(\beta_1' X_{i1}) \quad (3)$$

We estimated the model using maximum likelihood method as in the proposed order in the literature (Greene (1997) and Lee (2001) and Heij et al. (2004)). In the first-step we obtain the estimates of  $\beta_1$ , then calculate  $\hat{\lambda}_i = \phi(\hat{\beta}_1' X) / \Phi(\hat{\beta}_1' X)$  and<sup>15</sup>  $\delta_i = \hat{\lambda}_i (\hat{\lambda}_i + \hat{\beta}_1' X)$  for every observation in the selected sample. In the second step, we get the estimates of  $\beta_2$ , by regressing  $LTU^*$  on  $X_{i2}$ 's and  $\hat{\lambda}_i$ . We also obtain the marginal effects of the explanatory variables on the probability of becoming LTU.

## 6. Estimation Results

We estimate the marginal effects of the most important variables such as residence, gender, marital status, geographical region, education, age and occupation on the incidence of LTU of selected groups for both definitions<sup>16</sup>. The estimation results<sup>17</sup> are shown in two separate tables, as Table 1 with the results for narrow definition of LTU and Table 2 with the results for broad one<sup>18</sup>. First equation in both tables is the baseline regression equation<sup>19</sup> (i.e.,

<sup>15</sup> where  $\phi$  and  $\Phi$  stand for the standard normal density and distribution functions, in that order.

<sup>16</sup> List of the variables used in the analysis is provided in Appendix Table 1. Further, means and standard deviations of the variables used in the underemployment equation is provided in Appendix Table 2.

<sup>17</sup> The estimates of marginal effects and their standard errors, shown in Table 1 and Table 2, are evaluated at the sample means of the variables. They are computed by using Stata's "mfx" command. This command numerically calculates the marginal effects of the covariates and their standard errors after the estimation.

<sup>18</sup> The estimation results for the "selection" equations for each of the alternative models are provided in Appendix Table 3.

<sup>19</sup> The baseline line equation in these regressions is the equation that is estimated

equation 1) whereas the second (i.e., equation 2a and equation 2b) and the third group of equations (i.e., equation 3a and equation 3b) are designed based on gender<sup>20</sup> and residence<sup>21</sup> respectively. The estimation results of the regression using full data in the first equation in both tables suggest that most variables<sup>22</sup> included in this study have important relevance in determining long-term unemployment in either definition. Further estimations by separating males from females and individuals who live in urban areas from the ones who live in rural areas do not lead to totally different results from the initial ones except adding deeper insights.

As the first explanatory variable, “urban” has negative coefficient. This indicates that urban residing individuals are less likely to become long-term compared to rural residing ones. However, except for the regression (equation 2b in both tables) using females the coefficients are not significant. This implies that females rather than males who benefit by residing in urban areas in terms of lowering the possibility of staying unemployed for a long-time.

As the second explanatory variable, “female” has a positive and significant coefficient at one percent level in the regressions obtained using full sample in both tables with all definitions (see equation 1 in Table 1 and 2). This implies that females are more likely to be long-term unemployed under both definitions in comparison to males. Same result holds for the results of the estimations obtained using rural and urban individuals separately and narrow definition of LTU (see equations 3a and 3b in Table 1). However, same conclusion holds only for females who live in the urban areas with the use of broad definition (see equation 3a and 3b in Table 2). Especially among the urban residents females rather than males are more likely to become long-term unemployed. This can be explained by the

---

using full data.

<sup>20</sup> Equation 2a is estimated using only males, while equation 2b is estimated using only females.

<sup>21</sup> Equation 3a is estimated using individuals who live in rural area, while equation 3a is estimated using individuals who live in urban areas.

<sup>22</sup> In order to check the sensitivity of the results to the exclusion of some variables from the model we have estimated four alternative models for each of the case. These alternative models excluded some groups of the covariates from the models, such as occupation, status in employment, number of earners and etc. However, our general conclusions generally did not change. Therefore we provide the estimation results with the full alternative explanatory variables. The other alternative estimates are available from the author in request.

following factors. The first is that females are traditionally taken to be responsible for home production activities and hence they have a high reservation wage. Therefore they are more likely to become long-term unemployed. The second reason may be the factor that the discrimination against females in the Turkish labor market which decrease the probability of receiving a job offer as well as increase the probability of becoming long-term unemployed.

As the third variable “married” has statistically not significant coefficient in all the regressions (see Table 1 and 2). When we interact married variable with female variable however, interaction term in the regression for whole sample and urban individuals become statistically significant and negative (see eq.1 and 3b in Table 1 and 2). This implies that although marriage does not change the probability of being long-term unemployed in general, being female and married reduces the probability of becoming long-term unemployed significantly<sup>23</sup>. This result becomes even stronger when married females live in urban areas (see eq. 3b in Table 1 and 2). In Turkey married females are being kept outside of labor market<sup>24</sup>. Only for those who really need to work for living and monetary contribution to family participate in work force. Since, these females are in much need of work they do not stand to stay long as unemployed rather take any job they find.

With regards to geographical regions, only for narrow definition in determining the long-term unemployment results came out to be significant (see Table 1). For instance, individuals who live in the “most” developed regions of Turkey, i.e. Marmara and Aegean are less likely to be long-term unemployed compared the base region of Central Anatolia. The same observation is also hold for the unemployed in the East and South-East Anatolia, i.e. the “least” developed regions of the country<sup>25</sup>. This implies that

---

<sup>23</sup> Following the suggestion of the referee we make some predictions to check whether the estimation result is changing for high school graduate and non-graduate females if we consider the marriage difference. Prediction results are in line with our general results that married females whether high-school graduates or not are less-likely to become long-term unemployed compared to non-married ones, even if the difference statistically non-significant.

