

DEPARTMENT OF ECONOMICS

Religion and labor force participation of women

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RELIGION AND

LABOR FORCE PARTICIPATION OF WOMEN

Abstract

This article offers an empirical study of the influence of religiosity on women's labor force participation across 48 countries. Using the 2005-wave of the World Values Survey, I examine whether and how the labor force participation of women aged 18 to 55 is affected by the core dimensions of individual religiosity, i.e. religious affiliation, intensity of belief and participation in religious services. The analysis supports the hypothesis of a significant difference in the labor force participation of religious and non-religious women. The likelihood of employment decreases with a person's intensity of belief, but increases with participation in religious activities. Adherents of the Hindu and Muslim faith are the least likely to have paid work. These results are found after controlling for the standard human capital and household characteristics that influence female labor supply. When taking into account country-fixed effects, most religiosity variables lose their significance. This suggests that a country's institutions, economic structure and socio-political context matter for the way religiosity comes into play in women's work decisions.

Introduction

During the past few decades, religion has come to recapture the interest of many economists. The first contributions that applied basic economic reasoning to analyze religion and the behavior of religious agents date back to Adam Smith (1908 [1776]). The field of what is now known as *the economics of religion* has expanded significantly since then (see Iannaccone (1998) for an overview). Apart from the more theoretical studies that use economic concepts and models to explain patterns of religious behavior, there is also a line of work that is primarily empirical and that aims to understand how religion affects economic outcomes (Tan, 2006; Noland, 2005; Guiso et al, 2003; Barro & McCleary, 2003; Lipford and Tollison, 2003; Ewing, 2000; Heath et al, 1995). This paper falls in the latter category and looks into the influence of religion on women's labor force participation¹ (LFP). Although female employment is of great importance to welfare and economic growth, the acceptance of women's involvement in paid work is often assumed to be one of the core issues that set religious and non-religious individuals apart. (Guiso et al, 2003; Psacharopoulos, Tzannatos, 1989, p. 187) Furthermore, religion continues to be salient for many people in spite of its varying significance over time and place. (Norris & Inglehart, 2004; Tarakeshwar et al, 2003, p. 379) It is therefore worth examining whether there is in fact a notable difference in the labor force participation of religious and non-religious women, and exactly how religion exerts an influence on female work decisions. Several authors (Maneschiöld &

¹ LFP is here understood to mean observed participation. Although LFP is the result of both the willingness as well as the opportunities to participate, this paper focuses mainly on the previous due to data limitations. The WVS provides more information on the supply factors that drive women's labor force participation than on the demand side. However, an attempt is made to take the latter into account by including country dummies.

Haraldsson, 2007; Heineck, 2004; Read, 2004a; Lehrer, 1995) have found evidence of lower labor force participation (LFP) for women who are affiliated with a religious group, compared to those who are not. What also emerged from these studies is that the effect of different denominations on the labor supply of their female followers depends on the strictness with which they adhere to traditional gender roles. The present study aims to add to the existing literature in two important ways. First, by making use of individual-level data of the World Values Survey (WVS), it is possible to test whether previous results hold in a more heterogeneous sample. Because of its broad coverage of nations and communities worldwide, representing various cultural and religious traditions, the WVS offers a unique opportunity to test the generalizability of previous findings. Up to now studies on the influence of religion on female labor supply mainly focused on the Christian tradition within a particular country². Secondly, as it is assumed that religion might influence work behavior through different channels, this paper aims to set out how exactly different aspects of religiosity influence a woman's engagement in paid work. That is, whether related but distinct components of a person's religiosity reinforce or counteract each other, and whether they exhibit nonlinearities in their effect on the respondent's employment status. Information on this can also be retrieved from the 2005-wave of the WVS which includes an extensive set of questions on respondents' religious background, such as religious affiliation, level of involvement (frequency of attending religious services) and intensity of belief (importance attached to religion). These three aspects cover what Davie (1990) considers as religiosity's core dimensions, namely belief and belonging, and what

² This was generally the United States or a Western-European country, due to lack of significant data on both religiosity and economic outcomes for other countries.

Tarakeshwar et al (2003) identify as global indicators of individual religiosity. In contrast to previous studies, religion is thus no longer defined along the single dimension of gender traditionalism, but is allowed to have different aspects to it that reveal a different type of information (more on this in Section I and II). Given that a country's institutional environment and socio-political context may play an important role in the effect of religion on economic outcomes, I aim to control for this by including country-fixed effects. The paper is structured as follows. Section I provides a brief review of relevant contributions to the literature on female labor supply. This forms the backdrop to the analysis of religiosity and women's labor force participation. Section II describes the data set and variables. The empirical results are presented in section III, followed by a discussion in section IV.

I. Literature

Female employment patterns display a great divergence both across countries and over time. (Blau & Kahn, 2007; Antecol, 2000; Daly, 2000) This persistent finding is what brought women's labor market behavior to the forefront of the field of labor economics, if not to say "gave birth to modern labor economics" (Goldin, 2006, p. 3). An important conclusion that emerged from these studies is that female labor supply is much more imbedded in wider social processes than is the case for men. Becker (1965), for example, brought to our attention that women's time allocation decision could not be reduced to a simple trade-off between market work and leisure, but also had to take into account household production. Building further on this insight, a country's social arrangements (i.e. childcare provision, paid parental leave, preferable treatment of spousal incomes in taxation) and labor market policies (i.e. part-time work, flexible hours) were considered as an explanation for the variation in women's employment rates. (Daly, 2000) Evidence also suggested that from a long term perspective, the labor force participation of women exhibits a systematic change going through the different stages of economic development. (Mammen & Paxson, 2000) Women's work choices and decisions were thus found to be governed by a complex interaction between the family, the state and the market. (Daly, 2000)

