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**Female Labor Force Participation in Turkey
The Role of the Intergenerational Links**

Mine DURMAZ-ASLAN

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Female Labor Force Participation in Turkey

The Role of the Intergenerational Links

Mine Durmaz-Aslan[†]

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Abstract

This study investigates the impact of the transmission of gender role attitudes and/or preferences from parents to children on the labor force participation decision of married women in Turkey. Using parents-children data we estimate a reduced-form model in which a married woman's participation in adulthood depends on her mother's and mother-in-law's former labor force participation in her adolescence. Our estimation results show that married women grown up with working mothers are 10.8-17.8 percent more likely to participate in the labor force than married women with nonworking mothers and married women with working mothers-in-law are 9.3-17.3 percent more likely to be in the labor force than married women with nonworking mothers-in-law. In addition, the estimated effects of mother's and the mothers-in-law's former labor force participation in rural sample are larger than those in the urban sample. We also find that as the education level of married women increases, the effect of being raised by a working mother on female labor force participation decreases. Having a husband grown up with a working mother increases the probability that a married woman with less than a high school education participates in the labor force; however, it is not a significant determinant of the labor force participation decision of highly educated women. Our findings reveal that the intergenerational transmission of gender role attitudes and/or preferences influences the labor market behavior of married women in Turkey. More importantly, higher education reduces the effect of intergenerational transmission of gender role attitudes and/or preferences on female labor force participation.

Keywords: Female labor force participation, Marriage, Intergenerational social norm , Turkey

JEL codes: J12, J21, Z1, O52.

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1 Introduction

Female labor force participation is one of the most important factors which affect both economic and social development, and it also has a significant role in poverty reduction in developing countries. However, female labor force participation rates are relatively low in developing countries. Therefore, it becomes crucial to increase our understanding of the causes and consequences of low labor force participation of women in these countries to design appropriate policies. The labor supply decision of women has attracted considerable attention in the literature. To date, several studies have provided evidence on the links between education, earnings, fertility, and female labor force participation (Killingsworth and Heckman, 1987; Blundell and Macurdy, 1999). Recent studies have moved beyond to examine the relationship between gender role attitudes and/or preferences transmitted across generations and labor market behavior of women. These studies have provided evidence that labor market behavior of the previous generation of women is a decisive factor in the labor market behavior of the current generation of women (Fernandez et al., 2004; Butikofer, 2013; Carro et al., 2014; Campos-Vazquez and Velez-Grajales, 2014). In line with these studies, we aim to investigate whether the labor market behavior of the previous generation of women influences that of the current generation of women in Turkey through the intergenerational transmission of gender role attitudes and/or preferences.

Turkey is an interesting case for examining female labor force participation decisions because the Turkish labor market is characterized by very low female labor force participation and hence female employment rates. Indeed, Turkey has the lowest female labor force participation rate at 35 percent and female employment rate at 30.5 percent in 2015 among the OECD countries where averages are 63 percent and 58.6 percent, respectively¹. Existing literature on the Turkish labor market has provided a substantial amount of evidence on the relative and absolute importance of several factors affecting the female labor force participation such as age, education, having children and marriage(e.g. Tansel, 2001; Taymaz, 2010; Dayioglu and Kirdar, 2010; Karaoglan and Okten, 2015). Very few studies have investigated the role of social norms and gender role attitudes in female labor force participation in Turkey (Guner and Uysal, 2014). However, none of the existing studies have attempted to estimate the effects arisen from the transmission of attitudes and/or preferences from parents to their children by using children-parents pairs data. This study will be the first attempt to provide empirical

¹OECD Labor Force Statistics. Employment and participation rates are for individuals aged between 15-64.

evidence on this unexplored aspect of female labor force participation in Turkey using parents-children pairs data.

The data used in this study is extracted from the nationally representative Intergenerational Transmission of Disadvantages Module from 2011 Turkish Survey of Income and Living Conditions (SILC-2011), which collects retrospective information on each respondent's parents such as education, labor market status, occupation type when the respondent was 14 years old. Our sample includes married women aged between 25 and 59. However, reducing our sample to married women is not restrictive in the case of Turkey. Marriage is almost universal among women in this age interval. Indeed, 83.4 percent of women aged between 25 and 59 are married in our data set. Using this data set we estimate a reduced-form model in which a married woman's participation in adulthood depends on her mother's and mother-in-law's former labor force participation. Following the study of Fernandez et al. (2004), the labor market status of the mother is taken as a proxy for gender roles and attitudes regarding the role of women in the family. Growing up with a nonworking mother can affect a man's idea of gender roles and division of labor in the household and in this way, a man raised by a nonworking mother can be more averse to having a working wife than a man who grew up with a working mother. Therefore, a married woman's labor market behavior might be correlated with the labor market status of her husband's mother during his adolescence. Similarly, a woman's labor market behavior might be correlated with her own mother's former labor market status because daughters of nonworking mothers may have preferences and beliefs binding them to the home and/or hold greater skills in household production like their mothers. We also conduct additional estimations on sub-samples to figure out whether the effects of former labor market statuses of the mothers and mothers-in-law are different between married women living in rural and urban areas due to differences in lifestyles, and different across women's educational attainment levels.

Our results show that a married woman's labor market participation decision is positively correlated to the labor market status of both her own mother and her spouse's mother even after controlling for standard variables and parental education. A married woman is more likely to participate in the labor market if her mother was in the labor force when the daughter was 14 and the mother of her spouse was in the labor force when the husband was 14. The estimated effects of whether the mothers and the mothers-in-law participated in the labor force in rural areas are larger than those in urban areas. The potential reason behind this difference between rural and urban areas might be the intergenerational persistence of rural family structure where women traditionally work in agriculture. If the mother-in-law was working, the husband is more likely to

expect his wife to participate in agricultural activities. Moreover, the effects of former labor market behaviors of the mothers and the mothers-in-law on the likelihood that women participate in the labor market decrease as the educational attainment of women increases. While the labor force participation of married women with each education level is positively correlated with that of their mothers, the mothers-in-law's labor market behavior influences the labor market decision of married women with less than a high school education but not that of highly educated married women.

To sum up, we provide evidence that the labor market behavior of the previous generation of women influences the labor market behavior of the current generation of women in Turkey. In other words, the female labor force participation is constrained by choices made by previous generations. However, higher educational attainment reduces the effects of intergenerational transmission of preferences and/or attitudes towards gender roles on female labor force participation.

The paper proceeds as follows. Section 2 provides background information on female labor market in Turkey and Section 3 reviews the related studies in the literature. While Section 4 describes the data used in this study, Section 5 discusses the empirical strategy. Section 6 presents the estimation results and Section 7 concludes the paper.

2 Female Labor Force Participation in Turkey

The Turkish labor market is characterized by very low levels of female labor force participation and female employment rates, and relatively high female unemployment rates. The female labor force participation rates in Turkey, 31.5 percent in 2015, are not only low compared to the developed countries but also lower than other emerging countries²

Table 1 provides labor force participation, total employment, total unemployment and nonagricultural unemployment rates in Turkey for selected years to analyze the gender differences and the trends in these labor market indicators.³ During the period 1989-2015, we observe that male and female participation and employment rates have declined. The declines in female participation and employment rates are larger than those for males. The female labor force participation rate has fallen by 13 percent (from 36.1 percent in 1989 to 31.5 percent in 2015) while the participation rate of men has

²According to the OECD statistics, the average female labor force participation in the BRIC countries is 55.5 percent in 2015. For example, in 2015 the female labor force participation rate is 59 percent in Brazil, 68.2 percent in Russia, 52.1 in South Africa, 53.8 percent in Indonesia.

³The Turkish Statistical Institute (Turkstat) has conducted household labor surveys, which are comparable across time and in line with international data since October 1988. Therefore, we report statistics starting from 1989.

Table 1: Participation, Employment and Unemployment Rates (%) in Turkey

Rates	Labor Force Participation				Employment			
Year	1989	1995	2005	2015	1989	1995	2005	2015
Male (15+)	80.6	77.8	70.6	71.6	74.0	71.7	63.2	65.0
Female (15+)	36.1	30.9	23.3	31.5	32.7	28.7	20.7	27.5
Total (15+)	58.1	54.1	46.4	51.3	53.1	50.0	41.5	46.0

Rates	Unemployment				NA Unemployment			
Year	1989	1995	2005	2015	1989	1995	2005	2015
Male (15+)	8.2	7.8	10.5	9.2	11.4	10.4	12.2	10.5
Female (15+)	9.5	7.3	11.2	12.6	29.2	20.3	18.7	17.2
Total (15+)	8.6	7.6	10.6	10.3	14.4	12.0	13.5	12.4

Source: Turkish Statistical Institute (Turkstat) Labor Force Statistics.

Note: NA unemployment refers to the nonagricultural unemployment.

decreased by 11 percent (from 80.6 percent in 1989 to 71.6 percent in 2015). Similarly, the female employment rate has decreased by 16 percent (from 32.7 percent in 1989 to 27.5 percent in 2015) while the male employment rate has decreased by 12 percent (from 74 percent in 1989 to 65 percent in 2015).

When we look at the labor force participation rates and the employment rates in Table 1, we observe significant differences between men and women. Although female labor force participation has been increasing over the last decade, only 31.5 percent of women participate in the labor market compared to 71.6 percent of men and only 27.5 percent of women are employed compared to 65 percent of men by 2015. These striking gender disparities in terms of labor force participation and employment rates point out the male-breadwinner family structure in Turkey. Men are usually the primary breadwinners in the households.⁴ When we look at the total unemployment rates in Table 1, gender differences are not as large as those observed in labor force participation and employment rates. Indeed, male and female total unemployment rates are very similar during the period 1989-2005. The gender gap in total unemployment rates is 3.4 percentage points in 2015 where the female unemployment rate is 12.6 percent and the male unemployment rate is 9.2 percent. Besides, as seen in Table 1, total and nonagricultural unemployment rates are quite different in the Turkish labor market because the unemployment rate is very low in the agricultural sector. The reason for the low agricultural unemployment is that the Turkish agricultural sector is mainly dominated by family producers, and men are usually self-employed and women are

⁴The traditional male-breadwinner model is the family in which men earn a family wage while wives do household chores and care for family members.

working as unpaid family workers in family farms. Therefore, wide gender gaps in unemployment rates are observed when the agricultural sector is excluded. Although the female nonagricultural unemployment rate has decreased significantly during the period 1989-2015, a sizeable difference between female and male nonagricultural employment rates does still exist. By 2015, female and male nonagricultural unemployment rates are 12.4 percent and 17.2 percent, respectively.

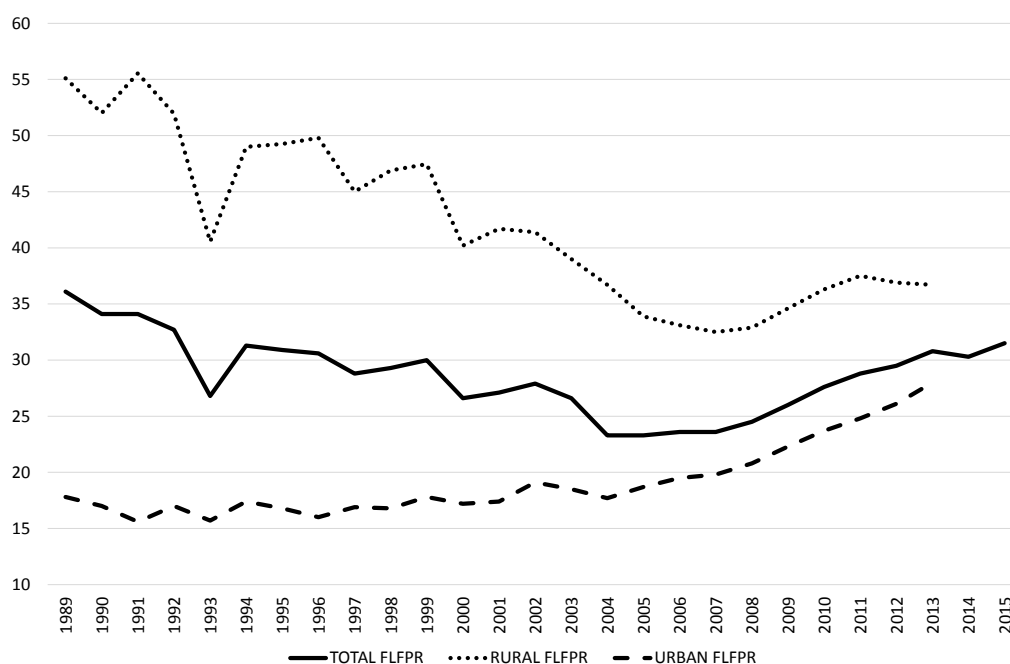


Figure 1: Female Labor Force Participation in Turkey

Source: Turkish Statistical Institute (Turkstat) Labor Force Statistics

For a closer analysis of the trends in labor force participation of women, Figure 1 illustrates how total, rural and urban female labor force participation rates evolve in Turkey over time.⁵ The total female labor force participation rate dropped from 36.1 percent in 1989 to 23.3 percent in 2005 and since then it has increased to 31.5 percent in 2015. Therefore, Figure 1 shows that the total female labor force participation rates follow two different trends between 1989-2013: a declining trend between 1989-2005

⁵Turkstat does not report any statistics in the rural/urban divide since 2013. Therefore, we report rural and urban female labor force participation rates until 2013.

and an increasing trend between 2005-2015. The trends in female labor force participation in Turkey seem to fit the U-shaped curve hypothesis proposed by Goldin (1994). The U-shaped hypothesis of female labor force participation describes the long-run relationship between economic development and participation of women. At the initial stages of economic development, when incomes are low and the agricultural sector is dominant, participation of women is high because they are often unpaid family workers on family farms. As the production shifts from agriculture to industry, women's labor force participation rates tend to fall because women are unable to take advantage of work opportunities in industrial sectors. In later stages of economic development, as female education increases and services sector expands, female labor force participation increases because of the emergence of white-collar jobs providing new employment opportunities for women (Goldin, 1994).

As seen in Figure 1, the declining trend in the total female labor force participation rates between 1989-2005 confirms that Turkey is on the downward sloping part of the U-shaped curve of female labor force participation during this period. This declining trend has been explained by two related transitions: the change in composition of labor force from agricultural sectors to nonagricultural sectors (see Table A.1 in Appendix for sectoral decomposition of employment in Turkey) and the rising urbanization following strong internal migration (Erman,1998; Tansel, 2001; Baslevant and Onaran, 2003; Gunduz-Hosgor and Smits, 2008; Dayioglu and Kirdar,2010; Gursel and Uysal,2012; Ilkkaracan, 2012) . Note that in Turkey the strong internal migration flows from rural to urban areas accompanied the structural transformation of the economy closely.

