

# **Subjective and objective measures of religiosity and fertility choices in developed countries**

Alicia Adsera

**Princeton University and University of Illinois Chicago**

**(Extended Abstract)**

I use the ISSP98 survey Religion II to study the relationship between objective and subjective measures of religiosity and fertility behavior. I extend some of my previous analysis for the case of Spain to a larger set of countries (13 European, USA, Australia, New Zealand and Canada).

## **Objective measures of Religiosity**

In some previous work I showed that the positive relation between mass attendance and fertility among Catholics holds in a sample that includes those who have ever been baptized regardless of the background of their spouses.

The ISSP 1998 offers a set of measures about attendance and current prayer of the individual as well as some measures about the religious behavior of the family where he/she was raised. This is a much richer set of data than

Current church attendance is measured on a scale of 6 options: Never (1); once a year (2); one or two times a year (3); once a month (4); two or three times a month (5); and, every week (6).

Prayer habits are measured by scale of 11 options: never (1); once a year (2); twice a year (3); few times a year (4); once a month (5); two or three times a month (6); almost every week (7); every week (8); several times a week (9); once a day (10); and several times a day (11).

Maternal/paternal/own mass attendance at the age of 12 have a scale of 9 options: Never (1); once a year (2); one or two times a year (3); a few times a year (4); once a month (5); two or three times a month (6), almost every week (7); every week (8); several times a week (9).

A simple estimate of the relationship between fertility and mass attendance (without additional controls) shows that both variables are positively related in both samples. The coefficient of mass attendance is 0.166 with a t-statistic of 4.57 in the first

sample and 0.131 with a t-statistic of 3.12 in the second sample. Table 1 presents estimates when controls are added. Column (1) includes the most complete specification with a very restricted sample that only includes those current Catholics raised by two Catholic parents and married to a Catholic. Current mass attendance is not significant. To see how results change in a less selected sample, columns (2) to (5) include specifications with the sample that includes baptized Catholics without imposing any restriction on their parental or spousal background. Essentially it includes all women less than 50 years of age married or living as married who were baptized at some point in their lives. In columns (2) and (5) the coefficient of mass attendance is positive and significant at 5% level and in column (3) it is significant at 10% both alone and jointly with the intensity of current prayer. The high correlation between attendance and prayer (around 0.5) introduces multicollinearity in the estimates that explains the decrease in significance of the coefficient on mass attendance. In column (4) when measures of past mass attendance of both parents and of the individual at 12 years of age are added, the coefficient on current mass attendance is significant on its own and jointly with both current prayer and childhood mass attendance. The size of the current mass attendance coefficient implies that, on average, a woman who never attends mass would have around 0.25 children less than one who attends once a month and 0.4 less than one with weekly attendance.

(Table 1 –Here)

### **Subjective measures of Religiosity**

A complete understanding of the relationship between religiosity and fertility behavior may require as well an investigation of the relationship between the latter and subjective religiosity (i.e. the one reported by the surveyed) – in addition to the analysis of the association between direct religious practice and the decision to have children. The ISSP 98 Survey contains a question that asks the individual to self-identify as a religious person in a scale of 1 to 7.

Self reported religiosity is measured on a scale of 7 options: extremely non-religious (1); very non-religious (2); somewhat non-religious (3); neither religious nor non-religious (4); somewhat religious (5); very religious (6); and extremely religious (7).

Around 56% of the total surveyed population of 2,488 consider themselves somewhat religious or more. Fifty-four percent of women in my sample consider themselves as somewhat religious or more (44% as somewhat religious and the remaining 10% as religious or highly religious). Among the 54% that consider themselves somewhat religious or more, only 47% attend mass at least once a month. The correlation of this measure of religiosity and mass attendance is 0.53 in the large sample of baptized Catholics and 0.43 in the restricted sample.

In Table 2 I substitute current mass attendance and prayer for the measure of self-reported religiosity. Current religiosity is positively related to fertility and it is significant at a 10% level in the most restrictive sample (columns (1) and (2)) and at 1% level in the sample of former/current Catholics (columns (3) and (4)).