Recent contributions to the literature are now also pointing to culture and religion as potential driving forces; supporting the consensus that economic factors only partly explain changes and differences in female labor supply. Fernández and Fogli (2006) investigated the influence of culture on married women's work behavior, using a sample of women born in the US but whose parents were born elsewhere. Past labor force participation rates from the countries of ancestry served as cultural proxies, capturing

beliefs held about the role of women in society. They found a positive and significant effect even after including individual and spousal characteristics. Fernández (2007) finds similar results replicating this study using future labor force participation rates instead, assuming culture varies very slowly over time. She also adds an extension by including WVS evidence on attitudes towards women's work in the country of ancestry, and finds that they correlate with female labor supply as well. Although it is difficult to separate one from the other, there are also studies that specifically deal with the effect of religion on women's labor supply. Psacharopoulos and Tzannatos (1989, 1987) found that with no other controls, religious affiliation explains approximately one third of the difference in female participation rates in ninety countries. Although this was an important first indication, it says little about how religion influences a woman's participation decision. Furthermore, not taking into account country-level factors obscures the effect of religion on female employment. Using instead household survey data, Lehrer (1995) takes a closer look at how religion impacts married women's allocation of time in the US. She finds evidence that if a woman marries inside her own faith, the latter's stance on the appropriate familial division of labor will determine her level of engagement in the labor market. If she marries outside her faith, her labor supply will be the outcome of a bargaining between her and her husband depending on both their denomination's views on gender roles. Because an interfaith union is assumed less stable, a woman might also have more incentive to invest in labor market activities than in spouse-specific capital (such as children), seen as the latter would decline in value should the marriage dissolve. This "marriage stability effect" might counteract with the previous "bargaining effect" in determining a woman's ultimate labor supply. Heineck (2004) takes a similar approach with German data, and adds

“other faith groups” (mostly Muslims) to the comparison instead of considering only Christian denominations. Using the same theoretical framework as Lehrer (1995), Heineck concludes that a faith’s strictness towards working women, and more importantly the spouses’ attachment to this faith, strongly influences a married woman’s labor force participation. Examining whether the degree of faith in Sweden’s dominant religion affects married women’s time allocation between paid and household work, Maneschiöld and Haraldsson (2007) reach similar conclusions.

Following a somewhat different strategy, Read (2004a, 2004b, 2002) takes into account both religion and culture in studying female labor supply, recognizing that although they are strongly related, at a certain level these concepts are still separate. She studies a minority group in the US, namely Arab American women, among which there are both Christians and Muslims who are either foreign born or native born. This allows her to distinguish between the influence of a woman’s ethnic cultural background and her religiosity on the labor force participation decision. Read concludes that religiosity affects women’s labor force participation negatively only when children are present, which suggests that family responsibilities mediate the influence of religion on women’s work behavior. Foreign born Arab American women with limited stay in the US participated much less in the labor market. These women were more likely to have an Arab spouse, believe in scriptural inerrancy and to support patriarchal gender roles. Seen as they were also predominantly Muslim, not controlling for the ethnicity related variables could lead to an overestimation of Muslim affiliation.

What most aforementioned studies have in common is that they reduce religion in all its different aspects, to a single dimension, namely gender conservatism. That is, no matter what aspect of religion is considered – whether religious participation, affiliation or

intensity of belief – the only information that the measures are assumed to reveal is the extent to which a person holds traditional gender views. In addition, it is only through this aspect that religion is supposed to exert an influence on women’s labor supply decisions. Although support for traditional gender views and corresponding behavior can be found in almost all religions (Guiso et al, 2003), it seems too narrow to assume that this is the only way in which religions can affect women’s labor force participation. This paper takes a different approach in the sense that different indicators of religiosity are included in the analysis assuming each might measure another aspect of religion (see Section II). The justification for this lays in the fact that, in contrast to the majority of previous studies, the present sample is not limited to denominations within a particular faith, but instead encompasses a wide range of religions covering countries all over the world. Whilst it is possible to place denominations of a particular religion along a single “orthodox-liberal” continuum and assume that the level of gender traditionalism is the only relevant difference between them when considering female labor supply; this is not obvious in studies including distinct faith traditions. For, who is to say whether Buddhism is more gender traditional than Protestantism, or Islam more than Hinduism? Furthermore, it cannot be stated that attitudes toward gender roles are the main and only relevant difference between religions when analyzing their influence on women’s labor force participation. Therefore, several measures of religiosity are included in order to capture the different channels through which any religion may shape female labor supply.

II. Data and variables

For the purpose of this study, data are taken from the most recent wave of the World Values Survey. This unique survey has been conducted in five waves in more than 70 countries around the world and provides a wealth of information on a broad range of topics, including individuals' demographic and religious background, and economic attitudes and behavior. The WVS, therefore, has the potential to spur a lot of research in the field of economics of religion. For the wave of 2005-2008, representative national surveys were administered to more than 80 000 individuals in 57 countries³. The empirical analysis is limited to a cross-section of women between the ages of 18 and 55⁴. Two countries – Jordan and New Zealand – were dropped because all the women in the respective samples were unemployed, which could lead to perfect predictability in the analysis and is above all non-representative for these countries. Another 3 252 observations were excluded because of missing data on crucial variables. In this process the US and Colombia were dropped entirely. The resulting sample includes 26 711 observations. The variables for the analysis are constructed based on the relevant WVS questions.

