# Questioni di Economia e Finanza 

(Occasional Papers)
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# FEMALE LABOUR MARKET PARTICIPATION AND CULTURAL VARIABLES 

by Silvia A. M. Camussi*


#### Abstract

This article offers a descriptive analysis of the relationship between cultural factors and female participation in the labour market. Using attitudinal variables from the World Value Survey, the correlation between female labour market participation and two aspects of culture (religion and attitudes towards working women) is analysed. The results indicate that where attitudes towards working women are less favourable, women engage less in paid working activities; when the frequency of attendance of religious services is higher there is less participation by women in the labour market.


JEL Classification: J16, Z13.
Keywords: female labor force participation; culture.

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## 1 Introduction ${ }^{1}$

Over the past decades a large amount of research has focused on investigating the determinants of female labour supply. Two main reasons have attracted researchers to study this phenomena.
First of all, female labour force participation is much lower than men's in many countries. Researchers have investigated the role of factors such as own and spouse income, fertility, education and age in determining women's participation (see Blundell and Macurdy $(1999,2008)$ for a survey).
Secondly, there are probably few transformations over the 20th century as radical as the change in women's role: since World War II many advanced economies experienced a substantial increase in the female labour force participation rates, mainly due to the participation by married women. Explanations to these trends include technological progress affecting home production, decrease in the costs and increase in the availability of child care, medical advances (including the introduction of the contraceptive "pill" and the associated decline in fertility), rise in education and gender gap decline (see Costa (2000) for a review).
There is, however, still a considerable variability in female labour force participation rates across countries. This can be seen in figure $\mathbb{1}$, which reports the International Labour Organization (ILO) statistics for different countries and areas in 2009.
These differences reflect different economic incentives but might to some extent be rooted in dissimilarities in culture and social norms.
The aim of this paper is to study the correlations between female participation to the labour market and culture, where culture may be thought as a body of shared knowledge, understanding and practices in a country.
The idea that culture matters in determining economic outcomes is not new. However, for a long period of time, questions regarding the role of culture in economic phenomena were largely absent in research. This was due both to the very broad definition of culture itself and to the absence of appropriate data and empirical methodologies that would allow one to investigate this issue (as argued by Guiso, Sapienza and Zingales (2006)).
In recent years, new econometric techniques and better data helped to provide evidence that culture matters and a growing strand of literature focused

[^2]Figure 1: Female LFPR: 15-64 years old (ILO statistics - year 2009)

on this issue.
In general, culture may be thought as a body of shared knowledge, understanding and practices in a country. The main question that researchers have tried to address is whether differences in the distribution of social preferences and beliefs play a role in explaining the variation in economic outcomes at the level of countries, social groups, or over time.
Some evidence comes from the historical case studies that have attempted to use natural experiments to identify the effect of culture (e.g. Botticini and Eckstein (2005) or Greif (1994)).
Other studies (for example Antecol (2000) and Fernandez and Fogli (2005)) follow the so-called "epidemiological approach" (Fernandez (2008)). Such approach relies on examining immigrants to a country to isolate the effect of culture from other factors, exploiting the differential portability of culture relative to markets and institutions. These analyses use as a measure of culture economic variables in the country of origin and link them to the behaviour of second generation immigrants on the grounds that those variables are a combination of a country's economic conditions and beliefs, where only the latter are relevant for second generation immigrants as they live in a country with a different economic environment.
This paper follows the literature strand that uses attitude variables as a proxy for culture, in order to investigate the correlations among economic phenomena and culture. Among these studies, Guiso, Sapienza and Zingales (2003) and Alesina and Giuliano (2007) use this methodology to investigate topics which are strictly related to the one presented in this paper. In particular, Guiso et al. (2003) analyse the correlations between religion and economic attitudes: the authors find that religious people tend to be less favourable with respect to working women. The second paper analyses how the structure of the family relationships affects different economic behaviour and attitudes: strong family ties are associated to higher home production and lower labour force participation of women.
This paper studies the correlations between female participation to the labour market and culture using attitude variables from the World Value Survey (WVS). This is a rich dataset containing information on demographic characteristics and social attitudes for a wide set of countries. This survey includes several questions that are useful to define culture. In particular, the focus here is on two aspects that are related to the beliefs and preferences in a country and that can help to assess its degree of "modernity".
The first aspect considered is religion and the strength of religious beliefs. A good range of questions in the survey provides information on the religious denomination of individuals, on the frequency of their attendance to
religious services and on their self-reported degree of religiosity. Women with stronger religious beliefs are expected to be more traditional and to participate less to the labour market.
A second set of aspects considered are the attitudes towards working women. Different questions in the WVS address this point. These questions aim to assess views on statements which stress the priority of men working in hard times, the fulfillment from being a housewife, the priority of boys to receive university education and women's ability compared to men's in being politicians or business executives. In the analysis, it is first constructed an index using the principal component analysis and then each attitude variable is considered separately. Women in societies that attribute them a more traditional role - i.e. societies in which women get married at a very young age, have the primary role of mothers, are in general secondary earners and often leave their jobs in order to take care of the household and of child rearing once married - are expected to engage less in paid work activities.
The effect of cultural factors on female labour market participation is analysed through a set of probit regressions, controlling for country fixed effects and several individual characteristics: age, education, marital status, fertility, mother's education.
The results show that a stronger religious attitude is associated to a lower women participation to the labour market. Moreover, where attitudes towards working women are less favourable women engage less in paid working activities. This result is robust to controlling for religion.
The paper is organized as follows. Section 2 presents the data used in the analysis; Section 3 presents the the probit regression models estimated; Section 4 reports the results of the analysis; Section 5 concludes.

