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The Effects of Education and Marital Status on Women's Labor Force Participation: A Regional Analysis of Turkey*

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Abstract

Participation of women in the labor force is important for a country's sustainable growth and development. The rate of female labor force participation in Turkey is far below those of developed countries. Furthermore, the rate differs across regions of the country. This study investigates the effects of educational level and marital status on women's labor force participation in the years 2006 and 2016. The aim of the study is to examine the differences across regions and to see whether the results showed any change over the ten years.

Toward this end, a probit-regression model is used, with micro-level data at NUTS2 level from the Turkish Household Labor Force Survey. The results point to greater probabilities of women's participation in the workplace in many Turkish regions over the period, but at the same time there were rigid lower participation probabilities for women, despite the rising level of education (except for higher education), in certain regions. Furthermore, we find the participation probability of Turkish women in the labor force to be higher if they have a Bachelor's or higher degree.

JEL Codes: J16, J21, O18, R23

Keywords: female labor force participation, regional analysis, Turkey

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1. Introduction

Participation of women in a country's labor force is central to its achieving sustainable economic growth and development. In 2015, the United Nations adopted a new set of goals to bring about sustainable development. These Sustainable Development Goals include "achieving universal primary education" and "promoting gender equality and empowering women"[3]. Mincer (1962) underlines the prime importance of education in the development of young boys and girls. However, he also states that "(w)ork at home is still an activity to which women, on the average, devote the larger part of their married life. It is an exclusive occupation of many women, and of a vast majority when young children are present." (Mincer, 1962, p.65)

In the developing world, female labor force participation lags far behind the rates in the developed countries. This is reflected in the fact that women perform a substantial amount of unpaid work within the household. However, it is the paid work that increases power in the household and raises families' standard of living (Winkler, 2016).

Kuznets (1973) points out that countries experience sectoral shifts in the economy during the development stage, typically from agriculture to industry and from industry to the service sectors. During this process of economic development, the decision of women as to whether or not to participate in the labor force is affected by these sectoral shifts. Many studies argue that female labor force participation shows a U-shape during such times of development.[4] Tansel (2012) argues that Turkey has been experiencing this U-shaped female labor force participation while experiencing economic growth. A more recent study by Tunalı, Kırdar, and Dayıoğlu (2017) also maintains that Turkey was on the rising part of the U-shaped curve of labor market participation during the 1988-2003 period.

In Turkey, female labor force participation has long been far below developed-country levels. For example, the Turkish rate (for females older than 15) was 72% in 1955, but plunged to 23.3 % by 2005, its lowest level. After that, however, it reversed course and rose to 32.4% by 2016 (Tansel, 2002; World Bank).[5] In contrast, the rate of women working outside the home was 67.5%

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[3] Resolution adopted by the General Assembly on 25 September 2015, see http://www.un.org/ga/search/view_doc.asp?symbol=A/RES/70/1&Lang=E and http://www.un.org/sustainabledevelopment/sustainable-development-goals/

[4] See Durand (1975), Schultz (1990), Goldin (1994), Tansel (2002), and Tam (2011), among others.

[5] The data for 1955 are obtained from Tansel (2002). See Tansel (2002) and Tansel (2012) for a discussion of the reasons behind falling rates of female labor force participation in Turkey.

in European Union countries and 63.6% in OECD countries, as of 2016 (OECD, 2017).

Furthermore, the rate of females working outside the home varies across Turkey's regions. While the highest rates are observed in the Black Sea region, the lowest rates show up in Southeast Anatolia. Such disparities among regions may arise from several factors. This study focuses on two of those: educational level and marital status. The area under examination is the NUTS 2 level (26 regions) in Turkey and covers the years 2006 and 2016, with the aim of identifying any changes over the ten-year period. This study differs from previous ones in its use of probit-regression models for each of the 26 regions.

The paper is organized as follows. Section 2 presents a brief literature review of studies of female labor force participation in Turkey. Section 3 delineates basic facts about such participation. Section 4 lays out our data and methodology. Section 5 presents the empirical results. Section 6 concludes the paper.

2. Literature Review

There are many outstanding studies of Turkey's female labor force. Among them, Tansel (2002) investigates the rate of female labor force participation and its determinants across 67 Turkish provinces, for the years 1980, 1985, and 1990. Her study points out major differences in this participation between rural and urban areas. According to her empirical results, the per capita gross provincial product growth rate, females' high school enrollment ratio, and the percentage of female high school graduates all positively affect female labor force participation.

In addition, women's labor force participation rises in urban areas especially for those who completed vocational high school and tertiary-level education. Tansel (2002) emphasizes the importance of education for increases in female employment. While married women have low participation rates, divorced women show relatively higher participation in urban areas. Tansel (2002) notes that this is most likely due to the need of divorced women to support their children.

In another study of Turkey in the 1988-2003 period, Tansel (2004) focuses on the educational level of females and states that the labor force participation goes up in tandem with the level of education.[6] The highest participation rates are found with female university graduates. However, she also emphasizes

[6] See also Tansel (1994) and Tansel (1996).

that in rural areas, where most of the women work in agriculture as unpaid family laborers, education has little impact on labor force participation (except at the university level). On the other hand, earlier Tansel (2002) had stated that Turkish female labor force participation varies with education level.

The research of Dayıoğlu and Kırdar (2010) into female labor force participation sheds light on the determinants and the trend of Turkish female labor force participation between 1988 and 2006. Using the data from the Household Labor Force Survey (HLFS), provided by TURKSTAT, they analyze the women's labor force in terms of education, marital status, age, and number of children, at the regional level. Their logistic-regression findings suggest that females with more schooling are more likely to participate in the labor market. However, one remarkable finding of theirs concerned illiterate women: their participation is higher than that of primary and middle-school graduates. Furthermore, single women are more likely to work; however, the number of children in the household decreases female labor force participation. In rural areas, women are more likely to be in the labor force, compared to those in urban areas.

Dayıoğlu and Kırdar (2010) point out the regional effects (rural and urban) on the participation probability of women. Being married is negatively related to labor force activity in both rural and urban areas. The negative effect of marriage on participation is greater in urban areas. Moreover, separated and divorced women have less probability of entering into the job market in rural areas, yet that is not the case in urban environments. Widowed women, on the other hand, have less probability of entering the workforce—regardless of where they live. Also, the same authors find that the participation probability of Turkish women is negatively related to the number of children in urban households, but not in rural ones.

Dayıoğlu and Kırdar (2010) also maintain that the lower fertility rates of younger women and the negative relation between children and labor force participation together suggest a higher participation rate for younger women in Turkey. They explain that women with higher education levels also have higher participation rates than illiterate ones.

Certain studies of Turkish female labor force participation investigate added and discouraged worker effects. Başlevent and Onaran (2003) look into the existence of the added and discouraged worker effects in the Turkish labor market. Using data on married couples from the HLFS for the years 1988-94, they conclude that the added-worker effect dominates the discouraged-worker effect. For their part, Karaoğlan and Ökten (2015) study the 2005-2010 period

and, with two-year pseudo-panel data sets, report that if a husband loses his job involuntarily or he is underemployed for some time, his wife is more likely to participate in the labor force.

Atasoy (2017) investigates the determinants of female labor force participation, concentrating on the effects of traditionalism. He draws on the 2013 Turkish Demographic and Health Survey data and reveals that education, fertility, and maternity status have significant effects on women's employment. He also notes that women raised in a traditional culture are less likely to look for jobs.