³ I use the preliminary version of the World Values Survey of 2005 where the data is integrated for 52 of the actually 57 participating countries. The included countries are France, Britain, Italy, Netherlands, Spain, USA, Japan, Mexico, South-Africa, Australia, Sweden, Argentina, Finland, South-Korea, Poland, Switzerland, Brazil, Chile, India, Slovenia, Bulgaria, Romania, China, Taiwan, Turkey, Ukraine, Russia, Peru, Ghana, Moldova, Thailand, Indonesia, Vietnam, Colombia, Serbia, New Zealand, Egypt, Morocco, Iran, Jordan, Cyprus, Iraq, Hong Kong, Trinidad & Tobago, Andorra, Malaysia, Burkina Faso, Ethiopia, Mali, Rwanda, Zambia and Germany. This data was retrieved from the WVS website on www.worldvaluessurvey.org.

⁴ Another option would have been to simply exclude the respondents who reported that they were retired or a student, but this would lead to the exclusion of many individuals at working age who choose to forgo a wage and study or retire early instead, giving rise to selection bias.

Female Labor Force Participation

The dependent variable is the labor force participation (LFP) of the women in the sample. LFP is dichotomous taking on a value of one if the individual reported having paid employment, and zero otherwise. Although a comprehensive study of labor supply would include an analysis of hours of work, precise data on the latter are lacking. Nevertheless, the present analysis remains valuable seen as female labor supply is known to respond mainly to economic factors at the “extensive” margin (that is, in the decision of whether to work or not).

Control Variables

Economic models of labor supply are based on the assumption of rational choice and suggest that an individual will participate in the paid labor market if the offered market wage exceeds the reservation wage. Given that data on wages are not available in the WVS and wages are determined simultaneously with labor supply, the previous wage variables are here replaced by some of their exogenous determinants. Education leads to a higher market wage, hence, measures of schooling (“secondary education” and “tertiary education”) are included in the estimating equations. Respondents with less than secondary schooling form the control group. Age and its quadratic term are included to account for the typical inverse U-shaped effect. This reflects that a person is more likely to participate in the labor force during those periods of the life cycle when the wage is relatively high.

Marginal household productivity is assumed greater for women who are married and/or with children. To capture these effects, a dummy variable is included which equals one if the respondent is married (or living together as married) and zero

otherwise, and a variable which gives the number of children (0 to “8 or more”). The larger the number of children born, the lower wages are expected to be due to the interruptions in labor market activity. A woman who has been out of the labor force on several occasions due to childbearing will have had less on-the-job training and experience which lowers her current wage opportunities, and ultimately affects her labor supply. Because exact data on family or the husband’s income are not available, a dummy variable is included which equals one if there is a chief wage earner in the household (other than the respondent) who is employed and zero if the latter is unemployed. Although not entirely accurate, this variable serves as a proxy for the effect of sources of income other than the woman’s own labor market earnings. A self-reported health indicator is included to control for the negative influence of poor health. The latter is a binary variable equal to 1 if the respondent’s health is fair or poor, and zero if good or very good. Women from a higher socio-economic class are expected to have better access to employment opportunities because they tend to be well-connected. (Spierings, N., 2007) Therefore, a self-reported indicator of social class is included which covers five categories (1=Lower class, 2=Working class, 3=Lower middle class, 4=Upper middle class, 5=Upper class)⁵.

Religiosity measures

According to rational choice theory, religiosity – as all other non-economic factors – should be taken into account as “preferences” and assumed exogenous when trying to explain economic behavior. Differences in individual behavior will then first be

⁵ Instead of excluding the observations with missing data on this variable, they were given the value of 1 referring to “working class”, based on the fact that the distribution of the dependent variable for the observations with missing values displayed the greatest similarity with the distribution for those in working class.

attributed to differences in economic opportunities and constraints, and whatever is left unexplained can ex-post be ascribed to differences in preferences. Assuming religion can be a cause of varying work preferences; explicitly taking into account the influence of religiosity on women's labor force participation can be considered an attempt to endogenize preferences. This is possible by making use of the extensive dataset of the WVS, which comprises several questions related to respondents' religious background. For this study, information is included on three key aspects of individual religiosity, i.e. affiliation, participation and intensity of belief. Whilst affiliation captures the specific doctrine of a religious group; intensity of belief and participation are more general features representing the personal and the social aspect of an individual's religiosity, irrespective of their affiliation. These three indicators also reflect the two core dimensions of religiosity as defined by Davie (1990), namely "belief" and "belonging". In other words, although the different measures of religiosity are related, they are clearly separate constructs.

The religious affiliation⁶ dummies distinguish between following categories: Roman Catholic, Protestant, Orthodox, Other Christians, Muslim, Other Muslims, Buddhist, Hindu, Other Denominations and No Affiliation. The goal was to identify the world religions (Judaism is excluded due to limited observations), but also their main divisions. This is not difficult for the Christian groups, but for the Islamic denominations, the situation is more complicated seen as "Muslim" is the generic term for all followers of the Muslim faith. Nonetheless, respondents that explicitly declared themselves "Shia" or "Sunni" (instead of just Muslim) are grouped in "Other Muslim

⁶ Iannaccone (1994) is right to conclude that in every collectively oriented religion one can identify different denominations with varying levels of strictness. Unfortunately, the WVS does not provide such detailed information for the different religions.

