# Regional Trade Performances and Labor Market Outcomes: The Case of Turkey

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## Abstract

*The aim of this paper is to explore the relation between regional trade performances and major labor market indicators. To this end, empirical analyses are designed to test the hypothesis that more regional trade performance leads more employment opportunities and stimulates local labor markets. The data sets used in the analyses are from Turkish Statistical Institute, one being trade statistics by province which consists of export and import data for 81 provinces. The other set contains individual-based data from Household Labor Force Survey and both of these sets are at NUTS level 2, including 26 regions. Time-interval for the analyses is from 2004 to 2008. Since the nature of data sets are cross-sectional, the methodology used in the study is based on the probit regression analyses. The preliminary results of the paper shows that increasing the performances of regional trade activities generally improve the indicators of local labor markets in Turkey, however for some regions this interaction does not result in an expected way.*

**Keywords:** trade, regional labor markets, Turkey

**JEL Classification Codes:** R23, F16

## 1. Introduction

Recently, many empirical studies have examined the role of trade on the labor market performance. Since trade activities are expected to bring new and related variety to a region by means of stimulating labor market outcomes, especially employment, focusing on regions' trade performances is important. Since the labor income is an important part of many household budget, employment rate is one of the most widely used indicators when determining the socioeconomic well-being of an area.

While starting that study, we have aimed to investigate the relationship between the regional trade performances and regional labor market indicators. Fundamental reason behind our decision about studying trade and labor issues in a regional context is the wide variation between regions in Turkey. This variation among regions is multi-dimensional. On the one side, it seems to be related with just income dispersion, on the other side it is more of a structural problem related with the sources of this income dispersion. Hence, we thought that answers to these problems may be revealed by exploring these problems with a regional view point.

The theoretical basis behind the relationship between trade and labor is not so far from the traditional context. The main idea of traditional Hecksher-Ohlin-Samuelson (HOS) model is that the owners of factors of production, which are scarcer in a country than in the rest of the world, will lose as a result of trade relative to the non-trade situation. On the other hand, standard economic analyses concludes that changes in a country's pattern of trade affects its aggregate level of employment only temporarily and in the long run, macroeconomic factors work to bring unemployment to its natural level. In this respect, no employment effects are predicted by HOS model (Bella and Quintieri, 2000).

Traditional economic literature considers unemployment indicators as the main proxies of labor market performance. But, in the late 1960s, the usefulness of considering employment dynamics was emphasized. Many authors recently started to prefer using employment indicators[1]. In other words, employment indicators are preferable to unemployment indicators. The reason behind this is that there are well-known difficulties and national differences in defining unemployment conditions. Also, unemployment rate depends on participation rate (labor supply), which in turn depends on employment rate (job opportunities) (Perugini and Signorelli, 2004).

Geographic unemployment rates are often regarded as indicators for the socio-economic performance of regions. Besides the variation of unemployment rates among regions is an important signal of an inefficient economy. This variation implies that while some regions suffer from skilled labor, others waste excess labor. As a result, the analysis of regional unemployment differences has attracted increasing interest in the economic literature. Despite this interest, regional unemployment differences do not represent the core of theories and do not wholly involve emprical studies of regional economic development. The functioning of regional labor markets has been the subject of intensive research in the regional economic literature[2]. Most of the former studies focus on growth and convergence of income in these regions rather than unemployment (Meliciani, 2006; Fujita et al. 1999). However, there is an empirical literature that tries to explain the differences between geographical areas in terms of unemployment rates[3]. In a comparative empirical study Taylor and Bradley (1997) state that disparities between regional labor markets in Italy, Germany and the UK are more marked than unemployment disparities in other European areas. According to Elhorst (2003), unemployment varies with location and there is a reason to consider unemployment from a regional perspective. The magnitude of unemployment disparities among regions within countries is almost as large as the magnitude of unemployment disparities among countries themselves. He also claims that regional unemployment disparities are invariably referred to in discussions of the regional labor market performances and the regional problem. By unemployment trends, the performance of labor market and sometimes the total economic record of governments are accounted.

The empirical literature on regional unemployment usually aims to examine the persistence of unemployment differentials and to develop a model that investigates its determinants. In the applied literature, generally standard statistical methods are used, such as time series data[4]. On the other, there are some studies that use spatial data[5]. For example, in their study, Boschma and Iammarino (2009) estimate the impact of related and unrelated variety in the export structures of Italian provinces on their economic growth. Also, they assess whether the breadth and relatedness of international trade linkages of each province affect regional economic growth. They test these theoretical statemets by means of a database on exports and imports by Italian province, by sector and by country of destination and origin for the period 1995-2003. Desmet and Fafchamps (2006) examine the spatial distribution of jobs across US countries between 1970 and 2000 and investigate whether sectoral employment is becoming more or less concentrated. The existing literature shows "deconcentration", in other words, convergence of employment across urban areas. Although many studies are about the differences of standarts of living and income convergence between different regions, Desmet and Fafchamps (2006) argue that income convergence across regions does not tell us anything about where economic activity is locating.

The findings of empirical literature show that, areas of unemployment can be classified into three groups.

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[1] See Signorelli (1997), Tronti (2002), Marelli (2004).
[2] See Fischer and Nijkamp (1987), Longhi (2005), Longhi et al. (2005), Puga (2002), Overman and Puga (2002).
[3] See Decressin and Fatas (1995), Jimeno and Bentolila (1998), Lopez-Bazo et al. (2002).
[4] See Decressin and Fatas (1995), Jimeno and Bentolila (1998), Martin (1997), Lopez-Bazo et al. (2005).
[5] See Molho (1995), Aragon et al. (2003), Niebuhr (2003), Lopez-Bazo et al. (2002), Cracolici et al. (2007).

The first one is about the low persistence of aggregate and regional relative unemployment which is seen in US; the second one is about high and low persistence of aggregate and regional relative unemployment, respectively, which is the case for most of the EU and the last one is about the high persistence of aggregate and regional relative unemployment which is the case for some European countries like Italy or Spain (Cracolici et al., 2007).

A large number of studies attempted to evaluate the impact of trade on employment (or unemployment) by using NUTS 2 level regional data. Table 1 shows the literature review which includes 7 empirical studies that explained unemployment with the help of NUTS 2 level regional data.

Even though the relationship between regional differences and economic development of Turkish economy has been investigated, empirical evidence about the regional employment dynamics of Turkey is very limited. The main focus point of empirical employment research Turkey is about the female labour force participation[6] and the effects of trade liberalization on labour force participation[7].

Yıldırım and Öcal (2006) aims to analyze how the concentration of sectoral employment across Turkish provinces has changed between 1985 and 2000. They have used a beta convergence analysis of the provincial employment rates for manufacturing, agriculture and service sectors by using a seemingly unrelated regression model (SUR). In the other part of their study, geographically weighted regression (GWR) was used in order to reveal some geographical variations.

In another study Öcal and Yıldırım (2008) aim to analyze how the concentration of employment across Turkish provinces has changed between 1990 and 2000. Again, they performed a beta convergence analysis of the provincial employment rates. Then, they extended their model in order to capture the spatial aspects of the employment dynamics where spatial dependence is handled in alternative ways. As a second step, geographically weighted regression (GWR) was used in order to examine the spatial variations in the relationship. As the end, empirical results show that there is a convergent trend and divergent trends in employment growth for Eastern provinces and Western provinces, respectively. This result indicates that there is a dichotomy of welfare in Turkey.

Öcal and Yıldırım (2008) claim that there are close links between the regions and/or provinces leading to interdependencies between regional economics though the access to common markets. They also add that these regions often have similar industrial composition and production technologies. Accordingly, employment in a region/province may depend to some extent on continued employment in another region/province.

Although our study leaves a number of other questions unanswered, it differs from the existing and very limited literature about Turkey. In the light of these above considerations, the main purpose of this study is to explore the relation between regional trade performances and major labor market indicators of Turkey. In particular, we concentrate on the effects of trade volumes on employment creation capacities, which in turn stimulate local labor markets. To the authors' best of knowledge, this study is the first that investigates the local labour markets of Turkey at the provincial level by using probit regression analyses.

**Table 1: Literature Survey**

| Study | Year | Country | Number of Regions | Type of Study |
|---|---|---|---|---|
| Van der Veen and Evers | 1983 | Netherlands | 11 | 8-equation interaction model among which female participation rate, migration and commuting |
| Bilger et al. | 1991 | Germany | 7 | 5-equation interaction model with participation, migration, earnings and employment |
| Decressin and Fatas | 1995 | E-12 | 51 | 3- equation interaction model with participation and employment, one for each region |
| Elhorst | 1995 | EU-12 | 146 | SEM* |
| Taylor and Bradley " " | 1997 " " | Germany Italy UK | 31 20 35 | SEM* SEM* SEM* |

Source: Desmet and Fafchamps 2006                    *SEM: Single Equation Model

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[6] See Tunalı (1997), Özar and Şenesen (1998), Tansel (2002).
[7] See Boratav et al. (1994), Filiztekin (1999), Uygur (1996), Şenses (1997).