A recent study of Tunalı, Kırdar, and Dayıoğlu (2017) examines the aggregate labor force participation behavior of Turkish females over the 1988-2013 period. Based on a synthetic-panel analysis, their findings forecast a jump in the labor force participation of Turkish women in the years ahead, on the heels of greater educational attainment; another propelling factor in this direction will be the expected decline in child-bearing by the new generation.

3. Female Labor Force Participation in Turkey: Basic Facts

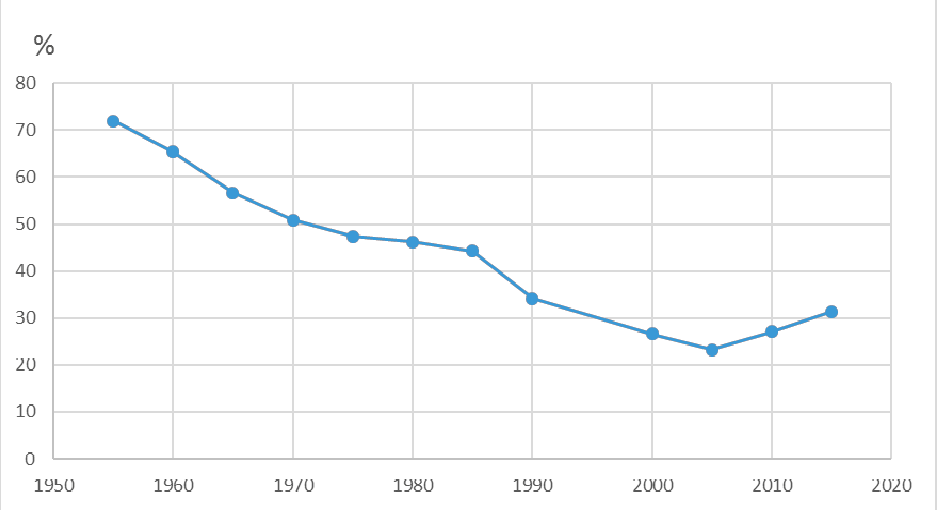
Low levels of female labor force participation have been a mark of shame on the Turkish labor market for many years. Figure 1 demonstrates the Turkish female labor force participation between the years 1955 and 2016. The rate was 72% in 1955, then plunged to 23.3% by 2005 (its lowest-ever level) before reversing direction and rising to 32.5% by 2016.[7]

As this study focuses on the 2006-2016 period, Figure 2 presents the magnified portion of that period. The Turkish rate of female labor force participation grew from 23.6% in 2006 to 32.5 % in 2016.

The data for the female labor market in Turkey reveal that participation in it varies from region to region, as can be observed in Table 1. The coastal regions are characterized by relatively higher patterns of women working. The highest rates appear in the Black Sea region (TR81, TR82, TR83, and TR90). The rates move upward between 2006 and 2016 in all of the NUTS2 regions, except for TR90 (Trabzon, Ordu, Giresun, Rize, Artvin, Gümüşhane). On the other hand, the lowest rates are in the Southeast Anatolian regions, such as TRC1 (Gaziantep, Adıyaman, Kilis), TRC2 (Şanlıurfa, Diyarbakır), and TRC3 (Mardin, Batman, Şırnak, Siirt). Nevertheless, the greatest increase in the female presence in the workforce happened in those very three regions within the last ten-year period.

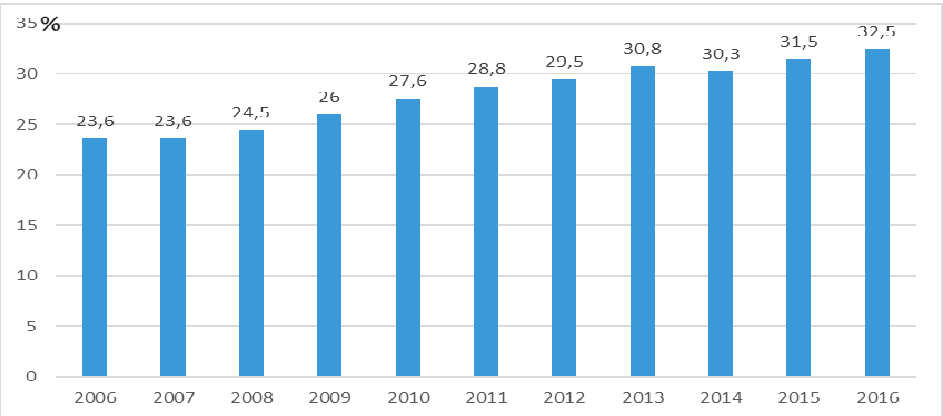
[7] The data for 1955 is taken from Tansel (2002). See Tansel (2002) and Tansel (2012) for a discussion of the reasons behind falling rates of female labor force participation in Turkey.

Figure 1. Turkish Female Labor Force Participation Rate, %, 1955-2016



Source: Tansel (2002) for 1955 and World Development Indicators for later years.
Note: Tansel (2002) details the data sources: for the period 1955-1990: the Census of the Population, State Institute of Statistics; for 1988-1990: the State Institute of Statistics Website, and the Household Labor Force Survey Results. "The Population Census figures for the years 1955-1965 include population 15 years of age and over, while for 1970-1990 they include population 12 years of age and over. The Household Labor Force Survey results for 1988-2000 include population 15 years of age and over" (Tansel, 2002, p.26).

Figure 2. Turkish Female Labor Force Participation, %, Age 15+



Source: TURKSTAT, Household Labor Force Survey

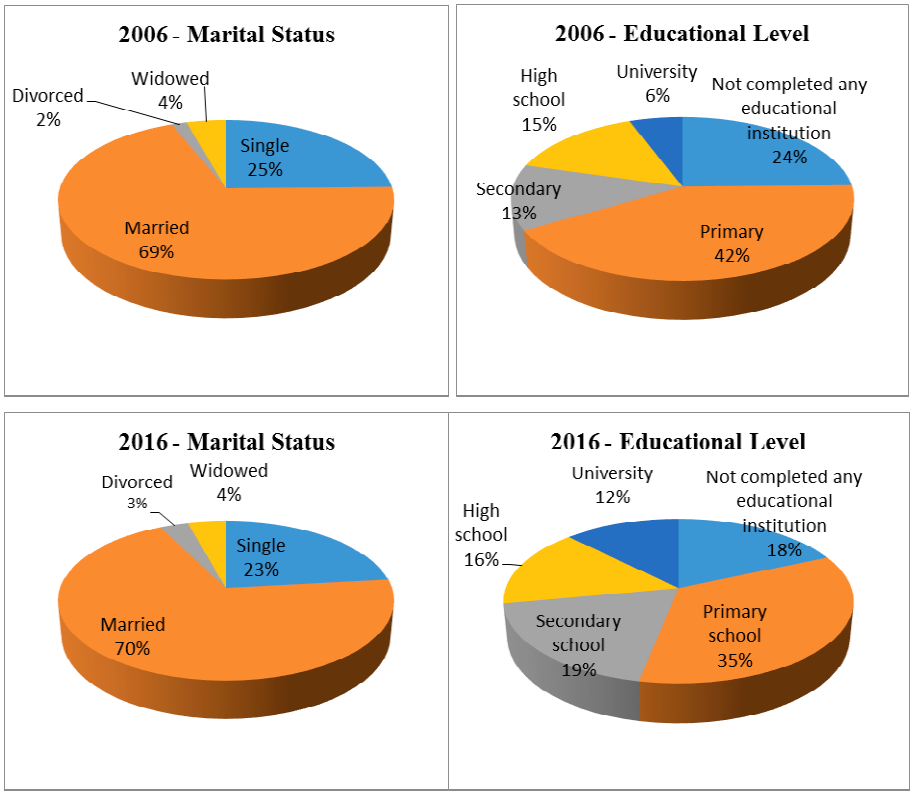
Table 1. Female Labor Force Participation Rate at NUTS 2 Level, %, Age 15+