## 2 Data

The World Value Survey (WVS) is a rich survey that has been now carried out in five waves in a large cross-section of countries: 1981-84, 1989-93, 1994-99, 1999-04, 2005-08. The questionnaire contains information about demographics (sex, age, education, etc.), self-reported economic characteristics (income, social class), and answers to specific questions about religion, political preferences and social attitudes. The coverage depends on the wave considered.
The data used here is from the most recent wave available. This includes data for 57 countries, 20 of which are OECD members, with a total of 82,896
obsevations. 52 percent of the sample is composed by women, 89 percent of which is in working age.
Since the interest is in studying female labour supply, the sample is restricted to women in working age. In most of the countries the survey was conducted on a sample of individuals whose age was over 18 years old. Hence, the focus is on women in the age range 18-64 years. Observations for which there is a mismatch between the age declared in the survey and that computed from their year of birth are also dropped. The final sample includes 35,531 women who are on average 37.8 years old and have an average of 1.9 children. Table 1 summarizes descriptive statistics for the sample. 47 percent of the women in the sample are either fully, partly or self employed. This percentage fells to 46 when considering only married women and to 42 when looking at women in the 18-34 age range.
Table 2 reports female employment to population ratio 2 for different age ranges and by different dimensions. Panel (a) reports the female employment to population ratios by religious denomination. Though some of these statistics may be affected by the numerosity in the sample (the absolute frequency for jewish and hindu women is very low in the sample), it seems that women who don't belong to any religious denomination are those who participate more to the labour market. Panel (b) considers women by marital status. It can be noted that for each age range married women engage less in paid work activities whereas divorced ones tend to engage more. Panel (c) shows how women with a higher level of education have a higher employment to population ratios in each of the age range considered. Finally, panel (d) shows that women with no children participate more to the labour market, especially in the child rearing years.
The WVS dataset contains different attitude variables that can be useful to define culture. In particular, those that relate to religion and to attitudes towards women are considered here. The lower part of table 1 provides descriptive statistics for these variables.
Different religious variables are available in the WVS dataset: the religion to which the individual belongs; information on the strength of religious beliefs based on the frequency of attendance to religious ceremonies; whether the individual considers herself a religious person; whether the individual spends time in prayer/meditation ${ }^{3}$.
Cultural variables considered here are: the priority of men or women in

[^3]getting a job when these are scarce; whether being a housewife is fulfilling; whether university education is more important for a boy or for a girl; whether men make better political leaders than women; whether men make better business executives than women (see appendix B for a more detailed discussion).
Each of the five attitude variables is first considered separately and then combined in two ways: first their sum is considered (given the way the variables are coded - see appendix B - a higher value corresponds to a less favourable environment towards women); secondly, by extracting the first principal component from the whole dataset with all individual responses for the five variables.
Figure 2 displays the indicator constructed through the principal component analysis at a country level: Northern European countries and occidental countries display the lowest values for the variable, suggesting a more favourable environment for women; African and Asian countries, instead, display the highest values. Figure 3 shows at the country level the correlations between the first principal component and the female LFPR. Correlations are negative, indicating that labour force participation is lower in countries where the environment is less favourable to women.

## 3 Specifications

For the cross-section empirical analysis, a series of probit regressions on female labour participation is run:

$$
\begin{equation*}
P_{i j}=\beta_{0}+\beta_{1} C_{i j}+\beta_{2} X_{i j}+\beta_{3} \gamma_{j}+\epsilon_{i j} \tag{1}
\end{equation*}
$$

The dependent variable, $P_{i j}$ takes value 1 if a woman i in country j is fully, partially or self-employed or value 0 otherwise.
Cultural variables - The regressors $C_{i j}$ are the cultural variables, discussed in the previous section: the religious measures and the set of variables identifying the attitudes towards women.
Individual characteristics - $X_{i j}$ is a set of individual characteristics, including the age of the individual; the age squared; a dummy for secondary education (complete or incomplete secondary education); a dummy for tertiary education (college or higher); a dummy for married marital status; the number of children; the education of the mother.
Since the education of the mother is not directly available in the WVS dataset, a proxy for this variable is created using the Barro-Lee Education

Figure 2: Cultural variable: all countries


Figure 3: LFPR and Cultural variable


Attainment dataset (2011) which provides estimates of educational attainment data for 146 countries at 5 -year intervals from 1950 to 2010. The data are disaggregated by sex and by 5 -year age groups among the population aged 15 years and over (see Barro and Lee (2010) $)^{4}$.
Country fixed effects - Finally, $\gamma_{j}$ are country fixed effects, that might account for differences in markets and institutions.
A series of regressions is run. The baseline model does not include cultural variables. Three different extensions are then estimated: the first two extensions include either the attitude variables or the religious variables; the third extension is the full specification in which all cultural variables are included.

