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**Investigating the factors affecting female labor force participation in
Türkiye. A study based on the Household Labor Force Survey 2022**

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ABSTRACT

Türkiye has the lowest female labor force participation (FLFP) rate among OECD countries making it essential to explore the determinants behind women's decisions to enter the labor force. Accordingly, this study analyzes factors influencing female labor force participation (FLFP) in Türkiye using the TURKSTAT Labor Force Statistics Micro Data for 2022 based on Household Labor Force Survey 2022. A probit model is applied, focusing on personal and household characteristics. Key findings show that being the head of household, larger household size, being single or divorced, and education (beyond secondary school) increase FLFP, while migration from birth province and being widowed reduce it. Age follows an “inverted-U” relationship with participation, where participation rising initially and declining as women reach older age groups. Regional income disparities also influence FLFP, with higher participation in wealthier regions. As well as providing a discussion on the reasons for the low FLFP, this study also calls for further research into social and cultural influences on it.

Keywords: Female labor force participation (FLFP), education, household size, migration, marital status, regional income, household data, probit model, Türkiye.

INTRODUCTION

Considering that women consist half of the world's adult population, therefore potentially the half of the labor force (Pimkina and de la Flor, 2020) and the significantly lower female labor force participation (FLFP in the sequel) than male across all regions (World Bank, 2022), it is not surprising that over the years, FLFP has been explored in many studies. To emphasize in numbers, it is worth noting that the global female labor force participation rate is 50% while the same rate for male is 80% (World Bank, 2022). In the ongoing and growing literature, there are many studies investigating the determinants of FLFP and its relationship between economic growth and social progress and mainly promoting FLFP is accepted as a strategic action target for sustainable economic development and social progress (Altuzarra and González-Flores, 2019; Anggraeni et al. 2022). In addition, the relationship between FLFP and innovation, fertility, competitiveness and so on are investigated in the literature (Lee and Chung, 2008; Richter, 2014).

By using different country specific data or cross-country data, the relationship between FLFP and economic growth has been tried to be explored. Verick (2018) emphasized that FLFP is an important determinant and outcome of growth and development, also it is an outcome of many different economic and social factors. In her study, by studying 187 countries' cross-national data, Er (2012) found that in addition to other factors more employment of women have important effects on the economic growth of a country. Similarly, Ustabaş and Gülsoy (2017) studied the relationship between FLFP and economic growth in terms of gross domestic product (GDP) per capita levels in Türkiye for the 1990-2015 period and they pointed out a strong correlation between the rate of FLFP in industry and services sectors and economic development. With the consideration of the importance of FLFP which is highlighted in the literature and in line with the expectations, there has been a policy trend to increase FLFP.

Although there is a large set of policy tools implemented by different countries in order to increase FLFP, the FLFP rates differ substantially. To generalize the relationship between FLFP and economic development, U-shaped relationship is demonstrated by Goldin (1995).

This relationship explained in a World Bank study as a relationship between development (proxied by GDP per capita) and FLFP, is high for the poorest countries, lower for middle income countries, and then rises again among high income countries (2022). U-shaped relation is mainly related with the agriculture as being dominant sector in poor countries, smaller share of agricultural activities in middle-income countries and shift of service sector and higher education levels in high-income countries. However, in the same study it is highlighted that recent studies indicating this pattern does not hold within regions or a specific country over time as their income levels rise. Verick (2018) highlighted that despite FLFP shows a tendency to increase with economic development, there is not straightforward or consistent relationship in country level and there is more variation across developing countries FLFP rather than labor force participation of males. Thus, understanding country specific factors affecting the FLFP can be leading.

For Türkiye, the level of FLFP is low for years despite a steady increase from 2004. Most recently, Turkish Statistical Institute (TURKSTAT) announced the FLFP ratio (for women over the age of 15) as 32.8% while the same ratio for man is 70.3% (2023, TURKSTAT). According to World Bank data which is based on International Labor Organization (ILO) estimates, FLFP in 2021 (% of female population aged 15-64) is 37% for Türkiye, while the same ratio is 62% for Organisation for Economic Co-operation and Development (OECD) countries. (World Bank Database, 2023). Moreover, Türkiye has the lowest FLFP ratio among OECD countries (OECD Database, 2023). By considering the low FLFP of Türkiye and the importance of understanding country specific factors affecting it, in this study the factors affecting the FLFP in Türkiye will be explored by using the Household Labor Force Survey for 2022 of

TURKSTAT. Especially by considering low FLFP ratio of Türkiye in comparison to developed countries, it becomes more important to find out the determinants behind the women's decision to be a part of labor force.

Although there are different studies exploring the determinants of FLFP in Türkiye, by using the latest version of the Household Labor Force Survey and investigating most current factors in comparison to the literature are the main aim and contribution of this paper. For this aim, the remaining of this study will focus on a woman's decision to be a part of labor force and this decision will be tried to be modelled with a probit model.

The outline of the paper is as following: In part 2, the relevant literature will be explored by focusing on the determinants of FLFP and possible variables for this study. In part 3, information about data and methodology will be provided in detail. In part 4, the results of probit modelling and findings will be shared. Finally in part 5, the concluding remarks and main results will be discussed.

LITERATURE REVIEW

In this section, related literature and the factors emphasized in the literature as being major determinants of women's labor force participation will be explained.