groups” together with other smaller Islamic fractions. From previous literature it can be inferred that religious doctrines can influence labor market behavior in two distinctive ways. First, religious ideologies can instill a work ethic⁷ in their adherents by portraying hard work as a virtuous duty mandated by God (or some other transcendental being). (Arslan, 2001; Chusmir & Koberg, 1988) In a similar fashion religions can promote certain traits that are valuable on the work floor such as discipline, reliability and determination, which not only affect the work decision but also worker productivity. (Parboteeah et al, 2009; Cornwell, 2005) Secondly, religious ideologies can provide a moral framework that shapes people’s understanding of appropriate gender roles. In this, women are generally portrayed as homemakers with primary responsibility for children and family. (Glass & Nath, 2006; Fortin, 2005; Guiso et al, 2003; Lehrer, 1995) This list is certainly not exhaustive in summing up the different ways in which religions could possibly affect female work behavior, but it does suggest that they can exert both a positive as well as a negative influence. Therefore, it cannot be predicted beforehand how exactly the affiliation dummies will relate to women’s labor force participation. The question on how much importance the respondent attaches to religion serves as an indication of her intensity of belief. A dummy variable is constructed for the women who declare that religion is “very important” and another for those who find religion is “rather important”. The control group consists of women who find religion is (rather) “unimportant”. Women who attach a lot of importance to their religious beliefs are more likely to adjust their labor market behavior to their understanding of their religion’s proscriptions, irrespective of their actual denominational affiliation. Strength

⁷ This theory stems mainly from the work of Max Weber (1976 [1905]) where he claims that the rise of capitalism and the industrialization in Western Europe was the result of the Protestant belief that a person’s election by God was authenticated by their work achievements.

of belief is therefore a better measure of religious conservatism, than denominational affiliation. (Glass, J. & Nath, L.E., 2006, p. 615)

Finally, information on religious participation is included with respondents being classified in three categories, according to their frequency of attending religious services⁸. The first category comprises respondents who participate “never” or “less than once a year” in religious services. They are treated as the reference (omitted) group. Individuals who attend religious services regularly (i.e. once a week or more), and those who attend rarely (i.e. “once a month”, “once a year” or “only on special holidays”), make up the second and third category respectively. Involvement in religious activities could serve as a measure of people’s exposure to religious teachings as suggested by Heineck (2004). However, the discipline and commitment required to frequently participate in religious activities are also likely to promote a certain engagement towards work that is conducive to women’s employment. In addition, collective religious activities are a way for religious groups to offer a social network to their members that could facilitate job search and the building of professional relations. Adam Smith ([1776] 1976, p. 795), for example, noted that being an active member of a religious community often served to signal members' virtuous character and good reputation to potential business partners.

It is easily assumed that those who grew up in a certain religious tradition will continue to state their affiliation with that religion; even if at present they do not perceive themselves as a religious person, or even declare themselves atheist. Given that the focus of this paper lies primarily on the influence of a woman’s religiosity on her LFP,

⁸ In Islamic societies the question “Apart from weddings and funerals, about how often do you attend religious services these days?” was replaced by a question on their frequency of prayer.

the effect of simply being religious is captured by including a dummy that equals one if the respondent declares herself “religious”, and zero otherwise. The purpose of adding this variable lies simply in the possibility to distinguish religious women from non-religious women, regardless of the person’s declared affiliation or other characteristics. The empirical analysis (section IV) will show that this variable loses significance when other religiosity measures are added to the analysis.

Country-fixed effects

Although individual labor market decisions make up the subject of this paper, taking into account macro-level factors is important as they often shape the effects on a micro-level. The basic labor supply model assumes a competitive labor market where the institutional framework is such that it allows women free access to (all occupational areas of) the labor market. In practice, this is often not the case and an important cause of differences in observed female participation rates worldwide. (Mamman & Paxson, 2000, p. 143) Countries with a socio-political environment and a legal framework that limit women’s labor market options increase the fixed costs of entering the labor force, which results in a lower participation. (Spierings & Smits, 2007; Youssef, 1971) On the other hand, there are countries where economic progress brought about changes in labor market policies and institutions that encourage women’s employment when they marry or have children (e.g. part-time work, public child care, home assistance for the elderly, individualized taxation for spouses or partners). This has given women the opportunity to no longer prescribe uniformly to the role of housewife. (Daly, M., 2000) In order to control for the level of economic development, the institutional structure and other omitted unobserved country characteristics (i.e. the context in which women

decide about their labor force participation), country-dummies will be included in the analysis. This will most likely lead to an underestimation of the effect of religion, to the extent that the latter has been captured by national culture. Tarakeshwar et al (2003) point out that a country's culture and religion are very much intertwined such that it is difficult to really distinguish between the two although they are different. Culture exerts an important influence on religious beliefs and practices leading people from different countries but who share a common religion, to display divergent patterns of behavior. This is because religious individuals tend to draw on those components of their faith that are most consistent with their cultural attitude. Then again, religion exercises an impact on culture as well. According to Fernandez and Fogli (2006, p. 2) markets, institutions and culture (of which religious beliefs are a fundamental component) interact with one another over time and mutually condition each other. This being said, it is still important to control for country-level factors as any additional effect that is then established can be attributed to religion more convincingly. (Guiso et al, 2003, p. 231)

III. Summary Statistics

Table 1 presents the means of all the variables for the entire sample of female respondents aged 18 to 55 years, but also for the split samples of religious and non-religious women. About 27% of the women in the sample is not religious. A little less than half has paid employment, but what stands out is of course the marked difference in labor force participation between religious and non-religious women. A little over 43% of religious women is employed compared to 56% of non-religious women. Average age is approximately 35 years, and self-reported health is generally good seen as only 30% reports their health as fair or poor. More than a third of all women completed secondary school and another 30% also had some form of higher education. The share of women with higher education is lower for religious women. Also, on average non-religious respondents have fewer children than religious women, although the difference is small. 66% of all women is either married or living together as married, and about 60% has someone else in the household who is the chief wage earner and who is employed. This will generally be the partner of the female respondent, but it can also be a parent or another member of the household. With respect to this last variable, religious women (61%) appear to have an employed chief wage earner in the household more often than non-religious women (56%). This means that non-religious women benefit less from an income-effect than religious women.

