Booze and Women:
Labor Market Outcomes of Secular Consumption Patterns in a Muslim Society

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Abstract

This study explores the effect of having secular consumption patterns on female labor force participation (FLFP) by using household survey data from a Muslim country, Turkey. A household is categorized as secular if its members report that they consume goods that contradict the conservative interpretations of Islam. This information is then used in FLFP estimations. The analysis is carried out for married/single females, and for females living in urban/rural areas separately. The results show that, in urban areas, FLFP is significantly higher for married females if they live in secular households. For the single females, whose mean age is lower, secularity is associated with an increased probability of educational participation. The results are not conclusive for the rural areas.

Keywords: Female labor force participation, religion.

JEL-codes: J16, Z12

1 Introduction

This paper is about the effect of religion on female labor force participation (FLFP). There is a vast amount of research concerning the factors determining FLFP in various countries with diverse religious compositions and development levels; yet, few of them account for the role of religion. An underlying reason would be the lack of joint data on religious choices/devoutness and other variables that affect participation at micro level . This study exploits the information provided in the consumption data of a Muslim country, Turkey, to observe if a household

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consumes goods that are considered as forbidden by the orthodox and conservative interpretations of Islam; and use this information to estimate its effect on FLFP.

It is a common conception about Islam that it prohibits consumption of alcoholic beverages and pork meat. Depending on the sect of Islam, some further restrictions may apply or some common exercises may be overlooked. For example, conservative Muslim families are usually against feeding pets in their homes; so, they are not expected to purchase any pet products[1]. Similarly, devout followers of *Hanefi* sect, which is the most common division of Sunni Islam in Turkey, consider eating of any seafood except for fish as a vice[2]. *Alewi* congregation, on the other hand, is known to be more liberal in religious practices.

Contradicting the widespread conception of Islam as a religion prohibiting the consumption of alcohol, alcoholic beverages have been widely and legally available in Turkey, especially in the urban areas. Similarly, seafood consumption with all varieties is also common, mostly in the Aegean and Mediterranean coasts, greater Istanbul region, and even in Ankara, a landlocked city. Pet feeding is getting common and pet products are readily available in urban areas. This diversity is mostly due to the secular lifestyle that a non-negligible fraction of the population in Turkey has been pursuing. The novel empirical strategy followed in this paper is based on the idea that the data on consumption of these "forbidden" goods in the household surveys provide us with valuable information on a households' secular lifestyle in a Muslim society. Using the consumption information as a proxy variable for having a secular view of the world, this paper raises the question if keeping a distance with conservative orthodox Islamic practices have any implications with regard to the labor market participation of women.

The analysis is carried out for females living in urban and rural areas separately, considering the substantial differences in the trends of participation and unpaid labor between the two areas. I also run separate estimations for married and single females at the schooling age to account for the joint decisions on educational and labor force participation.

The previous literature on the relationship between religion and FLFP investigates the subject on two dimensions, namely religious sect and the level of religiosity. While there is a almost a consensus that religiosity has a negative effect on FLFP, there are different competing views on the varying effects of alternative denominations. The following section of the paper elaborates the findings of the previous literature and stresses the differences between the conclusions reached in studies using macro- and micro-level data. That section

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[1] It is a common religious saying that "angels won't come into a house in which there is a dog."

[2] For a socio-antropological account of seafood consumption and its relation with religion in Turkey, see Knudsen (2006).

also summarizes the previous research on FLFP in Turkey. The details of the methodology and the data are provided in the third section. Section 4 presents the results for married and single females living in urban and rural areas separately. Section 5 gives the concluding remarks.

2 Religious Denominations, Devoutness and FLFP: Previous Findings

There are two separate waves of research regarding the effect of religious choices on FLFP. One group of studies investigates the causal link using cross-country data. A usual variable of interest is an indicator of FLFP rate (either in absolute terms or in terms of its ratio to male participation rate), where the ratio of each religion's followers or a categorical variable showing each country's religious majority, as explanatory variables, among others. A second group of research utilizes individual-level data from selected countries or specific religious groups. The advantages of this approach are the increased number of observations, as well as information on individual characteristics and a more sensitive analysis for various religious denominations or devoutness within countries.