In the literature, in addition to individual characteristics, socio-cultural and economic factors are considered as determinants of FLFP. For instance, according to Tansel (2002), the reasons for the low FLFP of Türkiye are, the longer years of schooling of younger populations which delaying the labor market entry, changing the labor force from agricultural sector to non-agricultural sector in which participation rates are lower, and the early retirement scheme causing earlier exit from the labor force. Besides, Varol (2017) emphasized that the patriarchal culture of Turkish society is an important factor affecting the FLFP of women, whereas Uraz et al. (2010) concluded cultural variables that signal more traditional values for the household

are associated with higher participation levels for women in rural areas and lower participation levels for urban areas of Türkiye, for the sample covering the years 2003-2006.

In the scope of this paper, determinants of FLFP is explained especially focusing on personal characteristics.

Age

Age generally plays a crucial role in women's participation in the labor market. Younger women may face barriers such as childcare responsibilities, while older women may face age discrimination or difficulties in returning to work after a career break. Kızılgöl (2012) examined the reasons of women participation in both rural and urban areas and the difference between single and married women participation in Türkiye, using Household Budget Survey data between 2002 and 2008. The result is that as the women gets older, the married women prefer not to work, whereas single women stay in the labor force. On the other hand, Varol (2017) claims that, as the age of women increases, working will be easier but this is the case until middle age of the woman. However, the increase in the number of children and the challenges faced by women in middle age, such as health problems, the decision to stay at home or difficulties in finding a new job due to limited experience, will have a negative effect on women's participation in the labor market. By using binary logit model on the World Values Survey of 2007, the study provides evidence that ageing has a positive effect on the FLFP until the age of 35-36, whereas its effect is negative after mid-30s in Türkiye. There are other studies finding a similar inverse U-shaped relationship between age and FLFP. For instance, Darıcı and Taşçı (2010) conducted a study using probit and logit specifications using TURKSTAT Household Labor Force Survey of 2006 and concluded an inverse U-shaped relation between female labor force participation and age.

Marital Status

Marriage burdens some responsibilities for women, so married women may need to work for sharing the household expenses or prefer to be housewife looking after home and her children.

The loss of husband, being divorced or being unmarried may lead a woman to prefer to participate in the labor force, as it usually involves taking economic responsibility for herself and her family and may be getting free from the pressure of husband.

On the other hand, labor force participation may be low in divorced women due to social pressures. Some of the studies in the literature on the relation between the effects of marital status on women's labor force participation are as follows: In their study conducting with TURKSTAT 2002-2008 Household Budget Surveys, Kılıç and Öztürk (2014) found that the labor force participation probability of married women or divorced/separated women is lower than that of single women. On the other side, married women are less likely to participate in the labor force than divorced women. Darıcı and Taşçı (2010) concluded that in all regions of Türkiye, the labor force participation probabilities for non-married women are always larger than that for married. Using the Household Labor Surveys of TURKSTAT for 2000, Dayıoğlu and Kırdar (2010) conducted an analysis by taking into account the rural/urban discriminant. According to that analysis, in both urban and rural areas, being married is negatively related to participation. Divorced women are also less likely to participate in rural areas but not in urban areas, whereas widowed women are less likely to enter the labor market in both areas. According to Kumaş and Çağlar (2011), being divorced is related with underemployment for a woman as a result of the study conducted with TURKSTAT Household Labor Force Survey 2009 data.

Education Level

According to the results of Address Based Population Registration System (ADNKS) 2021 of TURKSTAT, 1.593.893 woman is illiterate and 41 % of women in Türkiye do not have more

than primary school education. The most common education level among women is "primary school graduate" with 9.610.023 women having this education level (ASHB, 2023:23). Undoubtedly, this scenario has a negative effect on their involvement in labor market, placing them at a disadvantage situation compared to men who generally have better educational outcomes. Finding better jobs with higher wages is more achievable for educated women.

Moreover, higher education also helps to increase the self-esteem of women for resisting cultural pressures. However, it should be noted that educated women are also affected by cultural factors. After marrying or having a child, many educated women prefer not to work. According to Darıcı and Taşçı (2010), women with high school and higher than high school graduates are more likely to participate to the labor force than the base group of none-graduates. Positive impact on the labor force participation of women is also found by Thevenon (2013) for 18 countries between 1980 and 2007; and Varol (2017) for Türkiye. Besides, Varol (2017) concluded that graduating from college is an important determinant for FLPF. Also, Dayıoğlu and Kırdar (2010) found that university education is strongly positively associated with labor force participation in both rural and urban areas. On the other hand, Kızılgöl (2012) found that compared to illiterates, educated women are more willing to participate labor force. Kılıç and Öztürk (2014) conclude that although educational level is not important in rural areas for women employment in Türkiye, it is one of the most important factors in urban areas. Uraz et al. (2010)'s findings are also in the same line. It is concluded in the study that, in rural areas, education has less of an impact but women with low levels of education are discouraged from entering the labor market in urban areas of Türkiye. Another interesting result of the study is that urban migration from rural areas is associated with a significant decline in the labor force participation for low-educated women.

Household Size

When they have a smaller family, women can allocate more time to economic activities and other business opportunities. There are studies in literature supporting this argument. According to Darıcı and Taşçı (2010), for both married and non-married woman, as the number of individuals within the family declines, the likelihood of labor force participation increases. Also, Okunlola et al (2020) found that in Nigeria between 2016-2017, household size is negatively associated with labor force participation of woman. Having children is an important factor affecting the household size.

Therefore, in terms of its impacts on women, the increase in the number of children to be cared for at home can be considered under the same heading as household size.