It is not surprising to find that religious women display higher means for the religiosity indicators. Table 1 shows that about half the respondents consider religion as very important and 21% states that religion is rather important, leaving about 30% deeming religion (rather) unimportant. Furthermore, on average 33% of the respondents attend religious services regularly, and another 32% attends services rarely. As for the shares

of the different denominations, table 2 shows that 16% of the respondents is not affiliated to a particular religious group. This is much lower than the share of non-religious respondents, which indicates (as noted before) that many respondents probably state the religious group that they are culturally affiliated with or that they were brought up in, without actually being a religious person. Each comprising about 21% of all respondents, Muslims and Roman Catholics make up the largest religious groups, followed by the Orthodox and the Protestants with respectively 11% and 10%. About 6% of the sample belongs to a specific Muslim group (mostly Shia, but also Sunni) and about 5% belongs to a Christian denomination other than the previously mentioned. Nearly 5% of the sample declares affiliation to the Buddhist faith and a little less than 3% to the Hindu faith. All other respondents belong to a denomination with a smaller share and are therefore grouped together in a rest group.

TABLE 1: SAMPLE MEANS OF ALL VARIABLES

<i>N</i>	All 26 711		Non-Religious 7 228		Religious 19 483	
	<u>Mean</u>	<u>SD</u>	<u>Mean</u>	<u>SD</u>	<u>Mean</u>	<u>SD</u>
LFP = 1	0.466	0.499	0.558	0.497	0.432	0.495
Age	34.987	10.574	35.139	10.503	34.930	10.599
Secondary Education	0.349	0.477	0.359	0.480	0.346	0.476
Higher Education	0.293	0.402	0.254	0.435	0.184	0.388
Marital Status	0.661	0.473	0.650	0.477	0.665	0.472
Employment Status Chief Wage Earner	0.600	0.490	0.563	0.496	0.614	0.487
Children	1.815	1.703	1.530	1.498	1.920	1.761
Class	2.292	1.286	2.248	1.310	2.291	1.288
Health	0.295	0.455	0.257	0.437	0.306	0.461
Religious	0.729	0.444	0		1	
Religion rather important	0.217	0.412	0.174	0.380	0.233	0.423
Religion very important	0.522	0.500	0.217	0.413	0.635	0.481
Rare Attendance Religious Services	0.320	0.466	0.272	0.445	0.337	0.473
Regular Attendance Religious Services	0.336	0.472	0.099	0.298	0.424	0.494
No Denomination	0.159	0.366	0.452	0.498	0.050	0.218
Buddhist	0.045	0.208	0.087	0.281	0.030	0.170
Hindu	0.025	0.158	0.015	0.120	0.029	0.169
Roman Catholic	0.210	0.407	0.131	0.338	0.238	0.426
Protestant	0.096	0.294	0.039	0.194	0.117	0.321
Orthodox	0.112	0.315	0.045	0.207	0.137	0.344
Other Christian Groups	0.047	0.212	0.036	0.187	0.051	0.220
Muslim	0.211	0.408	0.099	0.298	0.253	0.435
Other Muslim Groups	0.058	0.233	0.043	0.204	0.063	0.243
Other Denominations	0.037	0.189	0.053	0.224	0.031	0.174

Source: WORLD VALUES SURVEY 2005 OFFICIAL DATA FILE v20081015, 2008. World Values Survey Association (www.worldvaluessurvey.org). Women aged 18 to 55 across 48 countries.

Looking at the same variables separately for each denomination in table 2, the divergence becomes clearer. Buddhists and members of the Christian faith groups all have LFP rates over 50%. Reaching almost 70%, Buddhist women turn out to have a higher employment rate than non-affiliated women. In contrast, Hindus and members of Muslim denominations have significantly lower employment levels, 23% and 29% respectively with an even lower 15% for Other Muslim groups. The share of women with less than secondary schooling is also much higher in the latter groups than in the previous. Over 50% of Muslim women and more than 60% of Hindu women have not completed secondary school. On the other hand, roughly 40% of Christian and Buddhist

women did not complete secondary school, and for Orthodox women it is about 25%. In addition, Hindu and Muslim are much more likely than any other faith group, to be married and have an employed chief wage earner in the household, and they also have a fertility rate higher than all other religious groups.

As for the measures of religiosity, there are some striking differences between the faith groups. To begin with, it appears that for every religious group there is about 10-20% women who state that they are affiliated with that particular group, but that they are not religious. Buddhists and Other denominations, on the other hand, stand out because of their relatively small share of affiliated women who describe themselves as religious. This might have something to do with the fact that Buddhism and Other (mostly Eastern) denominations, are generally considered as a way of life or alternative forms of spirituality, and not exactly as a religion in the strict sense⁹. The picture changes somewhat when looking at the importance attached to religion and religious participation. Muslims attach the most importance to religion, followed by Hindus and Protestants. However, there are more Muslims that do not participate in religious activities at all compared to most other groups. In contrast, Protestants are very much involved in religious services, followed by Hindus and the other Christian groups who display similar levels of religious involvement. As expected, non-affiliated respondents display the lowest means for all religiosity indicators.