<sup>24</sup> The traditions and home duties undertaken by females due to these traditions in Turkey keep married females at home rather than participating labor force especially in urban families.

<sup>25</sup> Except South-East Anatolia, however, the regional effects on becoming long-term unemployed are not statistically significant under the “broad” definition.

since the economic activities are plenty and high in volume and subject to frequent change in regions, such as Marmara and Aegean, turn-over is high and individuals have varying job opportunities. When it comes to East and South-East Anatolia the reason for not in long-term unemployed in narrow sense seems affordability. People in these regions, can not stay unemployed and migrate to west so frequently. In addition, the South-East Anatolia project which fuels the economy and creates new employment opportunities that are mostly intended for local people in this region. This result does not change when we run the regressions for the sub-samples such as males, females, rural and urban individuals.

Regarding the results for the education variable in the full sample the coefficient of four-year and over university dummy is negative and significant, while the coefficients of all the rest of education dummies are positive and mostly significant. This can be interpreted as when the level of education increases the probability of becoming long-term unemployed initially rises up to high school, then falls down (see eq.1 in Table 1 and 2). Although this result does not change using male and urban samples it does not hold for the regressions using female and rural samples since none of the coefficients are statistically significant when the later one is used. This implies that at least for males and individuals residing in urban areas while having a high school degree increases the probability of becoming long-term unemployed having four year and over university degree decreases the same probability compared to non-graduates (see eq. 2a and 3b in Table 1 and 2). The findings above are generally prevalent under both definitions of LTU and may be explained by the following factors. The first is that they are waiting for a “good” job because the “open” jobs are not relevant for them, i.e. “there is a queuing process for a good job”(Tansel and Tasci, 2004). The second may be that the human capital which they obtained during their study is not enough to fulfill the requirements of the open jobs. Therefore, as can be seen from the results for university graduates, individuals need to go for upper education to reduce the probability of being unemployed for long-term.

With regards to the effects of age group in the “full” data we observe that the marginal effects of these variables are mostly statistically significant and increases in age seem to increase the probability of being long-term unemployed regardless of the definition. The results are the same for both women and men with a slight difference under both definitions of long-term

---

unemployment. The results also show that for males that individuals who are 25 years of age and over are most likely to become long-term unemployed compared to base age group of 15-19, while for females the results does not vary over the age groups (see eq. 2a and 2b in Table 1 and 2). The results the regression using the sample which covers the urban residents is parallel to results for the baseline regression using full data. However, age among the rural individuals in general does not matter for LTU (see eq. 3a and 3b in Table 1 and 2). The results in general are consistent with the findings in the literature (Kosonen and Moisio (1998), Herzog (1999), Larsen (2003)). One reason for this strong result simply is that older unemployed have often being rejected in employers screening procedures. Second reason is that older unemployed is actually less able to integrate into labor market because they are more prone to mobility and outdated in terms of technical and educational skills. Therefore, they are less adaptable towards the changing environment and the economic restructuring

Another finding of this study is that increases in unemployment rate measured as local base seem to increase the probability of becoming long-term unemployed under both “broad” and “narrow” definition of LTU (see eq.1 in Table 1 and 2). The results of the estimations using males and individuals live urban areas are parallel to initial results (see eq.2a and 3b in Table 1 and 2). However, unemployment rate in each local area does not seem to matter in determining LTU of females and individuals who live in that area (see eq.2b and 3a in Table 1 and 2).

Once we control for the occupation dummies in the regressions, the results show that unemployed individuals in the other occupation groups are less likely to be long-term unemployed compared to the base occupation group of “professionals and related workers” regardless of the definition being employed (See Eq. 1 in Table 1 and 2). These results are same in the estimations for all urban residents (See Eq. 3b in Table 1 and 2) and males who are especially “sales workers (occup4)”, “service workers (occup5)”, “agricultural workers (occup6)” and “non-agricultural workers (occup7)”, under both definitions of LTU. Similar results are also found for rural residents who are “service workers (occup5)”, “agricultural workers (occup6)” and “non-agricultural workers (occup7)” only (See Eq.3a in Table 1 and 2). However, for females, the marginal effects of all of the occupation dummies in general, show statistically no-significant difference compared to “professionals and related workers” (See Eq.2b in Table 1 and 2). This can be explained by the fact that professionals and related workers are relatively

more subject to queuing process for a good job.

When we look at the effects of the status in employment using full sample, working as a “casual employee (statu2)” reduces the probability of becoming LTU under both of the definitions of LTU, while being as an “employer (statu4)” and a “self-employed (statu5)” does the opposite (see Table 1 and 2). The results are same when the males and urban residents used as sample under only the broad definition of LTU. However, in general, the results show no-statically significant difference between “regular employee” and the other statuses in employment for females and rural residents under both definitions of LTU. The results imply that the “startup cost” acquired by employers as well as self employed people extends their time as unemployed.

As the last and one of the most important factors, being head of household reduces the probability of becoming long-term unemployed under both definitions of LTU. This is also true for the samples of males and urban residents.