In Section 2 descriptive statistics are used to describe the basic features of the data. Section 3 gives information about data and variables used in our empirical application. Section 4 introduces the sample and methodology. In Section 5, the empirical findings obtained from the probit regression analyses are presented and interpreted. Finally, some concluding remarks are made in Section 6.

## *2. Descriptive Statistics*

Before starting probit analysis, descriptive statistics will be examined to give an idea about the general picture. Graphs from 1.a to 5.a present the relationship between regional trade and regional employment of Turkey for the years 2004-2008. It can be easily seen from these graphs that most regions have export and import volumes in $0-5 billion interval. This interval can be seen in more detail in graphs from 1.b to 5.b. Summary statistics for regional import and export data can be found in Table 2. The standard deviations presented in that table are noteworthy and they are evidence of regional disparities.

In year 2004, most regions have an import volume and export volume under $2.000.000.000. The two outliers which can be clearly seen on upper right area of the Graph 1.a are Istanbul's (TR10) regional import of $60.817.000.000 (blue) and regional export of $36.834.000.000 (red). Having the largest population between cities (approximately 10 millions), Istanbul is also the main trade and industry center of Turkey. Kocaeli region consists of five cities and is the only region with an import volume over $10.000.000.000 except Istanbul for year 2004. There are 9 regions with an import volume under $200.000.000, 7 of which are also below $100.000.000 import level. Total import of all 26 regions is $97.460.900.000 in 2004, this gives an idea about the importance of Istanbul as a trade center, more than 60% of total import belongs to Istanbul.

Istanbul has an export volume of $36.834.000.000 in 2004. The closest followers are Bursa region (3 cities-$5.663.100.000), Kocaeli region (5 cities-$4.375.300.000), Izmir region (1 city-$4.110.500.000). All other regions has export volumes under $2.500.000.000. Total export is $63.162.238.000 for year 2004, almost 60% of total export belongs to Istanbul. Graph 1.b shows the dense area, $0-2 billion interval, where most regions fall in 2004. In the following years this density diminishes and an expansion into the second half of $0-5 billion interval starts after 2006.

It is expected that more export creates more jobs and higher import levels require more income, but there is also another aspect of Turkey's import. Turkey needs to import in order to produce most goods for both internal and external markets. So, Turkey's export is import-dependent and a higher export volume requires more imports. *Regional Trade and Employment* graphs for 2004-2008 interval support that expectation. Graphs show that increasing trade volumes can be associated with higher employment. When the graphs are studied consecutively for the years examined in this study, not only an increase in both export and import volumes can be seen in 2004-2008 interval but there is also an increase in employment level. There is a movement to the upper right area of the graphs which shows higher employment levels and higher trade volumes. This relationship can also be observed in *A Closer Look* graphs which shows $ 0-5 billion interval. Except the one for 2008, they all point out a positive relationship between regional trade and regional employment. Since in year 2008 global crisis affected Turkish labor market and employment levels, there is no such clear relationship observed like the years before.

## Table 2: Summary Statistics

| NUTS 2 level regional import data - Turkey | | | | | |
|---|---|---|---|---|---|
| **Year** | **2004** | **2005** | **2006** | **2007** | **2008** |
| Mean | 3748496 | 4489424 | 5366936 | 6539912 | 7767089 |
| Standard Deviation | 11914330 | 13815536 | 16091783 | 19558382 | 22216777 |
| Median | 464180 | 504685 | 568975 | 703445 | 919340 |
| NUTS 2 level regional export data - Turkey | | | | | |
| **Year** | **2004** | **2005** | **2006** | **2007** | **2008** |
| Mean | 2429317 | 2825882 | 3289608 | 4125465 | 5077967 |
| Standard Deviation | 7171780 | 8122943 | 9193440 | 11637231 | 14333433 |
| Median | 498475 | 503395 | 578250 | 827890 | 1015850 |

**Regional Trade and Regional Employment in Turkey, 2004**
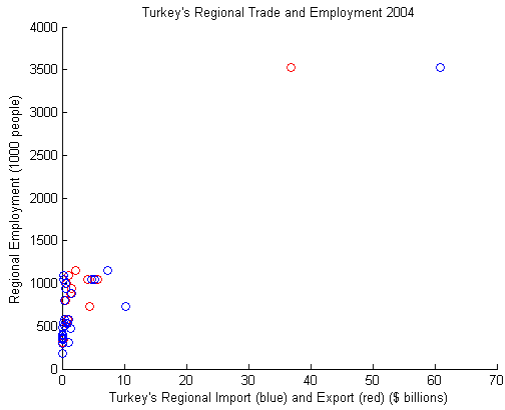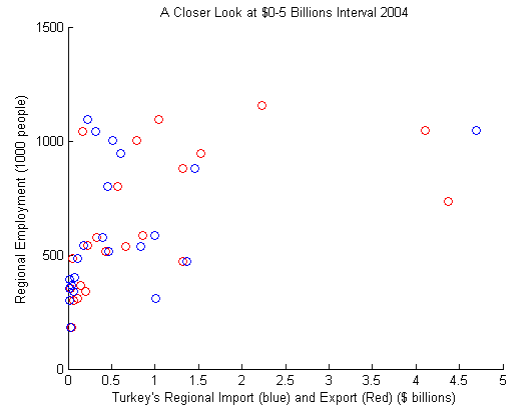


**Graph 1.a**             **Graph 1.b**

**Regional Trade and Regional Employment in Turkey, 2005**



**Graph 2.a**             **Graph 2.b**

**Regional Trade and Regional Employment in Turkey, 2006**



**Graph 3.a**             **Graph 3.b**

**Regional Trade and Regional Employment in Turkey, 2007**
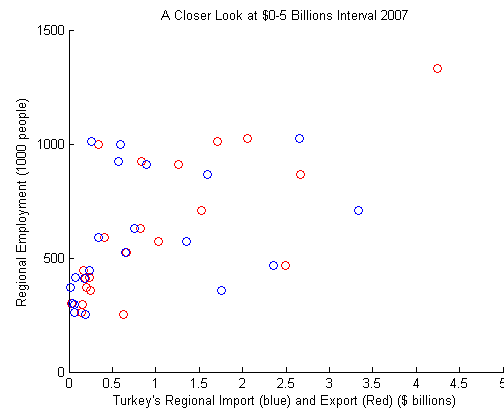


|                          |                          |
| :----------------------: | :----------------------: |
| **Graph 4.a**            | **Graph 4.b**            |

**Regional Trade and Regional Employment in Turkey, 2008**
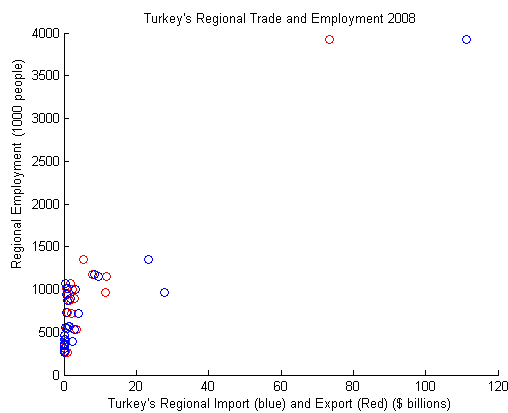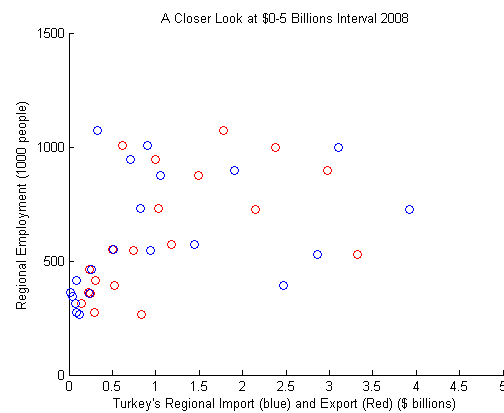


|                          |                          |
| :----------------------: | :----------------------: |
| **Graph 5.a**            | **Graph 5.b**            |

