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1 December 2013

Online at <https://mpra.ub.uni-muenchen.de/57791/>  
MPRA Paper No. 57791, posted 06 Aug 2014 12:51 UTC

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

Draft Version. Comments are welcome.

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December 2, 2013

## Abstract

This study explores the effect of religion on female labor force participation (FLFP) in a Muslim country, Turkey, by using the information in the consumption data as a signal of secularity. 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 and single females, separately. The results show that, living in a secular household has a positive and highly significant effect on the probability of FLFP in the urban areas. Secularity is also associated with a reduction in unpaid work, which is the most widespread form of female employment in rural areas in Turkey. For the single females, whose mean age is lower, the estimations provide some weaker evidence on the positive effect of secularity on the probability of educational participation, while no significant direct effect on paid work is found.

Keywords: Female labor force participation, religion.

JEL-codes: J16, Z12

## 1 Introduction

This paper concerns the effect of religion on female labor force participation (FLFP). There is a vast amount of research on the factors determining FLFP in various countries with diverse religious compositions and development levels; yet, only few of them account for the role of religion. One probable underlying reason is the lack of data at individual level which contain joint information on religious preferences or devoutness, and other variables that affect participation. This study exploits the information provided in the consumption data of

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a Muslim country, Turkey, to observe if a household consumes goods that are considered as “vice” by the orthodox (Sunni) interpretations of Islam; and uses 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 usually do not consume pet products as they abstain from feeding pets in their homes<sup>1</sup>. Similarly, devout followers of *Hanefi* sect, which is the most popular division of Sunni Islam in Turkey, consider eating of any seafood -except for fish- as a vice<sup>2</sup>. Followers of *Alewi* congregation, on the other hand, do not necessarily abstain from alcohol, as they have a more liberal approach to religious practices. Thus, contradicting the widespread impression of Islam as a religion imposing uniform rules to regulate daily life, consumption patterns may vary substantially between religious and secular individuals, or among different congregations in Turkey.

Despite the efforts in recent years -both at the governmental and municipal levels- to limit the production and sales of alcoholic beverages, they have widely and legally been available in Turkey, especially in the urban areas. Similarly, shellfish consumption with its all varieties is also common, mostly in the Aegean and Mediterranean coasts, greater Istanbul region, and even in Ankara, a landlocked city. Moreover, consumption of pet products increases as pet feeding gets common in urban areas. This diversity in consumption patterns reflects the secular lifestyle that a non-negligible fraction of the population has been pursuing in Turkey. The novel empirical strategy followed in this paper is based on the idea that the consumption data on these “sinful” goods in the household surveys provide us with valuable information about a household’s secularity in a Muslim society. Using this information, this study raises the question if keeping a distance with conservative Sunni Islam have any implications with regard to the labor market participation of females.

As a first step, this study analyses the urban and rural FLFP separately, considering the substantial differences between the two areas with regard to fractions of females who work unpaid in family enterprises. The analysis is then deepened to explore the effect of secularity on the supply of unpaid labor. Furthermore, this study investigates the educational and labor force participation of single females, who are younger in average. Carrying out additional analyses for the singles provides us with a broader perspective about the effects of secularity

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<sup>1</sup>It is a common religious saying that “angels wouldn’t come into a house in which there is a dog.”

<sup>2</sup>For a socio-anthropological account of seafood consumption and its relation with religion in Turkey, see Knudsen (2006).

on FLFP, by taking into account its indirect effect through educational participation.

The previous studies on the relationship between religion and FLFP investigate the subject mainly on two dimensions, namely, the differences across religious sects or the effect of religiosity. While there is almost a consensus that religiosity in general has a negative effect on FLFP, there are different competing views on the effects of alternative sects. The second section of the paper elaborates these findings and stresses the differences between conclusions reached in studies using macro- and micro-level datasets. That section also summarizes the results of previous research on FLFP in Turkey. The details of the methodology and the dataset used in this study are provided in the third section. Section 4 presents the results for married and single females separately. Section 5 provides the concluding remarks.

## **2 Religious Denominations, Devoutness and FLFP:**

### **The Previous Findings**

This section summarizes the findings of the previous literature investigating the effect of religion on FLFP in two categories. One group of studies investigates the causal link using cross-country data. A usual variable of interest in this group is an indicator of FLFP rate (either in absolute terms or in terms of its ratio to male participation rate); while the ratio of each religion's followers or a categorical variable showing each country's religious majority are used as explanatory variables, among others. A second group analyze individual-level data from certain countries or religious groups. This latter approach has the advantages of relying on higher number of observations as well as detailed information on individual characteristics which affect FLFP, besides indicators of religious preferences at individual level.