Figure 1 shows that during the period of 1989-2005, the female labor force participation rate in rural areas was decreasing while the urban female labor force participation rate was low and stagnant and thus, the total female labor force participation rate had declined.⁶ Indeed, rural female labor force participation rate decreased from 55.1 percent in 1989 to 33.9 percent in 2005 (lowest rate is 32.5 percent in 2007). During the same period, female labor force participation rates in urban areas slightly increased from 17.8 percent to 18.7 percent in 2005. Hence, the decline in the overall female labor force participation rates can be decomposed into two concurrent but separate sources: the flow from rural areas with high participation rates to urban areas with low participation rates

⁶Rural areas can be considered as a proxy for the agricultural employment in Turkey because the agricultural sector still constitutes the largest proportion of total rural employment. The share of the agricultural sector in rural employment is 76.4% in 1989, 70% in 2000, 64.2% in 2005 and 60.2% in 2013. In addition, women are mostly employed in the agricultural sector in rural areas. The share of the agricultural sector in rural female employment is 93.6% in 1989, 89.2% in 2000, 85.7% in 2005 and 80.1% in 2013.

and the decline in the participation rates of rural areas. Starting from the mid-1950s, Turkey has experienced rapid migration from rural areas to urban areas. The share of population living in urban areas has increased from 29 percent in 1955 to 44 percent in 1980, 59 percent in 1990, and 77 percent in 2012.⁷ This migration flow explains the stagnant trend in the urban female labor force participation rates until the mid-2000s. Dayioglu and Kirdar (2010) and Ilkcaracan (2012) argue that when households moved from rural areas to urban areas, husbands shifted out of the agriculture and found employment in urban areas. However, women had difficulties in finding employment and thus, they became unemployed or dropped out of the labor force. The authors also discuss that women who work in the agricultural sector in rural areas lack the education and necessary skills for integration into the urban labor market. Dayioglu and Kirdar (2010) provide evidence that women who migrated were relatively less educated than those living in urban areas. Moreover, Ilkcaracan (2012) argues that overall labor demand growth was not strong enough to compensate for the rural surplus of women released from agriculture. These women migrated from rural areas became full-time housewives, unemployed or economically active again by having low-paid work in the urban economy like domestic work or in labor-intensive informal industry (Erman, 1997). As a result, the urban female labor force participation rates remained stagnant while the total female labor force participation rates were decreasing until the mid-2000s.

In rural areas, men are usually self-employed and women usually work as unpaid family workers in small-scale family farms and thereby changes in the importance of agriculture and family-run establishments have a strong influence on participation of women living in rural areas. The proportion of self-employed household heads in rural areas engaged in agriculture decreased from 41.3 percent in 2000 to 30.5 percent in 2006 (Dayioglu and Kirdar, 2010). In addition, the proportion of the agricultural sector in total employment fell from 47.2 percent in 1989 to 25.7 percent in 2005 (see Table A.1 in Appendix). Note that this decrease is not due to a transition to wage-work in agriculture but a transition to other sectors. In other words, the structural transformation from agricultural to non-agricultural sectors is observed in rural areas as well, albeit to a lesser degree (see Table A.1 in Appendix). These changes in the agricultural sector and the migration from rural areas to urban areas have contributed to the decline in rural female labor force participation rates until the mid-2000s.

After 2005, female labor force participation rates started to increase as can be seen in Figure 1. The total female labor force participation rate increased from 23.3 percent

⁷Statistics on rural versus urban population are extracted from Turkish Statistical Institute (Turkstat) Population Censuses.

Table 2: Educational attainment of working-age population (%) in Turkey

Education Levels	Years	Total		Urban		Rural	
		Female	Male	Female	Male	Female	Male
Illiterate	1989	33.1	10.2	25.2	6.2	41.3	14.6
	2000	21.7	5.5	14.4	2.9	32.4	9.4
	2005	19.9	4.0	15.6	2.8	29.9	7.0
	2013	17.0	3.6	11.7	2.3	28.7	6.5
Less than high school	1989	58.6	74.5	61.1	72.8	56.1	76.5
	2000	61.8	68.5	61.4	62.7	62.3	77.3
	2005	60.2	64.6	59.5	60.7	61.8	74.3
	2013	58.0	61.4	56.5	55.8	61.2	73.8
High and vocational high school	1989	6.4	10.8	10.6	14.5	2	6.7
	2000	12.3	19.0	17.6	24.4	4.4	10.8
	2005	14.3	22.3	17.6	25.2	6.8	15.0
	2013	14.8	21.0	18.4	24.2	6.8	13.9
Higher education	1989	1.9	4.4	3.1	6.4	0.7	2.2
	2000	4.3	7.0	6.5	10.0	0.9	2.6
	2005	5.6	9.1	7.3	11.3	1.5	3.8
	2013	10.2	14.0	13.4	17.7	3.3	5.8

Source: Turkish Statistical Institute (Turkstat) Labor Force Statistics

in 2005 to 30.8 percent in 2013. The rural female labor force participation slightly increased from 33.9 percent in 2005 to 36.7 percent in 2013 while the urban female labor force participation rate grew from 18.7 percent in 2005 to 28 percent in 2013. Hence, this increasing trend in the total female labor force participation rate can be attributed largely to the rise in participation of women in urban areas. A potential reason for the increasing female labor force participation in urban areas is the improvements in educational attainment of urban women because greater educational attainment is expected to be associated with higher levels of participation. Note that in Turkey labor force participation of women who attained higher education is quite high compared to the rest of women ⁸. Table 2 shows the educational levels of working-age (15+) population in rural and urban areas in Turkey for selected years. While in 2005, 7.3 percent of working-age urban female population attained at least university; by 2013 this ratio increased to 13.4 percent. At the same time, the share of illiterate working-age women living in urban areas declined from 15.6 percent in 2005 to 11.7 percent in 2013. In addition, female employment in services sector has significantly expanded during this period. While the share of services sector in total urban employment increased from 20 percent in 2004 to 24.1 percent in 2005 and 25.4 percent in 2013 (see Table A.1 in Appendix), the share of female employment in services sector in urban areas grew from 60.3 percent in 2004 and 62.5 percent in 2005 to 70.5 percent in 2013 (Table 3).

⁸For female labor force participation rates by educational levels, see Figure A1 in Appendix.

Table 3: 1989-2013 Share of Female Employment(%)by Sectors in Turkey

Years	Total			Rural Areas			Urban Areas		
	Agriculture	Industry	Services	Agriculture	Industry	Services	Agriculture	Industry	Services
1989	76.6	9.0	14.4	93.0	3.0	4.0	12.7	32.1	55.2
1990	76.6	8.8	14.6	93.9	2.6	3.5	13.0	31.6	55.4
1991	77.2	8.4	14.3	94.8	2.6	2.6	9.2	31.0	59.9
1992	72.1	11.3	16.6	92.0	4.6	3.4	10.8	31.8	57.4
1993	68.9	11.7	19.3	92.4	3.4	4.2	7.2	33.5	59.3
1994	71.4	10.6	18.0	92.8	3.5	3.6	13.4	29.7	56.9
1995	71.7	9.7	18.6	94.8	2.4	2.8	9.4	29.4	61.2
1996	72.1	9.9	17.9	94.3	2.7	3.0	11.4	29.8	58.8
1997	67.9	11.6	20.5	93.5	3.1	3.4	8.8	31.2	60.0
1998	67.8	10.9	21.3	93.3	3.1	3.6	8.3	29.2	62.5
1999	66.4	11.8	21.8	91.6	4.2	4.1	10.6	28.5	60.9
2000	60.5	13.2	26.4	89.2	5.6	5.2	8.7	26.8	64.5
2001	63.3	12.1	24.5	91.2	4.3	4.5	11.0	26.8	62.2
2002	60.0	13.7	26.2	89.3	5.1	5.6	10.2	28.3	61.4
2003	58.5	13.4	28.1	89.1	4.1	6.8	9.5	28.3	62.2
2004	50.8	16.1	33.1	89.0	4.5	6.5	11.8	27.9	60.3
2005	46.3	16.6	37.1	85.7	5.3	9.0	10.8	26.7	62.5
2006	43.6	16.4	40.0	84.6	5.3	10.2	9.1	25.7	65.2
2007	42.7	16.1	41.2	84.9	4.6	10.5	8.3	25.4	66.3
2008	42.1	15.7	42.3	84.1	4.8	11.0	8.7	24.2	67.1
2009	41.6	15.3	43.1	84.1	4.9	11.1	7.5	23.7	68.9
2010	42.4	15.9	41.7	84.6	4.9	10.5	8.7	24.7	66.6
2011	42.2	15.2	42.6	84.1	4.7	11.2	8.9	23.4	67.6
2012	39.3	14.9	45.8	81.9	5.1	12.9	7.6	22.1	70.3
2013	37.0	15.3	47.7	80.1	5.1	14.8	7.1	22.4	70.5

Source: Turkish Statistical Institute (Turkstat) Labor Force Statistics

The incidence of part-time employment might be another factor affecting women's participation in the labor force by providing flexible working hours to reconcile work and family responsibilities. Table 4 provides information on the incidence of part-time employment in Turkey for the period of 2005-2013.⁹ In Turkey, the share of part-time employment in total employment increased from 5.3 percent in 2005 to 12.5 percent in 2013.¹⁰ When we examine the share of part-time employment in total female employment, the increasing incidence of part-time employment might one of reasons behind the increasing trend in female labor force participation. This may not be important in rural areas because the largest share of women are unpaid family workers in family farms but in urban areas, part-time jobs may provide an opportunity for flexible hours of work, and inclusion work with family responsibilities. We see that women are more likely to work part-time compared to men in Turkey and over the last decade, working part-time has become more common among urban women. Indeed, about 8.9 percent of urban employed women were working part-time in 2005 and this ratio increased to 15.1 percent in 2013 (Table 4).

Table 4: 2005-2013 Share of part-time working (%) in Turkey

Years	Total			Urban			Rural		
	Female	Male	Total	Female	Male	Total	Female	Male	Total
2005	12.3	2.9	5.3	8.9	1.9	3.3	16.1	5.4	9.1
2006	17.4	4.3	7.6	9.1	2.4	3.8	27.2	8.6	15.1
2007	19.2	4.7	8.5	9.3	2.3	3.8	31.3	10.4	17.6
2008	20.2	5.3	9.3	10.2	2.6	4.3	32.8	11.6	18.9
2009	23.8	6.6	11.3	13.8	3.4	5.8	36.2	13.6	21.5
2010	23.8	6.9	11.7	15.2	3.9	6.6	34.6	13.5	21.1
2011	24.7	6.8	12.0	14.8	3.7	6.5	37.2	13.3	21.9
2012	24.4	6.9	12.0	14.3	3.8	6.5	37.9	13.5	22.3
2013	24.8	7.2	12.5	15.1	4.1	7.1	38.8	13.7	22.7

Source: 2005-2013 Household Labor Surveys micro datasets; authors' own calculations

Beyond analyzing the trends in labor force participation, it is important to look at the nature of female employment. In the Turkish labor market, the majority of women are working either as regular or casual employees in the services sector or unpaid family

⁹Working part-time is defined as working between 1 and 34 hours per week in Turkish Statistical Institute (Turkstat) Household Labor Surveys.

¹⁰According to OECD statistics, the incidence of part-time employment in Turkey is lower compared to the majority of the OECD countries. The OECD average incidence of part-time employment (less than 30 hours per week) is 17.0 percent in 2013. This rate varies greatly across OECD countries. For example, it is 22.6 percent in the UK, 26.4 in Switzerland and 38.5 percent in the Netherlands.

workers in the agricultural sector. As can be seen in Table 5, more than half of women are working as regular or causal employees (61.7 percent) and three-fourth of these women are in the services sector.¹¹ A significant share of women are unpaid family workers (28.4 percent). Indeed, 89.2 percent of those female unpaid family workers are employed in the agricultural sector. However, being an unpaid family worker is rare among men, only 4.7 percent of male employment.

Table 5: Employment by gender, sector and employment status (2015)

Employment status	FEMALE				MALE			
	Agriculture	Industry	Services	Total	Agriculture	Industry	Services	Total
Regular or causal employee	4.6% (9.0%)	21.6% (82.5%)	73.8% (86.7%)	100% (61.7%)	2.9% (12.6%)	39.5% (85.5%)	57.6% (76.6%)	100% (69.3%)
Employer or self employed	32.5% (10.3%)	23.1% (14.2%)	44.4% (8.4%)	100% (10.0%)	41.2% (67.5%)	16.4% (13.4%)	42.4% (21.2%)	100% (26.1%)
Unpaid family worker	89.2% (80.7%)	1.8% (3.2%)	9.0% (4.8%)	100% (28.4%)	68.0% (19.9%)	8.1% (1.2%)	23.9% (2.1%)	100% (4.7%)
Total	31.4% (100%)	16.2% (100%)	52.5% (100%)	100% (100%)	15.9% (100%)	32.0% (100%)	52.1% (100%)	100% (100%)

Source: Turkstat Labor Force Statistics

On the other hand, informal employment is more prevalent among women compared to men in the Turkish labor market. Table 6 provides information on formal and informal workers by sectors where the informality is defined as not being registered with the social security system. As of 2015, 46 percent of women employed are unregistered at the social security system, compared with 28 percent of men. Especially in services and agriculture, where women are mostly employed, informality among women is severe. Indeed, 94 percent of women in agricultural sector and 23 percent of women in the services sector have informal jobs.

Table 6: Informal employment (in thousands) by gender and sectors(2015)

Sector	FEMALE					MALE				
	Formal	Share	Informal	Share	Total	Formal	Share	Informal	Share	Total
Agriculture	151	6%	2376	94%	2527	881	30%	2075	70%	2956
Industry	929	71%	373	29%	1302	4616	78%	1328	22%	5944
Services	3267	77%	963	23%	4230	7839	81%	1823	19%	9662
Total	4347	54%	3712	46%	8059	13336	72%	5226	28%	18562

Source: Turkish Statistical Institute (Turkstat) Labor Force Statistics

To sum up, although more women have participated in the labor force during the last decade, female labor force participation and employment rates are still quite low compared to those of males. The nature of female labor force participation is complex,

¹¹Regular or causal workers consists of individuals who work permanently, temporarily, seasonally or casually for an employer. While regular workers receive salary or wages on monthly basis and casual workers are usually paid according to the terms of a daily or weekly work contract.

and it can be affected by several factors such as economic development, educational attainment, household income, fertility, marriage, institutional setting and social norms influencing women's role in and outside the household. Apart from the potential reasons behind the low levels of female labor force participation rates discussed in this section, we focus on the social norm dimension in this study and investigate the impact of attitudes towards gender roles and preferences transmitted across generations on the female labor force participation in Turkey.

3 Literature Review

Economists have long been interested in similarities between parents' and their children's outcomes and a considerable attention has been devoted to the intergenerational correlations in earnings, education and occupations.¹² However, over the last decade, recent studies have moved beyond to examine how preferences, culture or social norms transmitted across generations help to shape labor market outcomes.

Within this literature, there are three strands that have explored the intergenerational correlations in attitudes towards gender roles and their consequences on labor market behavior of women. These strands differ in terms of proxies used for gender role attitudes in the empirical analysis.