Regions-NUTS2 Level	Labor Force 2006	Participation Rate % 2016
Average in Turkey	**23.6**	**32.5**
TR10 (İstanbul)	21.3	35.5
TR21 (Tekirdağ, Edirne, Kırklareli)	30.8	39.0
TR22 (Balıkesir, Çanakkale)	29.1	31.7
TR31 (İzmir)	21.9	37.9
TR32 (Aydın, Denizli, Muğla)	29.8	38.8
TR33 (Manisa, Afyon, Kütahya, Uşak)	24.5	34.3
TR41 (Bursa, Eskişehir, Bilecik)	27	30.3
TR42 (Kocaeli, Sakarya, Düzce, Bolu, Yalova)	20.9	33.3
TR51 (Ankara)	22.7	32.8
TR52 (Konya, Karaman)	15.1	27.4
TR61 (Antalya, Isparta, Burdur)	34.6	39.2
TR62 (Adana, Mersin)	22.5	30.1
TR63 (Hatay, Kahramanmaraş, Osmaniye)	23.2	26.4
TR71 (Kırıkkale, Aksaray, Niğde, Nevşehir, Kırşehir)	25.2	32.3
TR72 (Kayseri, Sivas, Yozgat)	13	28.0
TR81 (Zonguldak, Karabük, Bartın)	32.7	35.1
TR82 (Kastamonu, Çankırı, Sinop)	34	44.2
TR83 (Samsun, Tokat, Çorum, Amasya)	34	36.1
TR90 (Trabzon, Ordu, Giresun, Rize, Artvin, Gümüşhane)	49	41.3
TRA1 (Erzurum, Erzincan, Bayburt)	27.5	31.4
TRA2 (Ağrı, Kars, Iğdır, Ardahan)	30.3	33.5
TRB1 (Malatya, Elazığ, Bingöl, Tunceli)	21.3	30.2
TRB2 (Van, Muş, Bitlis, Hakkari)	19.1	22.9
TRC1 (Gaziantep, Adıyaman, Kilis)	8.3	19.3
TRC2 (Şanlıurfa, Diyarbakır)	4.5	22.4
TRC3 (Mardin, Batman, Şırnak, Siirt)	4.9	15.0

Source: TURKSTAT, Household Labor Force Survey

Figure 3 shows the data for the marital status and educational level of Turkish females. The percentages are calculated according to the categories established by the Household Labor Survey for Turkish females between the ages of 15 and 64 (working-age population). The marital status of Turkish females shows little change between 2006 and 2016. Over the ten years, we see a decline in primary-school graduates and those lacking any education at all, while the portion of the female population holding degrees—whether from middle school, high school, or university—is higher.

Figure 3. Marital Status and Educational Level of Turkish Females (2006 and 2016)



Source: TURKSTAT, Household Labor Survey

4. Data and Methodology

Our study uses data from the Turkish Household Labor Force Survey (HLFS), provided by the Turkish Statistical Institute (TURKSTAT) for the years 2006 and 2016. The HLFS is a data set comprised of 167,033 observa-

tions in 2006 and 167,283 observations in 2016 of Turkish females between the ages of 15 and 64.

The HLFS turns up information on demographic factors (age, region of residence, marital status, and educational level) as well as detailed information about the working status and the workplace. In this study, 15- to 64-year-old women are considered representative of Turkey's working-age female population. The variables in the analysis and their definitions are listed in Table 2.

Table 2. Definition of Variables

Variable	Description of Variable	Type of the Variable
Working status	Labor force status of household member 1. Employed 2. Unemployed 3. Not in labor force	Categorical
Age	Completed age	Count
Education	What is the latest educational institution/level you graduated from? 1- Not completed any educational institution 2- Primary school 3- Middle school, vocational school at middle-school level or primary education 4- High school 5-Vocational or technical high school 6- Higher education	Ordered
Course	Have you had any special course or training program or course outside of formal education within the last four weeks? (Foreign-language courses, computer courses, cutting-sewing courses, courses for the preparation for higher education, civil servant exam, open university, driving courses, university-preparation courses, seminars, etc.) (The answer is "Yes" or "No")	Binary
Marital Status	What is your marital status? (1. Single 2. Married 3. Divorced 4. Widowed)	Nominal

Source: TURKSTAT Household Labor Force Survey (HLFS)

The variable "female labor force participation" is a binary variable; if a woman is in the labor force, it takes the value of 1, and if she is not, it takes 0. Two different groups of dummy variables for marital status and educational level are created. The educational level of the females in the HLFS data are narrowed down into five groups for this study:

i) Not completed any educational institution: Women who are both illiterate and literate but have not completed any educational institution are combined.

ii) Primary School

iii) Middle School

iv) High School: Women who completed high school or vocational or technical high school are combined.

v) Higher Education: two- or three-year higher education or faculty or four years of higher education or faculty, Master's degree (five or six years faculty included) or doctorate levels are combined.

In 2006, HLFS data organize the information into six types of marital status: single, married, living together without being married, married but not living together, divorced, and widowed. For this study, those who are "married," or "living together without being married," or "married but not living together" are pooled together as "married." Therefore, the marital statuses of women are categorized as four groups of dummy variables: single, married, divorced, and widowed.

In the empirical analysis, we investigate the effects of educational level and marital status of women on their labor force participation using a probit model of the form;

$\Pr(Y_i = 1) = \phi(\beta_0 + \beta_1 Z_i + X_i^{'}\beta_2)$ where;

Y_i : Binary variable, female labor force participation

$Z_i^{'}$: Educational level, marital status

$X_i^{'}$: Other control variables; age, age square, course.

The study examines each NUTS2 region by creating 26 separate probit-regression models (See Appendix A for the list of regions at NUTS 2 level).

It should be noted that the number of children is not used in the analysis. The HLFS does not identify the parents of those respondents under the age of 15, so there is confusion as to whom they belong: are they the respondent's children or do they belong to some other female in the same household?[8] Therefore, this variable is not included in the model.

[8] Even if it can be identified, this might cause the problem of endogeneity, which is very likely to be present in the context of labor force participation.

5. Empirical Results

In this section, probit analysis is performed in order to analyze the impact of marital status and educational level on female labor force participation in Turkey. The analysis is carried out at NUTS 2 level for the years 2006 and 2016 with data from the Household Labor Force Survey.

The results are summarized in maps provided below in Figures 4 and 5. In these maps, blue/light (red/dark) color highlights the increase (decrease) in the participation probability of women in the Turkish labor force. White color indicates that the changes are insignificant. Reference categories are "being single" and "not completed any educational institution." Findings of the probit-regression for 2006 and 2016 are given in the Appendix, in Table A2.

5.1 The Impact of Education Level

Figure 4 shows how the participation probability of females in the labor force varies by educational level across Turkish regions. The study compares the results of 2006 and 2016 to determine any differences or similarities across regions.