## 4 Results

Table 4 presents the estimated marginal effects from a set of probit regressions. Standard errors are robust and clustered at the country level.
Column (1) of table 4 presents the results for the baseline model in which female employment is regressed on the set of individual characteristics and the country fixed effects. Column (2) presents the results for an extended model in which female employment is regressed on the set of the individual characteristics, the country fixed effects and the index for the attitudes towards women (denoted as "Culture"), computed through the principal component analysis as discussed in Section 2. Column (3) of the table presents the results for the extended model in which female employment is regressed on the set of individual characteristics, on the country dummies, on the index for the attitudes towards women and on the set of religious variables.
The sign of the coefficients on the individual characteristics are the same across specifications and all statistically significant. The coefficient on secondary and tertiary education are both positive and statistically significant in all the specifications. The magnitude of the coefficient is higher for tertiary education. The probability of being employed for the average woman, hence, increases with a higher level of education.
The coefficients on age and age squared present the expected sign and are both statistically significant in all specifications. The probability of being

[^4]employed for the average woman increases with age.
The coefficients on the dummy for being married and for the number of children also present the expected sign and are statistically significant. The probability of being employed for the average women is lower when the woman is married and when she has a higher number of children.
Moreover, the coefficient on the mother's education is, as expected, positive and statistically significant in all the specifications.
When controlling for the index for the attitudes towards women (column (2) of table 4), the coefficient on the first principal component is negative and statistically significant. A similar result is obtained when additionally controlling for the religious variables (column (3)). The probability of being employed for the average woman is lower as the attitudes towards working women become less favourable.
For what concerns the religious variable, the coefficient on the religious attendance is negative and statistically significant, though only at 10 percent. The coefficients on the 'religious person' variable and on the 'time for prayer and meditation' variable are again negative but both statistically not significant.
Table 5 presents the estimated marginal effects from some additional regressions. Standard errors are again robust and clustered at the country level. Column (1) of the table presents the results from the regression of female employment on the set of individual characteristics, the country fixed effects and the set of religious variables. Column (2) presents the results of the regression of female employment on individual characteristics, country fixed effects and each of the attitude towards women variables, now considered separately. Finally, column (3) presents the results for the specification in which female employment is regressed over the full set of variables.
The interpretation of the coefficients on the individual characteristics remains qualitatively analogous to the one for table 4.
When controlling for religious variables, the coefficient on the religious attendance is negative and statistically significant both in specification (1) and (3), though in the full specification it is significant only at 10 percent. The probability of being employed is lower for women that participate more to religious ceremonies. The coefficients on the 'religious person' variable and on the 'time for prayer and meditation' variable are again negative but both statistically not significant.
When including all the attitudes towards women variables, the coefficients on the 'job scarce' variable and on the 'housewife' variable are negative and statistically significant in both specification (2) and (3). The probability of being employed is, hence, lower for the average women in environments that
are less favourable towards a working woman. The coefficients on the variable 'university is more important for boys' and on the variable 'men make better politicians than women' are both of the wrong sign but statistically not significant. The coefficient on the variable 'men make better business executives than women' presents instead the correct sign and is statistically significant in both specifications.
The results of the analysis show that there is a correlation between culture and female employment. However, since the analysis is done by using individual attitudes as an indicator of culture, it is not possible to interpret the results as causal relations due to the potential for reverse causation, i.e. the possibility that the individual attitudes are primarily determined by economic circumstances.

## 5 Conclusions

This paper contributes to the growing literature that investigates the connections between culture and economic outcomes.
In particular, it uses attitude variables from the World Value Survey to study the correlations between female participation to the labour market and two different aspects of culture: religion and the degree of religious beliefs; a set of different variables that identifies the attitudes towards working women. The results of the analysis point out that when the frequency of the attendance to religious services is higher there is less participation by women to the labour market.
Moreover, where attitudes towards working women are less favourable women engage less in paid working activities. This result remains robust when controlling for religion.

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## A Tables:

Table 1: Summary of statistics of main variables - 5th wave WVS

| Variable | Obs | Mean | Std. Dev. | Min | Max |
| :--- | :---: | :---: | :---: | :---: | :---: |
| Employed (18-64 years old) | 35531 | 0.472 | 0.499 | 0 | 1 |
| Employed (18-34 years old) | 15796 | 0.417 | 0.493 | 0 | 1 |
| Employed (married) | 19791 | 0.459 | 0.498 | 0 | 1 |
| Labour foce (18-64 years old) | 35531 | 0.572 | 0.495 | 0 | 1 |
| Labour force (18-34 years old) | 15796 | 0.555 | 0.497 | 0 | 1 |
| Labour force (married) | 19791 | 0.526 | 0.499 | 0 | 1 |
| Age | 37778 | 37.794 | 12.765 | 18 | 64 |
| Fertility (female 18-64) | 35414 | 1.922 | 1.744 | 0 | 8 |
| Married (female 18-64) | 37679 | 0.562 | 0.496 | 0 | 1 |
| Primary (female 18-64) | 37575 | 0.305 | 0.460 | 0 | 1 |
| Secondary (female 18-64) | 37575 | 0.551 | 0.497 | 0 | 1 |
| College (female 18-64) | 37575 | 0.144 | 0.351 | 0 | 1 |
| Catholic (female 18-64) | 37778 | 0.230 | 0.421 | 0 | 1 |
| Orthodox (female 18-64) | 37778 | 0.114 | 0.318 | 0 | 1 |
| Protestant (female 18-64) | 37778 | 0.146 | 0.353 | 0 | 1 |
| Jews (female 18-64) | 37778 | 0.001 | 0.038 | 0 | 1 |
| Muslim (female 18-64) | 37778 | 0.237 | 0.425 | 0 | 1 |
| Hindu (female 18-64) | 37778 | 0.021 | 0.142 | 0 | 1 |
| Buddist (female 18-64) | 37778 | 0.039 | 0.194 | 0 | 1 |
| Other Religions (female 18-64) | 37778 | 0.042 | 0.201 | 0 | 1 |
| No Religion (female 18-64) | 37778 | 0.169 | 0.375 | 0 | 1 |
| Religious Attendance (female 18-64) | 35092 | 4.093 | 2.163 | 1 | 7 |
| Religious Person (female 18-64) | 36507 | 0.735 | 0.441 | 0 | 1 |
| Meditation/prayer (female 18-64) | 31236 | 0.815 | 0.388 | 0 | 1 |
| Job scarse (female 18-64) | 35646 | 1.767 | 0.897 | 1 | 3 |
| Housewife (female 18-64) | 35023 | 2.724 | 0.946 | 1 | 4 |
| Men better politician (female 18-64) | 36036 | 2.350 | 0.947 | 1 | 4 |
| University for boys (female 18-64) | 36699 | 1.856 | 0.838 | 1 | 4 |
| Men better business executives (female 18-64) | 33363 | 2.173 | 0.931 | 1 | 4 |

Table 2: Female Employment/Population by Age

| Panel (a) | Age |  |  |  |  |
| :--- | :---: | :---: | :---: | :---: | :---: |
| Religion | $18-24$ | $25-34$ | $35-44$ | $45-54$ | $55-64$ |
| No den | 43.9 | 66.9 | 73.5 | 70.4 | 43.6 |
| Catholic | 33.9 | 54.2 | 62.2 | 59.0 | 33.7 |
| Orthodox | 28.4 | 57.9 | 64.8 | 60.9 | 17.1 |
| Protestant | 30.6 | 57.4 | 68.8 | 68.0 | 45.3 |
| Jewish | 14.9 | 43.6 | 50.8 | 88.6 | 55.2 |
| Muslim | 17.0 | 32.2 | 30.5 | 26.4 | 20.9 |
| Hindu | 34.2 | 32.1 | 23.9 | 23.3 | 23.1 |
| Buddist | 50.0 | 78.7 | 78.6 | 65.9 | 45.1 |
| Other | 34.2 | 54.4 | 63.4 | 59.6 | 32.1 |


| Panel (b) | Age |  |  |  |  |
| :--- | :---: | :---: | :---: | :---: | :---: |
| Marital status | $18-24$ | $25-34$ | $35-44$ | $45-54$ | $55-64$ |
| Married | 23.1 | 44.5 | 54.8 | 53.9 | 33.5 |
| Living together as married | 36.7 | 50.2 | 62.3 | 57.9 | 51.3 |
| Divorced | 44.2 | 67.6 | 78.1 | 75.8 | 51.0 |
| Separated | 37.7 | 67.2 | 70.1 | 58.3 | 42.6 |
| Widowed | 25.8 | 53.8 | 54.9 | 47.4 | 22.5 |
| Single | 30.6 | 64.3 | 73.1 | 73.0 | 42.6 |


| Panel (c) | Age |  |  |  |  |
| :--- | :---: | :---: | :---: | :---: | :---: |
| Education | $18-24$ | $25-34$ | $35-44$ | $45-54$ | $55-64$ |
| Low education | 25.9 | 32.2 | 40.8 | 40.1 | 27.0 |
| Secondary education | 30.5 | 52.9 | 62.8 | 62.5 | 37.5 |
| Tertiary education | 32.0 | 74.3 | 82.2 | 82.2 | 52.7 |


| Panel (d) | Age |  |  |  |  |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
| Number of children | $18-24$ | $25-34$ | $35-44$ | $45-54$ | $55-64$ |  |
| No children | 31.1 | 67.7 | 72.8 | 65.6 | 38.1 |  |
| 1 child | 25.7 | 56.5 | 72.5 | 66.0 | 35.7 |  |
| 2 children | 21.6 | 45.0 | 65.1 | 64.7 | 34.2 |  |
| 3 children | 16.0 | 31.8 | 50.7 | 57.2 | 34.8 |  |
| Over 4 children | 36.3 | 38.6 | 40.5 | 39.0 | 31.5 |  |