The first strand has focused on immigrant outcomes to examine the role of intergenerational transmission of gender role attitudes on female labor supply. These studies use past labor force participation of women from the country of ancestry as a proxy for the gender role attitudes that immigrants bring to their host countries (Fernandez, 2007; Blau et al., 2008; Fernandez and Fogli, 2009; Fernandez, 2010). For example, Blau et al. (2008) find that immigrant women from countries with high female labor supply persistently are more likely to work more than those from countries with low female labor supply. Similarly, Fernandez and Fogli (2009) show that the labor supply and the fertility decisions of second-generation immigrant women in the US are significantly influenced by female labor force participation and fertility rates in their country of origin. This set of studies concludes that these findings on women reflect notions of gender roles and attitudes regarding the role of women in the family. They provide empirical evidence on the role of gender role attitudes in the labor market behavior of women; however, which is restricted to the context of immigrants.

The second strand has focused on quantifying the intergenerational correlations in

¹²Black and Devereux (2011) and Torche (2015) provide an extensive overview of these studies.

gender role attitudes and their impact on the labor market behavior of women. These studies have used data sources where individual opinions towards working women of both previous and current generations can be directly observed, for example Farre and Vella (2013) and Johnston et al. (2013). Using longitudinal survey data for the US, Farre and Vella (2013) construct an index of attitudes towards gender roles for both mothers and children to investigate the transmission of these attitudes across generations. Their findings indicate that a mother's view towards the role of women in the labor market is significantly correlated with those of her sons and daughters during their childhood. In other words, children of mothers who have less traditional attitudes inherit less traditional views. Hence, they support the view that gender role attitudes are passed from parents to children. They also study whether gender role attitudes expressed during a woman's youth are able to explain her adult labor market participation decision and whether those expressed during a man's youth are able to explain his wife's participation decision during adulthood. They find a positive relationship between daughters' attitudes in childhood and their labor supply decisions in adulthood. However, sons' attitudes in childhood are not related to their labor supply decisions but related to their wives' work decisions. Similarly, Johnston et al. (2013) using data from the 1970 British Cohort Study, conclude that mothers' and children's gender role attitudes are correlated equally for sons and daughters and more traditional mothers raise more traditional children. However, maternal attitudes have an impact on the daughter's labor supply decision but not on that of the son. On the other hand, they report that maternal attitudes are a significant and positive predictor of daughters-in-law's labor market behavior. Quantifying the intergenerational correlations in gender role attitudes requires longitudinal data where individuals and their expressed gender role attitudes are tracked over time. However, there is no this kind of longitudinal data available for Turkey.

The third strand uses indirect measures of attitudes towards gender roles to capture their impact on the labor force participation decision of women. This set of studies takes the maternal labor market behavior as a proxy for attitudes towards gender roles in the family. Leading papers in this literature are Fernandez et al. (2004), Kawaguchi and Miyazaki (2009), Butikofer (2013), Campos-Vazquez and Velez-Grajales (2014) and Morrill and Morrill (2013). These studies are based on the idea that preferences and attitudes towards gender roles are shaped during childhood. Gender role preferences are established at early ages while children are exposed to their parents (Thorton et al., 1983) and parents socialize their children by transmitting their own preferences (Bisin and Verdier, 2001). Children's position toward women is mainly formed by their experiences with the role of the mother in and outside household during their childhood

and adolescence. Therefore, mothers' labor market statuses may affect the acceptance of working women in the next generation. Based on these arguments, this set of papers studies the direct relationship between mothers' labor market behaviors in their children's adolescence and those of their adult daughters and/or daughters-in-law using data on mother-child pairs. Since our paper contributes to this strand, we discuss the findings of related studies in detail.

The work of Fernandez et al. (2004) proposes a theoretical model which explains how the labor market behavior of the previous generation of women affects the labor market decision of current generation of women. In their model, a man who grew up with a working mother differs from a man who grew up with a nonworking mother in two aspects: preferences for a working wife and/or household productivity. They argue that a man whose mother worked during his adolescence may develop preferences for a working wife because having a working wife does not contradict his family norms. Moreover, they discuss that working mothers may have transmitted a different set of housework skills to their sons compared to nonworking mothers. A man who grew up with a working mother may be more productive and cooperative on helping in the household, making it easier for their wives to work. Men's better household skills and modified preferences for working wives increase the incentives of women to invest in market skills as opposed to household skills. Therefore, men who grew up with a working mother are more likely to have wives who work. Based on these arguments, Fernandez et al. (2004) propose a positive causal relationship between the labor market participation of a mother-in-law and that of a daughter-in-law. To test this hypothesis, they use cross-sectional data from the General Social Survey and Female Labor Force Participation and Marital Instability for the US. They estimate a probit model where they regress the indicator of whether a married woman works on the indicator of whether her husband's mother worked while her husband was growing up along with control variables. Their results point out that a married woman's probability of working is positively correlated with whether her mother-in-law worked while her husband was growing up.

A number of empirical studies has followed similar methodologies to test the association between labor market behaviors of married women and their husbands' mothers. For example, Kawaguchi and Miyazaki (2009) find that Japanese men whose mothers worked are more likely to have working wives. Similarly, using Swiss data Butikofer (2013) finds supporting evidence that a woman married to a man who grew up with a working mother is more likely to be in the labor force. She also illustrates that the wife's contribution to household income impacts her husband's satisfaction negatively when he was raised by a mother who worked exclusively at home. Campos-Vazquez and

Velez-Grajales (2014) is another study that focuses on intergenerational persistence of preferences and attitudes towards gender roles. Looking at married women and their mothers-in-law in Mexico, they find that the previous labor market status of a mother-in-law has a significant and positive impact on the probability that her daughter-in-law participates in the labor force. The common finding of these studies is a significant relationship between the labor market behavior of a married woman and that of her mother-in-law when her husband was young. They fail to find a significant relationship between labor market statuses of a daughter and her own mother. Hence, they conclude that the transmission of labor market behavior works through mothers-in-law to daughters-in-law channel due to transformed preferences and/or greater household skills of men who are raised by working mothers. They argue that women acquire market skills in order to be able to marry this growing subset of men that prefer working woman.

There are also empirical papers providing evidence on the transmission of labor market behavior through the mother-to-daughter channel. Examples are Morrill and Morrill (2013) and Carro et al. (2014). Morrill and Morrill (2013) follow a similar methodology to that in Fernandez et al. (2004) in order to explore the relationship between labor market behaviors of previous and current generations of women. In contrast to previous studies, using the Survey of Income and Program Participation data for the US Morrill and Morrill (2013) show that a married woman's labor force participation is indeed correlated with former labor market statuses of both her own mother and her husband's mother. Accordingly, they argue that the empirical link between labor market behaviors of mothers-in-law and daughters-in-law might not always be due to mothers-in-law influencing daughters-in-law. They offer an alternative explanation on this relationship, which takes into account assortative mating. A woman who made an independent decision to work might prefer to marry a man whose mother worked. In other words, a woman may decide whether or not she wants to work first and whom she wishes to marry second. A working woman may prefer a man who supports her decision to work and thus, may choose a man who grew up with a working mother because a man who grew up with a working mother may be more efficient at household tasks and/or a working wife does not contradict his family norms. However, they note that this alternative explanation does not contradict the link between labor market behaviors of mothers-in-law and daughters-in-law modeled by Fernandez et al. (2004). Indeed, it highlights that both mother and mother's-in-law work experience might be important for the labor market decision of a married woman. Another study Carro et al. (2014), using Portuguese parish data, estimate the effect of having a working mother on the probability of working of a woman. They show that the mother's former working status has a large

positive impact on the daughter's probability of working during her adulthood.

To sum up, the overall findings indicate a positive association between mothers' former labor market statuses and current labor market behaviors of their both daughters and daughters-in-law. This result also implies that gender norms, preferences and housework skills are possibly passed from one generation to the next. In other words, female labor force participation decision depends on these intergenerational links.

A considerable amount of studies on the Turkish labor market has investigated potential reasons behind the trends in female labor force participation rates as we discussed in Section 2. Besides, existing studies have also provided a substantial amount of evidence on the relative and absolute importance of several factors that play an important role in explaining labor market behavior of women in Turkey. Among those already investigated are age, education, having children and marital status (e.g. Tansel, 2001; Baslevent and Onaran, 2003; Taymaz, 2010; Dayioglu and Kirdar, 2010; Karaoglan and Okten, 2015). The findings of these studies reveal that the probability that a woman participates in the labor market is a concave function of age (Dayioglu and Kirdar, 2010; Guner and Uysal, 2014; Karaoglan and Okten, 2015) married women have a lower likelihood of participation (Baslevent and Oraran, 2003; Dayioglu and Kirdar, 2010), a higher level of educational attainment increases female labor force participation (Tansel, 2001; Dayioglu and Kirdar, 2010; Karaoglan and Okten, 2015) and having young children is negatively associated with the participation probability of women (Baslevent and Onaran, 2003; Dayioglu and Kirdar, 2010; Guner and Uysal, 2014; Karaoglan and Okten, 2015).

Guner and Uysal (2014) have attempted to measure the effect of culture on female labor force participation decisions for internal migrant women in Turkey where culture is proxied by past employment rates in their respective provinces of origin. However, existing studies have never investigated the direct relationship between mothers' former labor force participation and those of their daughters and daughters-in-law in the Turkish labor market. Therefore, this paper seeks to fill this gap by providing evidence on the effects of these intergenerational links on the labor force participation of women in Turkey using parents-children data.

4 Data

The data used in this study are taken from the 2011 Survey of Income and Living Conditions Survey (SILC-2011) conducted by the Turkish Statistical Institute. This survey is

nationally representative and provides information on each respondent's household and individual characteristics (such as labor market status, income types, health status, and living standards). We use the Intergenerational Transmission of Disadvantages Module, which collects retrospective information on each respondent's parents such as education, labor market status, occupation type when the respondent was 14 years old. This is the only module that contains data on the former labor market status of parents, enabling us to investigate potential intergenerational links in the labor market behavior of women. Moreover, it is possible to obtain detailed information on respondents' spouses and their parents if the spouse is a household member.

The Intergenerational Transmission of Disadvantages Module data set contains 12,484 men and 12,963 women aged between 25 and 59 (25,447 observations). We restrict our sample to married women aged between 25 and 59 (10,811 observations). Note that 83.4 percent of women in the data are married. However, husbands of 39 married women are younger than 25 and those of 1,024 married women are older than 59. These husbands are not included in modular data set and hence there is no information on their parental background when they were 14. Therefore, we exclude 1,063 married women whose husbands are younger than 25 or older than 59.¹³ All women in our sample are residing with their husbands, which enables us to analyze the relationship between the woman's labor market behavior and both that of her mother-in-law and that of her own mother.

In the modular data, individuals are asked the highest level of education attained by their fathers and mothers when they were around 14 years old. These variables consist of eight response alternatives, including the "do not know" option. There are 203 married women (2.9 percent) who do not know their mothers' education and 382 married women (3.9 percent) who do not know their fathers' education. The number of spouses who do not know their mothers' and fathers' education in our sample are 232 (2.4 percent) and 362 (3.7 percent), respectively. However, the data set does not provide any information on why these individuals do not know their parents' education level and thus, they can be treated as missing observations. One option to deal with missingness is to use either listwise or pairwise deletion of missing observations, which may introduce a bias in the data if the complete observations are not a random sample in addition to loss of information. If this is the case, the other option is to impute missing observations.

When we check the pattern of missingness in parental education variables, in our sample 169 spouses do not know their fathers' education, 164 women do not know both

¹³The labor force participation rate of these women excluded from our sample is 26.1 percent.

their fathers' and their mothers' education, 143 women do not know only their fathers' education and 117 spouses do not know both their father' and their mother's education. All other possible missingness patterns occur, but with smaller frequencies and there are in total 792 cases where at least one of these four parental education is not known. There are 8,953 married women for whom parental education levels and their spouses' parental education levels are completely observed.

On the other hand, missing values only influence the results if the probability of missingness is associated with the dependent variable (Allisson, 2002). Thus, we perform simple Pearson's Chi-square test to compare the distribution of our dependent binary variable, the indicator of whether a married woman participates in the labor force for those with all parental education variables observed (8,953 observations) and those with at least one of parental education variables is missing (792 observations). The test result shows that Pearson's Chi-square statistics with one degree of freedom is 0.409 with a p-value of 0.522. We fail to reject the null hypothesis that missingness in parental variables is not associated whether a married woman participates in the labor force at 5% significance level. Hence, we exclude 792 married women who had missing information on at least one of four parental variables. Hence, our final complete case sample consists of 8,953 married women. We have also imputed the missing observations in parental education variables and we run regressions with the imputed full sample to figure out whether the estimation results are significantly different from those obtained from the complete case sample. The missing values in four parental education variables are imputed by using chained equations multiple imputation method. In general, multiple imputation is a simulation-based method for dealing with missing data and involves filling in the missing values multiple times and creating multiple complete data sets. The data are analyzed separately for each of the imputed data sets and then, estimates are combined to yield one summary result (Little and Rubin,2002). Multiple imputation by chained equations operates under the assumption that given variables used in the imputation model procedure, the missing data are missing at random (MAR) (Schafer and Graham, 2002). It means that the probability that a value is missing depends only on observed values not on unobserved values. In chained equations multiple imputation procedure, a series of regression models are run whereby each variable with missing data is modeled conditional on the other variables in data. In our case, parental education variables with missing values are modeled conditional on their children's characteristics such as gender, age, education, labor force participation status, the region of residence and their own characteristics such as the labor force participation and age. When we run regressions using imputed data, our results are not significantly different from those

estimated from the complete case sample. The descriptive statistics of the imputed data are available in Table A.5 and the probit estimation results of our model using imputed data can be found in Table A.6 in Appendix.

Table 7 shows the female labor force participation by participation statuses of their own mothers and their spouses' mothers. Women whose mothers and mothers-in-law participated in the labor force are more likely to be in the labor force. 56.6 percent of married women whose mothers participated and 56.1 percent of married women who have mothers-in-law participated are in the labor force when they are adults. Similarly, women who have mothers and mothers-in-law that didn't participated in the labor force are less likely to be in the labor force. 25.4 percent of married women whose mothers didn't participate and 25.3 percent of married women whose mothers-in-law didn't participated are in the labor force. Note that these are only raw correlations, and whether a statistically significant relationship still exists when we control for other factors that may affect this relationship will be analyzed following the econometric exercise.

Table 7: Conditional Frequencies

	Women outside the labor force	Women in the labor force	Total
The mother didn't participate	4,155 (74.6%)	1,416 (25.4%)	5,571 (100%)
Spouse's mother didn't participate	4,204 (74.7%)	1,425 (25.3%)	5,629 (100%)
The mother participated	1,913 (56.6%)	1,469 (43.4%)	3,382 (100%)
Spouse's mother participated	1,864 (56.1%)	1,469 (44.2%)	3,324 (100%)
Total	12,136 (67.8%)	5,779 (32.3%)	17,906 (100%)

Table 8 provides descriptive statistics for married women, their spouses as well as their parents and their spouses' parents and Table 9 shows the descriptive statistics for subgroups: women who are living in rural and urban areas and women with different educational attainment. In both tables, categorical variables are summarized in frequencies, and means of continuous variables are reported.