2.1 Studies Using Aggregated Data

Among cross-country studies, there is an earlier group of research which incorporates the competing views of dependency/world system approaches, the modernization approach and the cultural explanations. Marshall (1985), Pampel and Tanaka (1986) and Clark *et al.* (1991) test the effects of economic development, dependency in international trade, and culture jointly, on FLFP. Marshall (1985) and Clark *et al.* (1991) reach similar results, asserting that, once cultural factors (measured by regional dummy variables) included in the estimations, the magnitude and the significance of the effect of economic dependency diminishes. Both studies conclude that the low FLFP rates observed in the Muslim nations are not explained by these countries' mode of incorporation in the world system or their development levels. Pampel and Tanaka (1986) also stress that some regional effects have explanatory power, but their impact does not reduce the role of economic development in female participation. The authors highlight the U-shaped impact of development on the participation rate.

Ross' (2008) study attracted scholarly attention by challenging the common cultural view which holds the Islamic tradition as the main driving force behind the low levels of women's

economic and political participation in the Middle Eastern countries. According to author, it is the natural resources, more precisely the oil, but not the religion, which causes the female participation to be at its current low levels in the Middle East. Discovery and export of oil causes a country's real exchange rate to valuate (Dutch disease), which, in turn, increases the demand for non-tradable goods, either because they become cheaper, or because they have a higher elasticity of demand with respect to income. Traditionally, female labor-force is concentrated in the tradables sector, for which the demand decreases following valuation of the exchange rate. Thus, natural-resources exports are not gender-neutral in their final effect on labor demand. He supports his arguments by running panel and cross-national regressions for 161 countries with indicators of female economic and political participation as dependent variables. Among his explanatory variables are dummies for Middle Eastern and North African (MENA) countries and post-communist countries, the share of Muslims in each country, and a variable measuring per capita oil exports revenue. The oil coefficient is negative and highly significant in all estimations, indicating that the oil exports have a "curse" on women's participation in oil-exporting countries. The Islam coefficient, on the other hand, is not significant. Based on these findings, the author concludes that the religion is not an explanatory factor of women's low participation rates in the MENA countries.

The author's decision to include both a variable for the fraction of Muslims in each country and a dummy for MENA countries in the regressions might have driven the results for the effect of religion on the female participation. By using a dummy for MENA countries, the author presumes that there is something peculiar to these countries that drives the impact of oil revenues on women's participation, which has nothing to do with the religion. However, drawing a conclusion on the effect of Islam by taking 17 MENA countries as a "special case" might require some justification, which is not provided in the article. A similar concern is raised by Charrad (2009), who proposes that, patriarchal networks that have been prevailing in MENA countries might be the culprit for gender inequality in the region.

Haghighat-Sordellini (2009) also investigates the roles of Islam and oil revenues, among other factors, in determination of the FLFP. While her results confirms Ross (2008) regarding the negative effect of oil exports on the participation rates, the impact of share of Muslim population remains negatively significant even after controlling for the effect of oil revenues. As Charrad (2009), Haghighat-Sordellini (2009) also points the patriarchal traditions of Middle Eastern countries (measured by the religion's role in state formation and political role of women) as main causes of low participation.

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Spierings et al. (2009) emphasize the drastic variations of female labor-force participation across Muslim countries and explore the underlying reasons. Unlike the above-mentioned studies which suggest a negative (or non-existing) relation between the oil exports and the participation, the authors assert that the effect of oil exports is actually positive, through its impact on economic development. While pointing out the positive effects of democracy and economic development on female participation, their findings also indicate that the participation rate decreases as states departs from secularism.

Using a country-level data, Bayanpourtehrani and Sylwester (2012) regress various female labor force participation indicators on the share of each religion's followers (mainly Muslims, Hindus, Catholics, Protestants, and non-believers) in each country, as well as some other control variables. When the share of Muslims is used as the only explanatory variable, the authors find that, Islam has a strong negative effect on FLFP. Following the above-mentioned methodology of Ross (2008), the authors include regional dummies in the regressions as a second step. After controlling for region, the coefficient of Islam gets smaller and loses its significance. To further evaluate this finding, they also run the same regressions by excluding MENA countries out of the sample, countries where more than 90% of the population is Muslim. The results indicate a difference between the MENA and other countries with regard to the effect of Islam on female participation: The coefficient of Islam remains significant for the MENA region, but becomes insignificant for the rest of the sample.

This result contradicts with those of Heineck (2004) and Amin and Alam (2008) who, using individual-level data, find negative impact of being Muslim on female participation in Germany and Malaysia, respectively (see below). Moreover, like Ross (2008), Bayanpourtehrani and Sylwester (2012) do not provide any explanations on the reasons of the negative coefficient found for the MENA region either.