Table 4: Probit regressions: first principal component

|  | (1) | (2) | (3) |
| :---: | :---: | :---: | :---: |
| Mother's education | $\begin{gathered} 0.0311^{* * *} \\ (0.00887) \end{gathered}$ | $\begin{gathered} 0.0299^{* * *} \\ (0.00923) \end{gathered}$ | $\begin{gathered} 0.0344^{* * *} \\ (0.0101) \end{gathered}$ |
| Age | $\begin{aligned} & 0.0943^{* * *} \\ & (0.00521) \end{aligned}$ | $\begin{aligned} & 0.0960^{* * *} \\ & (0.00542) \end{aligned}$ | $\begin{aligned} & 0.0940^{* * *} \\ & (0.00597) \end{aligned}$ |
| Age squared | $\begin{gathered} -0.00110 * * * \\ (5.95 \mathrm{e}-05) \end{gathered}$ | $\begin{gathered} -0.00112^{* * * *} \\ (6.21 \mathrm{e}-05) \end{gathered}$ | $\begin{gathered} -0.00108^{* * * *} \\ (6.77 \mathrm{e}-05) \end{gathered}$ |
| Secondary education | $\begin{aligned} & 0.141^{* * *} \\ & (0.0265) \end{aligned}$ | $\begin{gathered} 0.131^{* * *} \\ (0.0248) \end{gathered}$ | $\begin{gathered} 0.150^{* * *} \\ (0.0201) \end{gathered}$ |
| Tertiary education | $\begin{gathered} 0.316^{* * *} \\ (0.0341) \end{gathered}$ | $\begin{gathered} 0.275^{* * *} \\ (0.0304) \end{gathered}$ | $\begin{gathered} 0.314^{* * *} \\ (0.0307) \end{gathered}$ |
| Married | $\begin{gathered} -0.0677^{* * *} \\ (0.0176) \end{gathered}$ | $\begin{gathered} -0.0534^{* * *} \\ (0.0183) \end{gathered}$ | $\begin{gathered} -0.0560^{* * *} \\ (0.0211) \end{gathered}$ |
| Children | $\begin{gathered} -0.0344^{* * *} \\ (0.00489) \end{gathered}$ | $\begin{gathered} -0.0337 * * * \\ (0.00586) \end{gathered}$ | $\begin{gathered} -0.0329 * * * \\ (0.00531) \end{gathered}$ |
| Culture |  | $\begin{gathered} -0.0374^{* * *} \\ (0.00667) \end{gathered}$ | $\begin{gathered} -0.0368 * * * \\ (0.00655) \end{gathered}$ |
| Religious attendance |  |  | $\begin{aligned} & -0.00542^{*} \\ & (0.00282) \end{aligned}$ |
| Religious person |  |  | $\begin{gathered} -0.0147 \\ (0.0126) \end{gathered}$ |
| Prayer |  |  | $\begin{aligned} & -0.00926 \\ & (0.0117) \end{aligned}$ |
| Catholic |  |  | $\begin{gathered} -0.0199 \\ (0.0931) \end{gathered}$ |
| Orthodox |  |  | $\begin{gathered} 0.0186 \\ (0.0957) \end{gathered}$ |
| Protestant |  |  | $\begin{aligned} & -0.00669 \\ & (0.0999) \end{aligned}$ |
| Muslim |  |  | $\begin{aligned} & -0.148 \\ & (0.108) \end{aligned}$ |
| Hindu |  |  | $\begin{gathered} -0.186^{* *} \\ (0.0909) \end{gathered}$ |
| Buddist |  |  | $\begin{gathered} -0.00309 \\ (0.0975) \end{gathered}$ |
| Other |  |  | $\begin{aligned} & -0.0678 \\ & (0.100) \end{aligned}$ |
| No den |  |  | $\begin{gathered} -0.0550 \\ (0.0951) \end{gathered}$ |
| Observations | 30725 | 24423 | 19241 |