Our dependent variable is an indicator of whether a woman participates in the labor market. Women are considered to be in the labor force if they are working as a part-time or full-time employee, or part-time or full-time self-employed or looking for a job. The former labor market status of a mother and that of the mother-in-law, our variables of interest in this study, are defined by dummy variables that are set equal to 1 if the mother or the mother-in-law were in the labor force when their children were around 14

years old, 0 otherwise. The average participation rate of married women in our sample is 32.2 percent while the average participation rate of the mothers and the mothers-in-law are 37.8 percent and 37.1 percent, respectively. Fathers' labor force participation variables are defined in the same way. The participation rate of women's own fathers is 92.1 percent and that of their spouses' fathers is 91.4 percent.

The data in Table 8 illustrates that average female labor force participation in the sample has declined across generations. In line with discussions in Section 2, the potential force behind this decline across generations is internal migration from rural to urban areas. In rural areas, women are commonly working in the family farms and as unpaid family workers. It is clear that working in family farms is different from working for pay. However, the data do not allow us to differentiate between sectors in which mothers and mothers-in-law were working.

On the other hand, we see that the participation rate of married women are different across subgroups in Table 9. The labor force participation rate of married women who are living in rural areas is higher than those living in the urban areas. While 23.2 percent of married women are participated in the labor force in urban sample, the analogous rate in rural sample is 51.6 percent. The share of women who participate in the labor force is also different across subgroups with respect to women's educational attainment. 44 percent of married women with high school or higher education diploma are in the labor force. These ratios are 28.7 percent and 28.9 among illiterate or literate/nongraduate women and primary education school graduates, respectively.

Education variables are defined as the highest level of education attained by individuals and they are coded in seven categories in the raw data: illiterate, literate but not a graduate, primary school, secondary, vocational secondary or primary education school, high school, vocational or technical high school and faculty/university, college or higher education level. Using these raw variables, women's and their husbands' education variables are grouped into four categories: illiterate or literate but not a graduate, primary education, high school and university or more.¹⁴ Similarly, we construct parental education variables by grouping them into three main education categories: illiterate or literate but not a graduate, primary education and high school or more. Table 8 shows that the highest level of education attained by most of the married women in the sample is primary education. Indeed, 56.7 percent of women are primary school graduates and 22.4 percent of them are illiterate or literate/nongraduate. Women who have a higher education diploma constitute only 8.3 percent of married women in the sample. How-

¹⁴Primary education category consists of individuals graduated from primary schools (5 years) or secondary, vocational secondary or primary education schools (5 years primary + 3 years secondary).

Table 8: Descriptive Statistics

WOMEN'S VARIABLES		# observations	%
Women's LFP	Working or unemployed	2,885	32.2
	Illiterate or literate/nongraduate	2,003	22.4
Women's Education Level	Primary education	5,075	56.7
	High School	1,132	12.6
	University or more	743	8.3
Women's Mothers' LFP	Working or unemployed when she was 14.	3,382	37.8
Women's Fathers' LFP	Working or unemployed when she was 14.	8,244	92.1
Women's Mothers' Education Level	Illiterate or literate/nongraduate	6,074	67.8
	Primary education	2,681	30.0
	High school or more	198	2.2
Women's Fathers' Education Level	Illiterate or literate/nongraduate	3,652	40.8
	Primary education	4,749	53.0
	High school or more	552	6.2
		# observations	Mean
Women's Age	Age (years)	8,953	39.1
		# observations	%
No of children aged 3 and less	None	6,285	70.2
	One	2,182	24.4
	Two or more	486	5.4
	Mean	8,953	0.37
No of children older than 3	None	3,558	39.7
	One	2,604	29.1
	Two	1,735	19.4
	Three or more	1,056	11.8
	Mean	8,953	1.12
		# observations	%
SPOUSES' VARIABLES		# observations	%
Spouses' Education Level	Illiterate or literate/nongraduate	497	5.6
	Primary school	5,459	61.0
	High School	1,732	19.4
	University or more	1,265	14.1
Spouses' Mothers' LFP	Working or unemployed when she was 14.	3,324	37.1
Spouses' Fathers' LFP	Working or unemployed when she was 14.	8,181	91.4
Spouses' Mothers' Education Level	Illiterate or literate/nongraduate	6,512	72.7
	Primary school	2,284	25.5
	High school or more	157	1.8
Spouses' Fathers' Education Level	Illiterate or literate/nongraduate	4,136	46.2
	Primary education	4,321	48.3
	High school or more	496	5.5
		# observations	Mean
Spouses' Age	Age (years)	8,953	42.5
Spouses' income	Total annual income (in 1000 TL)	8,953	16.1
		# observations	%
LOCATION RESIDENCE		# observations	%
Regions	TR1-Istanbul	1,063	11.9
	TR2-Western Marmara	594	6.6
	TR3-Aegean	1,254	14.0
	TR4-East Marmara	704	7.9
	TR5-West Anatolia	823	9.2
	TR6-Mediterranean	909	10.2
	TR7-Central Anatolia	603	6.7
	TR8-West Black-Sea	605	6.8
	TR9-East Black-Sea	351	3.9
	TRA-North-East Anatolia	562	6.3
	TRB-Central-East Anatolia	657	7.3
	TRC-South-East Anatolia	828	9.3

ever, husbands in the sample are more likely to be university graduates (14.1 percent) and less likely to be illiterate or literate but without a diploma (5.6 percent). One of the major differences between parents and their children is their education levels. Mothers are more likely to be illiterate or literate/nongraduate (67.8 percent of women's mothers and 72.7 percent of their spouses' mothers) and fathers are more likely to be primary education school graduates (53.0 percent of women's own fathers and 48.3 percent of their spouses' fathers). As expected, the education levels are consistently increasing over time and across generations. As can be seen in Table 9, women living in urban areas are more educated than women living in rural areas. Whereas 33.3 percent of married women in rural areas are illiterate or literate/nongraduate, this ratio is 17.3 percent among married women living in urban areas. The share of women who are university graduates is 11.0 percent in urban areas and 2.5 in rural areas.

The husbands in our sample are older than their wives on average. The mean age of the husbands is 42.5 and the mean of their wives is 39.1. When we look at the number of children in the household, the average number of children aged 3 years and younger is 0.4 and the average number of children older than 3 is 1.1. Although continuous variables of the number of the children are included in econometric analysis, the distribution of married women with respect to the number of children are also represented in the Table 8. 29.8 percent of married women are living in the households with at least one child aged 3 and younger and 61.4 percent of them are living in the households with at least one children aged older than 3.

Table 9: Descriptive Statistics of Subsamples

VARIABLES		Overall	Urban	Rural	Illiterate or literate/nongraduate	Primary Education	High school and more
WOMEN'S VARIABLES		%	%	%	%	%	%
Women's LFP	Working or unemployed	32.2	23.2	51.6	29.7	28.9	44.0
Women's Education Level	Illiterate or literate/nongraduate	22.4	17.3	33.3			
	Primary education	56.7	55.8	58.6			
	High School	12.6	15.9	5.7			
	University or more	8.3	11.0	2.5			
Women's Mothers' LFP	Working or unemployed when she was 14.	37.8	29.4	55.6	44.5	41.1	21.6
Women's Fathers' LFP	Working or unemployed when she was 14.	92.1	91.9	92.6	89.2	93.1	92.5
Women's Mothers' Education Level	Illiterate or literate/nongraduate	67.8	63.5	77.2	95.7	69.0	35.1
	Primary education	30.0	33.7	22.0	4.3	30.9	54.7
	High school or more	2.2	2.9	0.8	0.1	0.1	10.2
	Illiterate or literate/nongraduate	40.8	35.6	51.9	78.1	37.3	10.4
Women's Fathers' Education Level	Primary education	53.0	56.5	45.6	21.6	60.6	66.2
	High school or more	6.2	7.9	2.5	0.3	2.1	23.4
		Mean	Mean	Mean	Mean	Mean	Mean
Women's Age	Age (years)	39.1	38.7	40.0	42.4	38.9	36.2
No of children aged 3 and less		%	%	%	%	%	%
	None	70.2	71.0	68.5	65.3	74.1	64.9
	One	24.4	25.0	23.0	23.7	22.0	31.5
	Two or more	5.43	3.97	8.56	10.99	3.9	3.63
	Mean	0.37	0.34	0.43	0.50	0.31	0.39
No of children older than 3	None	39.7	41.0	37.0	36.0	37.9	48.8
	One	29.1	31.0	25.1	19.4	31.2	33.8
	Two	19.4	19.4	19.3	16.1	21.8	16.3
	Three or more	11.8	8.6	18.7	28.6	9.1	1.2
	Mean	1.12	1.00	1.37	1.65	1.06	0.70
SPOUSES' VARIABLES		%	%	%	%	%	%
Spouses' Education Level	Illiterate or literate/nongraduate	5.6	4.0	8.9	20.5	1.69	0.05
	Primary education	61.0	55.4	72.8	70.6	72.3	20.2
	High School	19.4	22.7	12.2	7.4	19.8	31.0
	University or more	14.1	17.9	6.1	1.6	6.3	48.8
Spouses' Mothers' LFP	Working or unemployed when she was 14.	37.1	28.0	56.6	43.9	38.9	25.2
Spouses' Fathers' LFP	Working or unemployed when she was 14.	91.4	91.4	92.3	88.2	92.3	92.3
Spouses' Mothers' Education Level	Illiterate or literate/nongraduate	72.7	68.6	81.6	95.7	73.9	45.1
	Primary education	25.5	29.0	18.1	4.3	25.9	47.1
	High school or more	1.8	2.4	0.3	0.0	0.2	7.8
Spouses' Fathers' Education Level	Illiterate or literate/nongraduate	46.2	41.0	57.3	79.3	43.2	19.1
	Primary education	48.3	51.8	40.8	20.2	54.5	61.5
	High school or more	5.5	7.3	1.9	0.6	2.4	19.4
SPOUSES' VARIABLES		Mean	Mean	Mean	Mean	Mean	Mean
Spouses' Age	Age (years)	42.5	42.1	43.3	45.3	42.5	39.6
Spouses' income	Total annual income (in 1000 TL)	16.1	17.6	12.8	10.3	14.7	26.0
LOCATION RESIDENCE		%	%	%	%	%	%
Regions	TR1-Istanbul	11.87	17.21	0.49	6.59	12.6	15.5
	TR2-Western Marmara	6.63	5.51	9.03	3	8.0	6.7
	TR3-Aegean	14.01	13.14	15.86	5.69	15.4	19.3
	TR4-East Marmara	7.86	9.43	4.52	3.69	9.8	7.0
	TR5-West Anatolia	9.19	12.01	3.19	3.25	10.0	13.3
	TR6-Mediterranean	10.15	10.42	9.59	8.54	10.2	11.7
	TR7-Central Anatolia	6.74	5.68	9	5.59	7.4	6.1
	TR8-West Black-Sea	6.76	5.13	10.22	6.09	7.6	5.3
	TR9-East Black-Sea	3.92	2.43	7.11	3.64	4.3	3.3
	TRA-North-East Anatolia	6.28	4.04	11.06	12.33	5.1	3.0
	TRB-Central-East Anatolia	7.34	5.73	10.78	17.42	4.3	4.8
	TRC-South-East Anatolia	9.25	9.28	9.17	24.16	5.3	4.1
	#Observation		8,953	6,096	2,857	2,003	5,075

5 Empirical Strategy

The labor supply decision of women has been studied extensively in the literature. A considerable amount of this literature explains the labor supply decision of women mostly with standard economic variables such as education, earnings and fertility (Killingsworth and Heckman (1987) and Blundell and Macurdy (1999)). Using this common model as a starting point, this study aims to quantify the intergenerational linkages in the labor market behavior of the current generation of women and that of the previous generation using data on children-parents pairs in Turkey. Therefore, we specify a reduced form model in which a woman's participation in the labor force depends on her own mother's former labor force participation and that of her spouse's mother, given that she is married, as well as the standard supply side control variables used in the literature.

The labor force participation of a married woman may be estimated by a standard probit model. Even though we experiment with different specifications, the baseline model is as follows.

$$y_i = \beta_0 + \beta_1 y_i^m + \beta_2 y_i^{sm} + \beta_3 X_i + \beta_4 H_i + \beta_5 P_i + \beta_6 W_i + \epsilon_i \quad (1)$$

A married woman i chooses either to participate in the labor market, $y_i = 1$, or not, $y_i = 0$. y_i^m and y_i^{sm} show the former labor force participation status of woman i 's mother and that of her spouse's mother, respectively. y_i^m equals to 1 if the mother was in the labor force when her daughter was 14, and 0 otherwise. y_i^{sm} equals to 1 if the mother was in the labor force when her son was 14, and 0 otherwise. X_i denotes a vector of characteristics of woman i and H_i is the vector of her spouse's characteristics. P_i includes characteristics of woman i 's parents and those of her spouse. Lastly, W_i are regional dummies of the current residence of woman i .

The vector of the woman's characteristics, X_i , includes variables that may affect her labor force participation such as her education level and her age. The number of young children in the household is also included given that the presence of young children who require care might be a deterrent to the woman's labor force participation. On the other hand, the vector of the spouse's characteristics, H_i , contains individual characteristics such as his age, his education as well as his income. W_i includes regional dummies of the current residence.

Parameters β_1 and β_2 are the parameters of interest and capture the potential intergenerational effects of the mother's participation status and the spouse's mother's participation status on that of the married woman. As hypothesized by Fernandez et al.

(2004), a married woman's labor force participation might be correlated with the labor supply of her spouse's mother during his adolescence. This is because whether the mother of the spouse worked is probably influenced by her beliefs about women's roles, which may then be transmitted to her son and affect the decision of his wife's labor force participation. Moreover, a woman's labor market behavior might be correlated with her own mother's labor market participation because daughters of nonworking mothers may have preferences and beliefs binding them to the home and/or hold greater skills in household production like their mothers.

Apart from preferences, attitudes towards gender roles and home productivity, human capital may also be transmitted from parents to their children. Therefore, we also control for parental education and the vector of P_i includes parental education variables of both the woman i and her spouse. Moreover, whether a mother participates in the labor force may depend on her educational attainment. Inclusion of parental education variables in Equation 1 also deals with this potential bias.

Lastly, the woman i 's labor force participation may be correlated with the region of the current residence, and thus the vector of W_i includes regional dummies.

6 Results

In this section, we represent the estimation results of Equation 1 that regresses the labor market status of a married woman on her own mother's former labor market behavior and that of her spouse's mother along with several standard control variables. First, we provide the estimation results for the overall sample of married women. Second, we run regressions on sub-samples to figure out whether the effects of former labor market statuses of the mothers and mothers-in-law are different between married women residing in rural and urban areas, and different across women's educational attainment levels.