## 3. Data and Variables

In our analyses we have used two main data sources of Turkish Statistical Institute. One of these data sets is the provincial trade statistics. This set include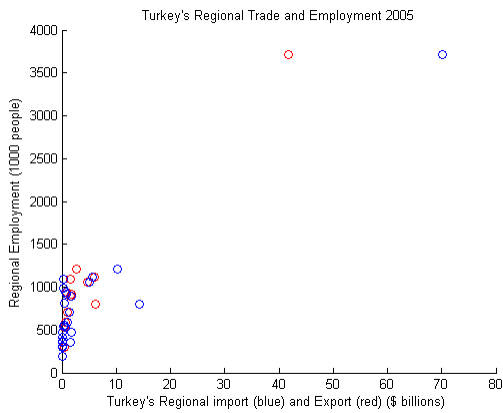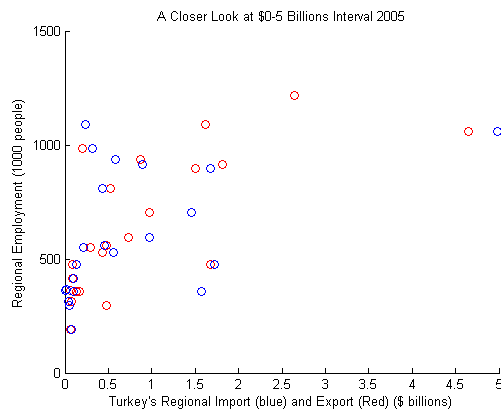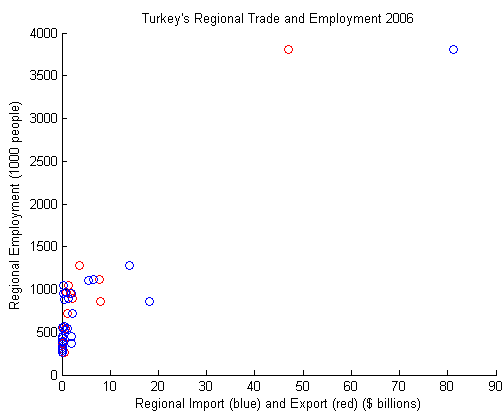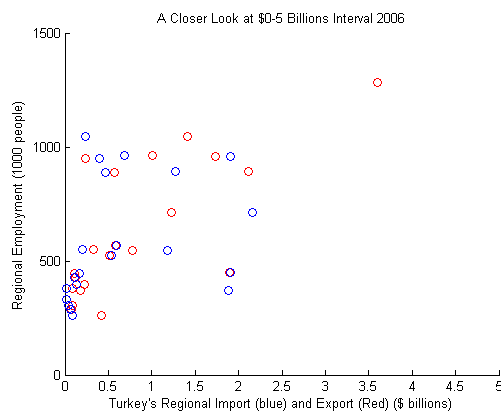s both export and import monthly data of 81 provinces in Turkey since 2002. However, in order to accord the analyses with the labor market data, for the first step, we draw trade statistics since the year 2004. For the second step, we aggregate these statistics of provinces into the NUTS 2 level 26 regions, again for the sake of accordance with the labor market data. Second data set we used in our analyses comes from the Household Labor Force Survey data of the Turkish Statistical Institute. These surveys are individual-based micro data. Each row of the micro data gives personal information for an individual and so includes individualistic, household and regional characteristics in it, but the main purpose of these surveys is to get information about the labor market activities of people. So, many questions asked in the surveys aim to investigate the status of an individual in the labor market. Starting from 2004, these cross-sectional micro data sets disaggregate the data at NUTS 2 level regions. Therefore, we decided to use these two data sources together and aimed to investigate whether there is a significant relationship between the trade and labor market performances of regions.

We have analyzed three groups of variables, namely individual characteristics, household characteristics and regional characteristics. Individual characteristics are age groups, education levels, and marital statuses. Household characteristics are household size, being household head and the presence of children aged less than 14 years in the household.

Regional characteristics are just related with the trade performances of NUTS 2 level regions.[8] In the Household Labor Force Survey micro data of Turkish Statistical Institute age of individuals is presented with several groups. These age groups are categorized by five year intervals, such as age groups 15-19 and 40-44. However for ages under 15 categorization changes from year to year, for example in 2004 Household Labor Force Survey there two age groups, 0-11 and 12-14 age groups but in 2005 Survey there is only 0-14 group. More detailed data is included in 2007 and 2008 surveys but for the sake of comparison we aggregated these all subgroups into 0-14 age group for the presence of children variable. 15-19 age group is mainly composed by students so we do not directly include them into the analyses, we only use them as benchmark category. Age groups used in analyses are: 20-24, 25-29, 30-34, 35-39, 40-44, 45-49, 50-54, 55-59, 60-64. Ages over 64 are not included in the analyses since participation of these individuals into the labor force is at the margin. Another individual characteristic is about the education levels. Although these levels are categorized into seven groups in the surveys, we aggregated these groups into three main groups, namely primary school graduation, high school graduation and university graduation. The primary school graduation variable includes 5-years and 8-years graduates.

High school graduation variable includes general, vocational and technical high schools. University graduation variable includes undergraduates, master and Ph.D. degrees. Marital statuses are reported as never married, married, widowed, and divorced. Moreover in 2005 and 2006 surveys there are two more statuses: living together but not married and married but not living together but in further surveys, 2007 and 2008, these two statuses were not included to the questionnaires. For the household characteristics we have generated two variables, household size and being household head dummy. In the surveys we have used there is a question about the relationship to the reference person in the household. Indeed this reference person is the person with widest knowledge about the household but in Turkey the perception about the reference person is she/he should be the household head who has the responsibility of earning family income. The question for the relationship to the reference person has 8 answers, we reduced the 8 answers into 2, namely being household head and not. Other family members are categorized as spouses, children, bride and grooms, grandchildren, mother and father-in-law, other relatives and non-relatives. All these groups are included in the not household head category in our analyses. The household size variable is the only continuous variable in our analyses. We have simply showed the number of household members with this variable. Lastly we have created two variables for regional characteristics; these are "import" and "export" variables. The construction of these variables is based on a scale. This scale divides regions by their import and export volumes. Categories are $ 0-2 billion, $ 2-5 billion, $ 5-10 billion, $ 10+ billion. Both regional import volume and regional export volume show similar characteristics thus, same scale is used for both. $ 0-5 billion interval is divided into two to have more detailed information because most regions have import and export volumes in that range.

## 4. Sample and Methodology

Our operational sample is limited with the people who are living in urban areas of Turkey and aged between 20 and 64. The main logic behind that choice is about persistence dominance of agricultural sector in the rural areas. Due to determination of employment is a problematic issue for the residents of rural areas, we decided to exclude these areas from our analyses. In our age interval choice, we have tried to exclude the transition years from our sample. So we just analyzed the ages which are people mostly active in the labor market. In the last step, we divided our sample into males and females. This is another important characteristic of the Turkish labor market. Depending on the structure of Turkish society, we should analyze females separating from males, because males are dominant in the labor force and the low participation of females is the subject of another paper.,

The methodological approach we used in the analyses of that paper depends on the probit regression analysis. This analysis is a type of regression used to analyze binomial response variables.

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[8] Summary statistics of the variables for Household Labor Force Survey data: Labor force participation and employment rate changes very little; average of labor force participation rate goes from 41% in 2004 to 42% in 2008, average of employment rate goes from %35.5 in 2004 to %37 in 2008. Average marriage rate increases only by %0.04: %67.5 in 2004 and %67.9 in 2008. Age groups variables for 2004-2008 interval show that population slowly gets older at the average. Mean of household size decreases from 4.33 to 4.18. There is an increase for all education levels in this period: primary education from %56.1 to %60.5, high school education goes from %20.4 to %20.6 and finally university education goes from %8 to %10.4 at the average. Average import scale goes from 1.96 to 2.20 and average export scale goes from 1.76 to 2.18.

Herein, the transformation is from the sigmoid dose-response curve to a straight line that can be analyzed by regression either through least squares or maximum likelihood. In the next section, the empirical works employing probit regression analysis is done by using STATA version 10.

## 5. *Empirical Results*

Being married has a positive effect on the likelihood of male labor force participation (employment). This is an expected result considering that males are strongly accepted as principal breadwinners of the family in Turkey. Likelihood of labor force participation decreases with marriage for females. In traditional Turkish family structure, women are considered as main caregivers of the family. They are expected to look after children and elderly, do household chores and do every other non-market activity. As a perception, after giving birth the role of women is constrained by motherhood. Being a mother becomes not just only the main role of a woman but also a social status. Thus both marriage and having children under age of 14 has a negative effect on the likelihood of female labor force participation and employment. On the contrary, having children increases the necessity of being employed for males. Our findings support these observations.

The likelihood of male labor force participation shows characteristics of classical age-participation profile, increases until 30-34 age group then barely decreases for 35-39 and 40-44 age groups and a strong decrease starts with 45-49 age group. A similar pattern can be seen for the likelihood of female labor force participation but sharp decrease starts at 40-44 age groups. These results are expected due to retirement regulations in Turkey. In 2002, new regulations for retirement were enacted for new entrants of retirement system. Until then, retirement ages for both males and females were early. The reflections of early retirement can be seen in our findings.