In 2006, primary school graduates are more likely to participate in the labor force than those who have "not completed any educational institution" only in regions TR32 (Aydın, Muğla, Denizli) and TR41 (Bursa, Eskişehir, Bilecik). On the other hand, in TR 22 (Balıkesir, Çanakkale), in the West, and in many regions in Central Anatolia, the Black Sea region, and Southeastern Anatolia, the participation probability of women is higher for those who have not completed any educational institution.

In 2016, the number of blue/light regions rises on the map. TR21 (Tekirdağ, Edirne, Kırklareli), TR32 (Aydın, Muğla, Denizli), TR41 (Bursa, Eskişehir, Bilecik), TR52 (Konya, Karaman), TR62 (Adana, Mersin), TR10 (İstanbul), and TR31 (İzmir) are the regions where this probability is highest in 2016.

However, both in 2006 and 2016, in most of the regions in the eastern parts of Turkey (Central Anatolia, the Black Sea region, East Anatolia, Southeast Anatolia), primary school graduates are less likely to participate in the

Figure 4. Probit Results of Females by Educational Level, 2006 and 2016

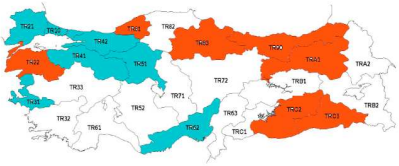
a. Primary School - 2006

a. Primary School - 2016

b. Middle School - 2006

b. Middle School - 2016

c. High School - 2006



c. High School - 2016

d. Higher education - 2006

d. Higher education - 2016

Source: Authors' own calculations from the Household Labor Force Survey Data (TURKSTAT)

Key:

	Increase in the participation probability of women in the labor force
	Decrease in the participation probability of women in the labor force

labor force in comparison to those who have not completed any educational institution. See Figure 4a.

In 2006, the probability of female middle school graduates participating in the labor force is higher than of those who have "not completed any educational institution" only in the regions TR10 (İstanbul), TR32 (Aydın, Muğla, Denizli), and TR41 (Bursa, Eskişehir, Bilecik).

In 2016, as in the primary school case, the number of blue/light regions is greater; in TR10 (Istanbul), TR21 (Edirne, Tekirdağ, Kırklareli), TR41 (Bursa, Eskişehir, Bilecik), TR62 (Adana, Mersin), and TR63 (Hatay, Kahramanmaraş, Osmaniye), middle school graduates are more likely to be in the labor force. As shown in Figure 4b, the number of statistically insignificant regions increases in 2016.

Completing high school ups the probability of being in the labor force, particularly in the Marmara region in 2006 and in the Central Anatolian regions in 2016.

The results show the lower probability of female high school graduates being in the workforce in Turkey's Eastern regions (especially the eastern parts of Central Anatolia and the Black Sea) in comparison to the reference category ("not completed any educational institution") in 2016 (Figure 4c).

Having higher education (university, faculty, or upper) is statistically significant almost in all regions in both years.[9] Therefore, the probability of a woman's participation in the labor force is higher if she has a "Bachelor's degree or a Master's degree" than those not having "completed any educational institution" (Figure 4d).

The control variables for the analyses, namely, "age" and "age square," are statistically significant in all regions for both 2006 and 2016. The results suggest that as "age" increases, Turkish women are more likely to participate in the labor force. The estimated coefficient for the "age square" is negative and significant. This result is expected since, as a woman gets older, the probability of her participating in the labor force decreases.

In a nutshell, the results suggest that as of 2016 there are more regions where the participation probability of Turkish women with primary, middle, or high school education is higher. The participation probability of university or upper graduate females is greater in almost all regions in both 2006 and 2016.

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[9] The exceptions to this are TR90 (Trabzon, Ordu, Giresun, Rize, Artvin, Gümüş) in 2006 and TR 82 (Kastamonu, Çankırı, Sinop) in 2016.

In addition, the red/dark colored regions (where the probability of participation is lower compared to the group who have not completed any educational institution) are concentrated in the Central and the Eastern Black Sea and some regions in Central and Eastern Anatolia in 2016 (Figure 4a, 4b, 4c). It is worth noting that these regions indicate a rigidity, with lower participation probabilities for female graduates of primary, middle, or high school in both 2006 and 2016.

Overall, attending any course or receiving any training does not appear to affect Turkish female labor force participation, although it does seem to help in many regions in 2006 and in all regions in 2016 (Table A2 in Appendix).

5.2 The Impact of Marital Status

It can be observed in Figure 5 that the probability of women's being in the labor force contracts when they are married, compared to those in the reference category "single women", in most of the regions in Turkey for both 2006 and 2016.

This is the case in all regions except TRA2 (Ağrı, Kars, Iğdır, Ardahan) and TRB2 (Van, Muş, Bitlis, Hakkari) in 2006. Only in TRB2 (Van, Muş, Bitlis, Hakkari) are married women likelier to participate in the labor force in this year. On the other hand, the estimated coefficient is insignificant for TRA2 (Ağrı, Kars, Iğdır, Ardahan).

It is shown in Figure 5a that the number of regions with insignificant results is higher in 2016. In addition to the Eastern Anatolia provinces, the insignificant results now extend to the Black Sea provinces.

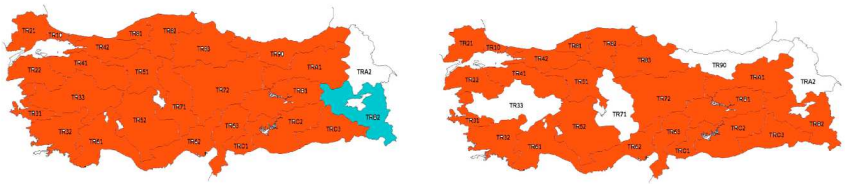
In 2006, there are only four regions where "being divorced" makes a statistically significant effect. In TR31 (İzmir), TR61 (Antalya, Isparta, Burdur), TR62 (Adana, Mersin), and TR21 (Edirne, Tekirdağ, Kırklareli), the participation probability of divorced women is lower than for single women.

In 2016, the number of blue/light-colored regions increases; that is, in Central Anatolia and in the two regions of the Black Sea (TR81 (Zonguldak, Karabük, Bartın) and TR90 (Trabzon, Ordu, Giresun, Rize, Artvin, Gümüşhane), divorced women are more likely to participate in the labor force than single women. These results are shown in Figure 5b.

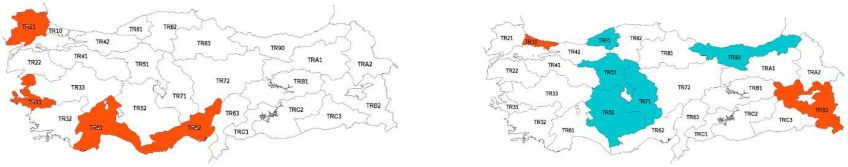
It is observed in Figure 5c that in both 2006 and 2016, the probability of a woman's participation in the labor force is higher if she is a widow, almost in all regions.