We seek to know specifically the effects of education and the place of residence on labor force participation of married women. The transmission of the gender role attitudes and/or preferences across generations and its effect on female labor force participation might be different between rural and urban areas because of the differences in family structures, the strength of traditional gender norms and employment opportunities (Gunduz-Hosgor and Smits, 2008). In Turkey, married women in rural areas are more likely to live in extended families and they are under the influence of their families and patriarchal values while urban married women are more likely to live in nuclear families and less likely to be under the influence of their families. Moreover, urban women have

less traditional gender role attitudes than women living in rural areas (Gunduz-Hosgor and Smits, 2008).

In addition, the majority of women living in rural areas are unpaid family worker in the agriculture (Table 3 and Table 5). Womens work at family farms are not recognized as an economic contribution to the household and thereby it is accepted as a part of domestic work of rural women. Therefore, the intergenerational transmission of gender role attitudes and/or preferences proxied by the former labor market status of mothers should be cautiously interpreted in the rural and urban contexts. The positive correlation between the labor market participation of married women in rural areas and those of their mothers and mothers-in-law might reflect the persistence of the rural family structure. Married women traditionally work in agriculture, and agricultural work is generally carried out by husbands and wives together. If the mother participated in the labor force (most probably engaged in agricultural activities), her daughter may hold similar preferences and agricultural production skills as her mother.¹⁵ If the mother-in-law was working, her husband might expect his wife to participate in agricultural activities with him. This expectation does not mean that the husband has less traditional gender attitudes towards working woman outside household. On the other hand, in urban areas the share of the agricultural sector in total employment is quite low (Table 3), and the majority of women are paid workers in the services sector (Table 5). Working for pay outside household is different from working in agriculture with family members. In urban context, sons and daughters of working mothers may have more egalitarian idea of gender roles and division of the labor in the household and less likely to be against woman working. When we take the influence of patriarchal values and the limited non-agricultural job opportunities in rural areas into account, it is expected that the transmission of gender role attitudes and/or preferences is more persistent in rural areas than that in urban areas.

As for the effect of education, it may affect the labor market behavior of women through different channels. According to human capital theories, a higher educational attainment is associated with an increase in skills and thus, the greater opportunity to earn higher wages (Goldin, 1994). Therefore, women with higher educational attainment are more likely to participate in the labor force. On the other hand, education is expected to increase more egalitarian gender role attitudes (Garrido,2018)and it may create a way out of traditional restrictions exposed by women. More educated women are expected

¹⁵The data does not allow us to control for the location of the mothers when their children are 14 years old. However, if the married woman lives in the rural area, it is likely that her mother was living in the rural area.

to hold less traditional gender role attitudes (Gunduz-Hosgor and Smits, 2008; Farre and Vella; 2013). In our sample, the female labor force participation rates increase as the education level of women increases (Table 9). We run regressions for separate education groups to compare the effect of intergenerational transmission of gender role attitudes and/or preferences on labor market behavior of married women with different educational attainment.

6.1 Overall Results

Table 10 reports the marginal effects obtained from the probit estimation of different specifications of Equation (1).¹⁶

Model (1) estimates the joint impact of the labor force participation of the spouse's mother and her own mother without including control variables. If there is assortative mating in the marriage market, the labor market participation of mothers of two spouses may be correlated. Controlling for one and not the other may bias the related coefficient upwards. The coefficients in Model (1) indicate that this may indeed be the case. β_1 and β_2 are significantly different than zero, and the marginal effects are sizeable. A married woman whose mother was in the labor force when she was about 14 has a 10.9 percentage point higher probability of participating in the labor market. If her mother-in-law was in the labor force when her husband was about 14, her probability of participating in the labor market is 11.9 percentage points higher. In addition, we run a Wald Chi-square test of the null hypothesis that the estimated coefficients on the mother's labor market status and the mothers-in-law's labor market status are equal. Test result shows that Chi-square statistics with one degree of freedom is 0.28 with a p-value of 0.599. Thus, we fail to reject the hypothesis that these two estimated coefficients in Model (1) are equal at the 5% significance level.

Model (2) expands the baseline model to include the woman's and her spouse's variables. The estimated average marginal effects of labor participation of the mother and the spouse's mother are slightly larger than in Model (1), but still statistically significant even after controlling for the woman's and the spouse's characteristics. The probability that a married woman participates in the labor market increases by 12.2 percentage points if her own mother was in the labor force and by 12.7 percentage

¹⁶We also estimate the unconditional effect of former labor market participation of the mother and that of the spouse's mother on the married woman's labor force participation. The estimated average marginal effects of these variables are statistically significant, and 0.173 and 0.178, respectively. A woman's labor force participation probability is 17.3 percentage points higher if her own mother participated in the labor market. Similarly, a married woman is 17.8 percentage points more likely to work if her mother-in-law worked when her husband was 14.

points if her mother-in-law was in the labor force. When we run the Wald Chi-square test of the null hypothesis that these estimated coefficients are equal, we fail to reject the null hypothesis with 0.20 chi-square statistics (p-value 0.655) at 5% significance level. It implies that there is no statistically significant difference between the estimated coefficients of labor market statuses of the mother and the mother-in-law in Model (2).

In Model (2), while the coefficient of the woman's age is statistically significant and positive, that of its square is also significant but negative. In other words, the female labor force participation is concave in age. It implies that having children who are not yet of school-going age may decrease a married woman's ability to engage in work at younger ages. As the age increases, they get more likely to return to the labor market after having raised little children. At older ages, women are more likely to retire and thus the probability of participating in the labor force decreases.

Educational attainment is also an important structural determinant of female labor force participation. We have distinguished four different categories of the married woman's educational level. Our reference group consists of married women with primary education. The estimated average marginal effect of being illiterate or literate/nongraduate is negative but insignificant. Observe that the greater extent of educational attainment, the more likely is a married woman to be in the labor force. Married women with high school and at least university education are more likely to be in the labor force compared to those with primary education by 9.06 percentage points and 48.5 percentage points, respectively. This is not surprising given that university graduate women in Turkey have much higher labor force participation rates than women with the lower level of education.¹⁷ The estimation results of Model (2) show that the presence of children younger than the age of three in the household is a strong and significant deterrent to a married woman's labor force participation. In other words, more children aged 3 and younger in the household reduce the probability that a married woman participates in the labor force. On the other hand, the number of children older than 3 does not significantly affect the labor market behavior of married women.

As for the spousal characteristics, the coefficients in Model (2) show clearly that there is a strong income effect in the labor market decisions of women. The husband's annual income and education have significant negative effects on labor force participation probabilities of his wife. Higher annual income of the husband decreases the probability that his wife participates in the labor force. Note that annual income of the husband

¹⁷According to Turkstat Labor Statistics for 2011, female labor force participation rate among illiterate or literate/nongraduate, those with primary education, high school graduates and at least university graduates are 17.4 percent, 26.3 percent, 35.0 percent and 72.2 percent, respectively.

Table 10: Estimated Marginal Effects-Overall Sample

	(1)	(2)	(3)	(4)
Mother participated	0.109*** (9.60)	0.120*** (11.03)	0.116*** (10.55)	0.0929*** (8.38)
Spouse's mother participated	0.119*** (10.55)	0.129*** (11.93)	0.132*** (12.15)	0.108*** (9.89)
Woman Variables				
Age		0.0238*** (3.45)	0.0242*** (3.51)	0.0258*** (3.77)
Age square		-0.000290*** (-3.47)	-0.000292*** (-3.49)	-0.000311*** (-3.74)
Illiterate or literate but without a diploma		-0.00463 (-0.36)	-0.00324 (-0.24)	0.00601 (0.43)
High school		0.0906*** (5.79)	0.0824*** (5.17)	0.0814*** (5.16)
University or more		0.485*** (24.08)	0.456*** (21.05)	0.458*** (21.37)
No of children aged 3 and less		-0.0355*** (-4.31)	-0.0340*** (-4.12)	-0.0304*** (-3.68)
No of children aged more than 3		-0.00209 (-0.48)	-0.000438 (-0.10)	0.00428 (0.97)
Spouse Variables				
Age		0.0163** (2.21)	0.0180** (2.43)	0.0159** (2.17)
Age square		-0.000216** (-2.54)	-0.000232*** (-2.72)	-0.000212** (-2.50)
Illiterate or literate but without a diploma		0.0190 (0.89)	0.0188 (0.87)	0.0254 (1.18)
High school		-0.0978*** (-7.38)	-0.101*** (-7.60)	-0.103*** (-7.77)
University or more		-0.107*** (-5.74)	-0.114*** (-6.03)	-0.119*** (-6.31)
Spouse's annual income		-0.000733** (-2.44)	-0.000927*** (-3.02)	-0.000848*** (-2.81)
Parental Variables				
<i>Mother's education level</i>				
Primary school			0.00828 (0.65)	0.0109 (0.85)
High school or more			0.122*** (3.14)	0.131*** (3.42)
<i>Father's education level</i>				
Illiterate or literate but without a diploma			0.0152 (1.24)	0.0202* (1.65)
High school or more			-0.00654 (-0.28)	-0.0136 (-0.59)
<i>Spouse mother's educational level</i>				
Primary school			0.0231* (1.76)	0.0245* (1.87)
High school or more			0.0282 (0.66)	0.0447 (1.05)
<i>Spouse father's educational level</i>				
Illiterate or literate but without a diploma			-0.0112 (-0.94)	-0.00441 (-0.37)
High school or more			0.0333 (1.35)	0.0298 (1.22)
Regions				
TR1-Istanbul				-0.0968*** (-5.17)
TR2-Western Marmara				-0.0182 (-0.87)
TR4-East Marmara				-0.0584*** (-2.91)
TR5-West Anatolia				-0.0569*** (-2.90)
TR6-Mediterranean				-0.0233 (-1.27)
TR7-Central Anatolia				-0.0356* (-1.67)
TR8-West Black-Sea				0.0592*** (2.89)
TR9-East Black-Sea				0.127*** (5.13)
TRA-North-East Anatolia				0.0148 (0.67)
TRB-Central-East Anatolia				-0.0335 (-1.52)
TRC-South-East Anatolia				-0.149*** (-6.46)
Observations	8953	8953	8953	8953
Pseudo R2	0.037	0.105	0.107	0.121

Standard errors in parentheses

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

Note: Reference educational level category for the woman, the spouse, her father and her spouse's father is primary school.

Reference category for mothers' education is illiterate or literate but without any diploma. The reference region is TR3-Aegean region.

variable includes his net employee income or net self-employment income and social transfer payments such as sickness payments. Since husbands are the main breadwinner of the households, the higher annual income of husband increases the family income.¹⁸ If the economic status of the household is kept high, female involvement in labor market activities may remain low. However, Mincer (1962) argues that husband's income variable includes a transitory component when the data are from cross-sectional household surveys in which the period of observation is short. The author also discusses that husband's permanent income may also be relevant for a married woman's labor supply decision. Therefore, husband's education included to Model (2) can be considered as an instrument for his permanent income and it may reflect the future earnings of the husband. As we did for women, we have distinguished four different categories of the spouse's education. Our reference group comprises married women whose husbands have primary education. The estimated average marginal effect of having a husband who is illiterate or literate/nongraduate is insignificant. A married woman whose husband is a high school graduate is 9.8 percentage points less likely to be in the labor force compared to the woman married to a man with primary education. Likewise, to be married to a man who have at least a university degree reduces the probability of participating in the labor force by 10.7 percentage points compared to be married to a man with primary education. It would be expected that as the husband's education increases, his wife is more likely to participate in the labor force. This is because generally more educated husbands are assumed to be unbiased towards negative social and cultural norms and hence, they allow their wives to work. However, the relationship between the participation of the woman in the labor market and her husband's education in Model (2) is negative. It implies that the relationship between husbands education and decision of the woman to participate in the labor force is rather economically based.

Up to this point, the results of the econometric analysis show clearly that women with mothers and mothers-in-law having worked, are more likely to participate in the labor market. One explanation for this correlation could be the transmission of human capital from parents to their children. To shed light on this channel, we add parental education variables of both the woman and her spouse in Model (3). The main finding that a married woman's labor market participation is positively and significantly correlated with the former labor status of the mother and the mother-in-law still holds. The p-value of the equality test of the coefficients of the mother's and the mother-in-law's labor force participation is 0.404, which yields that the difference between two estimated

¹⁸The labor force participation rate of husbands is 87.7 percent while the female labor force participation rate is 32.2 percent in our sample.

coefficients is insignificant at 5% significance level in Model (3). However, the marginal effects are robust to the inclusion of parental education in the regression. Out of the four possible channels from parents and parents-in-law to women, we find that education of the woman's own mother and the spouse's mother significantly affects her labor force participation decision. When the woman's mother is an at least high school graduate, she is 12.2 percentage points more likely to work compared to a woman whose mother is illiterate or literate/nongraduate. When her spouse's mother has primary education, the woman's probability of participating increases by 2.3 percentage points compared to the one whose spouse's mother is illiterate or literate/nongraduate. Having a mother-in-law with a high school or a university degree does not have a significant effect on the woman's labor market behavior. However, there are very few women who belongs to this category. Only 2.2 percent of the mothers and 1.8 percent of mothers-in-law are at least high school graduates (Table 8). Note that the education of fathers and fathers-in-law do not affect the labor force participation of the women in the sample.

Model (4) includes regional dummies. The marginal effect of labor market participation of both the mother and the spouse's mother on the probability that whether a married woman is in the labor market is slightly smaller but still significant when regional dummies are included. The sectoral distribution of the region of current residence may affect the participation decision of the married woman. Our reference region is the Aegean region where the share of the agricultural employment is about 30 percent.¹⁹ Note that women are mainly employed in the agricultural sector in Turkey. Therefore, to reside in Istanbul, East Marmara and West Anatolia regions where the share of the agricultural sector is less than that in Aegean region reduces the probability that a married woman participates in the labor market. However, a married woman residing in East Black Sea and West Black Sea regions where the share of the agricultural sector is larger than that in Aegean Sea region is more likely to be in the labor market. A married woman's probability of participating decreases by 14.9 percentage points if she resides in South-East region, which is the least developed region in Turkey in many aspects. Also in the full model, the difference between estimated coefficients of the mother's and the mother-in-law's former labor market statuses is not significant since p-value of the equality test is 0.415 and greater than 0.05. In full model (6), the magnitudes of marginal effects of the rest of variables are slightly different from those in previous specifications.

¹⁹According to Turkstat statistics for 2011, the share of the agricultural sector in employment is 30 percent in Aegean region, 1 percent in Istanbul region, 29 percent in Western Marmara, 17 percent in East Marmara, 15 in West Anatolia, 32 percent in Mediterranean region, 38 percent in Central Anatolia region, 46 percent in West Black-Sea, 54 percent in East Black-Sea, 52 percent in North-east Anatolia region, 40 percent in Central-East Anatolia region and 23 percent in South-East Anatolia region.

