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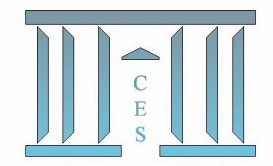

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Religion and Fertility: The French Connection

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Abstract

Usual microeconometric studies of the French fertility suffer from the lack of data on religion. Indeed, the French laws make it very difficult to collect data on the individual's religious affiliation. However, recent studies tend to validate the important role played by culture and especially religion in fertility behaviors. This paper proposes a microeconometric investigation of the French fertility where religion is taken into account. As a result, to be Catholic has no significant effect on fertility and considering oneself as a believer does also not matter. However, to be a practicer, whatever the measure that is chosen, has always a positive and significant impact on expected fertility. This paper also validates usual predictions of family economics. The income of male has a positive impact on the female fertility while the female income has a negative impact on women's fertility. Moreover, the school attainment of women has a negative impact on their expected number of children. Finally, in line with recent studies of Adserá [2006] , Fernandez & Fogli [2007], Brañas-Garza & Neuman [2006], etc., the present paper reconciles the beckerian analysis of fertility behaviors and the idea that non economical factors, namely culture, are hugely important in fertility choices.

JEL Codes: J11, J13, Z12
Key Words: Fertility, France, Religion, Religiosity

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1 Introduction

Usual microeconometric studies of the French fertility suffer from a lack of data on religion. The aim of this chapter is to overcome this shortcoming by providing a microeconometric investigation of the French fertility where, for the first time to the best of my knowledge, religion is taken into account. Furthermore, beyond this religious dimension, I provide complementary proxies for culture like the transmission of family values from parents to children.

As mentioned in the general introduction, the economic analysis of fertility behaviors enriched with microeconomic foundations since the seminal approach of Becker et al [1960, 1973, 1976]. The Beckerian theory assumes that children are time consuming, especially for women. It implies that higher female income results in smaller fertility rates[2]. The household theory of fertility[3] shows that an increase in the income of women reduces their fertility while an increase in the male income increases the household total fertility rate (TFR). Indeed, a higher male income reduces the opportunity cost for the woman not to participate to the workforce[4]. These standard mechanisms of endogenous fertility models have largely been evidenced by empirical studies without including cultural variables[5]. This absence of cultural determinants was essentially due to the lack of datasets allowing to clearly identify and measure cultural variables.

Thanks to the recent development of rich datasets including both economic and cultural variables, economists are now able to properly measure the impact of culture on fertility[6]. Doing so, they can test the validity of the usual Beckerian conclusions in a framework where culture matters. In the present chapter, I provide a contribution to this recent literature. controlling for usual economic variables like the respondent's incomes and education, I investigate cultural determinants of individual fertility on a French sample.

Religion is often chosen by the literature to identify and measure culture[7]. Guiso *et*

[2]Becker & Tomes [1976] argue that an increase in the parental income incite parents to have less children better educated because the income elasticity of demand for quality is higher than the income elasticity of demand for quantity.

[3]See, for instance, Browning *et al* [2006] for a review of this literature.

[4]See, for instance, Galor & Weil [1996] and Browning *et al* [2006].

[5]See Schultz [2008] and Hotz *et al* [1993] for a review of this literature.

[6]See Guiso et al [2006] for a review of this literature.

[7]Fernandez and Fogli [2007] show, without using religious variables, that culture is important to the

al [2006] argue that "*religious practices, even when they respond to economic conditions, are modified over time only at centuries or even millennium frequency. In this spirit, we restrict our attention (...) to those cultural aspects like religion and ethnic background that can largely be treated as invariant over an individual's lifetime*"[8].

French laws make it very difficult to collect data on the individual's religious affiliation. If religion had no impact on fertility behaviors, this specificity would not weaken the analysis of individual fertility behaviors in France. In line with the recent literature, this chapter shows that this is not actually the case.