**Table 1: Selectivity Corrected Long-Term Unemployment Narrow Definition**

VARIABLES	FULL-DATA	MALE	FEMALE	RURAL	URBAN
urban	-0.018 [0.015]	-0.003 [0.015]	-0.100* [0.055]		
female	0.100*** [0.017]			0.171* [0.089]	0.099*** [0.017]
FemMar	-0.078*** [0.027]			-0.062 [0.071]	-0.070** [0.031]
married	0.001 [0.019]	0.016 [0.020]	-0.067 [0.135]	0.028 [0.042]	-0.003 [0.021]
Marmara	-0.035** [0.016]	-0.036** [0.017]	-0.041 [0.041]	-0.082** [0.036]	-0.028 [0.017]
Aegean	-0.040** [0.018]	-0.058*** [0.018]	-0.004 [0.071]	-0.045 [0.039]	-0.045** [0.020]
Mediterranean	-0.02 [0.017]	-0.013 [0.018]	-0.032 [0.039]	-0.024 [0.038]	-0.022 [0.019]
BlackSea	-0.007 [0.020]	-0.027 [0.020]	0.022 [0.072]	-0.085*** [0.033]	0.008 [0.022]
EastAnatolia	-0.073*** [0.018]	-0.080*** [0.017]	0.099 [0.165]	-0.125*** [0.028]	-0.043* [0.024]
SouthEastAnatolia	-0.106*** [0.016]	-0.097*** [0.016]	-0.130** [0.056]	-0.142*** [0.025]	-0.098*** [0.019]
PrimarySchool	0.024 [0.023]	0.015 [0.023]	0.054 [0.060]	0.041 [0.050]	0.012 [0.025]
MiddleSchool	0.048* [0.027]	0.037 [0.029]	0.079 [0.067]	0.068 [0.069]	0.04 [0.030]
HighSchool	0.065** [0.028]	0.080** [0.032]	0.028 [0.110]	0.072 [0.074]	0.053* [0.030]
VocHighSchool	0.054* [0.032]	0.036 [0.032]	0.055 [0.171]	0.027 [0.081]	0.046 [0.034]
TwoYearUniv	0.016 [0.040]	-0.008 [0.040]	0.002 [0.182]	-0.004 [0.100]	0.006 [0.041]
Univ4pl	-0.070*** [0.026]	-0.046 [0.029]	-0.153 [0.133]	-0.082 [0.066]	-0.079*** [0.028]
age2024	0.029 [0.020]	-0.02 [0.022]	0.124** [0.050]	-0.022 [0.042]	0.036 [0.023]
age2534	0.144*** [0.021]	0.091*** [0.025]	0.244*** [0.041]	0.116** [0.049]	0.151*** [0.023]
age3544	0.195*** [0.027]	0.147*** [0.033]	0.284*** [0.068]	0.129* [0.068]	0.210*** [0.030]
age4554	0.321*** [0.034]	0.255*** [0.040]	0.443*** [0.161]	0.144 [0.096]	0.350*** [0.036]
age55pl	0.424*** [0.051]	0.369*** [0.052]	0.317 [0.424]	0.209 [0.148]	0.467*** [0.053]
unemprate	0.527*** [0.204]	0.460*** [0.187]	0.321 [1.246]	-0.171 [0.426]	0.692*** [0.229]
occup2	-0.085** [0.035]	-0.077** [0.035]	-0.124 [0.113]	NA	-0.075* [0.039]
occup3	-0.060*** [0.019]	-0.011 [0.028]	-0.138 [0.084]	0.025 [0.088]	-0.064*** [0.021]
occup4	-0.103*** [0.018]	-0.080*** [0.017]	-0.191 [0.118]	-0.069 [0.047]	-0.107*** [0.020]
occup5	-0.092*** [0.020]	-0.063*** [0.017]	-0.216* [0.126]	-0.130*** [0.028]	-0.090*** [0.023]
occup6	-0.123*** [0.018]	-0.109*** [0.018]	-0.171** [0.070]	-0.164*** [0.027]	-0.073** [0.030]
occup7	-0.118*** [0.022]	-0.103*** [0.018]	-0.149 [0.147]	-0.096** [0.042]	-0.125*** [0.025]
occup8	-0.085** [0.037]	-0.059 [0.045]	-0.185 [0.113]	-0.09 [0.089]	-0.084** [0.040]
statu2	-0.058*** [0.021]	-0.048** [0.019]	-0.076 [0.083]	-0.104* [0.053]	-0.056** [0.022]
statu3	0.063 [0.087]	-0.05 [0.119]	0.208 [0.129]	NA	0.093 [0.095]
statu4	0.110** [0.054]	0.078 [0.049]	0.444* [0.243]	0.058 [0.233]	0.111** [0.056]
statu5	0.062* [0.033]	0.049 [0.031]	0.168 [0.237]	0.099 [0.106]	0.056 [0.035]
statu6	0.066 [0.041]	0.070* [0.041]	0.067 [0.192]	0.145 [0.092]	0.023 [0.045]
numearners	0.006 [0.017]	0.008 [0.017]	0.013 [0.078]	0.025 [0.035]	0.007 [0.020]
head	-0.083*** [0.024]	-0.094*** [0.025]	-0.053 [0.072]	-0.079 [0.056]	-0.079*** [0.026]
year2001	-0.034*** [0.009]	-0.031*** [0.010]	-0.050*** [0.019]	-0.005 [0.023]	-0.041*** [0.010]
mills	-0.021 [0.042]	-0.01 [0.034]	-0.133 [0.306]	-0.042 [0.107]	-0.037 [0.045]
Observations	8763	6336	2427	1337	7420
LR chi2	505.718	309.367	150.774	156.799	426.187
Prob>chi2	0	0	0	0	0
Pseudue R-Sq	0.063	0.056	0.06	0.124	0.061
Log-Likelihood	-4339.666	-2887.486	-1412.059	-593.695	-3709.041

Notes 1) \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%  
2) standard errors adjusted for clustering on id. 3)NA: Not Applicable