In Turkish culture, women are usually expected to give a priority to their traditional roles and fulfill family responsibilities. Housekeeping and childcare are perceived as the primary duties of women, while earning money is often seen as part of men's responsibilities. With an increase in the number of children, women's responsibilities tend to raise, leading them preferring to care of them at home rather than work. In this aspect, Varol (2017) found negative effect of numbers of children on the probability of being employed for women in Türkiye. In another study, Kızılgöl (2012) concluded that the number of children reduces the labor force participation in urban areas, but in rural the situation is reversed. The founding of Dayıoğlu and Kırdar (2010) and Kılıç and Öztürk (2014) are also on the same line. Uraz et al. (2010)'s results are noteworthy in this respect. It is concluded that ever-married women (between the ages of 20-65) who are currently not working, stated "being a housewife" or taking care of children as being the main reason for not working, and these results remain the same for both the women residing in rural and urban areas, even with the high levels of education.

Region

The region where women live may affect their decision to participate in the labor force. Increasingly expensive living conditions in urban areas require women to participate in the

labor market. In Türkiye, especially in the Eastern and rural areas, girls may not attend school due to housework or cultural norms. Having a low level of education may reduce women's labor force participation by limiting their access to skilled job opportunities. Also, women have more job opportunities compared to rural areas with the transformations in urban areas.

Darıcı and Taşçı (2010) provide evidence on the highest labor force participation probability is seen in East Black Sea region, whereas the lowest probabilities are seen in Southeast Anatolia region, then respectively Middle East Anatolia, Northeast Anatolia and Mediterranean regions. Using multivariate logit analysis with the Household Survey Data between 1988-2006, Dayıoğlu and Kırdar (2010) found a strong association of the participation of urban and rural women with region. For 7 regions out of 12 in Türkiye, women's participation is affected in the same direction in urban and rural areas by the region.

However, the residence in the West, Central, Northeast and Mid-East Anatolia in contrast to Istanbul lowers the women's participation likelihood in urban areas, increases in rural areas. Berber and Eser (2008) investigated the sectoral distribution of women employees by considering national and regional bases in Türkiye and concluded that female employment differs in sectors in terms of regional development.

Being the Head of Household

In Türkiye, the head of the family is usually a man and when a woman becomes the head of the family due to reasons such as the death of her husband or divorce, labor force participation is expected to increase, because she has to provide for the family and has a say in her own life. In their study Darıcı and Taşçı (2010) concluded that when a woman is the head of the household the probability of participation to labor force increases. Also, Varol (2017) found that, high level of income, and being chief wage earner in the household have a positive impact on the FLFP in Türkiye.

Other Factors

Although these other factors are not available in the Household Labor Force Survey, they are explained for further research and general idea for the determinants of FLFP. Migration is one of the other factors in the literature, mostly the migration from rural to urban areas related with a decrease in FLFP (Kılıç and Öztürk, 2014, Dayıoğlu and Kırdar, 2010). Moreover, rural or urban residence is related with FLFP and it is highlighted that the majority of women in rural areas, married women are part of the labor force and typically work in either family-owned businesses or agricultural jobs in comparison to urban residing ones (Darıcı and Taşçı, 2010). In the literature, another determinant of FLFP is income. By using 2003 Household Budget Survey data and applying multinomial and mixed logit methods, Kızılırmak (2005) found that, women decide to participate in labor force in order to support the income and especially to compensate their husbands' income losses. Besides, Tatlı (2015) concluded that married women's husband's income is negatively related with FLPL, whereas household income is positively related.

DATA and METHODOLOGY

In this study, data is obtained from TURKSTAT, Labor Force Statistics Micro Data for 2022 based on Household Labor Force Survey 2022. The main aim of this survey is showing the structure of labor force in Türkiye, gathering the information about the economic activities, jobs, situation and working time of the ones in labor force and job seeking time, the job looking for and etc. for the unemployed ones. The first survey was conducted in 1966. Since 1988 it has been conducted in a regular base. Since 2021 the current format of the survey is adopted according to EU regulations. In the survey, every settlement in Türkiye was included for sample selection.

In the survey form, there are questions about the individual characteristics, education, employment, main occupation, side job, working hours, underemployment, income, unemployment/not being active and past work experience. Household Labor Force Survey's field application is carried out with computer-assisted interview methods. The answers are recorded directly into the computer by the interviewers. Based on 2022 Household Labor Force Survey, Labor Force Statistics Micro Data for 2022 was published in May 2023.

The survey covers 232 240 households, 628 092 persons and 485 668 persons over the age of 15. First of all, details of the definitions in the publication of TURKSTAT on labor force are provided below:

- Non-institutional population: Population excluding those residing in barracks, university dormitories, private hospitals, prisons etc.
- Non-institutional working age: Population aged 15 and above.
- Employed: Engages in economic activity for at least one hour during the reference week and earns income from this activity (including unpaid family workers) or people who have a job that they are temporarily absent from their work.
- Unemployed: People who are not employed in the reference week, who have been actively looking for a job in the last four weeks, and who can start work within 2 weeks if they find a job.
- Labor Force: Working age population supplying labor to produce economic goods and services within the reference period. Labor force is the sum of those employed and unemployed.
- Not Included in the Labor Force: Population aged 15 and over who are neither unemployed nor employed.

In this paper, the main data is consisted of women who are aged 15 and over which covers 251 490 women. However, in the data cleaning step, the unanswered surveys (16 observations) are removed from the data set. There is not an important missing value problem. The remaining of the analysis is conducted with the data of 251 474 women. In Table 1, summary statistics for

continuous variable are provided. For each variable the distribution of raw data can be followed in the Appendix.