Figure 5. Probit Results by Marital Status: 2006 and 2016

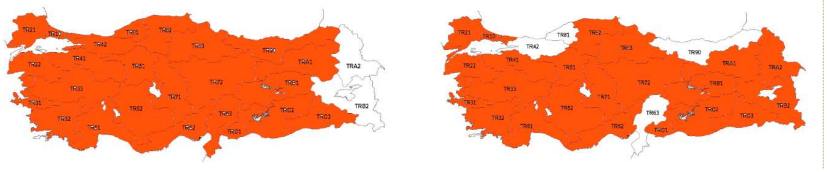
a. Married - 2006 **a. Married - 2016**



b. Divorced - 2006 **b. Divorced - 2016**



c. Widowed - 2006 **c. Widowed - 2016**



Source: Authors' own calculations from the Household Labor Force Survey data (TURKSTAT)

Key:

	Increase in probability of women's participation in the labor force
	Decrease in probability of women's participation in the labor force

6. Conclusion

From 2006 to 2016, Turkish females' labor force participation rose in all of the country's NUTS 2 level regions, except for TR90 (Trabzon, Ordu, Giresun, Rize, Artvin, Gümüşhane), which was already doing well. In 2006, TR90 displays the highest rate of female labor force participation; in 2016, the second highest. Interestingly, the lowest rates appear in the Southeast Anato-

lian regions, yet this is where the greatest strides occurred over the ten-year period in expanding women's presence in the workplace.

Our analyses focus on the effects of educational level and marital status on Turkish women's participation in the labor force in the years 2006 and 2016. To this end, probit analyses are performed for each Turkish NUTS2 region. The reference categories in the analyses are "being single" and "not completed any educational institution." The noteworthy results from the probit analyses can be summarized as follows:

i) In comparison to women who have "not completed any educational institution," the participation probability of Turkish women in the labor force is higher if they have "a Bachelor's or higher degree," in both 2006 and 2016, in almost all regions;

ii) Many regions have lower participation probabilities for primary and middle school graduates in 2006 and 2016. However, the number of these regions (red/dark regions) is lower in 2016 than in 2006, especially for the middle school graduates. We also see an increase in the number of regions where the participation probability of female primary, middle, and high school graduates finding a job goes up from 2006 to 2016.

iii) The Central and the Eastern Black Sea regions show invariably lower participation probabilities in the labor force for women with high school education (compared to those not having completed any educational institution). In general, such a lower probability is apparent for all Turkish women with primary, middle, or high school education. For all these education levels, the Central and the Eastern Black Sea and certain regions in Central and Eastern Anatolia indicate a rigidity from 2006 to 2016.

We see that agriculture is the dominant sector in these regions, with a greater than 50% employment share. We observe from the data provided in Table A3 in the Appendix that many Turkish women work in agriculture. Keeping in mind the reality here—the use of women in these rural areas as unpaid family workers in the fields—the rigidity (i.e., insisting on lower participation probabilities for women here, despite their greater level of education, not counting higher education) can be better understood.

In the regions with such rigidity (e.g., TR82 (Kastamonu, Çankırı, Sinop), TR83 (Samsun, Tokat, Çorum, Amasya), TR90 (Trabzon, Ordu, Giresun, Rize, Artvin, Gümüşhane), TRB2 (Van, Muş, Bitlis, Hakkari), and TRA1 (Erzurum, Erzincan, Bayburt)), the share of females working in agriculture is considerably high. Refer to Table A3 in the Appendix.

iv) Compared to single women, married or widowed women have a lower probability of being in the labor force in almost all regions of Turkey. The results are almost the same in 2006 and in 2016, suggesting the existence of rigidity for these women. This can be attributed to married and widowed women's having fewer financial worries. The findings differ for divorced women in some regions, with their higher probability of participating in the labor force. Considering that divorced women often need to support their families, we anticipated this result.

v) Women's attending any courses, seminars, or conferences, or receiving private lessons or instruction, raises the probability of their participating in the workforce in many regions of Turkey in 2006 and in all regions in 2016.

Finally, the findings of our analysis delineate the female labor force participation at the regional level in Turkey. This study is the first that examines this dynamic at the NUST2 level. Although we find no substantial difference between 2006 and 2016 by educational level, the two findings draw attention to the increasing participation probabilities of women in many Turkish regions in 2016 as well as their rigid lower participation probabilities elsewhere (despite the higher level of education, not counting higher education).

Furthermore, when it comes to the role of higher education, its effect on the participation decision is obvious. The differing results across Turkish regions may be explained by wide-ranging educational levels and sectoral variations.

Moreover, the sociological factors specific to regions should be examined to find the underlying causes of regional inequities in Turkey as well as the rigidities. Such ongoing investigation is essential if Turkish women are ever to assume their rightful place in the national economy. New regional labor policies may help to bring about this vision.

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Appendix

Table A1. Statistical Regions: NUTS 2 Level

TR10 İstanbul
TR21 Edirne, Tekirdağ, Kırklareli
TR22 Balıkesir, Çanakkale
TR31 İzmir
TR32 Denizli, Aydın, Muğla
TR33 Manisa, Afyonkarahisar, Kütahya, Uşak
TR41 Bursa, Eskişehir, Bilecik
TR42 Kocaeli, Sakarya, Düzce, Bolu, Yalova
TR51 Ankara
TR52 Konya, Karaman
TR61 Antalya, Isparta, Burdur
TR62 Adana, Mersin
TR63 Hatay, Kahramanmaraş, Osmaniye
TR71 Nevşehir, Aksaray, Niğde, Kırıkkale, Kırşehir
TR72 Kayseri, Sivas, Yozgat
TR81 Zonguldak, Karabük, Bartın
TR82 Kastamonu, Çankırı, Sinop
TR83 Samsun, Tokat, Çorum, Amasya
TR90 Trabzon, Ordu, Giresun, Rize, Artvin, Gümüşhane
TRA1 Erzurum, Erzincan, Bayburt
TRA2 Kars, Ağrı, Iğdır, Ardahan
TRB1 Malatya, Elazığ, Bingöl, Tunceli
TRB2 Van, Muş, Bitlis, Hakkari
TRC1 Gaziantep, Adıyaman, Kilis
TRC2 Diyarbakır, Şanlıurfa
TRC3 Siirt, Mardin, Batman, Şırnak