**Table 2: Selectivity Corrected Long-Term Unemployment Broad Definition**

VARIABLES	FULL-DATA	MALE	FEMALE	RURAL	URBAN
urban	-0.025 [0.017]	-0.021 [0.018]	-0.088* [0.053]		
female	0.089*** [0.019]			-0.025 [0.087]	0.109*** [0.019]
FemMar	-0.137*** [0.034]			-0.13 [0.099]	-0.133*** [0.038]
married	-0.008 [0.023]	-0.004 [0.024]	-0.045 [0.149]	-0.062 [0.056]	0.008 [0.025]
Marmara	0 [0.020]	0.004 [0.023]	-0.031 [0.044]	0.004 [0.061]	0 [0.022]
Aegean	0.035 [0.024]	0.004 [0.026]	0.057 [0.076]	0.100* [0.061]	0.018 [0.026]
Mediterranean	0.013 [0.021]	0.022 [0.024]	-0.003 [0.043]	0.019 [0.057]	0.004 [0.023]
BlackSea	0.026 [0.024]	0.004 [0.027]	0.021 [0.076]	-0.076 [0.058]	0.04 [0.026]
EastAnatolia	-0.011 [0.026]	-0.021 [0.027]	0.211 [0.148]	-0.090* [0.051]	0.04 [0.032]
SouthEastAnatolia	-0.106*** [0.023]	-0.094*** [0.025]	-0.150** [0.065]	-0.144*** [0.053]	-0.102*** [0.026]
PrimarySchool	0.031 [0.026]	0.009 [0.028]	0.085 [0.063]	0.027 [0.059]	0.019 [0.029]
MiddleSchool	0.059** [0.030]	0.041 [0.033]	0.095 [0.067]	0.028 [0.073]	0.055* [0.033]
HighSchool	0.105*** [0.031]	0.099*** [0.035]	0.067 [0.116]	0.144* [0.083]	0.092*** [0.034]
VocHighSchool	0.104*** [0.035]	0.054 [0.037]	0.093 [0.171]	0.127 [0.101]	0.090** [0.038]
TwoYearUniv	0.081* [0.047]	0.035 [0.052]	0.025 [0.194]	0.059 [0.134]	0.069 [0.050]
Univ4pl	-0.045 [0.037]	-0.091** [0.038]	-0.106 [0.184]	0.04 [0.126]	-0.065* [0.039]
age2024	0.03 [0.023]	-0.023 [0.027]	0.100** [0.050]	0.004 [0.057]	0.034 [0.025]
age2534	0.141*** [0.022]	0.121*** [0.028]	0.170*** [0.040]	0.085 [0.055]	0.153*** [0.024]
age3544	0.161*** [0.026]	0.147*** [0.034]	0.221*** [0.059]	0.093 [0.070]	0.177*** [0.028]
age4554	0.258*** [0.030]	0.247*** [0.036]	0.342*** [0.130]	0.029 [0.089]	0.292*** [0.031]
age55pl	0.309*** [0.045]	0.300*** [0.046]	0.375 [0.250]	0.003 [0.128]	0.362*** [0.045]
unemprate	0.888*** [0.240]	0.797*** [0.234]	0.106 [1.316]	0.521 [0.562]	1.002*** [0.268]
occup2	-0.046 [0.055]	-0.049 [0.060]	-0.101 [0.150]	0.113 [0.284]	-0.052 [0.057]
occup3	-0.090*** [0.025]	-0.062* [0.034]	-0.192* [0.101]	-0.136 [0.089]	-0.096*** [0.027]
occup4	-0.114*** [0.026]	-0.105*** [0.025]	-0.264* [0.153]	-0.088 [0.076]	-0.127*** [0.029]
occup5	-0.117*** [0.027]	-0.112*** [0.022]	-0.286 [0.175]	-0.166*** [0.051]	-0.124*** [0.030]
occup6	-0.126*** [0.029]	-0.143*** [0.029]	-0.099 [0.115]	-0.178*** [0.051]	-0.067 [0.042]
occup7	-0.129*** [0.027]	-0.136*** [0.022]	-0.237 [0.172]	-0.115** [0.055]	-0.144*** [0.030]
occup8	-0.058 [0.056]	-0.058 [0.068]	-0.189 [0.176]	-0.176 [0.131]	-0.052 [0.061]
statu2	-0.054** [0.026]	-0.049** [0.024]	-0.156* [0.090]	-0.031 [0.075]	-0.066** [0.027]
statu3	0.086 [0.100]	-0.062 [0.156]	0.175 [0.121]	NA	0.13 [0.105]
statu4	0.111** [0.056]	0.100* [0.055]	0.286 [0.228]	-0.029 [0.244]	0.132** [0.057]
statu5	0.078** [0.036]	0.071** [0.035]	0.178 [0.211]	-0.131 [0.089]	0.111*** [0.038]
statu6	0.054 [0.043]	0.063 [0.046]	0.107 [0.186]	-0.009 [0.082]	0.051 [0.053]
numearners	-0.025 [0.020]	-0.026 [0.021]	0.037 [0.083]	-0.062 [0.046]	-0.009 [0.023]
head	-0.111*** [0.029]	-0.124*** [0.030]	-0.037 [0.081]	-0.137* [0.073]	-0.103*** [0.031]
year2001	-0.046*** [0.011]	-0.049*** [0.012]	-0.042** [0.021]	0.018 [0.029]	-0.055** [0.012]
mills	0.047 [0.049]	0.047 [0.042]	-0.199 [0.324]	0.21 [0.141]	-0.005 [0.052]
Observations	8763	6336	2427	1340	7420
LR chi2	557.162	357.262	160.008	152.848	472.08
Prob>chi2	0	0	0	0	0
Pseudue R-Sq	0.054	0.048	0.053	0.095	0.054
Log-Likelihood	-5467.599	-3845.015	-1588.384	-795.224	-4634.655

Notes 1) \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%  
2) standard errors adjusted for clustering on id. 3)NA: Not Applicable

## 7. Conclusions and Policy Implications

In this study, we have investigated the factors affecting long-term unemployment in Turkey. For this aim, we initially provided the recent trends in long-term unemployment in the country on its own and on comparison with the OECD countries. We have then employed nationally representative data set of HLFS conducted by TUIK and used probit models in which takes the sample selection problem into account for empirical analysis. Even though the results of the empirical investigation, particularly under different definitions of LTU, may vary a little, the factors such as residency, gender, marriage, region, education, profession, age, the rate of unemployment and the type of work have come up to be the most significant and consistent ones in determining LTU.