#### **2.1 Studies Using Aggregated Data**

Among the cross-country studies, an earlier group of studies incorporate the competing views of dependency/world system approaches, the modernization approach and the cultural explanations to explain variations in FLFP across countries. 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. They also 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 devalue (Dutch disease), which, in turn, causes a shift in the domestic production towards the non-tradables sector, either because the tradables become cheaper to import, or the non-tradables 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 terms of their impact on labor demand. He supports his arguments by running panel and cross-national regressions for 161 countries where indicators of female economic and political participation used 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 implicitly 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. Charrad (2009) proposes a similar concern, holding the patriarchal networks that have been prevailing

in MENA countries as the culprit for gender inequality in the region.

Ross' hypothesis which rejects the connection between Islam and women's participation stands as an alternative to Inglehart's well known modernization approach. As opposed to Ross, Inglehart builds a connection with culture and gender equality; however, in her analysis culture functions as an endogenous variable through which the effect of production structure of an economy is transmitted to gendered outcomes. Thus, she hypothesises that the patriarchal culture prevailing in Muslim countries will change as these countries move to a post-industrial stage of development (Inglehart and Norris, 2003).

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.

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 rates decrease as states depart 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. Dayıođlu and Kırdar, 2010; Uraz et al., 2010; and Taymaz, 2010)



and the other previous studies on the subject. The two most cited 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 2010 was 28%, which placed Turkey at the lowest 16<sup>th</sup> among 188 countries in the dataset. This figure lies 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” as well as a government support program which was put into force in 2008 to foster women’s and youngsters’ employment (see. Dayıođlu and Kırdar, 2010, p.11).

The long-term falling trend in FLFP over the past decades remains one of the most important concerns of gender literature in Turkey. FLFP was as high as 35% in 1990. The above-mentioned studies highlight two driving factors behind the significant fall in FLFP. Firstly, depending on the year, participation in rural areas has been 10 to 20 percentage points higher compared to urban places. Fast migration from rural areas to the cities during this period caused the females to fall out of the labor force and resulted in a stagnating level of FLFP in urban areas. The decline in the job-creating capacity of agriculture, where a great fraction of females in rural areas are employed, remains as a second source of the general decreasing trend in FLFP. Tansel (2002) as well as the above mentions studies assert that the long term falling rate of participation in Turkey is a result of U-shaped relationship between industrialization/urbanization and FLFP.

A growing number of studies in recent years explore the role of patriarchy and conservatism in Turkey to explain the low and falling rates of female participation. 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. İlkaracan (2012) considers both the demand and supply side factors that affect women’s participation in the labor market. On the demand side, she explores how the structure of the domestic production changed, and affected the feminization of the labor force during import substitution and export promotion periods, respectively. On the supply side, based on the results of a survey conducted in Istanbul, she shows that conservative gender roles have a significant effect on the low levels participation of urban women. Similarly, using the data from 2006 Household Structure Survey by TURKSTAT, which contains information on conserva-

tive values and religiosity, Göksel (2013) shows that a wife’s share of income within a family is negatively correlated with household’s patriarchal attitudes and religious devoutness.

A common observation in the above-summarized studies is the rural-urban dichotomy in determination of FLFP in Turkey. Explanatory variables that affect participation in the urban areas, might lose their significance or have reversed effects for the rural areas. The main underlying reason is the fact that the majority of the females in the rural part of Turkey works unpaid (Dayıoğlu and Kırdar, 2010). Although 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<sup>3</sup>. Yet, husbands remain as the collector of crop revenues. For this reason World Bank (2009) considers the falling rate of FLFP in rural areas as “not necessarily a bad thing” (p.16). The following section reinforces the results reached in the previous literature on rural/urban dichotomy and adds to the literature by showing the effect of secularity on paid employment in both areas.

### 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, which include information on household consumption, household characteristics and wealth as well as data on individual characteristics, respectively. This study merges all the three datasets.