Table A2. Probit Results by Statistical Regions: NUTS 2 Level – 2006 HLFS Data

Variables	TR10 İstanbul	TR21 Tekirdağ, Edirne, Kırklareli	TR22 Balıkesir, Çanakkale	TR31 İzmir	TR32 Aydın, Denizli, Muğla	TR33 Manisa, Afyon, Kütahya, Uşak	TR41 Bursa, Eskişehir Bilecik	TR42 Kocaeli, Sakarya, Düzce, Bolu, Yalova	TR51 Ankara	TR52 Konya, Karaman	TR61 Antalya, Isparta, Burdur	TR62 Adana, Mersin	TR63 Hatay, Kahramanmaraş, Osmaniye
Age	0.0417***	0.0353***	0.0358***	0.0439***	0.0304***	0.0247***	0.0388***	0.0245***	0.0493***	0.0232***	0.0385***	0.0325***	0.0282***
	(25.84)	(8.19)	(8.71)	(17.53)	(8.80)	(10.19)	(13.58)	(10.32)	(19.96)	(8.23)	(9.62)	(12.59)	(9.64)
Age Square	-0.0005***	-0.0004***	-0.0004***	-0.0005***	-0.0004***	-0.0003***	-0.0005***	-0.0003***	-0.0006***	-0.0003***	-0.0005***	-0.0004***	-0.0003***
	(-26.78)	(-9.00)	(-9.97)	(-18.76)	(-9.92)	(-11.24)	(-14.22)	(-10.23)	(-20.37)	(-8.78)	(-10.31)	(-13.11)	(-9.34)
Prim. Sch.	-0.00567	0.0107	-0.0999***	0.0260	0.0578**	-0.0120	0.0615***	-0.00544	-0.0769***	-0.0460**	-0.0293	-0.00619	-0.0571***
	(-0.65)	(0.41)	(-4.49)	(1.89)	(2.96)	(-0.95)	(3.55)	(-0.42)	(-4.73)	(-3.10)	(-1.39)	(-0.49)	(-3.94)
Mid. Sch.	0.0224*	-0.0651	-0.218***	0.00484	0.000432	-0.0732***	0.0696***	-0.0416*	-0.0358	-0.0612**	-0.192***	0.0599***	-0.0702**
	(2.19)	(-1.92)	(-6.87)	(0.28)	(0.02)	(-3.96)	(3.35)	(-2.35)	(-1.81)	(-2.86)	(-6.22)	(-3.44)	(-3.27)
High Sch.	0.116***	0.0650*	-0.140***	0.0744***	0.00925	0.0115	0.116***	0.0699***	0.0840***	0.0102	-0.0392	0.0679***	-0.0288
	(12.64)	(2.05)	(-4.93)	(4.75)	(0.38)	(0.68)	(5.77)	(4.36)	(4.94)	(0.53)	(-1.47)	(4.65)	(-1.48)
Higher Deg.	0.316***	0.323***	0.109**	0.306***	0.308***	0.310***	0.392***	0.345***	0.300***	0.288***	0.192***	0.338***	0.296***
	(30.49)	(8.33)	(3.17)	(17.83)	(10.95)	(14.62)	(16.12)	(17.02)	(17.79)	(12.78)	(6.14)	(18.59)	(11.18)
Married	-0.259***	-0.205***	-0.187***	-0.215***	-0.182***	-0.128***	-0.174***	-0.217***	-0.168***	-0.119***	-0.264***	-0.198***	-0.137***
	(-36.61)	(-7.60)	(-7.32)	(-15.82)	(-8.48)	(-8.63)	(-10.43)	(-17.04)	(-13.47)	(-7.57)	(-11.11)	(-15.24)	(-8.65)
Divorced	-0.0269	-0.122*	-0.0872	-0.089***	-0.0659	0.00951	-0.0444	-0.0384	0.0503	0.0112	-0.132**	-0.0767*	0.0283
	(-1.64)	(-2.00)	(-1.65)	(-3.81)	(-1.67)	(0.30)	(-1.28)	(-1.17)	(1.93)	(0.35)	(-2.58)	(-2.39)	(0.64)
Widowed	-0.181***	-0.197***	-0.170***	-0.197***	-0.219***	-0.149***	-0.198***	-0.248***	-0.133***	-0.156***	-0.299***	-0.162***	-0.120***
	(-10.21)	(-4.34)	(-4.11)	(-7.22)	(-5.51)	(-5.57)	(-6.36)	(-9.55)	(-4.92)	(-4.93)	(-6.30)	(-5.90)	(-3.58)
Course	0.162***	0.145**	0.366***	0.196***	0.352***	0.145**	0.177***	0.171***	0.165***	0.0920**	0.136**	0.166***	0.0927**
	(5.05)	(3.10)	(3.79)	(4.81)	(6.02)	(2.93)	(4.46)	(4.81)	(4.42)	(2.66)	(2.75)	(4.23)	(2.64)
Obs.	20,209	3,828	4,280	9,112	5,839	10,442	8,235	9,055	8,115	5,541	4,813	7,695	6,126

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

Table A2. Probit Results by Statistical Regions: NUTS 2 Level – 2006 HLFS Data

Variables	TR71 Kırıkkale, Aksaray, Niğde, Nevşehir, Kırşehir	TR72 Kayseri, Sivas, Yozgat	TR81 Zonguldak, Karabük, Bartın	TR82 Kastamonu, Çankırı, Sinop	TR83 Samsun, Tokat, Çorum, Amasya	TR90 Trabzon, Ordu, Giresun, Rize, Artvin, Gümüşhane	TRA1 Erzurum, Erzincan, Bayburt	TRA2 Ağrı, Kars, Iğdır, Ardahan	TRB1 Malatya, Elazığ Bingöl, Tunceli	TRB2 Van, Muş, Bitlis, Hakkari	TRC1 Gaziantep, Adıyaman, Kilis	TRC2 Şanlıurfa, Diyarbakır	TRC3 Mardin, Batman, Şırnak, Siirt
Age	0.0169***	0.0154***	0.0254***	0.0132**	0.0221***	0.0253***	0.0138***	0.0299***	0.0296***	0.0156***	0.0173***	0.00477***	0.00945***
	(4.93)	(5.44)	(5.85)	(3.06)	(7.85)	(7.12)	(3.67)	(7.99)	(8.28)	(5.31)	(7.27)	(3.37)	(5.82)
Age Square	-0.0002***	-0.0001***	-0.0003***	-0.0001***	-0.0003***	-0.0004***	-0.0001**	-0.0003***	-0.0003***	-0.0002***	-0.0002***	-0.00006**	-0.0001***
	(-5.25)	(-5.31)	(-6.18)	(-3.37)	(-8.93)	(-8.26)	(-2.92)	(-6.97)	(-7.48)	(-4.42)	(-6.73)	(-3.16)	(-5.22)
Prim. Sch.	-0.0467*	-0.0448**	-0.146***	-0.100***	-0.121***	-0.145***	-0.0398*	-0.00102	-0.0304	-0.0789***	-0.0234*	-0.0405***	0.00187
	(-2.57)	(-3.18)	(-6.54)	(-4.44)	(-8.75)	(-7.59)	(-2.42)	(-0.06)	(-1.77)	(-5.13)	(-2.29)	(-4.35)	(0.25)
Mid. Sch.	-0.129***	-0.0957***	-0.207***	-0.245***	-0.243***	-0.345***	-0.215***	-0.0900**	-0.147***	-0.192***	-0.0201	-0.0305**	0.0222*
	(-4.93)	(-4.32)	(-6.43)	(-7.17)	(-11.61)	(-12.86)	(-7.61)	(-3.07)	(-4.95)	(-5.26)	(-1.26)	(-2.73)	(2.45)
High Sch.	-0.00849	-0.0174	-0.205***	-0.111***	-0.188***	-0.310***	-0.102***	0.00349	-0.0195	0.0260	-0.00858	0.0302***	0.0740***
	(-0.36)	(-0.90)	(-6.61)	(-3.63)	(-9.69)	(-13.40)	(-4.08)	(0.14)	(-0.86)	(1.13)	(-0.54)	(3.72)	(9.56)
High. Deg	0.416***	0.270***	0.164***	0.227***	0.207***	-0.00329	0.301***	0.395***	0.272***	0.430***	0.251***	0.206***	0.188***
	(12.31)	(11.51)	(4.13)	(5.68)	(7.11)	(-0.11)	(8.03)	(12.18)	(8.30)	(9.63)	(12.75)	(16.52)	(17.80)
Married	-0.105***	-0.128***	-0.157***	-0.111***	-0.126***	-0.0810***	-0.102***	-0.0260	-0.157***	0.0354*	-0.127***	-0.0516***	-0.0549***
	(-4.92)	(-7.62)	(-6.13)	(-4.08)	(-7.07)	(-3.79)	(-4.84)	(-1.15)	(-8.03)	(2.06)	(-9.50)	(-6.60)	(-7.02)
Divorced	-0.00787	-0.0413	-0.0226	0.0442	-0.0826	-0.0566	-0.0131	-0.183	-0.100	0.178	-0.0490	-0.0211	-0.0512
	(-0.17)	(-1.12)	(-0.35)	(0.59)	(-1.70)	(-0.83)	(-0.18)	(-1.58)	(-1.53)	(1.53)	(-1.23)	(-0.71)	(-0.85)
Widowed	-0.0858*	-0.182***	-0.156***	-0.218***	-0.235***	-0.102**	-0.175***	-0.0371	-0.160***	-0.0643	-0.173***	-0.0584**	-0.0411*
	(-2.35)	(-5.95)	(-3.49)	(-4.60)	(-7.59)	(-2.77)	(-4.30)	(-0.85)	(-4.32)	(-1.79)	(-5.56)	(-3.17)	(-2.24)
Course	0.140***	0.0951	0.194***	0.0773	0.237***	0.291***	0.204*	0.131	0.246**	0.0295	0.0788	0.0562	0
	(3.51)	(1.41)	(3.38)	(1.11)	(4.74)	(7.31)	(2.07)	(1.42)	(2.59)	(0.34)	(1.15)	(1.46)	(.)
Obs.	4,515	4,790	3,754	3,538	8,014	5,774	3,879	3,731	3,781	5,060	4,574	7,014	5,315