Several studies directly deal with the religious dimension of culture. The investigation of the religions' role in fertility behaviors essentially tries to answer two questions: "Are there any differences in fertility behaviors between religions?" and "Does religiousness influence fertility?" Few evidence support the existence of time persistent differences in fertility rates between the main monotheistic religions (see Brañas-Garza & Neuman [2006]).

Religiosity, however, appears to be a significant determinant of fertility. Neuman & Ziderman [1986] find that, among Jews, religiousness (measured by time devoted to religious activities) strongly and significantly increases fertility. Heineck [2006] studies the link between religion and fertility in Austria. He finds that women who are "strong Catholic believers" are expected to have larger families than woman without any religious belief.

Hacker [1999] shows that the degree of Christian conservatism is a good proxy for religious sentiment for American-born white women in the nineteenth century. Conservatism is measured by a dummy variable indicating whether individuals belong to specific religious groups such as Congregationalists, Universalists, Lutherans or Catholics. He finds that this proxy has a significant effect on women's fertility: more conservatism implies a higher total

understanding of female work and fertility decisions. They observe the economic behavior of immigrants in the United States during the second half of the twentieth century. They consider the expected female labor force participation and their total fertility rate, for the year 1950 in the immigrant's country of origin, as a good proxy for culture. It reflects their country's cultural attitude toward women's labor and fertility. They find that the cultural proxy is an economically and statistically significant variable to explain women's labor force participation and their total fertility rate. This epidemiological method could not be applied in the French case because informations about ethnic origin or country of origin cannot be collected.

[8] Birdsall [1988] argues, following Easterlin [1978] and Easterlin et al [1980], that fertility behaviors are influenced by social norms. She mentions that "*these norms may change in response to economic factors, but they are viewed as changing slowly enough so that for individual couples within a given society they can be considered as exogenous to fertility*"

fertility rate.

Williams and Zimmer [1990], Adserá [2006] , Amin *et al* [1997] show that the religiousness measured by church attendance has a positive and significant impact on fertility[9].

France is a secularized country with a Catholic identity. It was the first European country to enter the secularization process. Furthermore, the proportion of Catholics practicers keeps dramatically decreasing since 1945. This process quickened during the seventies. In 2001, the proportion of French individuals who had at least one element of Catholic practice[10] per month is about 12% (Hervieu-Léger [2004]). This makes intuitive that religiousness should have a relevant impact on individual fertility (see Adsera [2006]).

The data set "Enquête Mode de Vie des Français" is the first opportunity to measure the impact of religion and religiousness on fertility in France. It provides precise measures for religion like to be a Believer or not, church attendance, individual's estimation of the importance of religion in their own life[11]. This data is also rich of numerous informations about the respondent's economic situation (incomes, savings, wealth, history on the labor market, etc.), his lifestyle (health, addictions, consuming habits, etc.), his risk aversion and his values (religion, politics, attitude toward foreigners, etc.)

Several dimensions of religion are investigated in the present chapter. As in the usual literature, I explore the impact of the adherence to a religion, of believing (to be a religious believer or not) and of religiousness on fertility. I find that having been raised in a specific religion has no effect on expected fertility. Defining oneself as a religious believer has, *a priori*, a positive and significant impact on individual fertility. Nevertheless this effect loses its significance when the degree of religiousness is introduced. This latter is finally the only religious variable that really matters for fertility. This result is validated whether religiousness is measured by church attendance or by the respondent's subjective evaluation

[9]Note that Brañas-Garza & Neuman [2006] find that, among Spanish catholics, the exposure to religious practice during childhood has a positive impact on fertility. They also find that current religiosity of the respondent has no effect on fertility. However, the exposure to religious practice during childhood and current religiosity are strongly correlated.

[10]Either going to church, going to cathechism, confession, etc.

[11]Notice that, as the main purpose of this data set was not the study of fertility behaviors, some relevant informations are missing. Particularly, the absence of information on children's education makes it impossible to investigate the quality quantity trade-off chosen by parents. Furthermore, children's date of birth are not reported. It prevents the study of the impact of family policies on fertility choices and the examination of births spacing behaviors.

of the importance of religion in his own life. This last measure is innovative in the literature.