Table 1 Summary Statistics for two continuous variables

VARIABLES	Number of obs.	Mean	St. dev.	Min	Max
Family Size	251474	3.593	1.757	1	25
Age	251474	44.61	18.40	15	110

There are interesting observations from summary statistics which can be seen in detail in Appendix part. To mention a few of them, it should be noted that while 21.3 % of women has never completed a school, approximately 67% of women have less than high-school level of education. Among all the education levels, most common level is “primary school education” by 29.48 %. When the post-high school education levels are considered, it is observed that the most common education level among women is "5 or 6 years of Faculty-Master's degree or Doctorate" (9.2%), whereas the second most common level of education is “4-year College or Faculty” with 5.3 %.

When marital status is analyzed, approximately 65% of women are married and among non-married women, it is observed that women who have never been married are in the majority (20.6%) and those who are separated from their spouses are in the minority (3.9 %). In terms of migration status, it can be seen that 61.42% of the women have migrated from the province in which they were born.

Another interesting finding is as follows; approximately 18 % of women have family responsibility directly while for 55% their husbands are family responsible.

The correlation matrix presented in Table 2 shows the correlations between any of two independent variables and their significance levels. While constructing the model those correlations will be taken into account.

An important correlation of approximately 0.49 between widow and age is an expected result as the probability of losing women's spouse increases with increasing age. The correlation of 0.41 between the variable of having never been to school and age shows that lack of any education is less common in younger age groups.

Table 2: Pairwise Correlation Matrix

	age	familysize	never completing a school	primary school	secondary school	general/technical high school	college/faculty	master's/doctorate	never married	married	divorced	widowed	citychange	familyresp	IBBS21	IBBS22	IBBS23	IBBS24	IBBS25	
age	1,0000																			
familysize	-0.4171*	1,0000																		
never completing a school	0.4194*	-0.0040*	1,0000																	
primary school	0.2913*	-0.1188*	-0.3363*	1,0000																
secondary school	-0.3742*	0.1891*	-0.2257*	-0.2805*	1,0000															
general/technical high school	-0.2423*	0.0389*	-0.2375*	-0.2951*	-0.1980*	1,0000														
college/faculty	-0.2018*	-0.0639*	-0.2151*	-0.2672*	-0.1793*	-0.1887*	1,0000													
master's/doctorate	-0.0414*	-0.0437*	-0.0652*	-0.0810*	-0.0543*	-0.0572*	-0.0518*	1,0000												
never married	-0.5654*	0.2045*	-0.1992*	-0.2819*	0.2644*	0.1628*	0.1376*	0.0284*	1,0000											
married	0.1451*	0.0257*	-0.0132*	0.2177*	-0.1411*	-0.0727*	-0.0404*	-0.0045*	-0.6848*	1,0000										
divorced	0.0250*	-0.1028*	-0.0508*	0.0055*	-0.0069*	0.0370*	0.0141*	0.0151*	-0.1036*	-0.2742*	1,0000									
widowed	0.4923*	-0.2391*	0.3090*	0.0277*	-0.1212*	-0.1220*	-0.1245*	-0.0392*	-0.1790*	-0.4737*	-0.0717*	1,0000								
citychange	0.0160*	-0.1035*	-0.0962*	-0.0211*	-0.0760*	-0.0101*	0.1970*	0.0896*	-0.1047*	0.0902*	0.0586*	-0.0393*	1,0000							
familyresp	0.3131*	-0.3585*	0.1364*	0.0343*	-0.1161*	-0.0637*	-0.0223*	0.0230*	-0.1314*	-0.3370*	0.2790*	0.5104*	0.0581*	1,0000						
IBBS21	-0.1280*	0.3045*	0.2167*	-0.1334*	0.0366*	-0.0472*	-0.0558*	-0.0305*	0.0787*	-0.0209*	-0.0530*	-0.0365*	-0.1691*	-0.0560*	1,0000					
IBBS22	-0.0135*	0.0238*	0.0331*	-0.0224*	0.0102*	-0.0007	-0.0144*	-0.0139*	0.0219*	-0.0066*	-0.0170*	-0.0076*	-0.0577*	-0.0185*	-0.1944*	1,0000				
IBBS23	0.1046*	-0.1431*	-0.0565*	0.1075*	-0.0290*	-0.0206*	-0.0165*	-0.0135*	-0.0701*	0.0285*	0.0043*	0.0442*	-0.0029	0.0161*	-0.3196*	-0.3461*	1,0000			
IBBS24	0.0220*	-0.1137*	-0.1177*	0.0206*	-0.0108*	0.0488*	0.0573*	0.0333*	-0.0223*	0.0017	0.0431*	-0.0007	0.1461*	0.0353*	-0.2133*	-0.2310*	-0.3796*	1,0000		
IBBS25	-0.0409*	0.0036	-0.0637*	-0.0234*	0.0001	0.0397*	0.0472*	0.0409*	0.0376*	-0.0254*	0.0251*	-0.0253*	0.1077*	0.0250*	-0.1167*	-0.1264*	-0.2078*	-0.1387*	1,0000	

* Correlation coefficients are significant at the 0.05 level.

While modelling, if the independent variable has two categories or multi categories, linear probability models are not used. For binary response variables such as the decision to work or not, participating in labor force or not, logit and probit models are used especially; however, these models have some advantages over the linear probability model, although they are harder to interpret (Wooldridge, 2016). In this study, probit model will be used, and the results will be based on marginal effects.

ESTIMATION and FINDINGS

Dependent Variable

The dependent variable is defined as a binary result of labor force participation: being employed or unemployed women is 1 while not being in the labor force is 0. As it can be seen that 33.56 % of the women in the sample do not participate in the labor force.