(Table 2 – Here)

It is important to recognize that causality claims are not warranted for any of the contemporaneous measures of current religiosity, either self-reported or mass attendance, but that they are valuable in showing the intensity of the association between religion and fertility (Waite and Lehrer 2003). Childhood mass attendance, in contrast, is a measure not contaminated by current behavior. Still, a couple of issues hinder the use of that measure in a causal manner. First, there may be potential problems of selective recollection, particularly if the individual recalls mass attendance as a child to be a negative experience. Secondly, in the context of a sacralized society, such as Spain during the Franco regime, compulsory (daily) mass attendance in many schools may alter the true meaning of the measure as a proxy of the family environment where the child was socialized. In fact the correlation between the child and the parents' attendance is around 0.5 and on average children report to have attended mass more frequently than any of their parents.

### **Additional Analysis**

The paper will extend this preliminary analysis to include a larger set of countries (13 European, USA, Australia, New Zealand and Canada). Beyond Catholics, I will extend the analysis to mainline and conservative Protestants a majority in some of the

countries in the sample. Individuals will be assigned to the different groups according to the classification in Table 3.

I will study whether the relation between religiosity and fertility holds stronger in countries with religious competition than in those with a state church. Elsewhere I have already shown that there are differences across countries in the relevance of religion for individual preferences in the ideal number of children (Table 4). This analysis will further this research with a richer set of measures of religiosity both objective and subjective.

Most interestingly it will look at the variation across religious denominations in the same way I studied differences in ideal number of children (Table 5).

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**Table 1.** Fertility Regressions. Married, Spanish Women ISSP 1998

|   | (1)                   | (2)               | (3)                    | (4)                     | (5)                |
|---|-----------------------|-------------------|------------------------|-------------------------|--------------------|
| <b>Current religiosity:</b>   |                       |                   |                        |                         |                    |
| Mass attendance   | 0.050<br>(0.99)       | 0.081**<br>(2.30) | 0.068*<br>(1.67)       | 0.079*<br>(1.84)        | 0.091**<br>(2.43)  |
| Prayer  | 0.000<br>(0.01)       |                   | 0.010<br>(0.48)        | 0.015<br>(0.65)         |                    |
| <b>Mass attendance during woman's childhood:</b>                    |                       |                   |                        |                         |                    |
| Child at 12   | 0.033<br>(0.70)       |                   |                        | 0.056<br>(1.36)         |                    |
| Mother  | -0.107**<br>(2.47)    |                   |                        | -0.097**<br>(2.66)      |                    |
| Father  | 0.024<br>(0.81)       |                   |                        | 0.025<br>(0.93)         |                    |
| Distance between parents' attendance                                |                       |                   |                        |                         | -0.065**<br>(2.22) |
| <i>F</i> (2) Joint test current attendance and prayer               | 0.60<br>Prob>F =0.551 |                   | 2.43*<br>Prob>F =0.089 | 2.93*<br>Prob>F =0.055  |                    |
| <i>F</i> (3) Joint test current and childhood attendance and prayer | 0.79<br>Prob>F =0.502 |                   |                        | 3.36**<br>Prob>F =0.019 |                    |
| Sample size   | 246                   | 331               | 327                    | 300                     | 314                |
| Adjusted <i>R</i> <sup>2</sup>                                      | 0.30                  | 0.25              | 0.25                   | 0.27                    | 0.26               |

*Notes:*

Method: Ordinary least squares with robust errors.

The sample includes women married or living as married, aged 18 to 49. Column (1) only includes current Catholics, raised as Catholics by Catholic parents and with a Catholic spouse. Columns (2) to (5) include all former and/or current Catholics regardless of their family or spousal religious background. Current church attendance is measured on a scale of 6 options: Never (1); once a year (2); one or two times a year (3); once a month (4); two or three times a month (5); and, every week (6). Prayer habits are measured by scale of 11 options: never (1); once a year (2); twice a year (3); few times a year (4); once a month (5); two or three times a month (6); almost every week (7); every week (8); several times a week (9); once a day (10); and several times a day (11). Maternal/paternal/own mass attendance at the age of 12 have a scale of 9 options: Never (1); once a year (2); one or two times a year (3); a few times a year (4); once a month (5); two or three times a month (6), almost every week (7); every week (8); several times a week (9). Regressions include the following control variables: age, years of education, size of city, region of residence and birth cohort. Birth cohort 1948-59 is the benchmark. t-statistics in brackets.

\**p* < 0.10, \*\**p* < 0.05.