2.2 Studies Using Individual-Level Data

An earlier example to the individual-level analysis on the effect of religion on female participation is by Morgan and Scanzoni (1987). Based on the results of a questionnaire they administered to 318 senior white female college students in the USA, the authors conclude that religious devoutness significantly lowers the students' future plans for paid work.

Murphy (1995) studies the effect of religion on economic activity in Ireland. He carries separate analysis for single women and married couples. Regarding the single women, he finds that being a Catholic reduces the probability of labor-force participation 2.7 percentage

points, compared to the Protestants and others. As a second step, the author estimates the effect of religion on the labor market status of both males and females in a multinomial logistic setting. He concludes that being a Catholic lowers the probability of employment for both women and men, while the effect on the latter is much stronger. He suggests that the social benefit system in Ireland would be the major contributor on these results, though he provides no further clarifications.

Lehrer (1995) explores the impact of religion on the female employment using data from the United States. Her study covers ecumenical Protestant, exclusivist Protestant, Catholic families, as well as families with no religious affiliation. Thus, any other religious groups, such as Jews, Mormons and Muslims are excluded. She takes into account not only the effect of religious preferences of the females themselves, but also the effect of inter-faith marriages on female employment, through using the information on the faiths of their husbands. The findings suggest that the effect of religious choice on the employment varies depending on the existence of at least one child under 6 years of age. Within this cohort of families with younger children, Catholic women in homogamous marriages and Protestant women in out-marriages have higher probabilities of being employed compared to the Protestant women who married to husbands of the same faith.

Inspired by Lehrer's work, Heineck (2004) investigates the effects of religious affiliation and intensity on the probability of being employed for the females in the German labor market. The results indicate strong variations across religious affiliations and inter-faith marriages with regard to female employment. Regarding the women in Muslim marriages, the author finds a strong negative effect of Islamic affiliation -compared to both Catholic and Protestant couples- on the probability of being employed. The author also suggests that strength of faith for the Muslim women has a statistically significant negative effect on the odds of being employed compared to the women of other affiliations.

Another work that studies the cross-religious differences with regard to their impact on the women's labor-market status is of Amin and Alam (2008). Using a survey data from Malaysia for 1988 and 1989, they analyze the effect of religion on women's employment and part-time/full-time choice. Their results indicate significantly lower probabilities to work for married Muslim women compared to Buddhists and Hindus in Rural areas, and for single Muslim women compared to Buddhists in all areas. Also in rural areas, married Hindu women have a higher likelihood of working full-time than the Muslim women.

An overall evaluation of the above summarized studies reveals that there is little agreement

on the effect of religion on FLFP among the studies which uses aggregated data at country level, while the findings of the analyses based on individual-level data are much more coherent. The only observation that all country-level studies agree on is the lower levels of FLFP in the Muslim countries -particularly in the MENA region-. However, the explanations on the underlying reasons strongly contradict, especially on the role of religion as an explanatory factor.

One common claim of the individual-level studies is the negative effect of religious devoutness on FLFP. This finding might be considered as expected considering the fact that most religions offer more traditional roles to women in social life. Another common finding is the lower FLFP among Muslim groups within multi-religious countries. This conclusion is of particular interest for it constitutes a stronger case against the some above-mentioned country-level studies which asserts no cultural relationship between Islam and women's status.

2.3   FLFP in Turkey

In 2009 and 2010 World Bank and State Planning Organization of Turkey lead a series of publications analyzing the long term trends and determinants of FLFP in Turkey. World Bank (2009) provides an extensive summary on both the findings of background papers that contributed the project (i.e. Dayıoğlu and Kırdar, 2010; Uraz et al., 2010; and Taymaz, 2010) and the other previous studies on the subject. The most cited two facts about the Turkish case in all these studies are, surprisingly low level of FLFP, and its long term decreasing trend. According to the ILO statistics, FLFP in Turkey in 2010 was 28%, which placed the country the 16th lowest among 188 countries in the dataset. This figure is well below the averages of EU (50%) and OECD (51%). Moreover, the level of FLFP in 2010 was already driven up by the impact of the great recession through the "added-worker effect" and a government support program which was put into force in 2008 to foster women's and youngsters' employment (see. Dayıoğlu and Kırdar, 2010, p.11). The pre-recession figure of FLFP in 2007 was even lower with 24%, which was the 13th lowest among the same set of countries.