Table 3: Frequency and Percentage of Women in Labor Force

	Frequency
Labor Force Participation (Percent)	
0	167088 (66.44)
1	84386 (33.56)
Total	251474

Independent Variables

As independent variables family size, age, living in the same city, closeness to family responsible, marital status, education level and The Nomenclature of Territorial Units for Statistics (NUTS)-2 regions are used based on literature. While constructing a probit model and for controlling different effects, several dummy variables are defined before modelling. For additional descriptive statistics for the sample, such as the observations in each dummy categories and the raw answers of these variables can be seen in Appendix part. Explanations can be seen in Table 4.

Table 4: Dummy Variables and Explanations

Dummy VARIABLES	Explanation
Changing City	The answer of the question of “Have you lived in this city continuously since you were born?” From raw data a dummy variable is created: No change or Changing city.
Family Responsible	Represents the closeness to the family responsible such as herself/wife/daughter etc. From raw data a dummy variable is created: Herself or Other
Marital Status	Represents the status of never married, married, divorced and widowed. For dummy variable each of four categories is remained.
Level of Education	The answer of the question of “What is the last school/level of education you completed?” For dummy variable 6 categories are created from this answer: Never Completing A School, Primary School, Secondary School, General & Technical High School, 2 or 3-year College & 4-year College or Faculty, 5 or

	6 years of Faculty Master's degree or Doctorate
IBBS2	Provinces in the NUTS2 (SR Level 2) classification ¹ are grouped according to their annual average equivalent household disposable income ² and a dummy variable is introduced for each group according to income range: 23000-32499 TL, 32500-41999 TL, 42000-50499 TL, 50500-59999 TL, 60000-70000 TL

For the question of living in the same city, a dummy variable is created as “changing city” which is 1 if a woman has moved from the city where she was born to another within Türkiye. For the question of closeness to family responsible, the answer can be herself or other relatives such as husband, son/daughter, mother/father and so on. For this variable a dummy variable is created as “family responsible” which is 1 if a woman is head of household.

For marital status there are four variables: Never Married, Married, Divorced, Widow.

For education level the question was asked as the last completed school and there are 8 different categories. As dummy variables, different variables are combined and there are six final dummy variables: Never Completing A School, Primary School, Secondary School, General or Technical High School, 4-year College or Faculty or 2/3-year College, 5 or 6 years of Faculty/Master's degree or Doctorate.

There have been some shortcomings of the Household Labor Force Surveys emphasized in literature. For instance, they do not provide any information about having children which is an important determinant of FLFP (Dayioğlu and Kırdar, 2010). But information about household size is available and, in this study, it is regarded as an indicator of the number of the children

¹ The classification used by TURKSTAT for Türkiye within the Statistical Classification of Territorial Units used by the European Union countries

² TURKSTAT Income Distribution Statistics, 2022

in the household. Also, this variable itself is an independent variable in the literature and it is used as well in this paper.

The other shortcoming of the Survey is that the questions on "income" of the labor force are only asked for "wage" employees and does not include information on "non-wage" income or incomes, which is crucial to anticipate the income of the woman or the household (Taşçı and Darıcı, 2010). As it is asked only to wage employees, income variable is not included in this study. In order to include the effect of income in the model, regions are classified according to their annual average equivalent household disposable income and five dummy variables are created (Appendix). Moreover, the differences among regions are discussed in the literature. With these dummy variables both regional effects and income effects can be followed.

Our dependent variable (labor force participation) comprises two categories in the probit model. As it can be seen from the Table 5 and Table A.1 in Appendix, all the independent variables are significant at the 0.01 level.

Findings

According to Table 5, Model 6 can be preferred thanks to its compliance with the literature, being statistically significant and helping to understand the effects of different independent variables. The estimation is conducted with the Model 6 with the marginal effects at mean. Calculated marginal effects according to age percentiles which are 19, 28, 41, 54, 64 respectively can be seen in Appendix Table A.2.

Table 5: Estimation results for probit models (marginal effects in percentage points)

VARIABLES	(1) Model1	(2) Model2	(3) Model3	(4) Model4	(5) Model5	(6) Model 6
Age	-0.006*** (0.000)	-0.005*** (0.000)	-0.005*** (0.000)	-0.006*** (0.000)	-0.006*** (0.000)	0.041*** (0.000)
Age squared						-0.000*** (0.000)
Family size	-0.020*** (0.001)	0.000 (0.001)	-0.001 (0.001)	0.005*** (0.001)	0.008*** (0.001)	0.002*** (0.001)
Primary School		0.140*** (0.003)	0.112*** (0.003)	0.085*** (0.003)	0.086*** (0.003)	0.013*** (0.003)
Secondary School		-0.049*** (0.004)	-0.055*** (0.004)	-0.081*** (0.004)	-0.079*** (0.004)	-0.036*** (0.004)
General/Technical High School		0.123*** (0.004)	0.107*** (0.004)	0.079*** (0.004)	0.080*** (0.004)	0.054*** (0.004)
2 or 3-year College/4-year College or Faculty		0.405*** (0.004)	0.388*** (0.004)	0.383*** (0.004)	0.383*** (0.004)	0.321*** (0.004)
5 or 6 years of Faculty Master's degree/Doctorate		0.578*** (0.005)	0.569*** (0.005)	0.578*** (0.005)	0.577*** (0.006)	0.530*** (0.008)
Never married			-0.082*** (0.003)	-0.092*** (0.003)	-0.095*** (0.003)	0.100*** (0.004)
Divorced			0.170*** (0.005)	0.173*** (0.005)	0.133*** (0.006)	0.135*** (0.006)
Widowed			-0.162*** (0.003)	-0.162*** (0.003)	-0.190*** (0.003)	-0.069*** (0.005)
IBBS22=Income Range=32500-41999				0.045*** (0.004)	0.047*** (0.004)	0.041*** (0.003)
IBBS23=Income Range=42000-50499				0.117*** (0.003)	0.120*** (0.003)	0.121*** (0.003)
IBBS24=Income Range==50500-59999				0.102***	0.105***	0.101***