Source: International Social Survey Programme. Religion II, 1998

**Table 2.** Fertility Regressions. Married, Spanish Women ISSP 1998

|  | (1)    | (2)      | (3)     | (4)      |
|--|--------|----------|---------|----------|
| <b>Current religiosity:</b>                      |        |          |         |          |
| Self-reported                                    | 0.117* | 0.145*   | 0.190** | 0.216**  |
|  | (1.66) | (1.85)   | (3.44)  | (3.31)   |
| <b>Mass attendance during woman's childhood:</b> |        |          |         |          |
| Child at 12                                      |        | 0.031    |         | 0.043    |
|  |        | (0.64)   |         | (1.02)   |
| Mother   |        |          |         |          |
| Father   |        | -0.110** |         | -0.096** |
|  |        | (2.65)   |         | (2.72)   |
|  |        | 0.027    |         | 0.026    |
|  |        | (0.91)   |         | (0.99)   |
| F(2) Joint test                                  |        | 2.78*    |         | 9.10**   |
| religiosity and                                  |        | Prob>F   |         | Prob>F   |
| childhood  |        | =0.0642  |         | =0.0001  |
| attendance                                       |        |          |         |          |
| Sample size                                      | 263    | 246      | 331     | 300      |
| Adjusted R <sup>2</sup>                          | 0.29   | 0.31     | 0.27    | 0.29     |

*Notes:*

Method: Ordinary least squares with robust errors.

The sample includes women married or living as married, aged 18 to 49. Columns (1) and (2) only include current Catholics, raised as Catholics by Catholic parents and with a Catholic spouse. Columns (3) and (4) include all former and/or current Catholics regardless of their family or spousal religious background. Self reported religiosity is measured on a scale of 7 options: extremely non-religious (1); very non-religious (2); somewhat non-religious (3); neither religious nor non-religious (4); somewhat religious (5); very religious (6); and extremely religious (7). Maternal/paternal/own mass attendance at age 12 as in Table 1.

Regressions include the following control variables: age, years of education, size of city, region of residence and birth cohort. Birth cohort 1948-59 is the benchmark.

t-statistics in brackets.

\* $p < 0.10$ , \*\* $p < 0.05$ .

Source: International Social Survey Programme. Religion II, 1998

**Table 3.** Religious Denominations

| <b>Religion Variable</b> | <b>ISSP Category</b>   |
|--------------------------|--|
| Catholic                 | Roman Catholic   |
| Mainline Protestant      | Methodist, Lutheran, Presbyterian, Church of England, Episcopal, Unitarian, Church of Sweden, Norwegian State Church, United Church of Canada, Other Christian |
| Conservative Protestant  | Baptist, Congregational, Evangelist, Mormons   |
| Other Religions          | Shinto, Hindu, Buddhists, Sikh, Orthodox, Brethen, Ratana, Other non-Christian, Other miscellaneous.   |
| No Religion              | None   |

Notes: The Jewish and Moslem samples were too small to be significant and were dropped from the analysis.



**Table 4.** Predicted Ideal Number of Children by religion and religiosity across countries.

|                  | No Religion | Less than Weekly Attendance | Weekly Attendance | Difference Weekly vs. Less than weekly attendance | Difference Weekly attendance vs. No Religion |
|------------------|-------------|-----------------------------|-------------------|---|--|
| <b>Men</b>       |             |                             |                   |   |  |
| Australia        | 2.39        | 2.59**                      | 3.09**            | 0.50  | 0.70   |
| Austria          | 2.10        | 2.20                        | 2.41*             | 0.21  | 0.31   |
| Canada           | 2.49        | 2.54                        | 2.84**            | 0.30  | 0.35   |
| Western Germany  | 2.13        | 2.19                        | 2.48**            | 0.29  | 0.35   |
| Ireland          | 2.56        | 2.88                        | 3.29**            | 0.40  | 0.73   |
| Italy            | 2.14        | 2.24                        | 2.31              | 0.07  | 0.17   |
| Netherlands      | 2.27        | 2.49**                      | 3.06**            | 0.57  | 0.79   |
| New Zealand      | 2.42        | 2.49                        | 3.26**            | 0.77  | 0.84   |
| Norway           | 2.52        | 2.56                        | 3.24**            | 0.68  | 0.72   |
| Sweden           | 2.40        | 2.43                        | 2.51              | 0.08  | 0.11   |
| United Kingdom   | 2.20        | 2.25                        | 2.56**            | 0.31  | 0.36   |
| United States    | 2.23        | 2.41#                       | 2.83**            | 0.42  | 0.60   |
| Northern Ireland | 2.60        | 2.59                        | 3.06**            | 0.46  | 0.46   |
| <b>Women</b>     |             |                             |                   |   |  |
| Australia        | 2.35        | 2.55**                      | 3.16**            | 0.60  | 0.81   |
| Austria          | 2.01        | 2.13                        | 2.51**            | 0.38  | 0.50   |
| Canada           | 2.46        | 2.41                        | 2.87**            | 0.46  | 0.41   |
| Western Germany  | 2.14        | 2.23                        | 2.54**            | 0.31  | 0.40   |
| Ireland          | 2.99        | 2.68                        | 3.19**            | 0.52  | 0.20   |
| Italy            | 2.72        | 2.16*                       | 2.40**            | 0.24  | -0.32  |
| Netherlands      | 2.49        | 2.76**                      | 3.36**            | 0.60  | 0.87   |
| New Zealand      | 2.34        | 2.48#                       | 3.03**            | 0.55  | 0.69   |
| Norway           | 2.52        | 2.67                        | 2.99**            | 0.32  | 0.47   |
| Sweden           | 2.38        | 2.44                        | 2.99**            | 0.54  | 0.61   |
| United Kingdom   | 2.22        | 2.27                        | 2.58**            | 0.30  | 0.36   |
| United States    | 2.43        | 2.38                        | 2.62**            | 0.24  | 0.19   |
| Northern Ireland | 2.57        | 2.71                        | 3.11**            | 0.40  | 0.54   |