FLFP of Turkey was as high as 35% in 1990. The above-mentioned studies investigate a vast array of driving factors behind the significant fall in FLFP during the time passed; and two reasons stand out. First, FLFP in rural areas has been 10 to 20 percentage points higher compared to urban places, depending on the year. Fast migration from rural areas to the cities during this period caused the females to become out of the labor force and resulted in a stagnating level of FLFP in urban areas. Another reason is the decrease in FLFP in rural

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areas during the same period. The decline in the agricultural employment in general had a negative effect on female employment in this sector. Considering combined effects of these developments, the studies on the long term falling trend of FLFP in Turkey emphasized the U-shaped relationship between industrialization/urbanization and participation rate as the main driving force[3].

Gündüz-Hoşgör and Smits (2008) and Uraz *et al.* (2010) investigate the effect of cultural factors besides others, in determination of FLFP . Gündüz-Hoşgör and Smits (2008) conclude that females with traditional gender role attitudes have lower probabilities of being employed in formal jobs. Similarly, Uraz *et al.* (2010) find that women whose marriages are arranged by their families have significantly lower participation rates in the urban, but higher in the rural areas.

The positive effect of being in a conservative environment on FLFP in rural areas becomes hardly surprising once one considers the fact that the majority of the females in the rural part of Turkey works unpaid (Dayıoğlu and Kırdar, 2010). For this reason World Bank (2009) considers the falling rate of FLFP in rural areas as "not necessarily a bad thing" (p.16)[4]. The common feature of unpaid work for female employment in the rural areas, is the reason why it is important to estimate and interpret FLFP differently across rural/urban spheres.

3   Data and Methodology

The data used in this study comes from the 2003 Household Survey, which was conducted by Turkstat. The survey consists of three sets of questionnaires, including information on household consumption, household characteristics and wealth, and data on individuals. This study merges all three datasets.

The the main reason behind choosing 2003 as the year of study is that, among all household surveys of Turkey, 2003 is the only year which provides data at NUTS1- and NUTS2-level regional classification. Controlling for the effect of the region on FLFP is of importance, as the regional distributions of FLFP and the share of households with secular consumption patterns, exhibit similar patterns as seen in Figure 1. This allows as to disentangle the effects of secular

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[3]On the U-shaped relationship between development and FLFP in Turkey see Tansel (2002) as well as the above mentiones studies.

[4]Although it is a disappearing one, it is still a common picture in rural Turkey, especially the eastern regions, that women work in the fields while their husbands gather to spend their spare time in the coffeehouse of the village. The following is aquote from a 24-year old married female villager from a very eastern province of Iğdır, who was interviewed in 1984 by Morvaridi (1992:579): "...men did not hoe because they knew it was hard work and therefore they preferred to let their women do it, while they played cards".

consumption from other driving factors behind FLFP, such as distribution of industries and services across regions, which works as a demand factor, or other ethno-cultural influences[5]. To be able to provide data at regional level, the sampling size of the 2003 was kept at $25,920$ households, which is exceptionally high compared to surveys of other years.

A household is defined as "secular" in this study, if its members declare that they consume any of alcoholic beverages, shellfish, or pet products[6]. This definition comes with its limitations: The amount of consumption of alcoholic drinks declared in the household surveys is much lower than the total sales of these drinks in Turkey[7]. One reason behind this disparity would be social desirability bias in answering the survey. It is common in Turkey that people hesitate to pronounce publicly if they consume alcohol. Grocery stores which are allowed to sell alcoholic drinks usually wrap the bottles to disguise the ingredient, especially in the smaller areas. Another part of the disparity arises from the alcohol consumed in bars or restaurants, which are registered in different categories in the survey. In any case, inferences that we will draw in the next section using this consumption data will be downward biased, as part of the population which is not categorized as "secular" also includes households consuming alcohol. Another limitation with this measure of secularity is that, it suffers from its categorical nature. In other words, it is not able to catch the within-group differences with regard to their religiosity.

There is, on the other hand, one important advantage of the use of a categorical variable to measure secularity. In a setting where consumption of the "forbidden" goods is an explanatory, and FLFP is the dependent variable, the issue of two-way causality would emerge, if the variable "secular" were defined as a continuous one. A correlation between the two would indicate the impact of another person's employment within the household on total alcohol consumption, rather than measuring the effect of the consumption culture on FLFP. The possibility of reverse causality ceases to be an issue when a categorical variable is used to measure secularity, as it is not reasonable to expect an abstainer household to start drinking alcohol or start feeding a dog after a female's employment in the household.