Culture is not investigated only through the impact of religion on fertility. Indeed, I explore two aspects of the cultural transmission into the family: the influence of parental fertility on the own respondent's fertility and the transmission of "Family Ties / Family Oriented Values"[12] among generations. I find that these two channels are as important as religious variables to explain fertility. Indeed, having been raised in a large family significantly increases the repondent's expected fertility. The interpretation of this result is not straightforward. Bisin & Verdier [2001] underline the possibility that parents transmit their preferences to their children through a socialization process. Then, the effect of the variable "parental fertility" could reflect some transmission of the parental taste for fertility but also alternative transmissions from parents to children like social position and location. Nevertheless, this variable allows to control my results for these effects.

I also find that respondent's who have been raised in a family with "strong family ties" have significantly more children than others. Family ties are measured by replies to the following questions: "Which of the following values do you (or would you) try to transmit to your children?" and "Among the same set of values, which ones did your parents transmit you?" Respondent have been allowed to choose three answers among twelve like "Independency", "Taste for Work", "Generosity", Happiness", Honesty", "Family Values", etc. A respondent who choose "Family Values" for one of the questions gets one, he gets two if he chooses it for the two questions and zero otherwise[13]. I find that this score variable, called "Family Oriented values", has a positive and significant impact on the respondent's fertility.

I control my results for the respondent's familial background. Obviously, never having been married strongly decreases expected fertility. Among the conclusions of usual family economics (see Behrman [1993]), I find that male income has a positive impact on female fertility whereas the female income has a negative impact. The women's education negatively

[12] From French "Le sens de la Famille". I will refer to Family Oriented Values during the rest of the chapter.

[13] Alesina & Giuliano [2007] find that strong family ties are associated with higher fertility with a different method. They measure family ties with individual responses from the World Value Survey "*regarding the role of the family and the love and respect that children need to have for their parents*" for over 70 countries. They show that strong family ties implies a relatively stronger reliance to home production than to labor market participation. It results in lower labor force participation of women and higher fertility.

influences fertility[14] in the sense that the least educated women have more children than others. The respondent's age is the most powerful explanatory variable for the high frequency of observations where fertility equals zero. It highlights the strong postponement of first births which is a common characteristic of all developed countries. Furthermore, the woman's education and the size of the city where she lives both have a significant impact on the decision not to have children: highly educated women from big cities are more likely to choose not having children than other women.

The rest of the chapter is organized as follows. Section 2 provides a brief overview of the French fertility. Section 3 describes the data set "Enquête Mode de Vie des Français". Section 4 discusses the estimation method and presents its main results. Section 5 proposes some robustness checks. Finally, Section 6 concludes.

2 A Brief Overview of The French Fertility

The French fertility has been the first to decrease in early Europe in the eighteenth century. It started to decrease even before mortality. This feature has often been mentioned to invalidate the traditional theory of the demographic transition which presents the decrease of mortality as the main reason for the long run fall in fertility (Galor [2005a]). France has also been the first European country to enter secularization. This has favored the adoption of modern methods of birth control and notably contraception (Lesthaeghe & Wilson [1986] and Kirk [1996]). Lesthaeghe [1977] underlines that the proximity of the French culture was one of the main determinant of the earlier and faster fertility decrease in Wallonia than in Flanders.

As in all European countries, after the Second World War, fertility in France has been relatively high until the seventies. In 1970, the total fertility rate was very close to 2,5 children per women. Since 1964, the French fertility had decreased and reached its lowest level, in a period of peace[15], at 1,66 children per women in 1993. As displayed on figure 1, since 1994, this rate has always been increasing to reach 1,98 in 2006.