Living in urban areas especially for females shortens the term of unemployment in Turkey. Indeed, the quantity and variety of jobs available and the rate of turnover are higher in cities than in rural areas. In addition, cities compared rural areas provide more flexible and modern lifestyle that increases the chance of finding job relatively fast especially for females. Similarly, living in the most developed regions such as Marmara and Aegean compared to other regions reduces the probability of becoming long-term unemployed. This refers that shorter time period is required to find a job since plenty of jobs become available in relatively shorter time in the most developed regions. These findings imply that Turkish government should focus on rural social and economic development in order to increase the availability and variety of jobs and modern lifestyle in rural areas and fuel the economy, create new employment opportunities and encourage firms to give high priority for employing the “local” people in under-developed regions.

Being female regardless of where it is lived however, extends the term of unemployment in Turkey. Females are, in fact, traditionally taken to be responsible for home production activities and hence, they have a high reservation wage. The factors such these and the existing discrimination against females in Turkish labor market decrease the probability of receiving a job offer. Similarly, being older increases the probability of becoming long-term unemployed. Even though older age people are less likely to become unemployed, the incidence of LTU for them is higher than that for young. The older unemployed are in fact, have often being discriminated in screening procedures, outdated in terms of technical and educational skills

and thus, less able to integrate into labor market. This implies that public authorities in Turkey should implement policies to reduce gender and old age discrimination and establish facilities such as preschools and childcare to drive women out of home and facilities such as computer courses to adopt older people to new economic structure.

The results indicate a U-shaped relationship between the education level and the probability of becoming long-term unemployment. That is, LTU is not related to primary level of education, is positively related to mid-level of education and strongly positively related high school level education, while it is strongly negatively related to university level education. This means compared to non-graduates, the individuals with middle school, high school or vocational high school diploma are more likely to become LTU, while the individuals with university diploma are the opposite. Having university level of education compared to lower levels, relieves individuals from being subject to a “queuing process” for a good job and from fulfilling the requirements of the open jobs. Therefore, Turkish government as they do in process of entering European Union, should open more universities and increase public spending towards university education.

The results also show that occupations and employment status may be important in determining LTU. The results indicate a trade off between being professional and LTU as well as a trade off between being employer and LTU. Those of who want to be a professional and employer or self-employed must be willing to stay unemployed for longer term. This means that countries in which small business enterprises and self-employment are dominant are more likely to have longer duration of unemployment at individual base. Therefore, in order to prevent LTU, the government of the countries which is in this status should provide incentives for being corporate and larger scale business.

The result finally shows that being head of household reduces the probability of becoming long-term unemployed. This result refers to breadwinner responsibilities of the head in the household. As a final point, testing the effect of income support from the family in the absence of family income itself let us to use the number of earners in the household. However, using this variable we could not detect the effect of income which is inversely associated with LTU in the literature (Kosonen and Moisiso, 1999). In a further study, one can obtain data on family income in Turkey which we were unable to find to overcome this shortcoming. As the second thing that can be done in the future using Turkish data could be related to the effect of

unemployment insurance on LTU. As the literature suggest generous unemployment benefits increases work disincentives and play an important role in persistency of unemployment (Burda, 1988 and Katz and Meyer, 1990).

**References**

- Arulampalam, W. (2001), "Is unemployment really scarring? Effects of unemployment experiences on wages", *The Economic Journal*, 111, 585-606.
- Arulampalam, W., P. Gregg and M. Gregory (2001), "Unemployment Scarring", *The Economic Journal*, 111, 577-584.
- Bulutay, T. (1995), *Employment Unemployment and Wages in Turkey*, State Institute of Statistics and International Labor Office, Ankara.
- Burda, M., R. Layard and C. Pissarides (1988), "Wait Unemployment' in Europe", *Economic Policy*, 3(7), 391-425
- Cameron, D. R. (1978), "The Expansion of the Public Economy : A Comparative Analysis", *The American Political Science Review*, 72(4), 1243-1261.
- Chapman, B. and C. Kapuscinski (2000), "Avoiding Recessions and Australian Long-Term Unemployment" The Australia Institute: Centre for Economic Policy Research Discussion Paper No:418, Canberra, Australian National University
- Dolton, P. J., G. H. Makepeace and W. van der Klaauw (1989), "Occupational Choice and Earnings Determination: The Role of Sample Selection and Non-Pecuniary Factors" *Oxford Economic Papers*, New Series, 41(3), pp. 573-594.
- Foley M.C. (1997), "Determinants of Unemployment Duration in Russia", *The William Davidson Institute, University of Michigan Business School, Working Paper, no.81*.
- Garrett, G. (2000), "The Causes of Globalization," *Comparative Political Studies*, 33, 941-991.
- Greene, W. H. (1997), *"Econometric Analysis"*, Third Edition, Prentice-Hall, New Jersey, USA.