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

Table A2. Probit Results by Statistical Regions: NUTS 2 Level – 2016 HLFS Data

Variables	TR10 İstanbul	TR21 Tekirdağ, Edirne, Kırklareli	TR22 Balıkesir, Çanakkale	TR31 İzmir	TR32 Aydın, Denizli, Muğla	TR33 Manisa, Afyon, Kütahya, Uşak	TR41 Bursa, Eskişehir, Bilecik	TR42 Kocaeli, Sakarya, Düzce, Bolu, Yalova	TR51 Ankara	TR52 Konya, Karaman	TR61 Antalya, Isparta, Burdur	TR62 Adana, Mersin	TR63 Hatay, Kahramanmaraş, Osmaniye
Age	0.0620***	0.0587***	0.0415***	0.0545***	0.0418***	0.0455***	0.0495***	0.0493***	0.0513***	0.0326***	0.0632***	0.0386***	0.0379***
	(30.93)	(16.00)	(11.37)	(18.68)	(11.57)	(12.44)	(15.80)	(15.04)	(20.94)	(11.36)	(18.09)	(13.73)	(11.60)
Age Square	-0.0008***	-0.0008***	-0.0006***	-0.0007***	-0.0006***	-0.0006***	-0.0007***	-0.0006***	-0.0007***	-0.0004***	-0.0008***	-0.0005***	-0.0005***
	(-32.51)	(-18.21)	(-13.22)	(-21.38)	(-13.43)	(-14.16)	(-17.54)	(-16.44)	(-22.43)	(-12.77)	(-19.79)	(-14.35)	(-12.08)
Prim. Sch.	0.0281*	0.157***	0.0307	0.0470**	0.101***	-0.00382	0.119***	0.0301	0.00762	0.0398*	-0.000629	0.102***	0.0164
	(2.27)	(6.16)	(1.35)	(2.63)	(4.87)	(-0.20)	(5.19)	(1.51)	(0.39)	(2.38)	(-0.03)	(6.68)	(0.97)
Mid. Sch.	0.0672***	0.0692*	-0.0963***	0.0306	-0.0417	-0.0673*	0.0807**	-0.0125	0.0389	0.0105	-0.0554*	0.0827***	0.0324
	(4.87)	(2.32)	(-3.37)	(1.42)	(-1.55)	(-2.50)	(3.15)	(-0.51)	(1.83)	(0.49)	(-2.15)	(4.22)	(1.44)
High Sch.	0.127***	0.175***	-0.0596*	0.0740***	0.0136	-0.0423	0.156***	0.0758***	0.0954***	0.0590**	-0.00352	0.143***	0.0377
	(9.82)	(6.27)	(-2.25)	(3.77)	(0.55)	(-1.69)	(6.42)	(3.35)	(4.75)	(2.76)	(-0.15)	(7.93)	(1.77)
Higher Degree	0.358***	0.337***	0.247***	0.357***	0.268***	0.251***	0.390***	0.310***	0.376***	0.309***	0.234***	0.387***	0.339***
	(28.64)	(11.45)	(9.11)	(18.26)	(10.66)	(9.46)	(16.00)	(13.19)	(19.72)	(14.47)	(9.49)	(20.90)	(14.78)
Married	-0.278***	-0.154***	-0.0687**	-0.163***	-0.0746**	-0.101***	-0.189***	-0.199***	-0.152***	-0.0735***	-0.189***	-0.129***	-0.101***
	(-26.56)	(-6.11)	(-2.90)	(-8.96)	(-3.17)	(-4.36)	(-10.21)	(-10.24)	(-11.12)	(-4.33)	(-8.60)	(-7.60)	(-5.52)
Divorced	-0.0625***	0.00674	0.0496	0.0290	-0.0684	-0.0209	-0.0375	-0.0256	0.119***	0.0645*	-0.00142	0.0426	0.0720
	(-3.32)	(0.16)	(1.28)	(1.05)	(-1.85)	(-0.53)	(-1.22)	(-0.71)	(5.06)	(2.19)	(-0.04)	(1.45)	(1.85)
Widowed	-0.231***	-0.233***	-0.192***	-0.160***	-0.132**	-0.275***	-0.288***	-0.165***	-0.0927**	-0.138***	-0.223***	-0.164***	-0.180***
	(-9.47)	(-5.76)	(-5.06)	(-4.95)	(-3.26)	(-6.82)	(-7.56)	(-4.56)	(-3.25)	(-4.37)	(-5.37)	(-5.34)	(-4.36)
Course	0.145***	0.139**	0.130**	0.127***	0.156***	0.361***	0.190***	0.0884***	0.146***	0.153***	0.0720*	0.210***	0.162***
	(5.98)	(2.99)	(2.66)	(3.52)	(3.37)	(6.55)	(3.63)	(3.41)	(5.08)	(5.68)	(2.49)	(6.16)	(3.94)
Obs.	15,767	5,332	5,855	7,630	6,295	6,100	7,007	6,638	9,908	9,324	6,270	7,538	5,506