Participation probabilities increase with all levels of education for both males and females; however high school education has a smaller effect than primary education. However, this surprising result can be explained. Unless an individual graduates from university, being a high school graduate does not create a significant impact on the entry to the labor market. There are quite a number of university graduates in Turkey, and they are almost enough to fill in the positions which require an education level higher than primary school. This creates a big disadvantage for high school graduates, and some of them apply for the positions that require only primary school education. Primary school graduates gain experience since they can participate into the labor force earlier and this is another for high school graduates. Another interesting point is substantially strong effect of being university graduate on female labor force participation probability. All levels of education have stronger effect on the probability of female labor force participation than male labor force participation, but it can be clearly seen that university education is strikingly high. Given the labor income of the jobs which demand primary and high school educated women does not always match with the reservation wages of women with children, because they cannot afford childcare.

Household size has a positive effect on the likelihood of labor force participation (employment) for both sexes. Families with more members have larger needs than small ones and this requires a larger income. This requirement stimulates the participation of working age family members to the labor force and urges them to earn labor income enough to afford family needs. The positive effect of family size is higher on male labor force participation than females. This is in accordance with the with the abovementioned role of males in the household as primary breadwinners. In addition increasing family size strengthens the need of female participation to the labor force.

The variable for the volume of regional import has a negative effect on the probability of labor force participation for both sexes. Participation probability of individuals decreases by living in the regions which have higher import volumes. Regions with higher export volumes increase the probability of labor force participation for their residents. The effects of both import and export are quite similar for both sexes at the initial years of the analyses, but when we moved on to following years we see that women are affected more from both regional export and import activities. This difference can be more clearly observed in year 2008. We think that this is linked with recent global economic crisis and its resulting high unemployment rates. In such a way that, Turkish women do mostly react to economic downturns to compensate realized or potential income loss in the households. Thus stimulates the labor force participation rate of females, especially in urban areas, and so it leads women being vulnerable to economic conditions.

## 6. Conclusion

So far, first we examined the descriptive statistics of regional trade and labor market data to grasp a relationship between the performances of these two sectors, then we elaborated the characteristics of this relationship by using relevant data (from TURKSTAT) and appropriate methodological approach. We estimated probit regressions, got coefficients and computed the marginal effects for each variable. According to our empirical findings, individual and household characteristics gave significant and expected results. Regional characteristics, namely regional import and export dummies, show us that there is a positive relationship between the regional export volume and the regional employment, on contrary we observed a negative relationship between the regional import volume and the regional employment. In other words, the probability of both participation and employment of an individual residing in a region with a higher level of export increases and it decreases for the higher level of import for all the years under our empirical investigation.

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## *Appendices*

### A. Summary Statistics

**2004**

| Variable | Obs | Mean | Std. Dev. | Min | Max |
|---|---|---|---|---|---|
| lfp | 228721 | .4109942 | .4920153 | 0 | 1 |
| employed | 228721 | .3560932 | .4788443 | 0 | 1 |
| married | 228721 | .6755086 | .4681855 | 0 | 1 |
| Child014 | 228721 | .550872 | .4974064 | 0 | 1 |
| age2024 | 228721 | .117816 | .3223909 | 0 | 1 |
| age2529 | 228721 | .1121629 | .3155674 | 0 | 1 |
| age3034 | 228721 | .1124121 | .3158734 | 0 | 1 |
| age3539 | 228721 | .1033442 | .3044086 | 0 | 1 |
| age4044 | 228721 | .1018708 | .302479 | 0 | 1 |
| age4549 | 228721 | .0833067 | .2763459 | 0 | 1 |
| age5054 | 228721 | .0699499 | .255063 | 0 | 1 |
| age5559 | 228721 | .0491254 | .2161302 | 0 | 1 |
| age6064 | 228721 | .0378758 | .1908964 | 0 | 1 |
| eduPrimary | 228721 | .5615794 | .4961946 | 0 | 1 |
| eduHS | 228721 | .2038204 | .4028379 | 0 | 1 |
| eduUniv | 228721 | .0805523 | .2721469 | 0 | 1 |
| HHHead | 228721 | .3690785 | .4825563 | 0 | 1 |
| HHsize | 228721 | 4.337761 | 2.078477 | 1 | 25 |
| import | 228721 | 1.960139 | 1.256257 | 1 | 4 |
| export | 228721 | 1.765955 | 1.096012 | 1 | 4 |

**2005**

| Variable | Obs | Mean | Std. Dev. | Min | Max |
|---|---|---|---|---|---|
| lfp | 235263 | .4187824 | .4933607 | 0 | 1 |
| employed | 235263 | .3665897 | .4818741 | 0 | 1 |
| married | 235263 | .6722434 | .4693966 | 0 | 1 |
| Child014 | 235263 | .2129702 | .4094076 | 0 | 1 |
| age2024 | 235263 | .1128354 | .3163922 | 0 | 1 |
| age2529 | 235263 | .117086 | .3215234 | 0 | 1 |
| age3034 | 235263 | .1110374 | .3141792 | 0 | 1 |
| age3539 | 235263 | .1009041 | .3012023 | 0 | 1 |
| age4044 | 235263 | .1002325 | .3003104 | 0 | 1 |
| age4549 | 235263 | .0848327 | .2786332 | 0 | 1 |
| age5054 | 235263 | .0709844 | .2567993 | 0 | 1 |
| age5559 | 235263 | .0519504 | .2219273 | 0 | 1 |
| age6064 | 235263 | .0374177 | .1897835 | 0 | 1 |
| eduPrimary | 235263 | .6054246 | .4887603 | 0 | 1 |
| eduHS | 235263 | .2028623 | .4021317 | 0 | 1 |
| eduUniv | 235263 | .0866817 | .2813687 | 0 | 1 |
| HHHead | 235263 | .3711506 | .4831137 | 0 | 1 |
| HHsize | 235263 | 4.319825 | 2.037613 | 1 | 25 |
| import | 235263 | 2.012382 | 1.325816 | 1 | 4 |
| export | 235263 | 1.824762 | 1.134045 | 1 | 4 |

**2006**

| Variable | Obs | Mean | Std. Dev. | Min | Max |
|---|---|---|---|---|---|
| lfp | 238967 | .4188737 | .4933757 | 0 | 1 |
| employed | 238967 | .3693062 | .482618 | 0 | 1 |
| married | 238967 | .6727289 | .4692181 | 0 | 1 |
| Child014 | 238967 | .5471299 | .4977749 | 0 | 1 |
| age2024 | 238967 | .11017 | .3131022 | 0 | 1 |
| age2529 | 238967 | .1187737 | .3235227 | 0 | 1 |
| age3034 | 238967 | .110986 | .3141155 | 0 | 1 |
| age3539 | 238967 | .0975867 | .2967556 | 0 | 1 |
| age4044 | 238967 | .1015203 | .3020171 | 0 | 1 |
| age4549 | 238967 | .0825679 | .2752285 | 0 | 1 |
| age5054 | 238967 | .0746965 | .2629016 | 0 | 1 |
| age5559 | 238967 | .0542585 | .2265276 | 0 | 1 |
| age6064 | 238967 | .0377918 | .1906928 | 0 | 1 |
| eduPrimary | 238967 | .5974925 | .4904041 | 0 | 1 |
| eduHS | 238967 | .2051371 | .4038026 | 0 | 1 |
| eduUniv | 238967 | .0924856 | .2897108 | 0 | 1 |
| HHHead | 238967 | .3719007 | .4833131 | 0 | 1 |
| HHsize | 238967 | 4.279415 | 2.034712 | 1 | 27 |
| import | 238967 | 2.10247 | 1.32935 | 1 | 4 |
| export | 238967 | 1.909661 | 1.160002 | 1 | 4 |

**2007**

| Variable | Obs | Mean | Std. Dev. | Min | Max |
|---|---|---|---|---|---|
| lfp | 237775 | .416932 | .4930525 | 0 | 1 |
| employed | 237775 | .3673599 | .4820867 | 0 | 1 |
| married | 237775 | .6779014 | .4672815 | 0 | 1 |
| Child014 | 237775 | .5387488 | .4984973 | 0 | 1 |
| age2024 | 237775 | .1044601 | .3058571 | 0 | 1 |
| age2529 | 237775 | .119428 | .3242922 | 0 | 1 |
| age3034 | 237775 | .1100452 | .3129468 | 0 | 1 |
| age3539 | 237775 | .0998255 | .2997678 | 0 | 1 |
| age4044 | 237775 | .0995311 | .2993744 | 0 | 1 |
| age4549 | 237775 | .0850342 | .2789331 | 0 | 1 |
| age5054 | 237775 | .0769215 | .2664673 | 0 | 1 |
| age5559 | 237775 | .0565787 | .2310363 | 0 | 1 |
| age6064 | 237775 | .0389738 | .193533 | 0 | 1 |
| eduPrimary | 237775 | .5944738 | .4909946 | 0 | 1 |
| eduHS | 237775 | .2098623 | .407211 | 0 | 1 |
| eduUniv | 237775 | .0973778 | .2964721 | 0 | 1 |
| HHHead | 237775 | .3764525 | .4844967 | 0 | 1 |
| HHsize | 237775 | 4.20614 | 2.024532 | 1 | 31 |
| import | 237775 | 2.170931 | 1.290062 | 1 | 4 |
| export | 237775 | 1.961489 | 1.146693 | 1 | 4 |