Table 5: Probit regressions

|  | (1) | (2) | (3) |
| :---: | :---: | :---: | :---: |
| Mother's education | 0.0336*** | 0.0297*** | $0.0345^{* * *}$ |
|  | (0.00976) | (0.00915) | (0.0100) |
| Age | 0.0929*** | 0.0960*** | 0.0939*** |
|  | (0.00584) | (0.00543) | (0.00600) |
| Age squared | $-0.00108^{* * *}$ | -0.00112*** | -0.00108*** |
|  | (6.63e-05) | (6.25e-05) | (6.84e-05) |
| Secondary education | 0.158*** | 0.129*** | $0.148^{* * *}$ |
|  | (0.0188) | (0.0249) | (0.0201) |
| Tertiary education | $0.343^{* * *}$ | 0.272*** | 0.310*** |
|  | (0.0297) | (0.0305) | (0.0307) |
| Married | $-0.0712^{* * *}$ | -0.0497*** | -0.0519** |
|  | (0.0203) | (0.0185) | (0.0214) |
| Children | -0.0329*** | -0.0330*** | $-0.0321 * * *$ |
|  | (0.00437) | (0.00585) | (0.00533) |
| Job scarce |  | $-0.0373^{* * *}$ | $-0.0407^{* * *}$ |
|  |  | (0.00587) | (0.00644) |
| Housewife |  | -0.0350*** | $-0.0318^{* * *}$ |
|  |  | (0.00423) | (0.00439) |
| University |  | 0.00386 | 0.00603 |
|  |  | (0.00580) | (0.00590) |
| Politics |  | 0.00441 | 0.00605 |
|  |  | (0.00719) | (0.00813) |
| Business |  | -0.0127** | -0.0153** |
|  |  | (0.00646) | (0.00719) |
| Religious attendance | -0.00530** |  | -0.00499* |
|  | (0.00260) |  | (0.00284) |
| Religious person | -0.00858 |  | -0.0118 |
|  | (0.0113) |  | (0.0124) |
| Prayer | -0.0110 |  | -0.00924 |
|  | (0.0135) |  | (0.0118) |
| Catholic | -0.0504 |  | $0.172^{* * *}$ |
|  | (0.0780) |  | $(0.0328)$ |
| Orthodox | -0.00584 |  | 0.209*** |
|  | (0.0800) |  | (0.0477) |
| Protestant | -0.0349 |  | $0.185^{* * *}$ |
|  | (0.0857) |  | (0.0300) |
| Jewish | -0.176** |  | 0.184* |
|  | (0.0875) |  | (0.0988) |
| Muslim | -0.193*** |  | 0.0433 |
|  | (0.0723) |  | (0.0491) |
| Buddist | -0.0278 |  | $0.185^{* * *}$ |
|  | (0.0841) |  | (0.0338) |
| Other | -0.0838 |  | $0.124^{* * *}$ |
|  | (0.0850) |  | (0.0362) |
| No den | -0.0738 |  | $0.137 * * *$ |
|  | (0.0803) |  | (0.0366) |
| Observations | 22644 | 24423 | 19241 |

## B The WVS data:

Table 6: Cultural variables: WVS questions
Measures of religious affiliation:

1) Do you belong to a religious denomination? If yes, which one?
2) Apart from weddings, funerals and cristenings, about how often do you attend religious services these days? Answers: more than one a week; once a week; once a month; only on holy days; once a year; less frequent; never.
3) Independently of whether you go to church or not, would you say you are: a religious person; not a religious person; a convinced atheist.
4) Do you spend some time in prayer or meditation? Answers: Yes or No

## Measures of attitudes towards women:

5) When jobs are scarce, men should have more right to a job than a woman. Answers: agree; disagree; neither.
6) Being a housewife is just as fulfilling as working for pay. Answers: strongly agree; agree; disagree; strongly disagree
7) A university education is more important for a boy than for a girl. Answers: strongly agree; agree; disagree; strongly disagree
8) Men make better political leaders than women.

Answers: strongly agree; agree; disagree; strongly disagree
9) Men make better business executives than women.

Answers: strongly agree; agree; disagree; strongly disagree
Table 6 presents the cultural variables used in the analysis. Each of the religious variable is coded in a way that a higher value corresponds to a higher degree of religiosity. Table 7 reports a summary of the statistics for the strength of religious beliefs by country. The first two columns of the table show for each country the percentage of people who attend religious services at least once a week and at least once a year. The third column shows the percentage of women who consider themselves religious and the forth shows the percentage of those who dedicate some time to meditation and prayer. Each of the attitude variables is coded in a way such that a higher value corresponds to a higher degree of agreement. Table 8 reports summary statistics of attitudes towards women by country. Each column displays the percentage of individuals that agrees or strongly agrees with each of the five statements.