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 levels. Controlling for the effect of the region is of importance, FLFP rates and the shares of households with secular consumption patterns, exhibit strong and similar patterns as seen in Figure 1. Including regional effects in the analysis allows us to disentangle the effects of secular 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<sup>4</sup>. 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 the surveys of other years.

A household is defined as “secular” in this study, if its members declare that they con-

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<sup>3</sup>The following is a quote 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”.

<sup>4</sup>See Gündüz-Hoşgör and Smits (2008) for empirical findings about the effects of ethnicity on FLFP, and Tansel (2002) on the persistence of regional effects in Turkey.

sume any of alcoholic beverages, shellfish, or pet products<sup>5</sup>. This definition comes with its limitations: Total sales of alcoholic drinks in Turkey far exceeds their consumption amount declared in the household surveys<sup>6</sup>. One probable reason behind this disparity is the social desirability bias in the answers. It is common in Turkey that people hesitate to pronounce publicly that they consume alcohol. Grocery stores which are allowed to sell alcoholic drinks usually wrap the bottles to disguise the ingredient, especially in smaller areas. Another part of the disparity arises from the alcohol consumed in bars or restaurants, which are registered in different categories (such as restaurants) 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 includes households which consume alcohol but do not declare that.

Fortunately, in the section on household characteristics, the survey contains another question to allow us to cross-check on alcohol consumption. The respondents are asked if there is any person within the household with a “drinking habit”. Some households reply this question positively even if they do not declare any spending on alcoholic drinks in the consumption section of the survey. The opposite also holds, as some households which consume alcohol reply the question negatively. This latter discrepancy may arise if a household’s members consume alcohol occasionally but refuse to define this consumption as a “habit”. In any case, asking a questions on alcohol consumption in two different sections of the survey increases the quality of the data.

The measure of secularity used in this study has a shortcoming arising from its categorical nature, as it cannot catch the within-group variations with regard to secularity. Despite that, there is one important advantage of using 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” is defined as a continuous one. In such a case, a correlation between the two would indicate the impact of an additional person’s employment within the household on total alcohol consumption, rather than measuring the effect of the culture on FLFP. The possibility of reverse causality ceases to be an issue when a categorical variable is used to measure secularity, as

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<sup>5</sup>In 2003 questionnaire no household declares any consumption of pork meat. Pork meat is only available in some certain supermarkets in big cities in Turkey.

<sup>6</sup>The total estimated 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 beer sales 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](http://www.tapdk.gov.tr/alkol/istatistik/alkollu_icki_piyasa_arz_2003_2010.xls)>. Reached: 03.04.2013

it is not reasonable to expect an abstainer family to start drinking alcohol or start feeding a dog after a female’s employment in the household.

One may have an objection to the way of secularity defined in this paper on the grounds that a household consuming 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 resulting 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<sup>7</sup>.

Table 1: Estimated Means for Household Characteristics

	Rural	Urban	Total
Consuming alcohol	0.0637	0.0948	0.0826
Consuming shellfish	0.0003	0.0014	0.0010
Buying pet products	0.0068	0.0266	0.0188
Secular	0.0691	0.1163	0.0978
Per capita income (0 000 TL)	0.1664	0.2558	0.2207
# of children under 15	1.9825	1.4600	1.6650
<i>N</i>	34582	73032	107614
<i>N_pop</i>	27151784	42043781	69195565

Table 1 tabulates the fractions of households consuming alcohol, shellfish and pet products. 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 is 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 reports the mean values of the mean variables interest for females between 15 and 64 years of age. FLFP is 24 percentage points higher in the rural areas. However, according to the survey estimates, 76 percent of the working females between 15 and 64 years of age in the rural areas work unpaid in the family enterprises (small farms), as discussed in the previous section. In the urban areas, the same ratio is only 10 percent. Thus, any interpretation of FLFP in rural Turkey calls for a cautious interpretation and additional analyses.

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. Joint

<sup>7</sup>I obtained these figures from the institutions’ websites: <[www.worldvaluessurvey.org](http://www.worldvaluessurvey.org)> and <[www.worldchristiandatabase.org](http://www.worldchristiandatabase.org)>. Reached: 28.03.2013.