**2008**

| Variable | Obs | Mean | Std. Dev. | Min | Max |
|---|---|---|---|---|---|
| lfp | 241250 | .4239295 | .4941804 | 0 | 1 |
| employed | 241250 | .3700933 | .4828304 | 0 | 1 |
| married | 241250 | .6791834 | .4667914 | 0 | 1 |
| Child014 | 241250 | .5342922 | .4988237 | 0 | 1 |
| age2024 | 241250 | .1026736 | .3035327 | 0 | 1 |
| age2529 | 241250 | .1185202 | .3232238 | 0 | 1 |
| age3034 | 241250 | .1091648 | .3118465 | 0 | 1 |
| age3539 | 241250 | .1023834 | .3031525 | 0 | 1 |
| age4044 | 241250 | .097285 | .296346 | 0 | 1 |
| age4549 | 241250 | .0880622 | .2833859 | 0 | 1 |
| age5054 | 241250 | .0747648 | .2630119 | 0 | 1 |
| age5559 | 241250 | .0573513 | .2325131 | 0 | 1 |
| age6064 | 241250 | .0412352 | .1988342 | 0 | 1 |
| eduPrimary | 241250 | .5939731 | .4910907 | 0 | 1 |
| eduHS | 241250 | .2059067 | .4043635 | 0 | 1 |
| eduUniv | 241250 | .1040622 | .3053418 | 0 | 1 |
| HHHead | 241250 | .3778238 | .4848443 | 0 | 1 |
| HHsize | 241250 | 4.187905 | 2.03153 | 1 | 22 |
| import | 241250 | 2.207565 | 1.284346 | 1 | 4 |
| export | 241250 | 2.185575 | 1.289112 | 1 | 4 |

## B. Estimation Results

| Variables | (2004-male) lfp-probit | (2004-female) lfp-probit | (2004-male) emp-probit | (2004-female) emp-probit | Variables | (2004-male) lfp-mfx | (2004-female) lfp-mfx | (2004-male) emp-mfx | (2004-female) emp-mfx |
|---|---|---|---|---|---|---|---|---|---|
| married | 0.233*** | -0.631*** | 0.284*** | -0.445*** | married | 0.0770*** | -0.151*** | 0.110*** | -0.0919*** |
| | (0.0194) | (0.0142) | (0.0171) | (0.0147) | | (0.00656) | (0.00372) | (0.00665) | (0.00327) |
| Child014 | 0.253*** | -0.111*** | 0.259*** | -0.0612*** | Child014 | 0.0820*** | -0.0239*** | 0.0994*** | -0.0116*** |
| | (0.0120) | (0.0123) | (0.0110) | (0.0128) | | (0.00389) | (0.00269) | (0.00422) | (0.00244) |
| age2024 | 1.330*** | 0.668*** | 1.019*** | 0.515*** | age2024 | 0.272*** | 0.183*** | 0.315*** | 0.121*** |
| | (0.0161) | (0.0178) | (0.0157) | (0.0190) | | (0.00223) | (0.00579) | (0.00358) | (0.00528) |
| age2529 | 2.160*** | 0.878*** | 1.549*** | 0.752*** | age2529 | 0.333*** | 0.256*** | 0.407*** | 0.194*** |
| | (0.0207) | (0.0197) | (0.0169) | (0.0206) | | (0.00203) | (0.00695) | (0.00262) | (0.00654) |
| age3034 | 2.282*** | 0.958*** | 1.646*** | 0.862*** | age3034 | 0.340*** | 0.285*** | 0.419*** | 0.230*** |
| | (0.0243) | (0.0204) | (0.0189) | (0.0213) | | (0.00204) | (0.00732) | (0.00264) | (0.00705) |
| age3539 | 2.245*** | 1.007*** | 1.637*** | 0.930*** | age3539 | 0.333*** | 0.305*** | 0.415*** | 0.256*** |
| | (0.0257) | (0.0210) | (0.0201) | (0.0218) | | (0.00205) | (0.00767) | (0.00273) | (0.00749) |
| age4044 | 1.960*** | 0.878*** | 1.544*** | 0.834*** | age4044 | 0.317*** | 0.259*** | 0.403*** | 0.223*** |
| | (0.0227) | (0.0214) | (0.0198) | (0.0222) | | (0.00213) | (0.00761) | (0.00288) | (0.00737) |
| age4549 | 1.303*** | 0.623*** | 1.088*** | 0.623*** | age4549 | 0.261*** | 0.172*** | 0.324*** | 0.157*** |
| | (0.0200) | (0.0238) | (0.0191) | (0.0245) | | (0.00247) | (0.00789) | (0.00391) | (0.00756) |
| age5054 | 0.757*** | 0.395*** | 0.609*** | 0.403*** | age5054 | 0.187*** | 0.101*** | 0.207*** | 0.0929*** |
| | (0.0199) | (0.0267) | (0.0194) | (0.0273) | | (0.00360) | (0.00788) | (0.00563) | (0.00742) |
| age5559 | 0.408*** | 0.221*** | 0.312*** | 0.252*** | age5559 | 0.114*** | 0.0529*** | 0.113*** | 0.0546*** |
| | (0.0220) | (0.0317) | (0.0218) | (0.0322) | | (0.00525) | (0.00835) | (0.00742) | (0.00784) |
| age6064 | 0.0235 | 0.0655* | -0.0496** | 0.106*** | age6064 | 0.00752 | 0.0145* | -0.0191** | 0.0214*** |
| | (0.0251) | (0.0374) | (0.0252) | (0.0378) | | (0.00796) | (0.00857) | (0.00975) | (0.00802) |
| eduPrimary | 0.363*** | 0.174*** | 0.335*** | 0.143*** | eduPrimary | 0.118*** | 0.0371*** | 0.129*** | 0.0267*** |
| | (0.0173) | (0.0148) | (0.0170) | (0.0152) | | (0.00572) | (0.00310) | (0.00652) | (0.00282) |
| eduHS | 0.278*** | 0.637*** | 0.353*** | 0.535*** | eduHS | 0.0849*** | 0.169*** | 0.131*** | 0.124*** |
| | (0.0196) | (0.0173) | (0.0189) | (0.0180) | | (0.00566) | (0.00534) | (0.00671) | (0.00488) |
| eduUniv | 0.647*** | 1.698*** | 0.645*** | 1.470*** | eduUniv | 0.170*** | 0.573*** | 0.220*** | 0.468*** |
| | (0.0238) | (0.0218) | (0.0221) | (0.0216) | | (0.00480) | (0.00746) | (0.00635) | (0.00813) |
| HHHead | -0.0100 | -0.173*** | 0.170*** | -0.0787*** | HHHead | -0.00323 | -0.0343*** | 0.0655*** | -0.0143*** |
| | (0.0203) | (0.0200) | (0.0177) | (0.0205) | | (0.00651) | (0.00363) | (0.00686) | (0.00357) |
| HHsize | 0.0189*** | 0.00620** | 0.00450* | 0.00438 | HHsize | 0.00609*** | 0.00133** | 0.00173* | 0.000828 |
| | (0.00291) | (0.00300) | (0.00267) | (0.00312) | | (0.000936) | (0.000645) | (0.00102) | (0.000589) |
| import | -0.0608*** | -0.0824*** | -0.0613*** | -0.0877*** | import | -0.0195*** | -0.0177*** | -0.0235*** | -0.0166*** |
| | (0.00876) | (0.00936) | (0.00802) | (0.00968) | | (0.00282) | (0.00201) | (0.00307) | (0.00183) |
| export | 0.0833*** | 0.122*** | 0.0819*** | 0.133*** | export | 0.0268*** | 0.0263*** | 0.0314*** | 0.0251*** |
| | (0.0101) | (0.0105) | (0.00921) | (0.0108) | | (0.00325) | (0.00225) | (0.00353) | (0.00204) |
| Constant | -1.358*** | -1.574*** | -1.508*** | -1.742*** | | | | | |
| | (0.0250) | (0.0243) | (0.0240) | (0.0254) | | | | | |
| Observations | 110,670 | 118,051 | 110,670 | 118,051 | Observations | 110,670 | 118,051 | 110,670 | 118,051 |