Notes: All the control variables are set at either the mean or the modal group. Sample sizes are 8,414 women and 7,228 men. Full regression results are available upon request.

The significance tests correspond to the difference with respect to the no religion for those with less than weekly attendance and with respect to those with less than weekly attendance within the same denomination for the high religiosity individuals. Two tailed-tests # p<0.15; \* p<0.10;

\*\*p<0.05.

Source: Adsera (2006 b)

**Table 5.** Predicted Ideal Number of Children and Religion by Gender across Age Groups

|                             | All    | 30- yrs | 31-50 yrs | 51+ yrs |
|-----------------------------|--------|---------|-----------|---------|
| <b>Men</b>                  |        |         |           |         |
| Less than weekly attendance |        |         |           |         |
| No Religion vs.             | 2.27   | 2.10    | 2.31      | 2.36    |
| Catholic                    | 2.48** | 2.43**  | 2.50**    | 2.49**  |
| Other Religion              | 2.53** | 2.53**  | 2.41      | 2.71**  |
| Mainline Protestant         | 2.35** | 2.27**  | 2.40**    | 2.35    |
| Conservative Protestant     | 2.40*  | 2.20    | 2.35      | 2.61**  |
| <i>Weekly attendance</i>    |        |         |           |         |
| Catholic                    | 2.80** | 2.74**  | 2.86**    | 2.79**  |
| Other Religion              | 2.86** | 2.63    | 2.99**    | 2.93    |
| Mainline Protestant         | 2.64** | 2.57**  | 2.73**    | 2.60**  |
| Conservative Protestant     | 3.24** | 3.17**  | 3.12**    | 3.40**  |
| <b>Women</b>                |        |         |           |         |
| Less than weekly attendance |        |         |           |         |
| No Religion vs.             | 2.19   | 2.53    | 2.12      | 2.09    |
| Catholic                    | 2.38** | 2.56    | 2.29**    | 2.44**  |
| Other Religion              | 2.33*  | 2.58    | 2.19      | 2.40#   |
| Mainline Protestant         | 2.30** | 2.54    | 2.24**    | 2.28**  |
| Conservative Protestant     | 2.43** | 2.73#   | 2.18      | 2.69**  |
| <i>Weekly attendance</i>    |        |         |           |         |
| Catholic                    | 2.76** | 2.83**  | 2.72**    | 2.77**  |
| Other Religion              | 2.88** | 3.23**  | 2.62**    | 2.96**  |
| Mainline Protestant         | 2.60** | 2.78**  | 2.60**    | 2.54**  |
| Conservative Protestant     | 2.95** | 3.11*   | 3.03**    | 2.86    |

Notes: Results for column 1 are based on Table 5 and results for columns 2-4 are available from the author. All the control variables are set at either the mean or the modal group.

The significance tests correspond to the difference with respect to the no religion for those with less than weekly attendance and with respect to those with less than weekly attendance within the same denomination for the high religiosity individuals. Two tailed-tests # p<0.15; \* p<0.10; \*\*p<0.05.

Source: Adsera (2006 b)