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[5]See Gündüz-Hoşgör and Smits (2008) for some empirical findings on ethnic influences behind FLFP in Turkey, and Tansel (2002) on the persistence of regional effects on FLFP.

[6]In the 2003 dataset, there is no household which declares itself as consuming pork meat. Pork meat is only available in some certain supermarkets in big cities.

[7]The total value of declared beer consumption in the survey is $50,400,000$ liras which corresponds to $20,160,000$ litres at the 2003 price of 1,25 lira per half-litre bottle. According to the data of Tobacco and Alcohol Market Regulatory Authority of 2003, the sales of beer in 2003 was actually 480 million litres, which is as 24 times as high the reported amount in the household survey. Data source: <http://www.tapdk.gov.tr/alkol/istatistik/alkollu_icki_piyasa_arz_2003_2010.xls>. Reached: 03.04.2013

One may have an objection to the way of secularity defined in this paper on the grounds that a household which is a consumer of these "forbidden" goods, may still be religious, if its members belong to another religion such as Christianity. Even if there are any households falling into this category, the measuring bias would still be negligible, as 99.9 percent of the people in Turkey declares themselves to be Muslims, according to the World Values Survey data of 2007. World Christian Database reports the same figure as 98.2 percent[8].

Table 1: Estimated Means of Household Statistics

	Rural	Urban	Total
Consuming alcohol	0.0537	0.0822	0.0710
Consuming shellfish	0.0003	0.0014	0.0010
Buying pet products	0.0068	0.0266	0.0188
Secular	0.0592	0.1043	0.0866
Per capita income (0 000 TL)	0.1664	0.2558	0.2207
N. of children under 15	1.9825	1.4600	1.6650
N	34582	73032	107614
N_pop	27151784	42043781	69195565

The fraction of households consuming alcohol, shellfish and pet products are tabulated in Table 1. Reported consumption of pet supplies (2.7 percent in urban areas) and especially shellfish (0.14 percent in urban areas) are too low to allow separate estimations for each product group. A probable reason behind the low level of reported shellfish consumption would be that they are hardly ever cooked at homes in Turkey; thus, their consumption is registered in restaurant services. Table 1 also reports per capita disposable income and average number of children younger than 15 years of age per household, variables that are used in estimations in the next section.

Table 2: Estimated Means of Individual Characteristics - (Females 15-64 y.o.)

	Rural	Urban	Total
FLFP	0.4349	0.1945	0.2852
Married	0.6891	0.6691	0.6766
Primary or less	0.8989	0.7335	0.7959
Secondary	0.0857	0.1979	0.1555
Tertiary or more	0.0154	0.0686	0.0485
Age	34.7959	34.1267	34.3792
N	11243	25249	36492
N_pop	8887663	14663541	23551204

Table 2 reports the mean values of the basic variables for women between 15 and 64 years of age. FLFP is 24 percentage points higher in the rural areas. A higher rate of participation
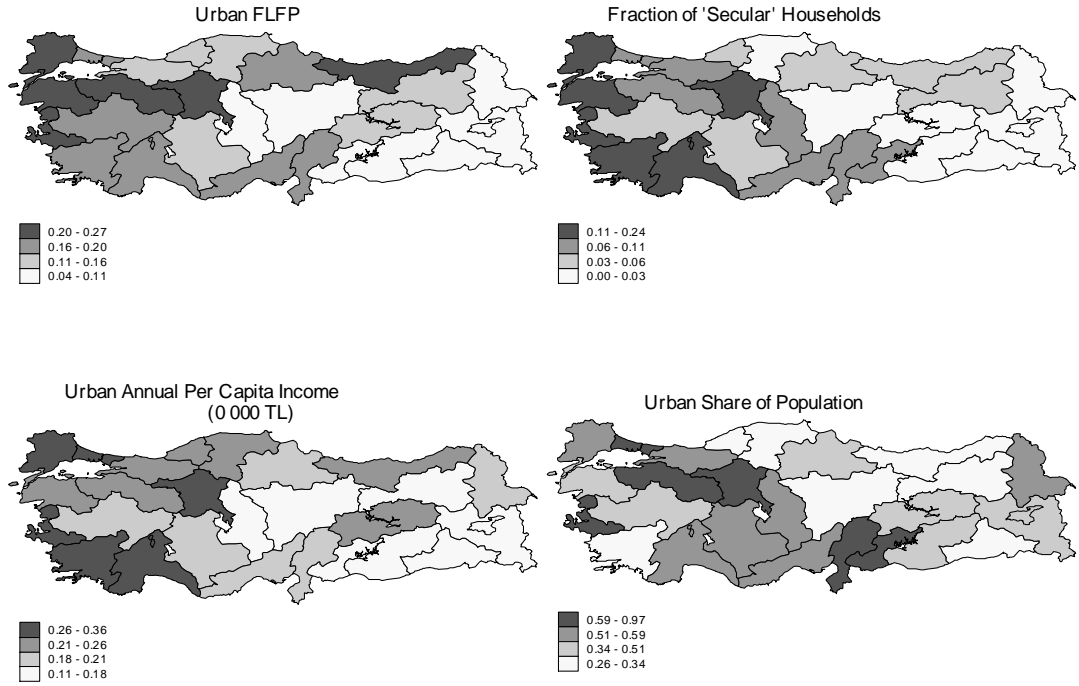