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

| Variables | (2005-male) lfp-probit | (2005-female) lfp-probit | (2005-male) emp-probit | (2005-female) emp-probit |
|---|---|---|---|---|
| married | 0.281*** | -0.665*** | 0.320*** | -0.482*** |
|  | (0.0190) | (0.0129) | (0.0167) | (0.0133) |
| Child014 | 0.112*** | 0.0290** | 0.104*** | 0.0223* |
|  | (0.0132) | (0.0125) | (0.0120) | (0.0130) |
| age2024 | 1.277*** | 0.694*** | 1.001*** | 0.542*** |
|  | (0.0160) | (0.0175) | (0.0155) | (0.0186) |
| age2529 | 2.156*** | 0.912*** | 1.596*** | 0.785*** |
|  | (0.0199) | (0.0190) | (0.0165) | (0.0198) |
| age3034 | 2.366*** | 0.969*** | 1.728*** | 0.879*** |
|  | (0.0240) | (0.0196) | (0.0186) | (0.0204) |
| age3539 | 2.311*** | 1.045*** | 1.749*** | 0.969*** |
|  | (0.0249) | (0.0203) | (0.0198) | (0.0211) |
| age4044 | 2.069*** | 0.948*** | 1.616*** | 0.898*** |
|  | (0.0228) | (0.0205) | (0.0196) | (0.0212) |
| age4549 | 1.391*** | 0.715*** | 1.150*** | 0.694*** |
|  | (0.0197) | (0.0222) | (0.0186) | (0.0229) |
| age5054 | 0.787*** | 0.470*** | 0.615*** | 0.460*** |
|  | (0.0192) | (0.0249) | (0.0187) | (0.0256) |
| age5559 | 0.378*** | 0.249*** | 0.262*** | 0.280*** |
|  | (0.0209) | (0.0299) | (0.0206) | (0.0302) |
| age6064 | -0.0254 | 0.0673* | -0.109*** | 0.0994*** |
|  | (0.0247) | (0.0366) | (0.0246) | (0.0371) |
| eduPrimary | 0.536*** | 0.166*** | 0.477*** | 0.135*** |
|  | (0.0244) | (0.0157) | (0.0241) | (0.0161) |
| eduHS | 0.449*** | 0.606*** | 0.516*** | 0.507*** |
|  | (0.0260) | (0.0183) | (0.0255) | (0.0189) |
| eduUniv | 0.743*** | 1.610*** | 0.776*** | 1.454*** |
|  | (0.0289) | (0.0218) | (0.0277) | (0.0218) |
| HHHead | -0.117*** | -0.202*** | 0.0906*** | -0.105*** |
|  | (0.0199) | (0.0186) | (0.0173) | (0.0191) |
| HHsize | 0.0312*** | -0.0189*** | 0.0183*** | -0.0124*** |
|  | (0.00271) | (0.00285) | (0.00250) | (0.00294) |
| import | -0.0496*** | -0.0255*** | -0.0582*** | -0.0557*** |
|  | (0.00904) | (0.00886) | (0.00827) | (0.00924) |
| export | 0.0816*** | 0.0452*** | 0.0858*** | 0.0884*** |
|  | (0.0106) | (0.0103) | (0.00966) | (0.0107) |
| Constant | -1.454*** | -1.477*** | -1.576*** | -1.662*** |
|  | (0.0305) | (0.0250) | (0.0295) | (0.0260) |
| Observations | 113,222 | 122,041 | 113,222 | 122,041 |

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

| Variables | (2005-male) lfp-mfx | (2005-female) lfp-mfx | (2005-male) emp-mfx | (2005-female) emp-mfx |
|---|---|---|---|---|
| married | 0.0919*** | -0.166*** | 0.123*** | -0.105*** |
|  | (0.00640) | (0.00350) | (0.00647) | (0.00311) |
| Child014 | 0.0347*** | 0.00659** | 0.0391*** | 0.00447* |
|  | (0.00398) | (0.00288) | (0.00445) | (0.00262) |
| age2024 | 0.259*** | 0.199*** | 0.301*** | 0.134*** |
|  | (0.00217) | (0.00589) | (0.00341) | (0.00545) |
| age2529 | 0.330*** | 0.276*** | 0.403*** | 0.211*** |
|  | (0.00198) | (0.00681) | (0.00243) | (0.00650) |
| age3034 | 0.334*** | 0.298*** | 0.414*** | 0.244*** |
|  | (0.00194) | (0.00713) | (0.00236) | (0.00696) |
| age3539 | 0.327*** | 0.329*** | 0.412*** | 0.279*** |
|  | (0.00194) | (0.00754) | (0.00237) | (0.00747) |
| age4044 | 0.314*** | 0.292*** | 0.397*** | 0.253*** |
|  | (0.00200) | (0.00749) | (0.00257) | (0.00736) |
| age4549 | 0.263*** | 0.210*** | 0.326*** | 0.186*** |
|  | (0.00225) | (0.00778) | (0.00347) | (0.00749) |
| age5054 | 0.188*** | 0.129*** | 0.204*** | 0.113*** |
|  | (0.00330) | (0.00793) | (0.00521) | (0.00747) |
| age5559 | 0.105*** | 0.0630*** | 0.0946*** | 0.0642*** |
|  | (0.00502) | (0.00835) | (0.00704) | (0.00784) |
| age6064 | -0.00810 | 0.0157* | -0.0419*** | 0.0209** |
|  | (0.00794) | (0.00881) | (0.00957) | (0.00819) |
| eduPrimary | 0.175*** | 0.0369*** | 0.182*** | 0.0264*** |
|  | (0.00816) | (0.00340) | (0.00915) | (0.00310) |
| eduHS | 0.130*** | 0.166*** | 0.184*** | 0.121*** |
|  | (0.00684) | (0.00574) | (0.00838) | (0.00524) |
| eduUniv | 0.185*** | 0.549*** | 0.250*** | 0.470*** |
|  | (0.00527) | (0.00763) | (0.00704) | (0.00817) |
| HHHead | -0.0366*** | -0.0417*** | 0.0344*** | -0.0199*** |
|  | (0.00612) | (0.00349) | (0.00661) | (0.00342) |
| HHsize | 0.00988*** | -0.00426*** | 0.00691*** | -0.00246*** |
|  | (0.000858) | (0.000643) | (0.000945) | (0.000586) |
| import | -0.0157*** | -0.00576*** | -0.0220*** | -0.0111*** |
|  | (0.00287) | (0.00200) | (0.00313) | (0.00184) |
| export | 0.0259*** | 0.0102*** | 0.0325*** | 0.0176*** |
|  | (0.00336) | (0.00232) | (0.00365) | (0.00212) |
| Observations | 113,222 | 122,041 | 113,222 | 122,041 |

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

| Variables | (2006-male) lfp-probit | (2006-female) lfp-probit | (2006-male) emp-probit | (2006-female) emp-probit |
|---|---|---|---|---|
| married | 0.271*** | -0.662*** | 0.307*** | -0.499*** |
| | (0.0184) | (0.0132) | (0.0164) | (0.0136) |
| Child014 | 0.305*** | -0.0765*** | 0.307*** | -0.0575*** |
| | (0.0117) | (0.0118) | (0.0108) | (0.0122) |
| age2024 | 1.264*** | 0.686*** | 1.023*** | 0.548*** |
| | (0.0160) | (0.0173) | (0.0156) | (0.0185) |
| age2529 | 2.072*** | 0.914*** | 1.557*** | 0.806*** |
| | (0.0191) | (0.0185) | (0.0161) | (0.0193) |
| age3034 | 2.240*** | 1.012*** | 1.714*** | 0.927*** |
| | (0.0234) | (0.0194) | (0.0188) | (0.0202) |
| age3539 | 2.152*** | 1.073*** | 1.669*** | 1.007*** |
| | (0.0242) | (0.0200) | (0.0199) | (0.0208) |
| age4044 | 2.015*** | 0.982*** | 1.607*** | 0.941*** |
| | (0.0223) | (0.0201) | (0.0193) | (0.0208) |
| age4549 | 1.406*** | 0.671*** | 1.188*** | 0.668*** |
| | (0.0196) | (0.0224) | (0.0187) | (0.0231) |
| age5054 | 0.847*** | 0.457*** | 0.689*** | 0.471*** |
| | (0.0189) | (0.0245) | (0.0185) | (0.0251) |
| age5559 | 0.425*** | 0.249*** | 0.316*** | 0.273*** |
| | (0.0206) | (0.0290) | (0.0205) | (0.0297) |
| age6064 | 0.0452* | 0.0182 | -0.0272 | 0.0730** |
| | (0.0243) | (0.0369) | (0.0244) | (0.0372) |
| eduPrimary | 0.598*** | 0.263*** | 0.532*** | 0.212*** |
| | (0.0244) | (0.0162) | (0.0242) | (0.0166) |
| eduHS | 0.545*** | 0.697*** | 0.581*** | 0.586*** |
| | (0.0259) | (0.0186) | (0.0255) | (0.0192) |
| eduUniv | 0.812*** | 1.686*** | 0.826*** | 1.525*** |
| | (0.0284) | (0.0217) | (0.0275) | (0.0217) |
| HHHead | -0.142*** | -0.242*** | 0.0184 | -0.159*** |
| | (0.0192) | (0.0184) | (0.0170) | (0.0189) |
| HHsize | -0.00240 | -0.0127*** | -0.0149*** | -0.0102*** |
| | (0.00287) | (0.00300) | (0.00265) | (0.00311) |
| import | -0.0332*** | -0.0349*** | -0.0428*** | -0.0473*** |
| | (0.00808) | (0.00794) | (0.00746) | (0.00818) |
| export | 0.0512*** | 0.0645*** | 0.0600*** | 0.0851*** |
| | (0.00926) | (0.00904) | (0.00854) | (0.00929) |
| Constant | -1.463*** | -1.547*** | -1.557*** | -1.703*** |
| | (0.0303) | (0.0253) | (0.0295) | (0.0263) |
| Observations | 114,782 | 124,185 | 114,782 | 124,185 |