However, their significance and signs do not change across all specifications and thus, their interpretations are similar to those we previously discussed.

The results in Models (1)-(4) represented in Table 10 indicate that the marginal effects of the mother's (β_1) and the mother-in-law's labor force participation (β_2) are significant and positive. Note that in all specifications their differences are not statistically significant at 5% significance level.

To reiterate, a woman whose mother participated in the labor force is from 10.8 percent to 17.8 percent more likely to participate in the labor force. On the other hand, having a spouse who grew up with a mother in the labor force increases the probability that the woman participates in the labor force by 9.3 percentage points to 17.3 percentage points depending on the specification. This may be due to the transmission of attitudes towards woman's role at home and in the labor market and/or preferences for a working wife and/or housework skills to children. However, with the current data we are not able to identify which intergenerational transmission mechanisms are at work. Instead, we explore the cumulative relevance of these transmission mechanisms in explaining labor force participation of the married women.

In terms of significant effect of the former labor market behavior of the mothers on labor force participation, our results are in line with those found by Morrill and Morrill (2013). However, results are different from the findings of Fernandez et al. (2004) and Butikofer (2013). When they include both mothers' and mothers-in-law's former labor market statuses into their regressions, they find that only the labor market behavior of the mother-in-law has a significant impact on the likelihood that a woman participates, the labor market behavior of her own mother does not. That's why they conclude that transmission of labor market behavior goes through only mothers-in-law to daughters-in-law channel. Fernandez et al. (2004) note that if both mother's and mother-in-law's labor market behaviors have significant effects on the woman's labor market behavior, the relationship between the woman's and the mother-in-law's participation could be driven by network effects. In other words, a woman's labor market behavior and that of her spouse's mother may be correlated due to a selection mechanism by which a woman is more likely to marry a man who does not oppose woman's labor market participation given that his mother had worked. The marriage may be formed on shared preferences or expectations among the mothers and hence, among couples. Therefore, the primary channel driving the wife's working decision may be the behavior of her own mother. Morrill and Morrill (2013) provide an explanation for this case. A woman may decide whether or not she wants to work first and whom she wishes to marry second. If this is the case, the woman's working decision depends on her own mother's working behavior

because the mothers represent a role model for their daughters. A working woman probably will choose to marry a man whose preferences and attitudes towards gender roles are shaped by a working mother. However, we are not able to control for these effects because the data do not allow us to determine the time sequence of working and marriage decisions. Therefore, we conclude that both the mother and the mother-in-law may influence the labor market behavior of married women.

6.2 Results of Sub-samples

Table 11 and 12 report the estimated average marginal effects of Equation 1 for sub-samples. In Table 11, the second and the third columns display estimation results for married women currently residing in urban areas and rural areas.²⁰ Table 12 presents the estimated marginal effects for married women with different educational attainment: illiterate or literate/nongraduate, primary education and at least high school graduates.

We have already discussed the estimated marginal effects for overall sample in previous subsection. In overall sample, the average increase in the probability that a married woman participates in the labor force due to the labor market status of her mother-in-law is 10.8 percentage points and due to the labor market status of her mother is 9.3 percentage points (Table 10).

In the Table 11, the average marginal effects in Column 2 indicate that having a mother participated in the labor force and a mother-in-law participated in the labor force increases the likelihood that a married urban woman participates in the labor force by 5.1 percentage points and 3.3 percentage points, respectively. On the other hand, in Column 3 the probability that a married woman residing in rural areas participates in the labor force increases by 9.1 percentage points if her mother was in the labor force and by 14.9 percentage points if her mother-in-law was in the labor force. When we run a Wald chi-square test of the null hypothesis that the estimated coefficients on the mother's labor market status and the mothers-in-law's labor market status in both urban and rural samples, we fail to reject the null hypothesis with p-values of 0.343 and 0.138, respectively.

As seen in Table 11, the estimated average marginal effects of the labor force participation of the mothers and the mothers-in-law in rural sample are larger than those obtained in urban sample. This finding should be interpreted cautiously because women who live in rural areas are more likely to work in the agriculture. In our sample 85.3% of

²⁰In SILC 2011 data, settlements with a population of 20 000 and less are defined as rural and settlements with a population of 20 001 and over are defined as urban.

working women in rural areas are working in the agricultural sector and 86.5% of those women are unpaid family workers. In rural areas, women are working as unpaid workers in the family farms and thereby they are able to allocate time continuously between work, child-rearing and housework. As seen in Column 3, the presence of children aged 3 and younger and/or children older than 3 does not statistically significantly affect the labor force participation of women in rural areas. On the other hand, the potential reason behind this difference between rural and urban areas might be the persistence of rural family structure across generations where the women traditionally work in agriculture. If the mother-in-law was working, the husband might be more likely to expect his wife to participate in agricultural activities. If the woman's mother was working, she could transfer her agricultural production skills to her daughter. Hence, women residing in rural areas might be more likely to work in the agricultural sector as their mothers and mothers-in-law. However, this is not the case in cities because women are usually paid workers. In our sample 73.9% of working women in urban areas are regular or casual employees and the proportion of unpaid female workers is only 11.8%. The presence of children in the household is a significant deterrent for the participation of urban women in the labor force, as presented in Column 2. In contrast to women in rural areas, urban women outsource their child care. This result indicates that lack of child care and pre-school services in Turkey reduces the urban female labor force participation.

In addition, the educational attainment seems an important determinant of the female labor force participation in both rural and urban areas. As the educational attainment increases, the probability of participating in the labor force increases. An urban married woman with at least university education is 39.6 percentage points more likely to be in the labor force compared to an illiterate or literate/nongraduate married urban woman. To graduate from high school increases the probability of participating in the labor force by 10.4 percentage points compared to be illiterate or literate/nongraduate in urban areas. On the other hand, in rural areas being at least university graduate increases the woman's probability of participation by 34.2 percentage points compared to be illiterate or literate/nongraduate. However, in rural areas university-graduate women are usually employed in the public sector rather than the agricultural sector. In our sample 57% of married university-graduate women in rural areas are working in the sectors of public administration and defence.

The data in Table 12 shows that higher educational attainment of women weakens the effects of the former labor market statuses of the mothers and the mothers-in-law on the female labor force participation. In Table 12, the Wald Chi-square tests do not show any significant differences between the estimated coefficients of the former labor

Table 11: Estimated Marginal Effects in Rural and Urban Areas

VARIABLES	Urban	Rural
Mother participated	0.0515*** (4.42)	0.0913*** (4.12)
Spouse's mother participated	0.0330*** (2.81)	0.149*** (6.89)
Woman Variables		
Age	0.0388*** (5.05)	0.0216* (1.69)
Age square	-0.000511*** (-5.36)	-0.000247 (-1.61)
Primary education	0.00801 (0.48)	0.0230 (0.94)
High school	0.104*** (4.95)	0.0302 (0.63)
University or more	0.396*** (16.46)	0.342*** (4.57)
No of children aged 3 and less	-0.0763*** (-7.14)	-0.0200 (-1.47)
No of children aged more than 3	-0.0191*** (-3.35)	0.000892 (0.12)
Spouse Variables		
Age	0.0158** (1.98)	0.0250* (1.80)
Age square	-0.000220** (-2.36)	-0.000298* (-1.87)
Primary education	-0.0304 (-1.03)	-0.00402 (-0.12)
High school	-0.0728** (-2.29)	-0.127*** (-2.96)
University or more	-0.0478 (-1.41)	-0.313*** (-5.36)
Spouse's annual income	-0.00102*** (-3.47)	-0.000116 (-0.17)
Parental Variables		
<i>Mother's education level</i>		
Primary education	0.00778 (0.62)	-0.0118 (-0.43)
High school or more	0.106*** (3.16)	0.120 (1.04)
<i>Father's education level</i>		
Primary education	0.00690 (0.52)	-0.0447* (-1.94)
High school or more	-0.00761 (-0.32)	-0.0716 (-1.06)
<i>Spouse mother's educational level</i>		
Primary education	0.0212* (1.66)	0.0137 (0.48)
High school or more	0.0373 (1.04)	0.0756 (0.40)
<i>Spouse father's educational level</i>		
Primary education	0.000768 (0.06)	0.0287 (1.26)
High school or more	0.00378 (0.16)	0.176** (2.36)
Regions		
TR1-Istanbul	-0.0195 (-1.08)	-0.215* (-1.75)
TR2-Western Marmara	-0.00920 (-0.38)	-0.0610 (-1.60)
TR4-East Marmara	-0.0116 (-0.56)	0.000212 (0.00)
TR5-West Anatolia	-0.0224 (-1.15)	0.0625 (1.15)
TR6-Mediterranean	0.0155 (0.75)	-0.0553 (-1.49)
TR7-Central Anatolia	-0.0763*** (-3.34)	-0.0459 (-1.20)
TR8-West Black-Sea	0.0301 (1.14)	0.0602* (1.66)
TR9-East Black-Sea	0.111*** (2.94)	0.0973** (2.39)
TRA-North-East Anatolia	-0.0936*** (-3.60)	0.0343 (0.91)
TRB-Central-East Anatolia	-0.0530** (-2.11)	-0.0399 (-0.99)
TRC-South-East Anatolia	-0.113*** (-5.29)	-0.119*** (-2.62)
Pseudo R2	0.187	0.085

Standard errors in parentheses.

The reference category for education variables is illiterate or literate/nongraduate.

The reference region is TR3 Aegean Region.

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

market statuses of the mothers and the mothers-in-law in Column 1 and Column 2 at 5% significant level with p-values of 0.351 and 0.212, respectively.

As can be seen in Table 12, to have a mother or a mother-in-law participated in the labor force increases the participation probability of an illiterate or literate/nongraduate married woman by 7.8 percentage points and 12.1 percentage points, respectively. The average marginal effect of the mother's former labor market status is slightly higher for a married woman with primary education compared to that of a illiterate or literate/nongraduate married woman. Indeed, a married woman with primary education is 9.2 percentage points more likely to be in the labor force if her mother was in the labor force. However, the effect of having a mother-in-law participated in the labor force on the labor force participation probability of a married woman with primary education is nearly identical to that estimated for an illiterate or literate/nongraduate married woman. In other words, the labor market behavior of a married woman with less than high school education is not only positively correlated with that of her mother but also with that of her mother-in-law. On the other hand, the labor market behavior of a married woman with at least high school education is only positively associated with her mother's former labor market behavior not that of her mother-in-law. The probability that a married woman with at least high school education participates in the labor force is 5.3 percentage points higher if her own mother was in the labor force whereas the estimated average marginal effect of the mother-in-law's former labor market status is not statistically significant.

Our estimations demonstrate that the mother-in-law's participation is a significant predictor of the participation probability of women who have less than high school education. For highly educated women, only her own mother's influences her labor force participation decision, not that of the mother-in-law does. This finding implies that the husband's preferences for a working wife and/or attitudes towards women's role at home and in the labor market, which are shaped by his mother's working status in his adolescence, are not important for participation of highly educated women. In other words, highly educated women make the decision of participation in the labor force independently from the husband's attitudes towards gender roles and preferences. More importantly, it appears that higher education reduces the effect of intergenerational persistence of attitudes towards gender roles and/or preferences on the female labor force participation.

As for the spousal characteristics, Table 12 shows that as the husband's education increases, the labor force participation probability of women who have less than high school education decreases. In the sample of married women who are illiterate

or literate/nongraduate, to be married to a man who holds high school or higher education diploma decreases the probability of participating in the labor force by 11.3 and 24.6 percentage points respectively compared to be married to an illiterate or literate/nongraduate man. The estimated average marginal effects of husband's education in the sample of women with primary education are slightly different from those obtained for illiterate or literate/nongraduate married women but their significance and signs are the same. In our sample, 79.5 percent of illiterate or literate/nongraduate women are married to husbands who have more education than they do. 72.3 percent of women with primary education have husbands with primary education and 26.1 percent of them married to a husband whose educational level is higher than theirs (Table 9). This education gap between husbands and wives may reflect the traditional values of husbands. Educated husbands married to a wife whose educational level lower than theirs may have more traditional gender role attitudes and are more likely to against his wives working. Therefore, this could be an alternative mechanism that explains the negative impact of husbands education on labor force participation of low educated women.

However, the effect of husband's education is not statistically significant in the sample of married women with an at least high school diploma. In other words, to be married to a husband with primary education or high school education or higher education does not increase the probability of participating in the labor force compared to be married to a man who is illiterate or literate/nongraduate. This might be a result of that highly educated women are more likely to marry highly educated men. As can be seen in Table 9, 79.8 percent of women who hold at least high school diploma are married to men of the same education category. Our reference category consists of married women whose husbands are illiterate or literate/nongraduate and only 0.05 percent of highly educated women are married to men who belong to this category.