⁹ Religion is described by Iannaccone (1998, p. 1466) as “any shared set of beliefs, activities, and institutions premised upon faith in supernatural forces.” This definition excludes purely individualistic forms of spirituality (characteristic for many Eastern religious traditions), as well as some variants of Buddhism which resemble pure philosophy.

TABLE 2: MEANS OF ALL VARIABLES BY RELIGIOUS DENOMINATION

	No Den.	Roman Catholic	Orthodox	Protestant	Other Christian Groups	Muslim	Other Muslim Groups	Buddhist	Hindu	Other
N	4 244	5 596	2 991	2 555	1 260	5 641	1 543	1 205	680	996
%	15.89	20.95	11.20	9.57	4.72	21.12	5.78	4.51	2.55	3.73
LFP = 1	0.622	0.523	0.559	0.510	0.487	0.289	0.145	0.677	0.229	0.483
Age	36.147	35.290	35.375	33.634	36.044	33.981	31.905	37.949	36.507	35.147
Secondary School	0.390	0.340	0.464	0.358	0.408	0.285	0.257	0.372	0.228	0.352
Higher Education	0.262	0.224	0.285	0.176	0.164	0.127	0.184	0.212	0.147	0.194
Marital Status	0.653	0.618	0.638	0.551	0.641	0.728	0.731	0.704	0.857	0.638
Employment Status Chief Wage Earner	0.456	0.551	0.535	0.532	0.521	0.714	0.789	0.759	0.854	0.655
Children	1.409	1.735	1.341	1.744	1.840	2.389	2.104	1.593	2.363	1.762
Class	2.018	2.134	2.209	2.236	2.294	2.443	2.943	2.774	2.419	2.204
Health	0.288	0.283	0.390	0.266	0.217	0.291	0.331	0.220	0.279	0.293
Religious	0.231	0.830	0.892	0.889	0.791	0.873	0.797	0.480	0.844	0.614
Religion rather important	0.138	0.319	0.364	0.207	0.216	0.086	0.119	0.379	0.235	0.256
Religion very important	0.073	0.434	0.422	0.687	0.534	0.882	0.853	0.387	0.619	0.342
Rare Attendance Religious Services	0.187	0.363	0.627	0.168	0.350	0.220	0.378	0.487	0.369	0.312
Regular Attendance Religious Services	0.024	0.419	0.224	0.707	0.451	0.389	0.275	0.232	0.438	0.285

Source: WORLD VALUES SURVEY 2005 OFFICIAL DATA FILE v20081015, 2008. World Values Survey Association (www.worldvaluessurvey.org).

Women aged 18 to 55 across 48 countries.

IV. Empirical Results

In an attempt to isolate those factors that determine whether or not a religious woman participates in the labor force, a reduced form labor force participation equation is estimated:

$$LFP_i = \beta_0 + \beta_L L_i + \beta_R R_i + \beta_C C + \varepsilon_i$$

LFP_i denotes the employment status of woman i , a variable set to 1 for individuals in full-, part-time or self-employment, and zero for others. The standard exogenous variables that influence labor supply – age, education, marital status, employment status of the chief wage earner, number of children, health and class – make up vector L_i . The variables are not expected to differ from the textbook case in their effects on the labor force participation of women. R_i includes the set of religiosity variables¹⁰ and C consists of country dummies. Given that LFP is dichotomous, Ordinary Least Squares is not an appropriate regression technique for estimating this equation. Although several methods of data transformation are available to circumvent this problem, I opt for the probit method. Five different specifications were estimated of which the results are presented in table 3. All models are based on the entire sample ($n=26\ 711$), except for model 3 which estimates separate equations for religious ($n=19\ 483$) and non-religious women ($n=7\ 228$). For interpretation purposes the marginal effects of the independent variables are reported instead of the probit coefficients.

¹⁰ It is assumed that causation runs from religiosity to LFP. Although it is acknowledged that this is a strong assumption that ignores the endogenous nature of the relation between work and religious participation or even intensity of belief, there is no way to control for this due to lack of better measures for the latter religiosity variables in the WVS.

Before discussing the results of the impact of religiosity on women's labor force participation, it is useful to examine the effects of the control variables. The first model in table 3 includes only the latter variables. All the signs are in the direction suggested by the reasoning outlined in section II. Female participation in the labor force increases with age and the effect follows the typical non-linear pattern. Investment in human capital as expressed in the level of education of the respondent clearly increases a woman's opportunities in the labor market. A woman is more likely to be employed when she has at least completed secondary school, and increases her chances even more with higher education. Being married lowers the probability of being employed, but not as much as having someone in the household who is in charge of the main income. The availability of other household income tends to decrease the need for women's earnings, and thus lowers the likelihood of women participating in the paid labor force. This effect comes only second to higher education in size. The presence of children has a negative influence on employment which is in line with expectations. Having poor health significantly decreases the probability of being employed, whilst a higher self-declared social class increases this probability.

Models 2 to 5 focus on the estimated impact of different measures of religiosity on female labor force participation. In model 2 a variable is added to capture the effect of being religious. Respondents who declared themselves as non-religious or atheist make up the reference category. The effect of being religious is negative and significant, which confirms previous findings. Researchers have consistently found that religious women participated less in the labor market compared to non-religious women, especially when children are present. (Maneschiöld & Haraldsson, 2007; Heineck, 2004; Read,

2004a; Lehrer, 1995) Including this variable leaves the effect of the control-variables more or less unchanged.