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

Table A2. Probit Results by Statistical Regions: NUTS 2 Level – 2016 HLFS Data

Variables	TR71 Kırıkkale, Aksaray, Niğde, Nevşehir, Kırşehir	TR72 Kayseri, Sivas, Yozgat	TR81 Zonguldak, Karabük, Bartın	TR82 Kastamonu, Çankırı, Sinop	TR83 Samsun, Tokat, Çorum, Amasya	TR90 Trabzon, Ordu, Giresun, Rize, Artvin Gümüşhane	TRA1 Erzurum, Erzincan, Bayburt	TRA2 Ağrı, Kars Iğdır, Ardahan	TRB1 Malatya, Elazığ, Bingöl, Tunceli	TRB2 Van, Muş Bitlis, Hakkari	TRC1 Gaziantep, Adıyaman, Kilis	TRC2 Şanlıurfa, Diyarbakır	TRC3 Mardin, Batman, Şırnak, Siirt
Age	0.0299***	0.0343***	0.0321***	0.0335***	0.0450***	0.0499***	0.0320***	0.0359***	0.0357***	0.0224***	0.0246***	0.0136***	0.0318***
	(8.34)	(9.32)	(6.65)	(7.89)	(13.27)	(15.73)	(8.42)	(9.15)	(10.12)	(8.22)	(8.60)	(4.85)	(10.10)
Age Square	-0.0004***	-0.0004***	-0.0004***	-0.0005***	-0.0006***	-0.0006***	-0.0004***	-0.0004***	-0.0004***	-0.0003***	-0.0003***	-0.0002***	-0.0004***
	(-9.57)	(-10.30)	(-7.39)	(-9.82)	(-14.70)	(-16.25)	(-8.47)	(-8.69)	(-9.95)	(-7.42)	(-8.42)	(-4.26)	(-9.48)
Prim. Sch.	-0.0731***	-0.0975***	-0.0476	-0.0670**	-0.0870***	-0.0484**	-0.0587**	0.0896***	-0.0447*	-0.112***	-0.0197	-0.0524**	0.0198
	(-4.13)	(-5.13)	(-1.79)	(-3.04)	(-5.06)	(-2.91)	(-3.25)	(5.02)	(-2.47)	(-7.12)	(-1.42)	(-3.15)	(1.26)
Mid. Sch.	-0.113***	-0.0963***	-0.0610	-0.194***	-0.172***	-0.138***	-0.145***	-0.0224	-0.0471	-0.0976***	-0.0174	-0.0560***	0.0355*
	(-4.57)	(-3.76)	(-1.60)	(-6.20)	(-7.13)	(-5.78)	(-5.49)	(-0.93)	(-1.91)	(-5.76)	(-0.99)	(-3.36)	(2.03)
High Sch.	-0.0456	-0.132***	-0.0530	-0.171***	-0.157***	-0.153***	-0.177***	0.0225	-0.00997	-0.0721***	0.0795***	0.0218	0.117***
	(-1.92)	(-5.33)	(-1.49)	(-5.69)	(-6.76)	(-6.97)	(-6.83)	(0.80)	(-0.44)	(-3.45)	(4.65)	(1.13)	(6.51)
Higher Deg	0.296***	0.181***	0.276***	0.0579	0.142***	0.101***	0.221***	0.255***	0.281***	0.236***	0.369***	0.360***	0.325***
	(11.17)	(7.12)	(6.82)	(1.75)	(5.71)	(4.27)	(8.14)	(7.41)	(12.59)	(10.48)	(23.08)	(17.50)	(16.57)
Married	0.0199	-0.081***	-0.0429	-0.0543*	-0.0835***	0.0156	-0.0906***	0.00609	-0.108***	-0.0539***	-0.124***	-0.147***	-0.138***
	(0.88)	(-3.72)	(-1.50)	(-2.00)	(-3.99)	(0.81)	(-4.15)	(0.24)	(-5.38)	(-3.38)	(-7.68)	(-9.41)	(-8.76)
Divorced	0.144***	0.0612	0.123*	0.0500	-0.0789	0.149**	0.0679	0.0346	0.0399	-0.348*	0.0556	-0.0559	0.0806
	(3.71)	(1.50)	(2.19)	(0.95)	(-1.80)	(3.11)	(1.21)	(0.49)	(1.05)	(-2.55)	(1.82)	(-1.38)	(1.75)
Widowed	-0.0906*	-0.156***	-0.0221	-0.158***	-0.274***	-0.0540	-0.243***	-0.159***	-0.171***	-0.158***	-0.0929**	-0.207***	-0.278***
	(-2.46)	(-4.11)	(-0.46)	(-3.58)	(-7.75)	(-1.69)	(-5.57)	(-3.42)	(-4.19)	(-4.79)	(-3.09)	(-5.96)	(-5.37)
Course	0.105*	0.202***	0.135***	0.184***	0.155***	0.320***	0.508***	0.127**	0.128***	0.0918*	0.132**	0.296***	0.188***
	(2.46)	(3.47)	(3.49)	(4.50)	(5.15)	(6.29)	(6.13)	(2.85)	(3.56)	(2.18)	(2.58)	(5.45)	(4.05)
Obs.	6,015	5,018	3,300	4,567	6,476	7,135	4,628	4,297	4,821	6,535	5,703	5,974	3,644

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

Table A3. Employment in Agriculture – 2006 and 2016: TURKSTAT Data

Regions-NUTS2 Level	Employment in agriculture (% of total employment) (2006)	Employment in agriculture (% of total employment) (2016)	Employment in agriculture (% of female employment) (2006)	Employment in agriculture (% of female employment) (2016)
Average in Turkey	**20.4**	**19.5**	**43.6**	**28.7**
TR10 (İstanbul)	0.4	0.9	0.2	1.2
TR21 (Tekirdağ, Edirne, Kırklareli)	21.1	17.1	32.7	19.0
TR22 (Balıkesir, Çanakkale)	47.6	29.3	67.3	38.1
TR31 (İzmir)	10.6	10.5	17.6	14.8
TR32 (Aydın, Denizli, Muğla)	32.6	28.5	49.9	37.9
TR33 (Manisa, Afyon, Kütahya, Uşak)	38.4	34.6	62.9	50.4
TR41 (Bursa, Eskişehir, Bilecik)	14.4	9.8	23.6	12.8
TR42 (Kocaeli, Sakarya, Düzce, Bolu, Yalova)	13.4	14.2	26.8	20.4
TR51 (Ankara)	3.5	3.5	4.4	4.4
TR52 (Konya, Karaman)	27.7	25.8	52.0	39.7
TR61 (Antalya, Isparta, Burdur)	29.3	24.4	48.2	33.7
TR62 (Adana, Mersin)	21.7	23.6	32.1	30.0
TR63 (Hatay, Kahramanmaraş, Osmaniye)	31.8	21.5	57.1	32.6
TR71 (Kırıkkale, Aksaray, Niğde, Nevşehir, Kırşehir)	41.9	32.3	75.2	49.7
TR72 (Kayseri, Sivas, Yozgat)	22.4	29.3	49.6	45.7
TR81 (Zonguldak, Karabük, Bartın)	35.0	32.2	69.8	52.0
TR82 (Kastamonu, Çankırı, Sinop)	58.6	48.6	83.4	63.8
TR83 (Samsun, Tokat, Çorum, Amasya)	46.9	40.0	72.2	56.6
TR90 (Trabzon, Ordu, Giresun, Rize, Artvin, Gümüşhane)	52.8	42.2	80.7	61.2
TRA1 (Erzurum, Erzincan, Bayburt)	51.6	45.8	83.4	65.9
TRA2 (Ağrı, Kars, Iğdır, Ardahan)	57.7	55.5	84.9	75.0
TRB1 (Malatya, Elazığ, Bingöl, Tunceli)	41.0	29.4	75.1	42.9
TRB2 (Van, Muş, Bitlis, Hakkari)	55.4	41.7	89.5	74.1
TRC1 (Gaziantep, Adıyaman, Kilis)	20.4	13.1	41.9	20.6
TRC2 (Şanlıurfa, Diyarbakır)	24.8	35.4	54.8	55.7
TRC3 (Mardin, Batman, Şırnak, Siirt)	20.1	12.4	24.8	13.0

Source: TURKSTAT