On the other hand, higher annual income of the husband decreases the probability that his wife participates in the labor force in the samples of married women with primary education and at least high school education. The magnitude of the average marginal effect of the husband's income is smaller for at least high school graduate women compared to that estimated for women with primary education. Moreover, Table 9 shows that the average annual income of husbands is higher in the sample of highly educated women compared to those in the samples of women who are illiterate or literate/nongraduate and have primary education. As we discussed above, the labor force participation decision of married women with primary education is affected by the labor force participation of both their mothers' and mother-in-law's labor whereas the decision of highly educated women depends on only the participation status of her mother

Table 12: Estimated Marginal Effects by Education Levels

VARIABLES	Illiterate or literate/nongraduate	Primary education	High school or more
Mother participated	0.0778*** (3.05)	0.0918*** (6.58)	0.0535** (2.06)
Spouse's mother participated	0.121*** (4.82)	0.122*** (8.80)	0.0158 (0.64)
Woman Variables			
Age	0.0259** (1.98)	0.0236** (2.45)	0.0805*** (5.00)
Age square	-0.000261* (-1.73)	-0.000294** (-2.47)	-0.00112*** (-5.41)
University dummy			0.335*** (16.34)
No of children aged 3 and less	0.0234* (1.82)	-0.0460*** (-3.68)	-0.136*** (-6.69)
No of children aged more than 3	0.00874 (1.32)	0.0117* (1.81)	-0.0730*** (-4.68)
Spouse Variables			
Age	0.0310** (2.14)	0.0152 (1.47)	0.0208 (1.27)
Age square	-0.000362** (-2.25)	-0.000187 (-1.56)	-0.000306 (-1.54)
Primary education	0.00259 (0.11)	-0.0647 (-1.45)	1.261 (0.03)
High school	-0.113** (-2.47)	-0.169*** (-3.63)	1.251 (0.03)
University or more	-0.246** (-2.42)	-0.266*** (-5.04)	1.286 (0.03)
Spouse's annual income	0.000609 (0.72)	-0.00134*** (-2.79)	-0.00100** (-2.33)
Parental Variables			
<i>Mother's education level</i>			
Primary education	-0.0319 (-0.60)	0.0137 (0.90)	-0.0235 (-0.91)
High school or more		0.470*** (2.65)	0.0672 (1.46)
<i>Father's education level</i>			
Primary education	-0.0293 (-1.13)	-0.0132 (-0.90)	-0.0197 (-0.54)
High school or more	0.236 (1.42)	-0.0710 (-1.43)	-0.0328 (-0.73)
<i>Spouse mother's educational level</i>			
Primary education	-0.0213 (-0.41)	0.0173 (1.08)	0.0313 (1.25)
High school or more		0.245* (1.96)	0.0409 (0.81)
<i>Spouse father's educational level</i>			
Primary education	0.0630** (2.36)	-0.0103 (-0.72)	0.0184 (0.62)
High school or more	0.103 (0.73)	-0.0115 (-0.25)	0.0140 (0.34)
Regions			
TR1-Istanbul	-0.165*** (-3.19)	-0.120*** (-5.05)	-0.00900 (-0.26)
TR2-Western Marmara	0.0231 (0.33)	-0.0231 (-0.86)	-0.0343 (-0.77)
TR4-East Marmara	-0.0592 (-0.95)	-0.0777*** (-3.17)	0.00617 (0.14)
TR5-West Anatolia	-0.0537 (-0.81)	-0.0901*** (-3.57)	-0.00187 (-0.05)
TR6-Mediterranean	-0.0596 (-1.16)	-0.0243 (-0.96)	0.0273 (0.72)
TR7-Central Anatolia	-0.0315 (-0.55)	-0.0473* (-1.70)	-0.0452 (-0.97)
TR8-West Black-Sea	0.145** (2.47)	0.0332 (1.17)	0.0486 (0.98)
TR9-East Black-Sea	0.331*** (4.78)	0.0936*** (2.63)	0.104* (1.74)
TRA-North-East Anatolia	0.0941* (1.84)	-0.0286 (-0.87)	-0.0107 (-0.17)
TRB-Central-East Anatolia	0.0363 (0.73)	-0.106*** (-3.21)	0.0222 (0.42)
TRC-South-East Anatolia	-0.0753 (-1.56)	-0.206*** (-7.34)	-0.0921 (-1.61)
Observations	2002	5075	1875
Pseudo R2	0.133	0.111	0.192

Standard errors in parentheses.

The reference category for education variables is illiterate or literate/nongraduate

The reference region is TR3 Aegean Region.

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

not that of her mother-in-law. Therefore, we might conclude that when the husband's income below some threshold, a married women decide to participate in the labor force according to both her mother's and mother-in-law's former labor market statuses. However, when the spouse's income above some threshold, the income effect might be more important than the effect of the mother-in-law's labor market behavior on the labor force participation decision of married women. Although the labor force participation decision of highly educated women is not constrained by their husband's attitudes towards gender roles and/or preferences, husbands' income is a significant deterrent to the labor force participation of highly educated married women. In other words, even if higher education increases the probability of labor force participation and reduces the intergenerational persistence of gender role attitudes and/or preferences, highly educated women are still secondary earners in the households and their labor market decision depends negatively on their spouse's labor income. In addition, a married womans employment outside the home can be a signal that the husband is not able to provide the needs of the family adequately (Goldin, 1994). Therefore, as the husbands income increases, the economic contribution of her wife to the household is no longer needed and thus she is more likely to exit the labor force. A nonworking wife can be a signal that the husband is economically and socially successful as the main provider of the family.

The sectoral distribution of the region of current residence may affect the participation decision of the married woman. Our reference region in Table 12 is the Aegean region where the share of the agricultural sector in employment is about 30 percent and the share of services sector is about 46 percent.²¹ Illiterate or literate/nongraduate women and women with primary education are more likely to work in the agricultural sector and highly educated women are more likely to work in services sector.²² Therefore, to reside in a regions where the share of the agricultural sector is less than that in the Aegean regions may reduce the participation probabilities of illiterate or literate women and women with primary education. For example, illiterate or literate/nongraduate married women residing in Istanbul where the agricultural employment constitutes only

²¹For the share of agriculture in regional employment, please see Footnote 19. According to Turkstat statistics for 2011, the share of the services sector in regional employment is 46% in Aegean region, 60% in Istanbul region, 42%t in Western Marmara region, 44% in East Marmara region, 62% in West Anatolia region, 49% in Mediterranean region, 39% in Central Anatolia region, 36% in West Black-Sea, 32% in East Black-Sea, 35% in North-east Anatolia region, 42% in Central-East Anatolia region and 51% in South-East Anatolia region.

²²According to 2011 Turkstat Labor Force Statistics, 83% of illiterate or literate/nongraduate women are working in the agricultural sector and only 9% of them are working in services sector. 54% and 27% of women with primary education are employed in the agricultural sector and services sector, respectively. 81% of at least high school graduate women are working in services sector and only 4% of them are employed in agricultural sector.

1 percent of regional employment is 16.5 percentage points less likely to participate in the labor force compared to those with the same education living in Aegean region. Similarly, married women with primary education living in East Marmara or West Anatolia are less likely to participate in the labor force compared to married women with primary education living in Aegean region. The participation probability of a married woman with primary education decreases by 20.6 percentage points if she resides in South-East region, which is the least developed region in Turkey in many aspects. To reside in West Black-Sea or East Black-Sea where the share of the agricultural sector is more than that in Aegean region increases the probability that a illiterate or literate/nongraduate married woman participates in the labor market. For highly educated married women, the estimated average marginal effects of regions are not statistically significant except that of East Black-Sea region. To reside in East Black-Sea region increases the participation probability of married women with at least high school education compared to reside in Aegean region. Although the agricultural sector is dominant in regional employment of East Black-Sea region, the labor force participation rate of married women with at least high school education is the highest among other regions. The female labor force participation rate of highly educated married women in this region is 52.5 percent where the analogous rate in overall sample is 44 percent.

7 Conclusion

Although the female labor force participation rates in Turkey have been increasing over the last the last decade, the level of female participation still remains the lowest among the OECD countries. In order to understand the reasons behind the low participation rates of women, previous studies have mostly focused on standard economic variables. In this study, we contribute to the existing literature by examining possible effects arisen from the transmission of gender role attitudes and/or preferences from parents to children on the labor force participation decision of women in Turkey.

The central aim of this study to investigate whether the labor market behavior of previous generation of women influences the labor market behavior of current generation of women in Turkey. The labor market decision of the current generation of women can be correlated with that of the previous generation of women because of the transmission of gender role attitudes and/or preferences from parents to children. To quantify the effect of this cultural transmission on female labor market decisions, using parents-children pairs data we estimate a reduced-form model in which a married woman's

participation in adulthood depends on her mother's and her mother-in-law's former labor force participation in her adolescence. We take the maternal labor market behavior as a proxy for attitudes towards gender roles and division of labor in the family.

Our estimation results show that married women who grew up with mothers in the labor force are more likely to participate in the labor force compared to married women who grew up with a mother outside the labor force. This could be due to a working mother may provide a positive role model for her daughter or daughters of nonworking mothers may have preferences and beliefs binding them to the home and/or hold greater skills in household production like their mothers. Moreover, having a husband raised by a mother in the labor force increases the probability that his wife participates in the labor force. This may be due to that a man who grew up with a working mother may develop preferences for a working wife because having a working wife does not contradict his family norms and also, he may be more productive and cooperative on helping in the household, making it easier for his wife to work. We also demonstrate that the effects of the mother and the mother-in-law participated in the labor market are larger for married women living in rural areas compared to those estimated for those living in urban areas. This difference between rural and urban areas might stem from the persistence of rural family structure across generations where the women traditionally work in agriculture. If the mother-in-law was working, the husband might be more likely to expect his wife to participate in agricultural activities. If the woman's mother was working, she could transfer her agricultural production skills to her daughter. In addition, while the labor force participation of married women with each education level is positively correlated with that of their mothers, the mothers-in-law's labor market behavior affects the labor market decision of married women with less than high school education but not that of highly educated married women.

Our findings show that a married woman's labor market behavior is not only positively correlated with that of her mother but also that of her mother-in-law. This implies that the role of women in the labor market and at home is persistently transmitted across generations. However, it appears that higher education reduces the effect of intergenerational persistence of attitudes towards gender roles and/or preferences on female labor force participation. This result is important because it has implications for many aspects of the economic and demographic situation of the current generation of women as well as next generations of women.

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Appendices

Table A.1: 1989-2013 Sectoral Shares (%) in Employment in Turkey

Years	Total			Rural Areas			Urban Areas		
	Agriculture	Industry	Services	Agriculture	Industry	Services	Agriculture	Industry	Services
1989	47.2	21.5	31.4	76.4	9.7	13.9	4.8	38.6	56.7
1990	45.9	20.8	33.3	75.9	8.4	15.7	5.1	37.7	57.2
1991	47.3	20.3	32.4	78.8	8.7	12.5	4.0	36.3	59.7
1992	44.4	23.1	32.5	76.0	10.7	13.3	5.1	38.6	56.3
1993	40.7	23.1	36.2	73.0	10.1	16.9	3.9	37.8	58.3
1994	42.0	22.8	35.2	74.2	10.3	15.4	5.1	37.0	57.9
1995	44.0	22.0	34.0	77.4	9.4	13.2	4.7	36.8	58.5
1996	44.2	22.6	33.2	76.0	9.5	14.4	5.7	38.3	56.0
1997	39.5	25.4	35.1	73.5	11.0	15.5	4.0	40.4	55.7
1998	42.0	22.8	35.2	76.4	9.2	14.4	4.3	37.7	58.0
1999	36.7	25.3	38.0	68.3	14.2	17.4	4.6	36.6	58.8
2000	36.0	24.0	40.0	70.2	12.2	17.6	3.8	35.1	61.1
2001	37.6	22.7	39.7	72.8	9.8	17.4	4.4	34.9	60.7
2002	34.9	23.0	42.1	68.1	11.1	20.8	4.4	34.0	61.7
2003	33.9	22.8	43.4	67.8	10.2	21.9	4.2	33.7	62.1
2004	29.1	24.9	46.0	70.1	9.9	20.0	5.7	33.5	60.8
2005	25.7	26.4	48.0	64.2	11.7	24.1	5.3	34.1	60.6
2006	24.0	26.8	49.1	61.9	12.8	25.2	4.7	34.0	61.4
2007	23.5	26.7	49.8	61.2	12.9	25.9	4.3	33.8	61.9
2008	23.7	26.8	49.5	60.8	13.9	25.3	4.6	33.5	61.9
2009	24.6	25.3	50.1	62.5	13.3	24.2	4.3	31.8	64.0
2010	25.2	26.2	48.6	62.9	13.1	23.9	4.8	33.3	61.9
2011	25.5	26.5	48.1	62.3	14.2	23.5	5.0	33.3	61.7
2012	24.6	26.0	49.4	61.9	13.9	24.2	4.6	32.5	62.9
2013	23.6	26.4	50.0	60.2	14.3	25.4	4.3	32.7	62.9

Source: Turkish Statistical Institute (Turkstat) Labor Force Statistics

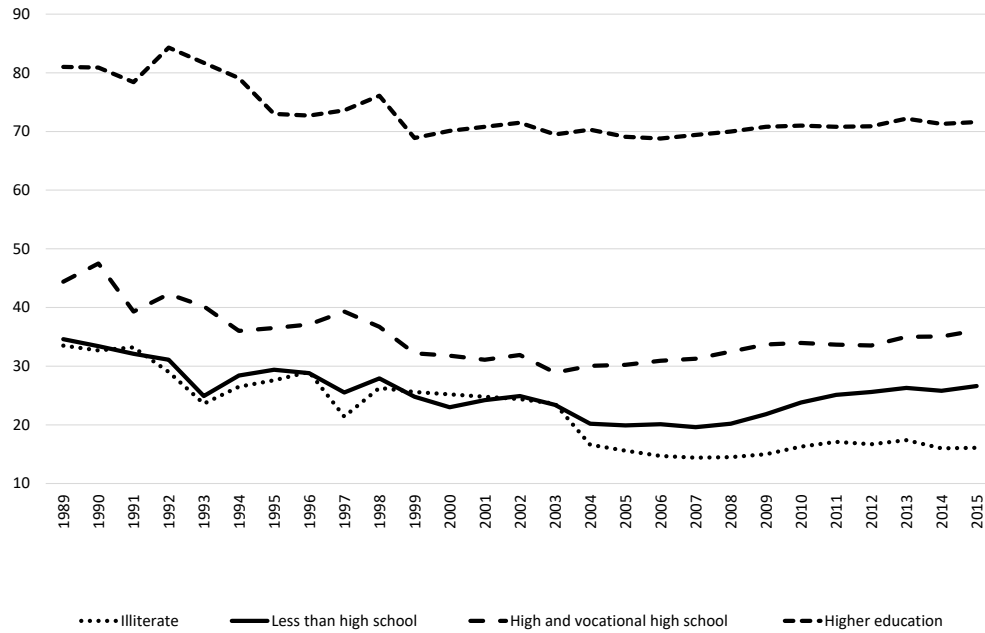


Figure A1: Female Labor Force Participation by Education Levels in Turkey

Source: Turkish Statistical Institute (Turkstat) Labor Force Statistics

Table A.2: Probit Estimation Results-Overall Sample

	(1)	(2)	(3)	(4)
Mother participated	0.315*** (9.47)	0.377*** (10.84)	0.364*** (10.38)	0.297*** (8.29)
Spouse's mother participated	0.346*** (10.36)	0.404*** (11.68)	0.415*** (11.88)	0.347*** (9.74)
Woman Variables				
Age		0.0746*** (3.45)	0.0761*** (3.50)	0.0826*** (3.76)
Age square		-0.000910*** (-3.46)	-0.000919*** (-3.48)	-0.000994*** (-3.73)
Illiterate or literate/nongraduate		-0.0145 (-0.36)	-0.0102 (-0.24)	0.0192 (0.43)
High school		0.285*** (5.76)	0.259*** (5.15)	0.261*** (5.14)
University or more		1.523*** (22.16)	1.436*** (19.73)	1.465*** (20.00)
No of children aged 3 and less		-0.112*** (-4.30)	-0.107*** (-4.11)	-0.0973*** (-3.67)
No of children aged more than 3		-0.00655 (-0.48)	-0.00138 (-0.10)	0.0137 (0.97)
Spouse Variables				
Age		0.0512** (2.21)	0.0566** (2.43)	0.0509** (2.17)
Age square		-0.000678** (-2.54)	-0.000729*** (-2.72)	-0.000677** (-2.50)
Illiterate or literate/nongraduate		0.0597 (0.89)	0.0591 (0.87)	0.0812 (1.18)
High school		-0.307*** (-7.33)	-0.318*** (-7.54)	-0.329*** (-7.70)
University or more		-0.335*** (-5.71)	-0.358*** (-6.00)	-0.379*** (-6.27)
Spouse's annual income		-0.00230** (-2.43)	-0.00292*** (-3.01)	-0.00271*** (-2.81)
Parental Variables				
<i>Mother's education level</i>				
Primary Education			0.0261 (0.65)	0.0348 (0.85)
High school or more			0.383*** (3.14)	0.419*** (3.42)
<i>Father's education level</i>				
Illiterate or literate/nongraduate			0.0478 (1.24)	0.0646* (1.65)
High school or more			-0.0206 (-0.28)	-0.0434 (-0.59)
<i>Spouse mother's educational level</i>				
Primary education			0.0728* (1.76)	0.0783* (1.87)
High school or more			0.0886 (0.66)	0.143 (1.05)
<i>Spouse father's educational level</i>				
Illiterate or literate/nongraduate			-0.0351 (-0.94)	-0.0141 (-0.37)
High school or more			0.105 (1.35)	0.0953 (1.22)
Regions				
TR1-Istanbul				-0.309*** (-5.15)
TR2-Western Marmara				-0.0581 (-0.87)
TR4-East Marmara				-0.187*** (-2.91)
TR5-West Anatolia				-0.182*** (-2.90)
TR6-Mediterranean				-0.0745 (-1.27)
TR7-Central Anatolia				-0.114* (-1.67)
TR8-West Black-Sea				0.189*** (2.89)
TR9-East Black-Sea				0.405*** (5.11)
TRA-North-East Anatolia				0.0473 (0.67)
TRB-Central-East Anatolia				-0.107 (-1.52)
TRC-South-East Anatolia				-0.477*** (-6.43)
Constant	-0.726*** (-37.51)	-3.125*** (-7.98)	-3.324*** (-8.38)	-3.216*** (-8.01)
Observations	8953	8953	8953	8953
Pseudo R2	0.037	0.105	0.107	0.121

Standard errors in parentheses

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

Note: Reference educational level category for the woman, the spouse, her father and her spouse's father's education is primary education. Reference category for mothers' education is illiterate or literate/nongraduate. The reference region is TR3-Aegean region.