Conducting an analysis across the religious and non-religious sub-samples, as in model 3, reveals a few notable differences in the process underlying women's labor force participation decision¹¹. For example, the results indicate that the effect of being married is negative and significant in the case of religious women, but fails to be significant in the non-religious sub-sample. More important, however, are the differences in the influence of an employed chief wage earner and the effect of children. Female responsiveness to other household income is very high in the religious sub-sample, and children decrease the likelihood of being employed but the latter effect is much smaller than the previous. In the non-religious sub-sample the effects of a chief wage earner in the household and children are more or less of the same magnitude. It seems that the mere fact of having someone in the household who earns a living is enough to dissuade religious women from participating in the labor force. According to Goldin (2006), in situations where women face social stigma for going out to work, it is not uncommon to find a significant large and negative income effect. It is also reasonable to assume that religious groups in general favor the traditional male breadwinner model and therefore stigmatize women who work, especially when they are married and with children. Furthermore, R^2 is lower for the non-religious sample. This suggests that the individual and household characteristics of religious respondents explain more of the variation in the latter's labor force participation than is the case for non-religious women. A possible explanation is that the attachment to the labor market

¹¹ Wald Chi-square tests indicated that the effects of all variables (including the constant) differ significantly across the two groups, except for age and age squared.

is stronger for non-religious women, such that they are less likely to respond to changes in the typical individual and familial labor supply determinants. It could also be that the less traditional division of labor in non-religious households allows women to participate more in the labor market regardless of their characteristics.

Model 4 considers the full sample again but now includes all the religiosity measures instead of a simple indicator of whether an individual is religious or not. More specifically, the importance attached to religion, involvement in religious activities and religious affiliation are included. The reference category consists of women who find religion not important, participate (almost) never in religious activities and who declare not to be affiliated with any religious group. As predicted, the variable that indicates whether a person is religious or not ceases to be significant. Most likely this is the result of its effect being fully captured by the other variables, which are in fact its constitutive components. The extent to which a woman attaches importance to her faith has a significant and increasingly negative effect on the likelihood of employment. It is not implausible to assume that there is a relation between the level of importance the respondent attaches to her faith, and the strictness with which she adheres to religious scriptures. According to Glass and Nath (2006, p. 615) intensity of belief is more of an indicator of religious conservatism than mere affiliation. Given that conservative religious views generally endorse the male breadwinner model and portray women as homemakers with primary responsibility for children and family, it is not surprising to find that it affects female labor force participation negatively. Read (2004) also finds that high religiosity over the life cycle and belief in scriptural inerrancy are related to a lower likelihood of employment. The intensity of religious participation on the other hand turns out to have an increasingly positive effect. The discipline needed to

participate in religious activities on a regular basis is likely to cultivate a work ethic and an active engagement that is reflected in a higher likelihood of employment. Cornwell (2005) finds similar results studying the impact of childhood religious participation on the labor supply of adult Protestant women. Finally, the results show that there is a differential effect on female labor force participation depending on the denomination. With non-affiliated women making up the reference category, only Buddhist and Protestant women are more likely to have paid work (with the effect being non-significant for Protestants). Women affiliated with all other religious groups are less likely to be employed, although this negative effect is rather small for Christian and Other denominations. The coefficients are even non-significant for the Roman Catholic and Orthodox traditions. The negative effect is largest for adherents of the Hindu and Muslim faith.

The fifth and final model incorporates country dummies, in order to hold constant unmeasured characteristics of the respective country that might influence women's engagement in paid employment. The idea is that besides individual religiosity and the standard determinants of female labor supply, the institutional environment and historical context have a profound impact on individual labor market outcomes. Taking into account this factor does somewhat change the results in the sense that the different variables have a less negative impact on female LFP. There are but a few exceptions, i.e. the negative impact of having a chief wage earner in the household who is employed becomes larger and almost all affiliation dummies lose their significance with the effect of Buddhist affiliation even turning negative. However, three affiliation dummies remain significant and continue to have a negative sign, namely Hindu, Muslim and Other Muslim.

TABLE 3: MARGINAL EFFECTS OF PROBIT REGRESSIONS AND COMPARISON OF COEFFICIENTS ACROSS GROUPS

Marginal Effects Probit (LFPi)	(1)	(2)	(3)^a		(4)	(5)
			<i>N-R</i>	<i>R</i>		Country-fixed Effects
Constant	0.461	0.461	0.563	0.422	0.455	0.453
Age	0.086	0.086	0.087	0.084	0.085	0.087
Age ²	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
Secondary School	0.141	0.140	0.123	0.143	0.114	0.142
Higher Education	0.251	0.247	0.185	0.269	0.222	0.258
Marital Status	-0.018	-0.020	-0.013 ^{ns}	-0.023	-0.018	-0.005 ^{ns}
Employment Status						
Chief Wage Earner	-0.202	-0.200	-0.095	-0.238	-0.180	-0.233
Children	-0.065	-0.062	-0.084	-0.055	-0.048	-0.041
Health	-0.050	-0.048	-0.056	-0.045	-0.046	-0.042
Class	0.008	0.009	0.028	0.001 ^{ns}	0.024	0.028
Religious		-0.081			-0.017^{ns}	-0.013^{ns}
Religion Rather Important					-0.042	-0.030
Religion Very Important					-0.120	-0.083
Rare Attendance Religious Services					0.029	0.021
Regular Attendance Religious Services					0.061	-0.004 ^{ns}
Roman Catholic					-0.017 ^{ns}	0.024 ^{ns}
Protestant					0.008 ^{ns}	0.043
Orthodox					-0.011 ^{ns}	0.025 ^{ns}
Other Christian Groups					-0.066	0.020 ^{ns}
Muslim					-0.138	-0.078
Other Muslim Groups					-0.302	-0.163
Buddhist					.0132	-0.003 ^{ns}
Hindu					-0.237	-0.117
Other Denominations					-0.042	-0.037 ^{ns}
<i>Pseudo R² (%)</i>	14.03	14.35	12.44	14.53	17.64	24.25
<i>N</i>	26 711	26 711	7 228	19 483	26 711	26 711

Note: ns=non-significant at 99% significance level. Respondents who reported themselves as ‘not a religious person’ or ‘an atheist’ comprise the (non-religious) control group, regardless of the religious denomination they reported belonging to.