Table 7: Strength of religious beliefs

| Country | One a week | Once a year | Religious person | Prayer |
| :---: | :---: | :---: | :---: | :---: |
| France | 5.0 | 24.7 | 46.5 | - |
| Britain | 16.7 | 36.0 | 51.4 | - |
| Italy | 36.0 | 83.9 | 92.2 | 85.9 |
| Netherlands | 11.4 | 31.3 | 63.4 | - |
| Spain | 11.9 | 35.5 | 46.5 | 33.1 |
| US | 37.5 | 59.6 | 77.6 | 91.8 |
| Canada | 21.3 | 50.1 | 69.0 | 81.2 |
| Japan | 2.7 | 51.9 | 24.3 | 40.2 |
| Mexico | 54.1 | 81.2 | 80.4 | 90.4 |
| South Africa | 65.8 | 85.9 | 89.6 | 90.9 |
| Australia | 12.4 | 32.0 | 53.9 | 71.9 |
| Norway | 3.7 | 27.1 | 49.0 | 38.4 |
| Sweden | 3.0 | 18.6 | 36.9 | 55.2 |
| Argentina | 25.0 | 56.8 | 86.9 | 84.9 |
| Finland | 7.4 | 43.6 | 64.4 | 81.1 |
| South Korea | 37.7 | 58.0 | 35.2 | 54.6 |
| Poland | 58.9 | 92.2 | 95.6 | 91.9 |
| Switzerland | 10.4 | 46.9 | 65.5 | 82.0 |
| Brazil | 55.1 | 73.8 | 90.9 | 92.9 |
| Chile | 28.1 | 55.8 | 68.7 | 83.8 |
| India | 48.6 | 80.3 | 82.3 | 84.7 |
| Slovenia | 17.9 | 59.9 | 75.3 | 56.2 |
| Bulgaria | 8.5 | 67.0 | 69.4 | 30.2 |
| Romania | 30.0 | 82.8 | 95.5 | 97.7 |
| China | 15.2 | 38.9 | 23.0 | - |
| Taiwan | 7.5 | 34.2 | 39.1 | 71.5 |
| Turkey | 5.4 | 39.1 | 84.9 | 98.0 |
| Ukraine | 9.5 | 65.5 | 86.9 | 69.5 |
| Russia | 3.8 | 42.5 | 82.2 | - |
| Peru | 46.6 | 80.2 | 86.0 | 84.1 |
| Uruguay | 29.8 | 51.2 | 61.3 | 58.5 |
| Ghana | 86.3 | 92.8 | 91.8 | - |
| Moldova | 12.6 | 66.0 | 91.8 | 92.3 |
| Georgia | 20.0 | 77.7 | 98.9 | 78.5 |
| Thailand | 41.6 | 90.4 | 34.7 | 75.5 |
| Indonesia | 64.0 | 87.4 | 87.1 | 96.8 |
| Vietnam | 8.7 | 47.3 | 46.5 | 34.6 |
| Colombia | 54.1 | 78.4 | 84.1 | 96.1 |
| Serbia | 11.3 | 74.0 | 87.2 | 70.5 |
| New Zealand | 14.7 | 28.5 | 52.1 | 69.5 |
| Egypt | 22.6 | 48.6 | 94.8 | 94.7 |
| Morocco | - | - | 92.0 | 87.2 |
| Iran | 30.0 | 68.0 | 86.4 | 96.7 |
| Jordan | 97.9 | 97.9 | 95.4 | 99.4 |
| Cyprus | 22.0 | 77.2 | 70.7 | 81.8 |
| Iraq | 32.7 | 48.4 | 54.1 | - |
| Guatemala | 76.6 | 92.5 | 75.9 | 98.0 |
| Hong Kong | 8.4 | 19.5 | 31.1 | - |
| Trinidad and Tobago | 49.2 | 78.0 | 86.2 | 98.7 |
| Andorra | 6.2 | 28.6 | 56.0 | 72.0 |
| Malaysia | - | - | 90.4 | 87.1 |
| Burkina Faso | 74.8 | 85.5 | 93.1 | 95.5 |
| Ethiopia | 82.3 | 95.0 | 83.2 | 95.0 |
| Mali | 65.4 | 83.6 | 98.1 | 95.3 |
| Rwanda | 95.3 | 96.9 | 94.9 | 99.1 |
| Zambia | 77.5 | 87.3 | 90.8 | 87.6 |
| Germany | 6.7 | 37.8 | 45.5 | 50.5 |
| non-OECD | 42.6 | 71.0 | 78.3 | 85.7 |
| OECD | 19.5 | 47.3 | 60.7 | 71.1 |
| Total | 35.1 | 63.3 | 73.5 | 81.5 |