IBBS25=Income Range=60000-70000				(0.004)	(0.004)	(0.004)
				0.084***	0.083***	0.071***
Changing city				(0.005)	(0.005)	(0.005)
				-0.044***	-0.046***	-0.056***
Family responsible				(0.002)	(0.002)	(0.002)
					0.063***	0.017***
					(0.004)	(0.003)
Observations	251,474	251,474	251,474	244,601	244,601	244,601
Pseudo R-squared	0.0375	0.108	0.122	0.131	0.132	0.170
Log Likelihood	-160453	-160453	-160453	-156374	-156374	-156374

Robust standard errors in parentheses

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

The coefficient of age variable is positive and significant indicating that aging has a positive effect on FLFP and then it has a decreasing effect. To verify whether this relationship is linear or has “inverted-U” pattern, age square is added to model. As a result, the marginal effect of this variable shows that, as the woman getting older, FLFP decreases after a certain level. As it can be seen from Table A.2 in Appendix, the rate of increase rises up to a level after that, the rate of increase decreases. It is consistent with literature and needed to be explored more. For example, the effects of age can differ according to marital status.

In the data set, household size indicates the total number of members in the household. “Family size” variable is introduced as a continuous variable in the model. The results in Table 4 indicate that, family size has a positive effect on FLFP and this result does not comply with the literature, but there is not a strong effect. One unit increase from the mean (3.59) in the family size is related with 0.2% increase in the probability of a woman participate in the labor force. The positive relationship in this direction can be explained by the need for a source of income to make a living in crowded families and this situation leads women to decide to work.

Taking into consideration the education variable, “Never Completing A School” category is taken as reference and it is observed that, except “Secondary School” category, all the level of education completed, have a positive effect on FLFP. If we consider the most influential variable, having been graduated from “5 or 6 years of Faculty, Master's degree or Doctorate” increases the probability of FLFP by 53%, compared to never completing a school. It is seen that, as the education level increases, the probability of FLFP increase, in accordance with the literature. Secondary school graduates may be old due to regulations in Türkiye (since 1997 there is no secondary school degree) and this can be effective in the negative relation.

Marital status is another influential variable in terms of FLFP. Taking as reference the “married” women, widowed is negatively related with FLFP, whereas being never married and being divorced is positively related. Being a divorced woman increases the probability of FLFP by 13 %, whereas being single increase by 10 % and being widowed decrease 6,9 % compared to married women. These results reveal that being married is associated with higher participant levels than being widowed, whereas being divorced is related with the highest probability participation. This can be result of increasing responsibilities of women after divorcing. Also, the results are partially consistent with the literature. Although most studies were conducted according to rural-urban distinction and had variety of consequences, the low participation of the widowed women is consistent with our results. The effect of being married or single and divorced may vary in different studies according to the characteristics of the sample or period. Factors such as social and traditional norms and development level of the region of residence can be effective on FLFP in this aspect.

Since there is no information on income in the dataset and to include the effect of income level in the model to a certain extent, provinces in the NUTS2 (SR Level 2) classification³ are grouped according to their annual average equivalent household disposable income⁴ and a dummy variable is introduced for each group (Appendix). Estimation results with these variables are presented in Table 4. Taking as reference the IBBS 2_1 dummy, indicating the lowest income provinces, living in the higher income provinces seem to have a positive effect on FLFP. For a woman, living in IBBS2_3 has the highest impact, as it increases the probability of participating the labor force by 12%, compared to living in IBBS2_1. On the other side although the marginal effect on FLFP does not increase as the average household income level of the province increase.

³ The classification used by TURKSTAT for Türkiye within the Statistical Classification of Territorial Units used by the European Union countries

⁴ TURKSTAT Income Distribution Statistics, 2022

This situation may result from the fact that, the group of higher average household disposable income levels IBBS2_4 and IBBS2_5, include the biggest cities of Türkiye, where income distribution is unequal than the others⁵. That position results in low-income ratios for the majority of the households in which leads to low FLFP rates, in accordance with the results in the literature.

As mentioned in the previous section, another shortcoming of the dataset is the lack of information on the migration of women from rural to urban areas. Due to the information on migration from province of birth is available in the data set, “Changing city” dummy is introduced to the model. In Türkiye, migration from rural areas or less developed provinces to more developed provinces is widespread and capturing this effect is aimed in this way. This variable has a negative effect, indicating that an increase in the migration from province of birth appears to be associated with a decrease in the probability of FLFP. Women migrants may have the perception that they will not be able to find a job that is suitable for their skills in their new place of residence. If a woman migrates, the probability of her participation decreases by 5.6 %, which is a result consistent with literature.

Being the head of the household, which is introduced using “family responsible” dummy to the model, has a positive sign, indicating that being the head of the household effects the FLFP positively, so that if a woman is the head of the household, the probability of her participation increases by 1.7%. This situation is also in line with the findings in the literature.

⁵ Income and Living Conditions Survey Regional Results, 2021 <https://data.tuik.gov.tr/Bulten/Index?p=Income-and-Living-Conditions-Survey-Regional-Results-2021-45582>

CONCLUSION

By using the Household Labor Force Survey for 2022 of TURKSTAT, investigating most current factors on FLFP with most current data set in comparison to the literature with a probit model is the main aim of this study. In this study, the effect of person-related factors on FLFP is examined and according to the results, the size of the household in which a woman in the sample lived and being head of the household of that woman increase the probability of labor force participation in line with the literature.