Figure 1: Descriptive statistics plotted on NUTS2 regions (2003).

in rural areas may not be something favorable as much as it sounds, considering the fact that 80 percent of females who work are unpaid family workers, as mentioned in the previous section.

Figure 1 plots the regional distributions of urban FLFP, urban per capita income, fraction of households with secular consumption patterns and urbanization at NUTS2 level. The upper left map shows that there are significant differentiations among urban regions with regard to FLFP. In western regions, FLFP is much higher compared to the east. FLFP is also high in the northeast, but the underlying reason is different than the reasons for the western parts of Turkey. Women in the North participate in paid employment because their husbands usually work in the construction sector in the West, especially in Istanbul (Gündüz-Hoşgör and Smits, 2008: 110-111). Fraction of households with secular consumption patterns by regions, and regional distribution of per capita urban income exhibit similar distributions as FLFP. Central and eastern parts of Turkey are poorer and contains fewer secular households. The similarity among the three distributions calls for controlling for the income level when estimating the effect of secularity on FLFP.

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4   Results

This section presents the results of multivariate regressions on FLFP for married and single females. For the married group I run the usual logistic regressions, where the dependent variable is a dummy indicating labor force participation. This approach is not suitable to estimate participation of single females, most of whom are in the schooling age; thus their labor force and educational participation should be evaluated jointly. For single females, I use bivariate probit estimations, which I borrow from the child-labor literature (see Dayıoğlu, 2007, among others) where employment and schooling decisions are affected by each other. The bivariate probit estimator has certain advantages compared to the other limited-dependent variable models. Probit models, in general, relax the independence of irrelevant alternatives (IIA) assumption of logit models. This assumption is violated in this case, because the existence of the possibility of going to school and working at the same time may affect the relative probability of choosing between schooling and working. Another advantage of bivariate probit models is that, they do not necessitate ordering or nesting of the decisions.

The results presented below show the average marginal effects of the regressors for each equation. An alternative approach would be to report the marginal effects at the mean values of the explanatory variables. The two methods surprisingly yielded similar magnitutes. However, marginal effects at means are not reported because in estimations where indicator explanatory variables are used, they are not much informative (see Williams, 2012: 324).

In all settings, the main explanatory variable of interest is `secular`, which was defined in the previous section. The income variable I use, `faminc_perc`, is per capita income in the household, excluding the female in estimation. This variable is a proxy for reservation wage and its squared value is also included. The other explanatory variables are, number of children in the household who are younger than 15 years (`children`); `age` and its square, as well as educational and NUTS1-level regional dummies. The estimations for the married females are run for the age group of 15 to 64, while for the single females the same range is limited with 15 to 25.

4.1   Married Females

Table 3 shows the results for married females living in urban areas in three different settings. Almost all the explanatory variables in the third, the largest setting, have the expected sign and significance. If per capita income in the household excluding the female increases 10,000

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liras per annum[9], the probability of participation decreases around 5.5 percent. Similarly, participation decreases with increasing age. Although not reported in the Table, the squared values of both the income and age are positive, indicating a U-shaped effect[10]. An extra children within the household reduces the participation rate around 2 percent. The effect of having a university degree means 46 percent increase in the probability of participation, which is strikingly high. There are also some significant differences across regions with regard to FLFP. Even after controlling for the other determinants, FLFP rates in Central Anatolia, Central East and South East are significantly 3 to 6 percent lower than the Istanbul region. In the western regions, on the contrary, urban FLFP is higher. The significant coefficients for the regional effects even after contolling for income, age, fertility, education as well as secularity calls for further research regarding the effects other cultural factors, such as patriarchal family structures, prevailing in these regions.