- Gürsel, S. and V. Ulusoy (1999), "Türkiye'de İşsizlik ve İstihdam (Unemployment and employment in Turkey)", Yapı Kredi Yayınları, No:87.
- Heij, C., P.Boer, P.H. Franses, T. Kloek and H. K. van Dijk (2004), "Econometric Methods with Applications in Business and Economics," Oxford University Press Inc., New York.
- Herzog, Henry W. (1999) "Are Redundant Workers Stigmatized in Transition Labor Markets? Long-Term Unemployment in Central Europe", Luxembourg Income Study Working Paper Series, No:17.
- Hicks, A. and Swank, D.H. (1992) "Politics, Institutions, and Welfare Spending in Industrialized Democracies, 1960-82", *American Political Science Review*, 86(3), 658-74.
- Katz, L. and B. Meyer (1990) "The impact of potential duration of unemployment benefits on the duration of unemployment", *Journal of Public Economics*, 41:45-72.
- Kokko, K., L.R. Bergman and L. Pulkkinen (2003), "Child Personality Characteristics and Selection into Long-Term Unemployment in Finnish and Swedish Longitudinal Samples", *International Journal of Behavioral Development*, 27(2), 134-144.
- Konseiga, A. (2006), "Household Migration Decisions as Survival Strategy: The Case of Burkina Faso", *Journal of African Economies Advance Access published August 23, 2006*.
- Kosonen, P. and P. Moisio (1999), "Comparing Long-term Unemployment, Secondary Labour Markets and Household Incomes", Luxembourg Income Study Working Paper Series, No:217.
- Larsen, C. Albrekt (2003) "Structural unemployment. An analysis of recruitment and selection mechanisms based on panel data among Danish long-term unemployed" *International Journal of Social Welfare*, 12(3), pp 170-181.
- Layard, R. (1997), "Preventing Long-term unemployment", in Philpott, J. (ed) *Working for Full Employment*, London, Routledge

- Lee, Lung-fei (2001), "Self-Selection" in Baltagi, B. (ed) *A Companion to Theoretical Econometrics*, Blackwell Publishers, Oxford, UK.
- Lynch, L. (1989) "The Youth Labour Market in the Eighties: Determinants of Reemployment Probabilities for Young Men and Women", *Review of Economics and Statistics*, 71, 37-45.
- Machin, S and A. Manning (1998) "Longterm Unemployment in Europe", in Ashenfelter, O. and Card, D. (eds) *Handbook of Labour Economics*, Volume 3C, Amsterdam: North-Holland.
- OECD (2002), "*OECD Employment Outlook*", OECD, Paris, September 2002.
- OECD (2005), "Main Economic Indicators", OECD, Paris, June 2005.
- OECD Database (2005), *OECD Databases on Labor Force Statistics*, URL address: <http://www.oecd.org>, last accessed June 20, 2005.
- Obben, J., H. Engelbrecht and V.W. Thompson (2002), "A Logit Model of the Incidence of Long-Term Unemployment", *Applied Economics Letters*, 9, 43-46.
- Palme, M. O. and R. E. Wright (1998), "Changes in the rate of return to education in Sweden" *Applied Economics*, **30**, pp.1953-1663.
- Patridge, M. D. and D. S. Rickman (1998), "Regional Differences in Chronic Long-Term Unemployment", *The Quarterly Review of Economics and Finance*, 38(2), 193-215.
- Patton, W. and R. Donohue (1998), "Coping with Long-Term Unemployment", *Journal of Community & Applied Social Psychology*, 8, 331-342.
- Price, R. H., J.N. Choi and A.D. Vinokur (2002), "Links in the Chain of Adversity Following Job Loss: How Financial Strain and Loss of Personal Control Lead to Depression, Impaired Functioning, and Poor Health", *Journal of Occupational Health Psychology*, 7(4), 302-312.

- Sinclair, P. (1987), *Unemployment: Economic Theory and Evidence*, Oxford (Oxfordshire), UK.
- State Institute of Statistics (SIS) (2001a), *Household Labor Force Survey Results 2000*, October 2001, Ankara: State Institute of Statistics.
- State Institute of Statistics (SIS) (2001b), *Household Labor Force Survey Results by Geographical Regions 2000*, October 2001, Ankara: State Institute of Statistics.
- State Institute of Statistics (SIS) Database (2004), *Household Labor Force Survey Database (Hanehalkı İşgücü Anketi Veritabanı)*, URL address: <http://www.die.gov.tr>, last accessed December 20, 2004.
- Tansel, A. And Tasci, H. M. (2004), “Determinants Of Unemployment Duration for Men and Women in Turkey”, IZA Discussion Paper No:1258
- Taşçı, H. M. (2005), “Essays on Unemployment in Turkey” Unpublished PhD Thesis, METU, Ankara.
- Tunali, İ. (2003), *Background Study on Labor Market and Employment in Turkey*, Prepared for the European Training Foundation, June-2003, Ankara-Turkey.
- Vishwanath, T. (1989), “Job Search, Stigma Effect, and Escape Rate from Unemployment”, *Journal of Labor Economics*, 7(4), 487-502.

**Appendix: Table 1: List of the Variables**

1. “Urban” is a dummy variable taking value 1 if a man or woman lives in a town of more than 20,000 inhabitants and 0 otherwise
2. “Female” is a dummy variable taking value 1 if the sex is female and 0 otherwise
3. “married” is a dummy variable taking value 1 if the survey respondent is married and 0 otherwise
4. “FemMar” is an interaction dummy taking value 1 if the sex is female and marital status is married and zero otherwise.
  
5. Region of residence is a set of seven dummies: Central Anatolia (base category), Marmara, Aegean, Mediterranean Black Sea, East Anatolia, and South East Anatolia.
  
6. Education consists of a set of six dummies: The reference category includes those who are illiterate plus those who are literate but did not graduate from a school. The other education categories are “Primary School”, “Middle School”, “High School”, “Vocational High School”, “Two-Year University”, and “Four-Year University and over” (“Univ4pl”).
  
7. Age is a set of six dummies:
  - “age1519”: Age 15-19 (base category)
  - “age2024”: Age 20-24
  - “age2534”: Age 25-34
  - “age3544”: Age 35-44
  - “age4554”: Age 45-54
  - “age55pl”: Age 55 and over.
  
8. “unemprate” is the local unemployment rate.
  