Discussion

The study of women's labor force participation is vital for two reasons, (1) differences in women's employment decisions are often an important cause of income disparities between households and (2) at the country level differences in the endowment of labor can be a barrier to development. (Reimers, 1986; Psacharopoulos & Tzannatos, 1989) It is therefore vital to have a good understanding of what factors determine women's willingness to work. The results of the previous section demonstrate that taking into account religion in the study of women's labor supply is a valuable contribution to existing literature. Including measures of religiosity does not change the fact that human capital and household characteristics still account for most differences in women's labor force participation. In all regression equations, higher education comes out overwhelmingly as the main determinant of favorable labor market outcomes for women, which supports previous findings. (Spierings & Smits, 2007; Fortin, 2005; Psacharopoulos & Tzannatos, 1987) Thus, encouraging women to achieve a higher education remains one of the key policy instruments to stimulate women's engagement in the labor market. Religion, however, does matter. Women who state that they are religious display a lower employment rate than non-religious women. Intensity of belief and religious participation exert an opposite effect on the likelihood of employment with the latter being positive and smaller in magnitude than the previous. Compared to non-affiliated women adherents of almost all religious groups are less likely to participate in the labor force. Although most affiliation coefficients become non-significant when country dummies are included. This implies that what might seem to differentiate religious groups at first sight has probably more to do with the national culture and economic environment in which they developed over time. What did

become clear from the analysis is that the Hindu and both the Muslim denominations stand out in their negative effect on women's engagement in paid work. Instead of concluding that there is something inherent in the teachings of these religions that prevent women's active participation in the labor market, a more constructive interpretation is offered by Guiso et al (2003) and Eisenstadt (1968). Eisenstadt (1968, p.10) introduces the concept of the "transformative potential" of religions, which he defines as the "capacity to legitimize, in religious or ideological terms, the development of new motivations, activities, and institutions which were not encompassed by their original impulses and views". This means that more than pointing to what the scriptures say about working women, we should look at why and how in the course of development particular religious groups came to promote certain traits or behaviors that are not necessarily conducive to women's active participation in the labor market. This is not to say that religious scriptures have nothing to do with the displayed labor force patterns, but that particular historical developments¹² could have influenced the meaning individuals gave to the respective teachings, and how they took shape over time and were transmitted from one generation to the next. Results derived in the previous section suggest that, especially for Hindus and Muslims, these religious beliefs have imposed a restraint on women's ability to enter the labor market. According to Inglehart and Welzel (2005), as the level of socio-economic development increases in countries around the world, values that constrained individuals in their freedom of choice will change allowing people to take more control of their lives and develop their creative human potential. These changing values will not only reshape religious beliefs

¹² Going into the specific religious teachings and historical developments is valuable, but of such immense complexity that it falls outside the scope of this paper. Guiso et al (2003, p. 229-230) provide one possible insight.

and gender attitudes but also increase demand for democratic institutions, giving rise to communities where religion may continue to be salient in people's lives but no longer have such a strong hold on individuals that it limits their ability to make choices freely. This is an avenue for future research given that time-series data is available for individuals with diverse religious backgrounds. The World Values Survey has made panel data available for five waves including surveys conducted from 1981 to 2008 which allow further examination of this hypothesis.

Conclusion

In most of the industrialized world, the increase in women's labor force participation over the past few decades was the main driving force of economic growth. Pulling women into the work force as much as possible is therefore considered part of the solution to economic problems such as ageing and poverty. Nevertheless, the greater dispersion in female employment both within and across countries attests to the fact that women are much more likely to be out of the labor force than men. Although this can be an efficient outcome depending on the social context, Psacharopoulos and Tzannatos (1987, p. 198) were right to claim that as "the locus of production gradually moves from the home toward the market..., such differences in employment patterns are likely to reduce economic efficiency". For this reason, continuing to explore the wide range of factors that condition women's work decisions is vital. The extensive work related to the determinants of female labor supply had already covered many bases, such as the influence of home and private life, social policy arrangements, labor market structure and policies and the level of economic development on women's labor supply decision. The goal of the present analysis was to find out empirically whether, after controlling for the typical predictors of economic behavior, there is in fact an additional influence of religiosity on female labor force participation. And if so, through what mechanism does this religious influence operate? Data and variables were drawn from the World Values Survey dataset of 2005; limited to women aged 18 to 55 in 48 countries. After controlling for age, education, marital status, the chief wage earner's employment status, health and children, religious women are found to participate less than non-religious women. The more importance respondents attached to their religion the less likely they were found to be active in the labor market, with the effect being

opposite for religious participation. Compared to the reference category of non-affiliated women, almost all religious affiliations had a negative impact which became non-significant when including country dummies, except for the Hindu and Muslim faith groups. It is argued that the way in which the Muslim and Hindu faith traditions were shaped over time due to historical circumstances explains their influence on female work decisions today.

This paper argues for the value of including religion as a category of analysis in the study of economic behavior by contributing to the empirical work in this area. Although there are still a few unresolved issues concerning the influence of religion on female labor supply, it is clear that religion does matter.

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