The coefficient of `secular` is highly significant and positive in all settings. In the base model, the coefficient indicates that FLFP is almost 10 percent higher among secular families. After controlling for income, number of children, age and education, the difference reduces to 3.4 percent. Adding regional effects does not change the result substantially. These results show that, the direct effect of having a secular lifestyle on FLFP is 3 percent at the minimum.

The results reported in Table 4 for the rural areas exhibit somewhat different patterns than the previous table. The negative impact of income in rural areas is much stronger (20% for a 10 000 lira increase). The number of children in the household does not affect the participation negatively. A puzzling observation is that, having a secondary school diploma reduces the participation. Nevertheless, this result is consistent with the findings of Dayıoğlu and Kırdar (2010: 40); and its explanation is beyond the scope of this paper. Regarding the regional effects, the participation is higher in every region compared to Istanbul. This result is related to the negative relationship between urbanization and FLFP in Turkey.

In the estimations for rural areas, the coefficient of `secular` has a lower significance and a negative sign, as opposed to the findings for urban areas. Living in a secular household reduces the probability of being in the labor force around 5 to 6 percent in rural areas. However, unlike the results for the urban areas, the interpretation of this negative results is not straightforward, considering the unpaid nature of the female employment in rural Turkey.

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[9]This corresponds to $6,700 approximetaly, at the mean exchange rate of 2003.

[10]The turning point of `faminc_perc` is rather high, at 124,000 TL per annum.

Table 3: Logistic Estimations of FLFP in Urban Areas - Average Marginal Effects

	(1-Base Dif.)	2	3
secular	0.096***	0.034***	0.028**
	(8.19)	(3.42)	(2.90)
faminc_perc		-0.056***	-0.055***
		(-4.20)	(-4.05)
children		-0.023***	-0.019***
		(-7.29)	(-5.73)
age		-0.001***	-0.001***
		(-5.20)	(-5.17)
educ_secondary		0.065***	0.060***
		(6.77)	(6.35)
educ_tertiary		0.467***	0.464***
		(22.66)	(22.38)
West Marmara			0.043**
			(2.83)
Agean			0.027*
			(2.30)
East Marmara			0.032*
			(2.47)
West Anatolia			0.008
			(0.69)
Mediterranean			0.033**
			(2.71)
Central Anatolia			-0.054***
			(-4.09)
West Black Sea			0.033
			(1.87)
East Black Sea			0.109***
			(5.52)
North-East			-0.005
			(-0.26)
Central-East			-0.029*
			(-2.32)
South-East			-0.061***
			(-5.66)
N	16876	16876	16876

t statistics in parentheses
Females between 15 and 64 years of age
Base education category is primary school and less. Base region is Istanbul.
Estimations include squared values of income and age
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 4: Logistic Estimations of FLFP in Rural Areas - Average Marginal Effects

	(1-Base Dif.)	2	3
secular	-0.067*	-0.052	-0.057*
	(-2.39)	(-1.78)	(-2.12)
faminc_perc		-0.248***	-0.202***
		(-6.09)	(-5.33)
children		0.009	0.014**
		(1.78)	(2.87)
age		0.003***	0.002***
		(5.23)	(4.72)
educ_secondary		-0.139***	-0.132***
		(-4.33)	(-4.05)
educ_tertiary		0.334***	0.328***
		(5.80)	(5.54)
West Marmara			0.302***
			(8.10)
Agean			0.315***
			(9.35)
East Marmara			0.193***
			(4.24)
West Anatolia			0.217***
			(5.08)
Mediterranean			0.306***
			(8.84)
Central Anatolia			0.083
			(1.74)
West Black Sea			0.489***
			(22.59)
East Black Sea			0.423***
			(14.88)
North-East			0.374***
			(10.29)
Central-East			0.136*
			(2.52)
South-East			0.227***
			(5.30)
N	7683	7683	7683

t statistics in parentheses
Females between 15 and 64 years of age
Estimations include squared values of income and age
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

4.2 Single Females

Here the category of "single" includes females who stated themselves as "not married" at the time the survey was conducted, including those who were never married, devorced, living separately, cohabiting (12 observations only), as well as who lost their husbands. The results for the urban and rural single females are presented in Table 5 and Table 6, respectively. For the sake of brevity, only the coefficients for `secular, faminc_perc` and `age` are reported.