9. Occupation of the unemployed individuals consists of eight dummies:
  - “occup1”: Professional and related workers (base category),
  - “occup2”: Administrative and managerial workers
  - “occup3”: Clerical and Related Workers,
  - “occup4”: Sales Workers,
  - “occup5”: Service Workers,
  - “occup6”: Agricultural Workers,
  - “occup7”: Non-Agricultural Workers
  - “occup8”: Workers not classified by Occupation

10. Status in the last job for the unemployed individuals consists of six dummies:

“status1”: Regular Employee (base category)

“status2”: Casual Employee

“status3”: Paid family Workers

“status4”: Employer

“status5”: Self Employed

“status6”: Unpaid Family Workers

11. “numearners” is the number of earners in the household

12. “Head” is a dummy variable taking value 1 for the head of households, and 0 otherwise.

13. “year2001” is a dummy variable taking value 1 if the observation comes from the year of 2001, and 0 otherwise.

***Variable used only in the selection into unemployment equation:***

14. “fertsay” is the number of individuals in the household

**Appendix Table 2: Means and Standard Deviations of the Variables Used in LTU equations.**

Variable	Full Data		Male		Female		Rural		Urban	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
LTU	0.221	0.415	0.188	0.390	0.310	0.463	0.204	0.403	0.225	0.417
urban	0.847	0.360	0.822	0.383	0.912	0.284				
female	0.277	0.448					0.159	0.366	0.298	0.458
FemMar	0.086	0.280					0.043	0.203	0.093	0.291
married	0.469	0.499	0.530	0.499	0.309	0.462	0.449	0.498	0.472	0.499
Marmara	0.281	0.450	0.268	0.443	0.316	0.465	0.173	0.379	0.301	0.459
Aegean	0.138	0.345	0.129	0.335	0.162	0.368	0.179	0.384	0.131	0.337
Mediterrian	0.194	0.396	0.189	0.392	0.208	0.406	0.142	0.349	0.204	0.403
BlackSea	0.108	0.311	0.098	0.297	0.136	0.342	0.109	0.311	0.108	0.311
EastAnatolia	0.071	0.257	0.091	0.288	0.018	0.133	0.164	0.370	0.054	0.226
SouthEastAnatolia	0.086	0.280	0.102	0.303	0.042	0.202	0.095	0.294	0.084	0.277
PrimarySchool	0.452	0.498	0.503	0.500	0.316	0.465	0.495	0.500	0.444	0.497
MiddleSchool	0.137	0.344	0.145	0.352	0.118	0.322	0.123	0.328	0.140	0.347
HighSchool	0.182	0.386	0.153	0.360	0.257	0.437	0.180	0.384	0.182	0.386
VocHighSchool	0.094	0.293	0.081	0.273	0.129	0.336	0.086	0.281	0.096	0.295
Twoyear Univ.	0.026	0.160	0.021	0.142	0.041	0.198	0.019	0.135	0.027	0.164
Univ4pl	0.051	0.221	0.037	0.188	0.090	0.286	0.016	0.127	0.058	0.233
age2024	0.259	0.438	0.236	0.425	0.319	0.466	0.281	0.450	0.255	0.436
age2534	0.277	0.448	0.275	0.447	0.283	0.450	0.252	0.434	0.282	0.450
age3544	0.174	0.379	0.194	0.396	0.119	0.324	0.157	0.364	0.177	0.381
age4554	0.087	0.282	0.108	0.311	0.033	0.177	0.057	0.231	0.093	0.290
age55pl	0.028	0.164	0.037	0.188	0.004	0.061	0.023	0.150	0.028	0.166
unemprate11	0.095	0.035	0.094	0.036	0.096	0.033	0.090	0.042	0.096	0.034
occup2	0.008	0.090	0.009	0.092	0.007	0.086	0.002	0.047	0.009	0.096
occup3	0.055	0.228	0.028	0.166	0.125	0.331	0.018	0.133	0.062	0.241
occup4	0.079	0.270	0.079	0.270	0.080	0.271	0.030	0.170	0.088	0.283
occup5	0.109	0.311	0.118	0.323	0.084	0.278	0.083	0.277	0.113	0.317
occup6	0.045	0.208	0.050	0.219	0.033	0.177	0.164	0.370	0.024	0.153
occup7	0.376	0.484	0.473	0.499	0.122	0.327	0.372	0.484	0.377	0.485
occup8	0.008	0.089	0.006	0.080	0.012	0.109	0.005	0.072	0.008	0.092
statu2	0.263	0.440	0.334	0.472	0.079	0.270	0.369	0.483	0.244	0.430
statu3	0.003	0.054	0.001	0.038	0.007	0.083	0.002	0.047	0.003	0.056
statu4	0.012	0.107	0.015	0.123	0.002	0.045	0.003	0.055	0.013	0.114
statu5	0.036	0.187	0.048	0.213	0.007	0.081	0.036	0.188	0.036	0.187
statu6	0.022	0.147	0.025	0.157	0.014	0.116	0.066	0.248	0.014	0.118
numearners	0.729	0.877	0.657	0.894	0.919	0.800	0.879	1.078	0.702	0.832
head	0.362	0.481	0.477	0.500	0.061	0.239	0.318	0.466	0.370	0.483
year2001	0.437	0.496	0.437	0.496	0.437	0.496	0.445	0.497	0.435	0.496
N	8763		6336		2427		1343		7420	