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
Educ: primary or less	0.8989	0.7335	0.7959
Educ: secondary	0.0857	0.1979	0.1555
Educ: tertiary or more	0.0154	0.0686	0.0485
Age	34.7959	34.1267	34.3792
<i>N</i>	11243	25249	36492
<i>N_pop</i>	8887663	14663541	23551204

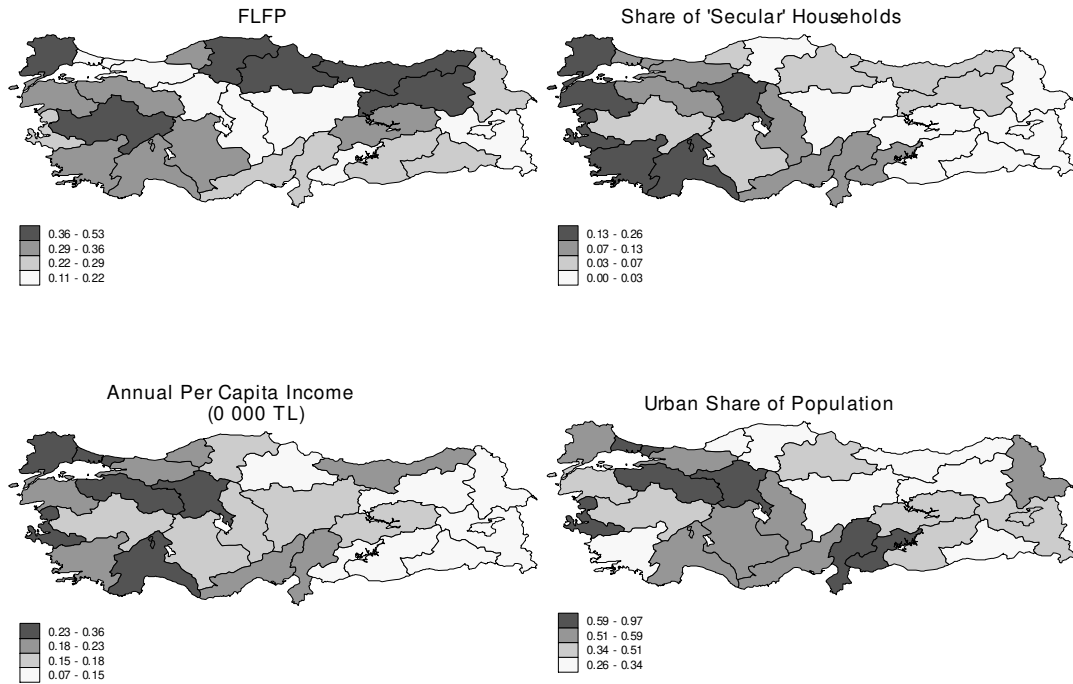


Figure 1: Descriptive statistics plotted over NUTS2 regions (2003).

evaluation of FLFP with urbanization map at the lower right corner shows that, participation rates are rather low in the most urbanized cities of Turkey, such as Istanbul and Ankara. This observation is in line with the previous literature which holds the migration to cities as a driving factor behind falling FLFP rates in Turkey. Gündüz-Hoşgör and Smits (2008: 110-111) explain the high rates of FLFP in the North by the fact that, husbands from this region usually work in the construction sector in the West, especially in Istanbul, while their wives run the family farm businesses. The maps also show that, 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 these three distributions calls for controlling for the income level when estimating the effect of secularity on FLFP.

## 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, in a position to choose between education and employment. For the singles, I use a bivariate probit setting, which I borrow from the child-labor literature (see Dayıođlu, 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 working and going to school at the same time may affect the relative probability of choosing between the two. The advantage of using a bivariate setting is that, it does 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. In the estimations, the two methods surprisingly yielded similar results. Nevertheless, I choose not to report marginal effects at means as they are not much informative in estimations where indicator explanatory variables are used (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 acts as a proxy for reservation wage. The other explanatory variables are, number of children in the household who are younger than 15 years of age (`children`), `age` and its square; dummies on education level of the head of the household, the type of the household (i.e. “nuclear”, “patriarchal/large”, “one adult” or “people living together”) as well as educational and NUTS1-level regional dummies. The estimations for the married females covers the age group of 15 to 64, while the same range is limited to 15 to 22 for the singles.

#### 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 liras per annum<sup>8</sup>, the probability of participation decreases around 4.3 percentage points. This variable is expected to reflect the reservation wage of a female in the household. In the original logit estimations, which are not reported here, the coefficient of `age` has a positive, and its square has a negative sign; and both of them are highly significant (at 0.1 percent level). The turning point of age that I calculate from the logistic estimation is 38 years, which is exactly the same as the mean age in estimation sample. As a result, the estimated marginal effect in Table 3 appears not to be significant.