Table 8: Attitudes towards women

| Country | Job scarce | Housewife | University | Politics | Business |
| :---: | :---: | :---: | :---: | :---: | :---: |
| France | 16.5 | 51.7 | 17.5 | 4.0 | 9.3 |
| Britain | 9.5 | 70.4 | 10.5 | 2.5 | 6.2 |
| Italy | 17.4 | 47.0 | 10.4 | 5.4 | 7.1 |
| Netherlands | 9.3 | 49.3 | 13.0 | 2.5 | 10.3 |
| Spain | 13.0 | 46.8 | 13.6 | 10.4 | 11.7 |
| US | 4.2 | 80.2 | 19.0 | 3.4 | 8.9 |
| Canada | 11.3 | 78.9 | 14.8 | 2.6 | 8.4 |
| Japan | 23.7 | 91.1 | 34.9 | 16.5 | 27.6 |
| Mexico | 22.2 | 75.6 | 22.4 | 22.1 | 17.4 |
| South Africa | 23.5 | 49.4 | 38.5 | 16.9 | 32.6 |
| Australia | 6.8 | 74.8 | 13.5 | 3.1 | 7.8 |
| Norway | 3.5 | 47.3 | 12.7 | 1.6 | 13.7 |
| Sweden | 1.7 | 42.3 | 5.4 | 1.0 | 2.9 |
| Argentina | 20.4 | 58.7 | 21.1 | 10.3 | 15.5 |
| Finland | 5.8 | 83.2 | 13.1 | 3.7 | 12.0 |
| South Korea | 28.9 | 91.1 | 47.3 | 16.5 | 36.0 |
| Poland | 28.3 | 56.4 | 34.2 | 10.2 | 19.2 |
| Switzerland | 21.4 | 58.5 | 13.4 | 4.0 | 7.4 |
| Brazil | 18.7 | 46.4 | 23.4 | 8.4 | 20.8 |
| Chile | 21.6 | 54.9 | 34.6 | 22.3 | 22.1 |
| India | 40.3 | 63.6 | 51.9 | 40.7 | 56.0 |
| Slovenia | 9.0 | 63.7 | 24.1 | 5.2 | 14.3 |
| Bulgaria | 15.9 | 59.6 | 33.4 | 8.3 | 12.0 |
| Romania | 31.7 | 31.0 | 46.5 | 13.7 | 39.1 |
| China | 40.9 | 73.0 | 51.1 | 18.4 | 34.4 |
| Taiwan | 41.5 | 76.3 | 38.9 | 11.2 | 25.0 |
| Turkey | 46.8 | 74.3 | 56.0 | 17.0 | 47.6 |
| Ukraine | 25.0 | 57.8 | 39.5 | 28.6 | 38.2 |
| Russia | 30.0 | 50.4 | 49.9 | 23.0 | 37.4 |
| Peru | 13.8 | 59.7 | 10.9 | 10.1 | 8.6 |
| Uruguay | 19.0 | 73.7 | 14.6 | 5.5 | 15.2 |
| Ghana | 41.6 | 21.1 | 71.2 | 15.6 | 58.1 |
| Moldova | 33.3 | 39.9 | 43.1 | 11.8 | 33.7 |
| Georgia | 42.8 | 60.1 | 59.6 | 17.5 | 58.0 |
| Thailand | 29.2 | 17.2 | 44.9 | 22.7 | 41.4 |
| Indonesia | 42.8 | 87.5 | 50.5 | 18.1 | 32.1 |
| Vietnam | 38.5 | 78.3 | 54.1 | 19.8 | 40.0 |
| Colombia | - | 54.3 | 21.8 | 6.6 | 15.2 |
| Serbia | 6.0 | 38.5 | 26.5 | 8.3 | 18.8 |
| New Zealand | 6.1 | 67.0 | 9.0 | 2.5 | - |
| Egypt | 84.7 | 89.9 | 90.1 | 31.2 | 82.1 |
| Morocco | 36.0 | 54.7 | 42.1 | 18.4 | 37.6 |
| Iran | 63.8 | - | 71.8 | 47.1 | 71.7 |
| Jordan | 85.3 | 67.8 | 73.9 | 27.2 | 66.1 |
| Cyprus | 28.6 | 45.9 | 22.1 | 6.4 | 12.3 |
| Iraq | 80.1 | 83.5 | 87.9 | 45.4 | - |
| Guatemala | 13.9 | 75.0 | 25.8 | 16.4 | - |
| Hong Kong | 17.3 | 91.4 | 33.3 | 19.4 | - |
| Trinidad and Tobago | 23.2 | 70.9 | 19.8 | 6.1 | 12.2 |
| Andorra | 4.0 | 39.7 | 5.7 | 1.5 | 3.1 |
| Malaysia | 39.7 | 57.7 | 60.0 | 35.1 | 41.5 |
| Burkina Faso | 44.6 | 32.8 | 58.2 | 29.6 | 67.0 |
| Ethiopia | 3.9 | 10.7 | 16.3 | 6.4 | 13.5 |
| Mali | 52.2 | 48.9 | 73.8 | 43.1 | 80.8 |
| Rwanda | 20.1 | 27.1 | 46.5 | 28.1 | 43.5 |
| Zambia | 23.3 | 44.7 | 42.1 | 20.0 | 40.1 |
| Germany | 14.2 | 32.7 | 11.7 | 9.1 | 9.5 |
| non-OECD | 37.4 | 56.7 | 46.7 | 20.8 | 38.7 |
| OECD | 16.1 | 64.3 | 20.6 | 8.3 | 15.1 |
| Total | 31.3 | 59.5 | 17.2 | 39.7 | 32.1 |


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[^1]:    * Bank of Italy, Branch of Torino.

[^2]:    ${ }^{1}$ A previous version of paper was presented at the conference "Women and the Italian Economy" organized by the Bank of Italy, held in Rome on March 7th, 2012. The views expressed therein are those of the authors and do not necessarily reflect those of the Bank of Italy.

[^3]:    ${ }^{2}$ Throughout the analysis the focus is on women who are either fully, partially or self employed: respondents to the WVS who self-report themselves in the unemployment status may be in fact considered out of the labour force under different statistical conventions.
    ${ }^{3} \mathrm{~A}$ more in depth description of the variables is present in appendix B .

[^4]:    ${ }^{4}$ To construct the proxy the data first divided in 5 cohorts: women born 1941 and 1950; between 1951 and 1960; between 1961 and 1970 ; between 1971 and 1980 between 1981 and 1987. Secondly - using the Barro-Lee data in 1950, 1960, 1970, 1980, 1985 - for each cohort the education attained by the mother is estimated as the average education of women in the following age ranges: 15-19, 20-24, 25-29, 30-34.