On the other side, the situation that the woman had migrated from her province of birth to another province decreased the probability of participation. The increasing effect of age and “inverted-U” shape relation are observed in line with the literature. Also, it is concluded that being widowed decreases the probability of FLFP compared to being married, while being single and divorced increases the probability of FLFP. Another finding is that having any level of education other than secondary school increases the probability of FLFP compared to having never completed school. Among the 5 regions grouped according to their average annual household income level, it was found that the probability of FLFP increased in other regions compared to the region with the lowest income level. Besides, household size has a small but positive effect on FLFP. The fact that participation increases with educational attainment and regional income levels can be seen as one of the key findings of this study besides other facts about the marital status, family responsibility, age, and household size. Moreover, with most recent data set the factors affecting FLFP in Türkiye resulted mainly coherent with the literature.

Urban women’s low participation levels -especially for low skilled women- are often emphasized in the literature. This situation may occur due to the opportunity cost of childcare and the difficulties in transferring it. Besides, the low wage levels compared to men in the labor market leads to reduced participation. Social and cultural norms are also effective in FLFP.

Market preferences and cultural values in the demand side are other factors. This supply side and demand side factors should be examined in detail in further studies.

Efficient survey methods should be applied in order to obtain information on social and cultural norms. Because of pressure and hesitation, these are issues which it is difficult to provide reliable data. Hence, a leading research question can be related with the factors effecting the fact that single women, but mostly widow women, participate in FLFP less than married women according to the results of this study.

Moreover, the limitations of the Household Labor Force Survey which are discussed in the literature (not questioning the ownership and number of children, household income level, rural/urban separation) can be considered to improve the survey.

All in all, it is very clear that increasing the FLFP is very important both in terms of economic and social consequences. This study with the most recent data set on labor force hopefully help to understand the recent dynamics of FLFP and lead some further research questions.

APPENDIX

Table A.1: Estimation results for the probit model (coefficients)

VARIABLES	(1) Model1	(2) Model2	(3) Model3	(4) Model4	(5) Model5	(6) Model6
Age	-0.018*** (0.000)	-0.014*** (0.000)	-0.014*** (0.000)	-0.016*** (0.000)	-0.016*** (0.000)	0.120*** (0.001)
Age squared						-0.001*** (0.000)
Family size	-0.054*** (0.002)	0.001 (0.002)	-0.001 (0.002)	0.014*** (0.002)	0.021*** (0.002)	0.006*** (0.002)
Primary School		0.379*** (0.008)	0.308*** (0.008)	0.235*** (0.009)	0.237*** (0.009)	0.039*** (0.009)
Secondary School		-0.141*** (0.012)	-0.158*** (0.011)	-0.239*** (0.012)	-0.233*** (0.012)	-0.109*** (0.012)
General/Technical High School		0.331*** (0.010)	0.289*** (0.010)	0.215*** (0.011)	0.219*** (0.011)	0.154*** (0.011)
2 or 3-year College/4-year College or Faculty		1.067*** (0.011)	1.023*** (0.011)	1.007*** (0.011)	1.009*** (0.011)	0.855*** (0.012)
5 or 6 years of Faculty Master's degree/Doctorate		1.714*** (0.026)	1.657*** (0.026)	1.704*** (0.028)	1.696*** (0.028)	1.462*** (0.028)
Never married			-0.239*** (0.008)	-0.271*** (0.008)	-0.278*** (0.008)	0.281*** (0.010)
Divorced			0.446*** (0.013)	0.453*** (0.014)	0.351*** (0.015)	0.366*** (0.015)
Widowed			-0.515*** (0.013)	-0.515*** (0.013)	-0.626*** (0.014)	-0.213*** (0.016)
IBBS22=Income Range=32500-41999				0.123*** (0.010)	0.129*** (0.010)	0.118*** (0.010)

IBBS23=Income Range=42000-50499				0.323***	0.331***	0.348***
				(0.009)	(0.009)	(0.009)
IBBS24=Income Range==50500-59999				0.278***	0.284***	0.284***
				(0.010)	(0.010)	(0.010)
IBBS25=Income Range=60000-70000				0.226***	0.225***	0.200***
				(0.013)	(0.013)	(0.013)
Changing city				-0.124***	-0.131***	-0.165***
				(0.006)	(0.006)	(0.006)
Family responsible					0.173***	0.051***
					(0.010)	(0.010)
Constant	0.539***	-0.175***	-0.041**	-0.142***	-0.184***	-2.916***
	(0.011)	(0.017)	(0.019)	(0.020)	(0.020)	(0.035)
Observations	251 474	251 474	251 474	244 601	244 601	244 601
Pseudo R-squared	0.0375	0.108	0.122	0.131	0.132	0.170
Log Likelihood	-160 453	-160 453	-160 453	-156 374	-156 374	-156 374

Robust standard errors in parentheses

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

Table A.2: Marginal effects at different percentiles of AGE*

	Marginal Effect of AGE	Marginal Effect of AGE²
at mean (44.61)	.0410***	-.0005***
at 19	.0000628***	-7.64 x 10 ⁻⁷ ***
at 28	.001803***	-.0000219***
at 41	.0291271***	-.0003544***
at 54	.0409055***	-.0004977***
at 64	.0100781***	-.0001226***

*average values used for other independent variables

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

Tables A.3: Frequencies of Raw Data (Education)