Having a university degree means 55 percentage points increase in the probability of participation, which is strikingly high. An extra children within the household reduces the participation rate around 2 percentage points. Living in a larger household has a positive effect on FLFP, probably because of sharing of domestic duties allows females to work outside home. Surprisingly, the education level of the head of the household, who is a male in 90 percent of the cases, has a very strong negative effect on female participation. One probable explanation to this unexpected result would be the higher tendency to “stay home as the mistress of one’s own house” (İlkkaracan, 2012: 24) among females who are married to more educated husbands. Nevertheless, this result calls for a further research conducted on the complex grid of gendered interactions between conservatism and social classes.

There are also significant variations across regions with regard to FLFP. Even after con-

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<sup>8</sup>This corresponds to \$6,700 approximetaly, at the mean exchange rate of 2003.

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

	(I-Base Dif.)	II	III
secular	0.097*** (0.011)	0.037*** (0.009)	0.032*** (0.009)
faminc_perc		-0.047*** (0.013)	-0.046*** (0.013)
children		-0.024*** (0.003)	-0.020*** (0.003)
age/10		-0.011*** (0.002)	-0.011*** (0.002)
educ: secondary		0.103*** (0.011)	0.097*** (0.011)
educ: tertiary		0.554*** (0.023)	0.548*** (0.023)
head's educ: secondary		-0.047*** (0.007)	-0.048*** (0.007)
head's educ.: tertiary		-0.054*** (0.008)	-0.054*** (0.008)
HH type: large		0.025** (0.008)	0.027** (0.009)
West Marmara			0.048** (0.015)
Agean			0.031* (0.012)
East Marmara			0.033* (0.013)
West Anatolia			0.011 (0.011)
Mediterranean			0.037** (0.012)
Central Anatolia			-0.051*** (0.014)
West Black Sea			0.036* (0.018)
East Black Sea			0.118*** (0.020)
North-East			0.005 (0.021)
Central-East			-0.024 (0.013)
South-East			-0.060*** (0.011)
<i>N</i>	16876	16876	16876

Standard errors in parentheses

Covers females between 15 and 64 years of age. Base HH type is 'nuclear'

Base education category is primary school and less. Base region is Istanbul.

Estimations include squared values of income and age.

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



trolling for the other covariates, FLFP rates in Central Anatolia, Central East and South East are significantly 2 to 6 percent lower than the Istanbul region. In the western regions, on the contrary, urban FLFP is higher. The significant coefficients of the regional effects is in line the previous literature on the effects of cultural factors prevailing in these regions (Gündüz-Hoşgör and Smits, 2008; and Uraz *et al.*, 2010.)

The coefficient of the main variable of interest, **secular** is highly significant and positive in all settings. The base model shows that, living in a secular household means almost 10 percentage points increase in the probability of labor force participation of married females. After controlling for income, number of children, age and education, household head's education and household type, the difference reduces to 3.7 percent. Adding the regional effects narrows the gap only to a minor extent (to 3.2 percentage points). These results show that, the direct effect of having a secular lifestyle on FLFP is highly significant and it's impact is more than 3 percentage points at the minimum.

The results reported in Table 4 for the rural areas exhibit a different pattern than the previous table. While effects of household type and education does not change significantly, the negative effects of family income and household head's education become much stronger. The confusing result is that, the signs of the remaining explanatory variables as well as some regional effects are reversed. The existence of children in the household does not affect the participation negatively, having a secondary school diploma reduces participation, and the effect of age is positive. Regarding the regional effects, the participation is higher in every region compared to Istanbul. Most importantly, the sign of **secular** also reverses and loses some of its significance as we move from urban to rural areas.