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

| Variables | (2006-male) lfp-mfx | (2006-female) lfp-mfx | (2006-male) emp-mfx | (2006-female) emp-mfx |
|---|---|---|---|---|
| married | 0.0899*** | -0.168*** | 0.117*** | -0.110*** |
| | (0.00625) | (0.00362) | (0.00633) | (0.00324) |
| Child014 | 0.0990*** | -0.0176*** | 0.116*** | -0.0117*** |
| | (0.00379) | (0.00272) | (0.00408) | (0.00248) |
| age2024 | 0.263*** | 0.198*** | 0.304*** | 0.138*** |
| | (0.00219) | (0.00589) | (0.00332) | (0.00549) |
| age2529 | 0.335*** | 0.279*** | 0.397*** | 0.221*** |
| | (0.00198) | (0.00665) | (0.00245) | (0.00641) |
| age3034 | 0.338*** | 0.317*** | 0.411*** | 0.264*** |
| | (0.00196) | (0.00712) | (0.00239) | (0.00701) |
| age3539 | 0.325*** | 0.343*** | 0.400*** | 0.295*** |
| | (0.00197) | (0.00748) | (0.00247) | (0.00747) |
| age4044 | 0.321*** | 0.308*** | 0.395*** | 0.271*** |
| | (0.00203) | (0.00742) | (0.00257) | (0.00735) |
| age4549 | 0.270*** | 0.197*** | 0.330*** | 0.179*** |
| | (0.00225) | (0.00779) | (0.00333) | (0.00754) |
| age5054 | 0.203*** | 0.126*** | 0.223*** | 0.118*** |
| | (0.00321) | (0.00778) | (0.00489) | (0.00744) |
| age5559 | 0.119*** | 0.0635*** | 0.112*** | 0.0631*** |
| | (0.00489) | (0.00818) | (0.00677) | (0.00773) |
| age6064 | 0.0144* | 0.00420 | -0.0103 | 0.0153* |
| | (0.00763) | (0.00859) | (0.00929) | (0.00811) |
| eduPrimary | 0.198*** | 0.0586*** | 0.202*** | 0.0420*** |
| | (0.00823) | (0.00350) | (0.00912) | (0.00319) |
| eduHS | 0.158*** | 0.197*** | 0.204*** | 0.146*** |
| | (0.00665) | (0.00605) | (0.00815) | (0.00556) |
| eduUniv | 0.203*** | 0.575*** | 0.262*** | 0.498*** |
| | (0.00509) | (0.00730) | (0.00677) | (0.00796) |
| HHHead | -0.0451*** | -0.0498*** | 0.00694 | -0.0298*** |
| | (0.00598) | (0.00338) | (0.00642) | (0.00327) |
| HHsize | -0.000775 | -0.00290*** | -0.00562*** | -0.00207*** |
| | (0.000924) | (0.000685) | (0.00100) | (0.000628) |
| import | -0.0107*** | -0.00799*** | -0.0162*** | -0.00955*** |
| | (0.00260) | (0.00182) | (0.00281) | (0.00165) |
| export | 0.0165*** | 0.0148*** | 0.0226*** | 0.0172*** |
| | (0.00298) | (0.00207) | (0.00322) | (0.00188) |
| Observations | 114,782 | 124,185 | 114,782 | 124,185 |

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

| Variables | (2007-male) lfp-probit | (2007-female) lfp-probit | (2007-male) emp-probit | (2007-female) emp-probit |
|---|---|---|---|---|
| married | 0.225*** | -0.660*** | 0.250*** | -0.502*** |
|  | (0.0185) | (0.0134) | (0.0165) | (0.0137) |
| Child014 | 0.338*** | -0.131*** | 0.333*** | -0.101*** |
|  | (0.0117) | (0.0121) | (0.0109) | (0.0124) |
| age2024 | 1.239*** | 0.722*** | 1.022*** | 0.580*** |
|  | (0.0163) | (0.0178) | (0.0158) | (0.0188) |
| age2529 | 2.068*** | 0.937*** | 1.603*** | 0.815*** |
|  | (0.0193) | (0.0186) | (0.0163) | (0.0194) |
| age3034 | 2.198*** | 1.049*** | 1.692*** | 0.959*** |
|  | (0.0229) | (0.0197) | (0.0185) | (0.0204) |
| age3539 | 2.141*** | 1.113*** | 1.696*** | 1.034*** |
|  | (0.0240) | (0.0202) | (0.0198) | (0.0209) |
| age4044 | 2.036*** | 1.004*** | 1.637*** | 0.958*** |
|  | (0.0226) | (0.0204) | (0.0195) | (0.0211) |
| age4549 | 1.383*** | 0.673*** | 1.176*** | 0.658*** |
|  | (0.0193) | (0.0224) | (0.0185) | (0.0231) |
| age5054 | 0.816*** | 0.405*** | 0.691*** | 0.419*** |
|  | (0.0188) | (0.0248) | (0.0184) | (0.0254) |
| age5559 | 0.378*** | 0.175*** | 0.297*** | 0.198*** |
|  | (0.0204) | (0.0298) | (0.0204) | (0.0304) |
| age6064 | 0.0312 | 0.0231 | -0.0193 | 0.0710* |
|  | (0.0243) | (0.0359) | (0.0244) | (0.0363) |
| eduPrimary | 0.645*** | 0.261*** | 0.609*** | 0.221*** |
|  | (0.0258) | (0.0171) | (0.0259) | (0.0175) |
| eduHS | 0.613*** | 0.728*** | 0.673*** | 0.622*** |
|  | (0.0272) | (0.0192) | (0.0271) | (0.0197) |
| eduUniv | 0.922*** | 1.695*** | 0.949*** | 1.515*** |
|  | (0.0296) | (0.0221) | (0.0289) | (0.0221) |
| HHHead | -0.140*** | -0.210*** | 0.0342** | -0.131*** |
|  | (0.0191) | (0.0182) | (0.0170) | (0.0185) |
| HHsize | -0.00904*** | -0.0160*** | -0.0234*** | -0.0123*** |
|  | (0.00288) | (0.00311) | (0.00269) | (0.00322) |
| import | -0.00243 | -0.0790*** | -0.0289*** | -0.0787*** |
|  | (0.00801) | (0.00800) | (0.00736) | (0.00821) |
| export | 0.0198** | 0.112*** | 0.0526*** | 0.121*** |
|  | (0.00902) | (0.00894) | (0.00829) | (0.00915) |
| Constant | -1.484*** | -1.543*** | -1.627*** | -1.708*** |
|  | (0.0316) | (0.0261) | (0.0311) | (0.0271) |
| Observations | 114,172 | 123,603 | 114,172 | 123,603 |