Table A.3: Probit Estimation Coefficients: Rural and Urban Areas

VARIABLES	Urban	Rural
Mother participated	0.210*** (4.40)	0.252*** (4.09)
Spouse's mother participated	0.134*** (2.80)	0.411*** (6.72)
Woman Variables		
Age	0.158*** (5.03)	0.0597* (1.69)
Age square	-0.00208*** (-5.34)	-0.000682 (-1.61)
Primary school	0.0326 (0.48)	0.0634 (0.94)
High school	0.425*** (4.93)	0.0833 (0.63)
University or more	1.613*** (15.57)	0.945*** (4.53)
No of children aged 3 and less	-0.311*** (-7.10)	-0.0553 (-1.47)
No of children aged more than 3	-0.0777*** (-3.35)	0.00246 (0.12)
Spouse Variables		
Age	0.0642** (1.98)	0.0691* (1.80)
Age square	-0.000895** (-2.36)	-0.000823* (-1.87)
Primary education	-0.124 (-1.03)	-0.0111 (-0.12)
High school	-0.296** (-2.29)	-0.352*** (-2.95)
University or more	-0.195 (-1.41)	-0.864*** (-5.28)
Spouse's annual income	-0.00416*** (-3.47)	-0.000319 (-0.17)
Parental Variables		
<i>Mother's education level</i>		
Primary education	0.0317 (0.62)	-0.0325 (-0.43)
High school or more	0.433*** (3.15)	0.331 (1.04)
<i>Father's education level</i>		
Primary education	0.0281 (0.52)	-0.124* (-1.94)
High school or more	-0.0310 (-0.32)	-0.198 (-1.06)
<i>Spouse mother's educational level</i>		
Primary education	0.0864* (1.66)	0.0378 (0.48)
High school or more	0.152 (1.04)	0.209 (0.40)
<i>Spouse father's educational level</i>		
Primary education	0.00313 (0.06)	0.0791 (1.26)
High school or more	0.0154 (0.16)	0.486** (2.35)
Regions		
TR1-Istanbul	-0.0756 (-1.08)	-0.598 (-1.62)
TR2-Western Marmara	-0.0352 (-0.38)	-0.165 (-1.60)
TR4-East Marmara	-0.0444 (-0.56)	0.000573 (0.00)
TR5-West Anatolia	-0.0872 (-1.15)	0.171 (1.14)
TR6-Mediterranean	0.0575 (0.75)	-0.149 (-1.49)
TR7-Central Anatolia	-0.323*** (-3.17)	-0.124 (-1.20)
TR8-West Black-Sea	0.110 (1.16)	0.165* (1.65)
TR9-East Black-Sea	0.377*** (3.11)	0.269** (2.35)
TRA-North-East Anatolia	-0.409*** (-3.27)	0.0932 (0.91)
TRB-Central-East Anatolia	-0.215** (-2.04)	-0.108 (-0.99)
TRC-South-East Anatolia	-0.515*** (-4.90)	-0.323*** (-2.61)
Constant	-4.641*** (-8.27)	-2.849*** (-4.24)
Observations	6096	2857
Pseudo R2	0.187	0.085

Standard errors in parentheses.

The reference category for education variables is illiterate or literate/nongraduate.

The reference region is TR3 Aegean Region.

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

Table A.4: Probit Estimation Coefficients by Education Levels

VARIABLES	Illiterate or literate/nongraduate	Primary education	High school or more
Mother participated	0.262*** (3.03)	0.304*** (6.50)	0.170** (2.05)
Spouse's mother participated	0.406*** (4.75)	0.403*** (8.61)	0.0503 (0.64)
Woman Variables			
Age	0.0873** (1.97)	0.0782** (2.44)	0.256*** (4.91)
Age square	-0.000880* (-1.72)	-0.000972** (-2.46)	-0.00355*** (-5.30)
University dummy			1.065*** (13.77)
No of children aged 3 and less	0.0789* (1.82)	-0.152*** (-3.66)	-0.431*** (-6.50)
No of children aged more than 3	0.0294 (1.32)	0.0386* (1.81)	-0.232*** (-4.61)
Spouse Variables			
Age	0.104** (2.13)	0.0502 (1.47)	0.0663 (1.27)
Age square	-0.00122** (-2.24)	-0.000618 (-1.56)	-0.000973 (-1.54)
Primary education	0.00870 (0.11)	-0.214 (-1.45)	4.011 (0.03)
High school	-0.379** (-2.46)	-0.560*** (-3.62)	3.979 (0.03)
University or more	-0.829*** (-2.41)	-0.881*** (-5.01)	4.093 (0.03)
Spouse's annual income	0.00205 (0.71)	-0.00443*** (-2.78)	-0.00319*** (-2.32)
Parental Variables			
<i>Mother's education level</i>			
Primary education	-0.107 (-0.60)	0.0453 (0.90)	-0.0749 (-0.91)
High school or more		1.556*** (2.65)	0.214 (1.46)
<i>Father's education level</i>			
Primary education	-0.0986 (-1.13)	-0.0438 (-0.90)	-0.0626 (-0.54)
High school or more	0.796 (1.42)	-0.235 (-1.43)	-0.104 (-0.73)
<i>Spouse mother's educational level</i>			
Primary education	-0.0718 (-0.41)	0.0572 (1.08)	0.0996 (1.25)
High school or more		0.811* (1.96)	0.130 (0.81)
<i>Spouse father's educational level</i>			
Primary education	0.212** (2.36)	-0.0342 (-0.72)	0.0587 (0.62)
High school or more	0.347 (0.73)	-0.0379 (-0.25)	0.0447 (0.34)
Regions			
TR1-Istanbul	-0.640*** (-3.11)	-0.396*** (-4.95)	-0.0286 (-0.26)
TR2-Western Marmara	0.0712 (0.33)	-0.0700 (-0.85)	-0.110 (-0.76)
TR4-East Marmara	-0.196 (-0.94)	-0.245*** (-3.13)	0.0195 (0.14)
TR5-West Anatolia	-0.177 (-0.80)	-0.288*** (-3.51)	-0.00593 (-0.05)
TR6-Mediterranean	-0.198 (-1.18)	-0.0736 (-0.96)	0.0859 (0.72)
TR7-Central Anatolia	-0.101 (-0.55)	-0.146* (-1.68)	-0.145 (-0.96)
TR8-West Black-Sea	0.420** (2.44)	0.0974 (1.17)	0.153 (0.98)
TR9-East Black-Sea	0.928*** (4.56)	0.268*** (2.67)	0.326* (1.74)
TRA-North-East Anatolia	0.278* (1.79)	-0.0869 (-0.86)	-0.0340 (-0.17)
TRB-Central-East Anatolia	0.111 (0.72)	-0.344*** (-3.02)	0.0702 (0.42)
TRC-South-East Anatolia	-0.254 (-1.62)	-0.767*** (-6.11)	-0.301 (-1.57)
Constant	-5.161*** (-5.58)	-2.811*** (-4.80)	-9.694 (-0.08)
Observations	2002	5075	1875
Pseudo R2	0.133	0.111	0.192

Standard errors in parentheses.

The reference category for education variables is illiterate or literate without any diploma.

The reference region is TR3-Aegean Region.

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

Table A.5: Descriptive Statistics of Imputed Data

WOMEN'S VARIABLES		%
Women's LFP	Working or unemployed	32.3
Women's Education Level	Illiterate or literate/nongraduate	22.6
	Primary education	56.8
	High School	12.4
	University or more	8.1
Women's Mothers' LFP	Working or unemployed when she was 14.	37.6
Women's Fathers' LFP	Working or unemployed when she was 14.	90.3
Women's Mothers' Education Level	Illiterate or literate/nongraduate	68.4
	Primary education	29.5
	High school or more	2.1
Women's Fathers' Education Level	Illiterate or literate/nongraduate	41.0
	Primary education	53.0
	High school or more	6.1
		Mean
Women's Age	Age (years)	39.2
		%
Number of children aged 3 and less	None	70.4
	One	24.3
	Two or more	5.3
	Mean	0.36
Number of children aged more than 3	None	40.0
	One	29.1
	Two	19.4
	Three or more	11.6
	Mean	1.1
SPOUSES' VARIABLES		%
Spouses' Education Level	Illiterate or literate/nongraduate	5.8
	Primary education	61.3
	High School	19.1
	University or more	13.8
Spouses' Mothers' LFP	Working or unemployed when she was 14.	0.4
Spouses' Fathers' LFP	Working or unemployed when she was 14.	0.9
Spouses' Mothers' Education Level	Illiterate or literate/nongraduate	73.1
	Primary education	25.1
	High school or more	1.7
Spouses' Fathers' Education Level	Illiterate or literate/nongraduate	46.4
	Primary education	48.1
	High school or more	5.5
SPOUSES' VARIABLES		Mean
Spouses' Age	Age (years)	42.6
Spouses' income	Total annual income (in 1000 TL)	15.9
LOCATION RESIDENCE		%
Regions	TR1-Istanbul	11.6
	TR2-Western Marmara	6.5
	TR3-Aegean	13.5
	TR4-East Marmara	8.1
	TR5-West Anatolia	9.0
	TR6-Mediterranean	10.3
	TR7-Central Anatolia	6.8
	TR8-West Black-Sea	7.1
	TR9-East Black-Sea	3.9
	TRA-North-East Anatolia	6.6
	TRB-Central-East Anatolia	7.5
	TRC-South-East Anatolia	9.1

Table A.6: Probit Estimation Results of Imputed Data-Coefficients

	(1)	(2)	(3)	(4)
Mother participated	0.308*** (0.0317)	0.371*** (0.0331)	0.359*** (0.0334)	0.295*** (0.0341)
Spouse's mother participated	0.348*** (0.0318)	0.405*** (0.0329)	0.417*** (0.0332)	0.351*** (0.0339)
Woman Variables				
Age		0.0711*** (0.0207)	0.0726*** (0.0207)	0.0794*** (0.0209)
Age square		-0.000878*** (0.000251)	-0.000886*** (0.000252)	-0.000966*** (0.000254)
Illiterate or literate/nongraduate		-0.0415 (0.0390)	-0.0324 (0.0405)	0.00267 (0.0423)
High school		0.283*** (0.0476)	0.252*** (0.0486)	0.251*** (0.0489)
University or more		1.514*** (0.0662)	1.419*** (0.0699)	1.440*** (0.0703)
No of children 3 and less		-0.120*** (0.0251)	-0.115*** (0.0252)	-0.104*** (0.0256)
No of children more than 3		-0.00426 (0.0130)	0.00212 (0.0131)	0.0181 (0.0136)
Spouse Variables				
Age		0.0469** (0.0221)	0.0525** (0.0222)	0.0457** (0.0224)
Age square		-0.000627** (0.000255)	-0.000679*** (0.000256)	-0.000615** (0.000258)
Illiterate or literate/nongraduate		0.0901 (0.0633)	0.0924 (0.0638)	0.114* (0.0646)
High school		-0.320*** (0.0403)	-0.335*** (0.0407)	-0.344*** (0.0412)
University or more		-0.340*** (0.0565)	-0.368*** (0.0576)	-0.385*** (0.0583)
Spouse's annual income		-0.00230** (0.000915)	-0.00298*** (0.000938)	-0.00283*** (0.000936)
Parental Variables				
<i>Mother's education level</i>				
Primary school			0.0245 (0.0387)	0.0326 (0.0392)
High school or more			0.397*** (0.121)	0.430*** (0.121)
<i>Father's education level</i>				
Illiterate or literate/nongraduate			0.0361 (0.0381)	0.0556 (0.0385)
High school or more			-0.0145 (0.0715)	-0.0306 (0.0718)
<i>Spouse mother's educational level</i>				
Primary school			0.0758* (0.0403)	0.0800** (0.0408)
High school or more			0.101 (0.131)	0.151 (0.132)
<i>Spouse father's educational level</i>				
Illiterate or literate/nongraduate			-0.0425 (0.0368)	-0.0226 (0.0373)
High school or more			0.125* (0.0753)	0.117 (0.0760)
Regions				
TR1-Istanbul				-0.302*** (0.0580)
TR2-Western Marmara				-0.0680 (0.0649)
TR4-East Marmara				-0.155** (0.0609)
TR5-West Anatolia				-0.178*** (0.0608)
TR6-Mediterranean				-0.0788 (0.0566)
TR7-Central Anatolia				-0.113* (0.0653)
TR8-West Black-Sea				0.144** (0.0624)
TR9-East Black-Sea				0.402*** (0.0760)
TRA-North-East Anatolia				0.0175 (0.0670)
TRB-Central-East Anatolia				-0.117* (0.0673)
TRC-South-East Anatolia				-0.506*** (0.0723)
Constant	-0.720*** (0.0185)	-2.933*** (0.375)	-3.141*** (0.380)	-3.011*** (0.385)
Observations	9,745	9,745	9,745	9,745

Standard errors in parentheses.

Note: Reference educational level category for the woman, the spouse, her father and her spouse's father's education is primary education.

Reference category for mothers' education is illiterate or literate/nongraduate.

The reference region is TR3 Aegean Region

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