The problem with the estimations presented in Table 4 is that, they do not distinguish between paid and unpaid work. As mentioned in Section 3, the estimated share of females working unpaid in family enterprises is 76 percent in rural areas, whereas the same figure for the urban areas is 10 percent, only. It is not clear from these results whether the negative sign of **secular** is due to the effect on unpaid or paid part. In order to disentangle the effect of secularity on paid work, Table 5 reports estimation results with the same set of explanatory variables as the previous regressions; however, this time using the probability of paid employment of females as the dependent variable, and combining both urban and rural areas. The added variable **urban** both catches the negative effect of urbanization on paid labor and allows us to report the marginal effects for urban and rural areas, separately. This methodology is not much informative in FLFP estimations as it keeps the unemployed out

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

	(I-Base Dif.)	II	III
secular	-0.063*	-0.051*	-0.055*
	(0.026)	(0.026)	(0.025)
faminc_perc		-0.153***	-0.112**
		(0.040)	(0.036)
children		0.001	0.006
		(0.005)	(0.005)
age/10		0.030***	0.025***
		(0.005)	(0.005)
educ: secondary		-0.009	-0.012
		(0.039)	(0.037)
educ: tertiary		0.450***	0.443***
		(0.035)	(0.038)
head's educ: secondary		-0.203***	-0.199***
		(0.023)	(0.023)
head's educ.: tertiary		-0.234***	-0.227***
		(0.035)	(0.034)
HH type: large		0.157***	0.128***
		(0.015)	(0.015)
West Marmara			0.295***
			(0.037)
Agean			0.313***
			(0.034)
East Marmara			0.188***
			(0.045)
West Anatolia			0.215***
			(0.042)
Mediterranean			0.313***
			(0.034)
Central Anatolia			0.091
			(0.047)
West Black Sea			0.479***
			(0.023)
East Black Sea			0.426***
			(0.028)
North-East			0.373***
			(0.036)
Central-East			0.169**
			(0.051)
South-East			0.252***
			(0.041)
<i>N</i>	7683	7683	7683

Standard errors in parentheses

Covers 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.

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

of the regressions; thus, it cannot be a substitute for the previous regressions. However, it is still useful to separate the effect of secularity on paid and unpaid work.

As reported in Table 5, when the probability of paid work is chosen as the dependent variable, the coefficient of `secular` becomes positive, both in urban (column II) and rural areas (column III). This shows that, the previously found negative effect of secularity for the rural areas (Table 4) was due to the negative effect on unpaid labor. In other words, living in a secular household not only has a increasing effect on the probability of labor force participation but also a decreasing effect on the probability of working unpaid, which is the common form of female employment in the rural areas.

## 4.2 Single Females

For the group of 15 to 64 year-old single females, the estimated mean age is 18 years. At this age, reduced participation in the labor force could be something favorable as long as it is associated with increased schooling. This calls for a methodology of joint evaluation of employment and schooling decisions. This section presents the results for paid work participation and schooling decisions in a bivariate probit setting. I choose paid employment, instead of labor force participation, as an alternative to educational participation, in order to avoid the “contamination” and subsequent ambiguity caused by unpaid work in rural areas, which was mentioned in the previous sub-section. Nevertheless, in alternative settings, which I do not present here for the sake of brevity, I run similar estimations by choosing labor force participation as a probable outcome and reached similar results. In all settings, secularity has a driving impact through schooling decisions, while the impact on employment (or LFP in general) is limited at this age group.

As this section contains analyses about the effect of secularity on educational participation, I limit the age from 15 to 22 years. The upper limit is arbitrary; however, choosing a higher limit does not have an important effect on the results<sup>9</sup>. An estimated 99.7 percent of the single females of this age group of are “never married”. The remaining 0.3 percent includes those who are divorced, living separately, cohabiting and who lost their husbands

Table 6 provides the coefficients for `secular` and `urban`; as well as the remaining continuous variables (`faminc_perc`, `children` and `age`) to observe how coefficient estimations behave. As one might expect, participation rates both in paid labor and education are signif-

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<sup>9</sup>Results for alternative settings are available from the author upon request.