| Variables | (2007-male) lfp-mfx | (2007-female) lfp-mfx | (2007-male) emp-mfx | (2007-female) emp-mfx |
|---|---|---|---|---|
| married | 0.0752*** | -0.166*** | 0.0960*** | -0.110*** |
|  | (0.00629) | (0.00366) | (0.00638) | (0.00326) |
| Child014 | 0.110*** | -0.0296*** | 0.126*** | -0.0203*** |
|  | (0.00382) | (0.00276) | (0.00412) | (0.00250) |
| age2024 | 0.262*** | 0.209*** | 0.306*** | 0.147*** |
|  | (0.00224) | (0.00609) | (0.00339) | (0.00567) |
| age2529 | 0.338*** | 0.284*** | 0.406*** | 0.221*** |
|  | (0.00198) | (0.00670) | (0.00243) | (0.00641) |
| age3034 | 0.341*** | 0.328*** | 0.413*** | 0.274*** |
|  | (0.00198) | (0.00726) | (0.00244) | (0.00714) |
| age3539 | 0.331*** | 0.355*** | 0.409*** | 0.303*** |
|  | (0.00199) | (0.00752) | (0.00247) | (0.00750) |
| age4044 | 0.325*** | 0.314*** | 0.402*** | 0.275*** |
|  | (0.00202) | (0.00754) | (0.00255) | (0.00744) |
| age4549 | 0.273*** | 0.195*** | 0.332*** | 0.174*** |
|  | (0.00231) | (0.00775) | (0.00340) | (0.00746) |
| age5054 | 0.200*** | 0.108*** | 0.226*** | 0.102*** |
|  | (0.00333) | (0.00758) | (0.00494) | (0.00720) |
| age5559 | 0.109*** | 0.0429*** | 0.107*** | 0.0436*** |
|  | (0.00512) | (0.00784) | (0.00686) | (0.00736) |
| age6064 | 0.0100 | 0.00526 | -0.00734 | 0.0147* |
|  | (0.00774) | (0.00828) | (0.00929) | (0.00782) |
| eduPrimary | 0.215*** | 0.0574*** | 0.232*** | 0.0431*** |
|  | (0.00874) | (0.00363) | (0.00971) | (0.00331) |
| eduHS | 0.177*** | 0.204*** | 0.235*** | 0.154*** |
|  | (0.00687) | (0.00621) | (0.00845) | (0.00574) |
| eduUniv | 0.225*** | 0.575*** | 0.295*** | 0.490*** |
|  | (0.00493) | (0.00744) | (0.00662) | (0.00813) |
| HHHead | -0.0449*** | -0.0432*** | 0.0130** | -0.0246*** |
|  | (0.00602) | (0.00339) | (0.00646) | (0.00326) |
| HHsize | -0.00294*** | -0.00360*** | -0.00888*** | -0.00246*** |
|  | (0.000936) | (0.000702) | (0.00102) | (0.000642) |
| import | -0.000789 | -0.0178*** | -0.0110*** | -0.0157*** |
|  | (0.00260) | (0.00180) | (0.00279) | (0.00164) |
| export | 0.00643** | 0.0252*** | 0.0199*** | 0.0241*** |
|  | (0.00293) | (0.00201) | (0.00314) | (0.00182) |
| Observations | 114,172 | 123,603 | 114,172 | 123,603 |

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

| Variables | (2008-male) lfp-probit | (2008-female) lfp-probit | (2008-male) emp-probit | (2008-female) emp-probit |
|---|---|---|---|---|
| married | 0.194*** | -0.636*** | 0.230*** | -0.473*** |
| | (0.0179) | (0.0132) | (0.0160) | (0.0135) |
| Child014 | 0.346*** | -0.0863*** | 0.306*** | -0.0623*** |
| | (0.0117) | (0.0118) | (0.0108) | (0.0122) |
| age2024 | 1.246*** | 0.739*** | 0.997*** | 0.574*** |
| | (0.0164) | (0.0176) | (0.0159) | (0.0187) |
| age2529 | 2.088*** | 0.954*** | 1.586*** | 0.823*** |
| | (0.0192) | (0.0186) | (0.0161) | (0.0193) |
| age3034 | 2.218*** | 1.044*** | 1.679*** | 0.955*** |
| | (0.0229) | (0.0194) | (0.0182) | (0.0201) |
| age3539 | 2.193*** | 1.137*** | 1.706*** | 1.054*** |
| | (0.0240) | (0.0197) | (0.0194) | (0.0204) |
| age4044 | 2.058*** | 1.020*** | 1.640*** | 0.964*** |
| | (0.0225) | (0.0202) | (0.0192) | (0.0210) |
| age4549 | 1.401*** | 0.751*** | 1.193*** | 0.719*** |
| | (0.0189) | (0.0216) | (0.0180) | (0.0224) |
| age5054 | 0.871*** | 0.414*** | 0.730*** | 0.428*** |
| | (0.0188) | (0.0243) | (0.0184) | (0.0250) |
| age5559 | 0.415*** | 0.160*** | 0.307*** | 0.192*** |
| | (0.0201) | (0.0291) | (0.0201) | (0.0297) |
| age6064 | 0.0754*** | -0.127*** | 0.0135 | -0.0615 |
| | (0.0236) | (0.0371) | (0.0237) | (0.0374) |
| eduPrimary | 0.658*** | 0.255*** | 0.591*** | 0.206*** |
| | (0.0258) | (0.0168) | (0.0258) | (0.0173) |
| eduHS | 0.625*** | 0.737*** | 0.679*** | 0.651*** |
| | (0.0273) | (0.0189) | (0.0270) | (0.0195) |
| eduUniv | 0.917*** | 1.690*** | 0.932*** | 1.513*** |
| | (0.0294) | (0.0216) | (0.0286) | (0.0217) |
| HHHead | -0.137*** | -0.169*** | 0.0258 | -0.104*** |
| | (0.0186) | (0.0176) | (0.0165) | (0.0181) |
| HHsize | -0.0123*** | -0.0193*** | -0.0204*** | -0.0150*** |
| | (0.00285) | (0.00303) | (0.00265) | (0.00314) |
| import | -0.0525*** | -0.172*** | -0.0678*** | -0.153*** |
| | (0.0109) | (0.0107) | (0.00994) | (0.0109) |
| export | 0.0590*** | 0.171*** | 0.0784*** | 0.159*** |
| | (0.0108) | (0.0106) | (0.00990) | (0.0109) |
| Constant | -1.455*** | -1.492*** | -1.594*** | -1.660*** |
| | (0.0314) | (0.0256) | (0.0309) | (0.0266) |
| Observations | 115,788 | 125,462 | 115,788 | 125,462 |

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

| Variables | (2008-male) lfp-mfx | (2008-female) lfp-mfx | (2008-male) emp-mfx | (2008-female) emp-mfx |
|---|---|---|---|---|
| married | 0.0641*** | -0.165*** | 0.0884*** | -0.106*** |
| | (0.00603) | (0.00370) | (0.00621) | (0.00328) |
| Child014 | 0.112*** | -0.0203*** | 0.117*** | -0.0129*** |
| | (0.00379) | (0.00279) | (0.00410) | (0.00252) |
| age2024 | 0.259*** | 0.222*** | 0.303*** | 0.149*** |
| | (0.00220) | (0.00620) | (0.00350) | (0.00574) |
| age2529 | 0.335*** | 0.299*** | 0.408*** | 0.230*** |
| | (0.00197) | (0.00678) | (0.00245) | (0.00652) |
| age3034 | 0.336*** | 0.334*** | 0.415*** | 0.277*** |
| | (0.00195) | (0.00720) | (0.00244) | (0.00711) |
| age3539 | 0.330*** | 0.370*** | 0.415*** | 0.315*** |
| | (0.00196) | (0.00735) | (0.00245) | (0.00738) |
| age4044 | 0.321*** | 0.328*** | 0.406*** | 0.283*** |
| | (0.00199) | (0.00756) | (0.00253) | (0.00751) |
| age4549 | 0.273*** | 0.229*** | 0.340*** | 0.199*** |
| | (0.00226) | (0.00776) | (0.00335) | (0.00752) |
| age5054 | 0.206*** | 0.114*** | 0.238*** | 0.107*** |
| | (0.00311) | (0.00767) | (0.00483) | (0.00729) |
| age5559 | 0.116*** | 0.0403*** | 0.111*** | 0.0435*** |
| | (0.00483) | (0.00782) | (0.00679) | (0.00734) |
| age6064 | 0.0238*** | -0.0280*** | 0.00515 | -0.0123* |
| | (0.00725) | (0.00767) | (0.00900) | (0.00722) |
| eduPrimary | 0.218*** | 0.0584*** | 0.226*** | 0.0416*** |
| | (0.00869) | (0.00373) | (0.00972) | (0.00339) |
| eduHS | 0.178*** | 0.214*** | 0.238*** | 0.167*** |
| | (0.00673) | (0.00631) | (0.00844) | (0.00589) |
| eduUniv | 0.223*** | 0.578*** | 0.294*** | 0.493*** |
| | (0.00492) | (0.00719) | (0.00680) | (0.00793) |
| HHHead | -0.0435*** | -0.0369*** | 0.00984 | -0.0204*** |
| | (0.00582) | (0.00358) | (0.00629) | (0.00338) |
| HHsize | -0.00398*** | -0.00453*** | -0.00777*** | -0.00308*** |
| | (0.000919) | (0.000712) | (0.00101) | (0.000647) |
| import | -0.0169*** | -0.0405*** | -0.0258*** | -0.0316*** |
| | (0.00350) | (0.00250) | (0.00378) | (0.00225) |
| export | 0.0190*** | 0.0402*** | 0.0298*** | 0.0327*** |
| | (0.00349) | (0.00249) | (0.00377) | (0.00224) |
| Observations | 115,788 | 125,462 | 115,788 | 125,462 |

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

**C. Statistical Regions of Turkey (Nuts 2 Level)**