Possible Answer Codes	Level of Education	Freq (Percent)
1	Never Completing A School	53,567 (21.30)
2	Primary School	74,123 (29.48)
3	Secondary School	39,833 (15.84)
41	General High School	26,894 (10.69)
42	Technical High School	16,473 (6.551)
52	2 or 3-year College	3,884 (1.544)
511	4-year College or Faculty	13,432 (5.341)
512	5 or 6 years of Faculty Master's degree or Doctorate	23,268 (9.253)
Total		251474

Frequencies of Dummies (Education)

Possible Answer Codes	Level of Education	Dummy	Freq (Percent)
1.	Never Completing A School	education1	53,567 (21.30)
2.	Primary School	education2	74,123 (29.48)
3.	Secondary School	education 3	39,833 (15.84)
41.	General High School	education4	43,367 (17.241)
42.	Technical High School		
511.	2 or 3-year College	education5	17,316 (6.885)
512.	4-year College or Faculty		
52	5 or 6 years of Faculty Master's degree or Doctorate	education6	23,268 (9.253)
Total			251474

Frequencies of Raw Data also Dummies (Marital Status)

Possible Answer Code	Marital Status	Freq (Percent)
1	Never Married	51,699 (20.56)
2	Married	162,044 (64.44)
3	Divorced	10,016 (3.983)
4	Widowed	27,715 (11.02)
Total		251474

Frequencies of Raw Data (Closeness to Family Responsible)

Possible Answer Code	Closeness to Family Responsible	Freq (Percent)
1	Herself	46,011 (18.30)
2	Husband	140,163 (55.74)
3	Daughter/Son	47,489 (18.88)
4	Mother/Father	7,017 (2.790)
5	Sister	2,000 (0.795)
6	Mother-in-law/Father-in-law	990 (0.394)
7	Son-in-law/Daughter-in-law	4,661 (1.853)
8	Grandchild	1,312 (0.522)
9	Grandfather/Grandmother	175 (0.0696)
98	Other Relatives	1,048 (0.417)
982	Not Relatives	608 (0.242)
Total		251474

Frequencies of Dummy (Family Responsible)

	Closeness to Family Responsible	Freq (Percent)
1	Herself	46,011 (18.30)
0	Other	205,463 (81.70)
Total		251474

Frequencies of Raw Data and Also Dummies (Living Same City)

*The question is only asked to women whose birth city is in Türkiye.

	Living Same City	City Change (Dummy)	Freq (Percent)
1	YES	NO	150,223 (61.42)
0	NO	YES	94,378 (38.58)
Total			244601

Frequencies of Raw Data (NUTS2)

Possible Answer Code	NUTS2	Freq (Percent)
1	TR10	17,739 (7.054)
2	TR21	7,496 (2.981)
3	TR22	8,296 (3.299)
4	TR31	9,935 (3.951)
5	TR32	11,179 (4.445)
6	TR33	11,100 (4.414)
7	TR41	11,232 (4.466)
8	TR42	13,635 (5.422)
9	TR51	12,637 (5.025)
10	TR52	11,662 (4.637)
11	TR61	9,530 (3.790)
12	TR62	9,563 (3.803)
13	TR63	9,846 (3.915)

14	TR71	9,713 (3.862)
15	TR72	8,194 (3.258)
16	TR81	6,233 (2.479)
17	TR82	6,608 (2.628)
18	TR83	10,100 (4.016)
19	TR90	12,360 (4.915)
20	TRA1	7,032 (2.796)
21	TRA2	8,571 (3.408)
22	TRB1	9,107 (3.621)
23	TRB2	7,644 (3.040)
24	TRC1	7,770 (3.090)
25	TRC2	7,808 (3.105)
26	TRC3	6,484 (2.578)
Total		251474

Frequencies of Dummies (NUTS2)

Classification Table of Statistical Regions (SR Level 2) According To Annual Average Equivalent Household Disposable Income (TL)

Income Range (TL)	Statistical Regions (SR Level 2)	Dummy	Freq (Percent)
23000-32499	TRA2 Kars, Ağrı, Iğdır, Ardahan TRB2 Van, Muş, Bitlis, Hakkari TRC1 Gaziantep, Adıyaman, Kilis TRC2 Diyarbakır, Şanlıurfa TRC3 Siirt, Mardin, Batman, Şırnak	IBBS 2_1	38,277 (15.2)
32500-41999	TRA1 Erzurum, Erzincan, Bayburt TRB1 Malatya, Elazığ, Bingöl, Tunceli TR72 Kayseri, Sivas, Yozgat TR62 Adana, Mersin TR63 Hatay, Kahramanmaraş, Osmaniye	IBBS 2_2	43,742 (17.3)
42000-50499	TR22 Balıkesir, Çanakkale TR32 Denizli, Aydın, Muğla TR33 Manisa, Afyonkarahisar, Kütahya, Uşak TR42 Kocaeli, Sakarya, Düzce, Bolu, Yalova TR52 Konya, Karaman TR81 Zonguldak, Karabük, Bartı TR82 Kastamonu, Çankırı, Sinop TR83 Samsun, Tokat, Çorum, Amasya TR90 Trabzon, Ordu, Giresun, Rize, Artvin, Gümüşhane	IBBS 2_3	91,173 (36.2)
50500-59999	TR21 Edirne, Tekirdağ, Kırklareli TR31 İzmir TR41 Bursa, Eskişehir, Bilecik TR51 Ankara TR61 Antalya, Isparta, Burdur	IBBS 2_4	50,830 (20)
60000-70000	TR10 İstanbul	IBBS 2_5	17,739 (7.05)
Total			251474

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