Table 5: Logistic Estimations of Paid Employment - Average Marginal Effects

	Average	At urban=0	At urban=1
urban	-0.028*** (0.005)		
secular	0.017* (0.007)	0.016* (0.007)	0.020* (0.008)
faminc_perc	-0.061*** (0.014)	-0.056*** (0.012)	-0.069*** (0.016)
children	-0.009*** (0.002)	-0.008*** (0.002)	-0.011*** (0.003)
age/10	-0.002 (0.002)	-0.002 (0.002)	-0.003 (0.002)
educ: secondary	0.087*** (0.010)	0.079*** (0.009)	0.098*** (0.012)
educ: tertiary	0.549*** (0.024)	0.532*** (0.024)	0.573*** (0.023)
head's educ: secondary	-0.021*** (0.006)	-0.019*** (0.005)	-0.024*** (0.006)
head's educ.: tertiary	-0.023** (0.007)	-0.021** (0.007)	-0.026** (0.008)
HH type: large	-0.020*** (0.005)	-0.018*** (0.005)	-0.023*** (0.006)
West Marmara	-0.006 (0.010)	-0.006 (0.009)	-0.007 (0.011)
Agean	-0.001 (0.008)	-0.001 (0.008)	-0.001 (0.010)
East Marmara	0.020 (0.011)	0.018 (0.010)	0.022 (0.012)
West Anatolia	-0.019* (0.008)	-0.017* (0.007)	-0.021* (0.009)
Mediterranean	0.009 (0.009)	0.008 (0.008)	0.010 (0.010)
Central Anatolia	-0.063*** (0.007)	-0.057*** (0.007)	-0.072*** (0.009)
West Black Sea	-0.001 (0.010)	-0.001 (0.009)	-0.001 (0.011)
East Black Sea	0.047** (0.015)	0.043** (0.014)	0.053** (0.016)
North-East	-0.006 (0.014)	-0.005 (0.013)	-0.007 (0.016)
Central-East	-0.035*** (0.010)	-0.032*** (0.009)	-0.040*** (0.012)
South-East	-0.045*** (0.007)	-0.041*** (0.007)	-0.052*** (0.009)
<i>N</i>	24559	24559	24559

Standard errors in parentheses

Covers 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.

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ <sup>19</sup>

Table 6: Bivariate Probit Estimation of Participation

	paid=0 student=0	paid=1 student=0	paid=0 student=1	paid=1 student=1
urban	-0.135*** (0.014)	0.042*** (0.008)	0.081*** (0.013)	0.011*** (0.001)
secular	-0.078*** (0.021)	0.009 (0.013)	0.061** (0.021)	0.009* (0.004)
faminc_perc	-0.124* (0.051)	-0.114** (0.041)	0.244*** (0.038)	-0.005 (0.008)
children	0.029*** (0.005)	-0.000 (0.003)	-0.026*** (0.005)	-0.002** (0.001)
age/10	0.847*** (0.032)	0.247*** (0.018)	-1.091*** (0.029)	-0.002 (0.005)
<i>N</i>	7428	7428	7428	7428

Standard errors in parentheses

Covers single females between 15 and 22 years of age

Explanatory variables include squared values of income and age,

as well as dummies on education and region, HH head's education and HH type.

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

icantly higher in urban areas (4.2 and 8.1 percentage points, respectively). Secularity reduces the probability of non-participation 7.8 percentage points; and its effect is also highly significant. 7 points of this reduction is associated with a significant increase in schooling, while no significant effect on employment is observed.

It is also important to observe from the table that, a higher number of children under 15 in the household causes a significant reduction not only in labor force participation of married females (Table 3), but also in the probability of schooling of the singles. A reduced schooling means a double jeopardy for the single females as one of the most important determinants of FLFP in Turkey is education<sup>10</sup>.

## 5 Secular or just luxury? Robustness checks

The excise tax on alcohol in Turkey is the third highest after Norway and Iceland among OECD countries with \$6337.68 per hectoliter, excluding the 18% VAT<sup>11</sup>. Because of heavy taxation, alcoholic drinks are hardly affordable for the lower-income groups. This section explores if the inferences drawn in the previous sections, which were based mainly on consumption of

<sup>10</sup>See the studies in Section 2.3 as well as the results on education provided in Table 3.

<sup>11</sup><<http://www.oecd.org/ctp/tax-policy/Table%205.3%20Taxation%20of%20alcoholic%20beverages.xls>>, reached: 28.11.2013

alcoholic drinks but also at a lesser extend on shellfish and pet products, reflected the effect of secularity, or instead, just luxury consumption habits. The latter would be the case if female labor force (or educational) participation is somehow correlated with the propensity to consume of the households.