**Appendix Table 3: Selection into Unemployment**

	Full	Male	Female	Rural	Urban
urban	0.005 [0.019]	-0.048** [0.023]	0.120*** [0.037]		
female	-0.215*** [0.020]			-0.145*** [0.021]	-0.627*** [0.054]
FemMar	-0.400*** [0.035]		-0.514*** [0.030]	-0.402*** [0.039]	-0.434*** [0.088]
married	-0.230*** [0.026]	-0.311*** [0.030]		-0.230*** [0.029]	-0.210*** [0.059]
Marmarra	0.162*** [0.021]	0.195*** [0.026]	0.089** [0.036]	0.141*** [0.022]	0.273*** [0.057]
Aegean	0.221*** [0.024]	0.205*** [0.031]	0.235*** [0.042]	0.212*** [0.027]	0.241*** [0.057]
Mediterranean	0.045* [0.023]	0.042 [0.029]	0.039 [0.040]	0.04 [0.025]	-0.066 [0.060]
BlackSea	0.157*** [0.025]	0.128*** [0.032]	0.224*** [0.043]	0.141*** [0.027]	0.169*** [0.065]
EastAnatolia	-0.161*** [0.029]	-0.069** [0.035]	-0.518*** [0.074]	-0.210*** [0.034]	-0.038 [0.060]
SouthEastAnatolia	0.038 [0.028]	0.111*** [0.033]	-0.132** [0.057]	0.029 [0.030]	0.041 [0.071]
PrimarySchool	0.181*** [0.025]	0.110*** [0.034]	0.116*** [0.044]	0.201*** [0.029]	0.057 [0.056]
MiddleSchool	0.095*** [0.029]	-0.054 [0.037]	0.098* [0.053]	0.113*** [0.033]	-0.071 [0.069]
HighSchool	0.255*** [0.029]	-0.031 [0.039]	0.403*** [0.049]	0.233*** [0.033]	0.384*** [0.068]
VocHighSchool	0.440*** [0.033]	0.178*** [0.043]	0.635*** [0.055]	0.425*** [0.037]	0.531*** [0.084]
TwoyearsUniv	0.527*** [0.047]	0.183*** [0.063]	0.697*** [0.072]	0.526*** [0.050]	0.538*** [0.140]
Univ4pl	0.529*** [0.037]	0.132*** [0.049]	0.713*** [0.060]	0.553*** [0.040]	0.328*** [0.124]
age2024	0.366*** [0.022]	0.551*** [0.031]	0.153*** [0.034]	0.369*** [0.025]	0.381*** [0.053]
age2534	0.198*** [0.025]	0.383*** [0.035]	0.077** [0.039]	0.215*** [0.028]	0.109* [0.064]
age3544	0.075*** [0.028]	0.322*** [0.038]	-0.141*** [0.046]	0.075*** [0.031]	0.049 [0.072]
age4554	-0.075** [0.032]	0.232*** [0.042]	-0.548*** [0.062]	-0.066* [0.034]	-0.207** [0.081]
age55pl	-0.480*** [0.039]	-0.200*** [0.050]	-1.199*** [0.119]	-0.482*** [0.043]	-0.558*** [0.099]
unemprate	4.086*** [0.170]	3.968*** [0.213]	4.603*** [0.316]	4.349*** [0.196]	3.508*** [0.359]
occup2	0.221*** [0.057]	0.066 [0.065]	0.355*** [0.120]	0.272*** [0.059]	-0.268 [0.246]
occup3	0.330*** [0.030]	-0.001 [0.044]	0.401*** [0.041]	0.386*** [0.031]	-0.212** [0.107]
occup4	0.505*** [0.029]	0.260*** [0.036]	0.726*** [0.051]	0.558*** [0.030]	0.09 [0.101]
occup5	0.574*** [0.026]	0.317*** [0.032]	0.856*** [0.049]	0.630*** [0.028]	0.235*** [0.075]
occup6	0.199*** [0.037]	-0.017 [0.048]	0.324*** [0.078]	0.267*** [0.048]	0.046 [0.081]
occup7	0.559*** [0.022]	0.308*** [0.029]	0.732*** [0.040]	0.600*** [0.024]	0.312*** [0.067]
occup8	0.325*** [0.062]	0.041 [0.080]	0.696*** [0.100]	0.379*** [0.066]	-0.031 [0.192]
statu2	0.521*** [0.019]	0.532*** [0.020]	0.306*** [0.054]	0.518*** [0.020]	0.534*** [0.051]
statu3	0.462*** [0.107]	1.123*** [0.238]	0.091 [0.127]	0.385*** [0.115]	1.098*** [0.293]
statu4	-0.466*** [0.044]	-0.419*** [0.045]	-0.555*** [0.209]	-0.448*** [0.045]	-0.679*** [0.197]
statu5	-0.360*** [0.029]	-0.364*** [0.032]	-0.623*** [0.108]	-0.321*** [0.032]	-0.542*** [0.077]
statu6	-0.276*** [0.041]	-0.095* [0.052]	-0.561*** [0.087]	-0.235*** [0.050]	-0.358*** [0.085]
numearnrs	-0.527*** [0.012]	-0.642*** [0.016]	-0.312*** [0.016]	-0.570*** [0.013]	-0.411*** [0.025]
head	-0.339*** [0.024]	-0.343*** [0.029]	-0.202*** [0.051]	-0.332*** [0.026]	-0.334*** [0.058]
year2001	0.004 [0.011]	0.011 [0.014]	0.006 [0.019]	-0.012 [0.012]	0.078*** [0.028]
fertsay	0.077*** [0.003]	0.100*** [0.004]	0.025*** [0.007]	0.085*** [0.004]	0.054*** [0.007]
Constant	-2.217*** [0.045]	-1.989*** [0.054]	-2.476*** [0.082]	-2.286*** [0.047]	-1.829*** [0.090]
Observations	243707	117584	126123	186967	56740
LR chi2	9385.947	6033.441	3003.719	7588.77	1946.135
Prob>chi2	0	0	0	0	0
Psedue R-Sq	0.225	0.226	0.221	0.209	0.312
Log-Likelihood	-29269.786	-19093.462	-9342.211	-24683.464	-4370.044

Robust standard errors in brackets

\* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%