Table 5: Bivariate Probit Estimation of Participation - Urban Areas

	inlabf=0, student=0	inlabf=1, student=0	inlabf=0, student=1	inlabf=1, student=1
secular	-0.078***	-0.026	0.086***	0.019**
	(0.020)	(0.019)	(0.022)	(0.007)
faminc_perc	-0.082**	-0.213***	0.286***	0.009
	(0.029)	(0.038)	(0.043)	(0.007)
age	0.049***	0.044***	-0.093***	-0.000
	(0.003)	(0.002)	(0.002)	(0.001)
N	5818	5818	5818	5818

Standard errors in parentheses
Females between 15 and 24 years of age
Estimations include dummies on education and region, squared income and age
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Regarding the effects of income and age on decisions between educational and labor force participation, the results do not much differ between urban and rural areas. A 10 000 lira increase in income reduces the probability of labor force participation around 21 to 23 per cent, while increasing the probability of schooling in the range of 25 to 28 per cent. These figures are higher than the ones presented for the married females, especially for the ones living in urban areas. The effect of increasing age, on the other hand, is significantly negative for labor force, and significantly positive for educational participation, as one might expect.

The results show that, the effect of living in a secular household has a significant negative effect on $(-7$ to 8 per cent) "staying at home" (i.e. participating neither in education nor in labor force) both in urban and rural areas. In urban areas, this effect is reflected on a positive increase in schooling, as well as joint participation in labor force and schooling (column III and IV of Table 5). However, unlike urban areas, the distribution of this increased participation in rural areas do not differ significantly between education and labor force.

5 Conclusion

Table 6: Bivariate Probit Estimation of Participation - Rural Areas

	inlabf=0, student=0	inlabf=1, student=0	inlabf=0, student=1	inlabf=1, student=1
secular	-0.067*	0.048	0.005	0.013
	(0.032)	(0.055)	(0.040)	(0.008)
faminc_perc	-0.045	-0.230**	0.253***	0.023*
	(0.066)	(0.077)	(0.054)	(0.011)
age	0.040***	0.059***	-0.089***	-0.010***
	(0.004)	(0.003)	(0.004)	(0.002)
N	2705	2705	2705	2705

Standard errors in parentheses

Females between 15 and 24 years of age

Estimations include dummies on education and region, squared income and age

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

This study investigated how females' labor supply behavior as well as educational behavior for the single females were affected by the (non)religiosity of the household they lived in. The main contribution of the paper is its empirical strategy, which is to use the information provided in the consumption data to categorize the households based on their stance against conservative religious practices. This paper is also a contribution to the literature investigating the effect of religion on female labor supply.

The methodology applied in this paper yielded useful results in search for the effects of (non)religiosity in a context of a Muslim society. But it also has the potential to be extended to explore the differences among alternative denominations if applied to the data of a multi-religious country.

The findings of this paper strongly support the previous micro-econometric evidence on the grounds that, living in a non-religious environment increases the labor supply of married females in urban areas. The effect of secularity is also positive on the educational of participation of urban younger single females. In other words, the results show that, a secular lifestyle is associated with more egalitarian outcomes in urban areas.

The results presented in this study, as well as the previous studies show that, FLFP in rural and urban areas tell two totally different tales. They move in different directions in time; they are affected in opposite ways by a certain set of explanatory variables; and, most importantly, their interpretation is not the same because of unpaid nature of employment of females in rural areas. Here, the results for the rural areas suggest that, labor force participation rate of the married females is lower if they live in secular households. As stated in the previous section, the interpretation of this finding calls for further normative discussions on unpaid labor. Lastly, for the single females in rural areas, the results suggest that secularity is

associated with a lower probability of "staying at home", without being conclusive on the choice between increased schooling and labor supply.

One limitation of the methodology applied in this paper arises from the undeclared amount of alcohol consumption in the household surveys. The existence of households who consume alcohol but do not register that in the questionnaires causes a data contamination in the non-secular group, which results in a downward bias in the estimations. Therefore, the results obtained in this study should be interpreted as the minimum effects of secular consumption patterns on FLFP. Another limitation is that, it is not possible to investigate the effect of secularity on marriage decisions, because the data does not include information about characteristics of the pre-marriage households. Any future study accounting for this factor will give us a fuller understanding of the gender effects of having a secular lifestyle.

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