Table 7: Shares of HHs Consuming:

coffee	0.16
banana	0.23
dressing	0.19
icecream	0.17
<i>N</i>	107614

To test the extend of the effect of luxury consumption, I picked those foods and beverages which are “secular”, but, at the same time luxurious to use as “placebo” goods in the regression settings of the previous section. Four products, namely, coffees, bananas, ice creams and salad dressings are “safe” to consume in orthodox Sunni terms, yet purchased by smaller shares of households (Table 7). Actually, appropriateness of these goods as placebos in the previous section’s settings are questionable, as there would be a reverse causation from a female’s employment and changing consumption habits towards luxury goods within a household. In simpler terms, it would be reasonable to expect a female who was previously out of the labor market to start buying some luxury products after getting a job, which would hardly be the case for alcoholic consumption or pet products. Nevertheless, as Table 8 presents, the use of these products in FLFP or paid work estimations does not yield any significant results despite the possibility of reverse causation.

The first column in the table tabulates the results for urban FLFP regressions, while the dependent variable in the second is the probability of paid employment in all areas. None of the placebo products have significant coefficients for married females in any setting. These results suggest that, the luxurious nature of alcohol, shellfish and pet products does not explain the correlation between consumption of these goods and FLFP the previous section documents.

Unlike the results presented for married females, using the placebo goods in the bivariate probit setting for the singles produce some significant results, as Table 9 shows. As in the case of the coefficient of `secular`, consumption of these products are associated with decreased non-participation (Column I) and increased schooling (Column III) - except for coffee. Their significance levels are not as strong as `secular` reported in Table 6, and the coefficient values

Table 8: Using Placebo Goods

	FLFP in Urban Areas	Paid Work in All Areas
coffee	0.005 (0.008)	0.002 (0.006)
banana	0.001 (0.007)	0.002 (0.005)
dressing	-0.008 (0.007)	-0.008 (0.005)
icecream	0.008 (0.007)	0.000 (0.005)
<i>N</i>	16876	24559

Standard errors in parentheses

Covers females between 15 and 64 years of age

The other explanatory variables are as same as Column (III) of Table 3.

Table 9: Bivariate Placebo Estimations Using Placebo Goods

	paid=0 student=0	paid=1 student=0	paid=0 student=1	paid=1 student=1
coffee	-0.030 (0.015)	0.004 (0.009)	0.024 (0.015)	0.003 (0.002)
banana	-0.037* (0.016)	0.016 (0.010)	0.016 (0.015)	0.005* (0.002)
dressing	-0.037* (0.016)	-0.014 (0.009)	0.051*** (0.015)	0.001 (0.002)
icecream	-0.042** (0.015)	-0.001 (0.009)	0.040** (0.015)	0.003 (0.002)
<i>N</i>	7428	7428	7428	7428

Standard errors in parentheses

Covers females between 15 and 22 years of age

The other explanatory variables are as same as Table 6.

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

vary around 4 percentage points, which are almost half the size of the effect of secularity. Nevertheless, these results may suggest that *part* of the positive effect of secularity on educational participation may arise from the luxurious nature of alcohol, shellfish and pet products consumption in Turkey. If girls' education is considered as a "luxury good", as Cameron and Worswick (2001) suggest, a correlation between education and other luxury consumption goods become something expected. Yet, the higher magnitude and significance level of **secular** compared to the placebo goods suggest that, there is a combined effect of secularity and luxury for the case of consumption of alcohol, shellfish and pet products.

## 6 Conclusion

This study investigates the effect of religion on female labor supply using the information provided in the consumption data as a signal of a household's secularity. Three consumer products, alcoholic drinks, shellfish and pet products are chosen as "secular" products, i.e. goods that contradicts the conservative Sunni practices. This empirical strategy helps relaxing the data constraint on religious information at micro-level, as long as it is applied to a society where faith-related consumption patterns exist.

The findings of this paper strongly support the previous micro-econometric evidence which holds that, living in a non-religious environment increases labor force participation of married females in urban areas. The effect of secularity of FLFP in rural areas is reversed, because of unpaid nature of female employment in rural Turkey. Further analysis are carried out to show that, secularity is associated with an increased probability of paid work, thus the negative impact found for the rural areas is a favorable outcome.

The joint estimations on the probability of paid employment and educational participation of single females also indicate a positive effect of secularity on schooling. However, the robustness checks using some other luxury but at the same time "not necessarily secular" placebo products imply that a part of the effect on schooling may be a result of correlation between luxury consumption goods; i.e. alcoholic drinks and "girl's education as a luxury consumption". Yet, the smaller magnitude and the significance levels of the coefficients of the placebo goods suggest that the positive effect of the "secular" products on the probability of educational participation is not totally explained by the luxurious nature of them .

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 on FLFP 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 gendered effects of having a secular lifestyle.

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