In 1994, the French family policies became more generous. Subsidies for births particu-

[14] This result also appears in Schultz [1999], Breierova & Duflo [2004], Hoem *et al* [2006]. Note that less conclusive results are find by Kravdal [2004] and McCrary & Royer [2006].

[15] During the First World War, the French fertility rate reached its minimum at 1,23 in 1916.

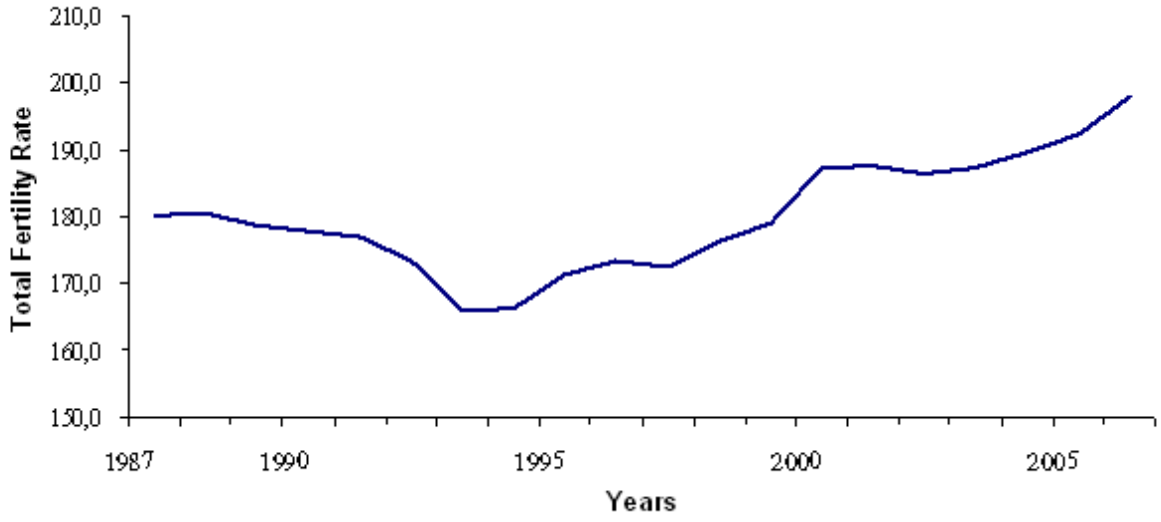

Figure 1: Evolution of French Total Fertility Rate since 1987 (US Census Bureau)

larly raised for families who decide to have a third child. Furthermore, strong efforts have been made to provide day nurseries and to reduce the cost of child care by sitters. These policies succeeded in allowing French women to have children without renouncing to their career[16]. Brewster & Rindfus [1996] and Apps & Rees [2004] argue that such public policies decrease the child rearing time of parents (and especially women) and in turn, incite households to have more children and women to increase their labor supply. A large literature highlight that French public policies are one of the main determinant of the persistence of high fertility rates in France[17]. For instance, Lauer & Weber [2003] and Köppen [2006] show that French women have both more children and higher participation to the labor market than German women. They find that differences in family friendly policies are the main determinant of this differential fertility.

Toulemon *et al* [2008] argue that the family policies in France have created especially positive attitudes towards two or three child families. Such policies have largely enjoyed a consensus among politicians and French residents. Laroque & Salanie [2005] also find that

[16]Indeed, in France like in other European countries, the relationship between fertility and women's participation to the labor market is now positive (see Ahn & Mira [2002]).

[17]Prioux [2007] provides an enlighting presentation of fertility evolutions in France for the last thirty years.

financial incentives have been efficient in increasing the fertility in France.

If the current French fertility rate is below its replacement level, it is the highest among European countries since 2002 (see figure 2). France is expected to increase its population up to 65,7 million people in 2050 while the German's population is expected to decrease in the same time. If this happens, Germany's population would stay the largest in Europe and the French population the second largest one. Due to larger fertility, ageing is expected to be lower in France, it implies that the proportion of the French population in Europe is expected to raise from 16 to 17%[18].

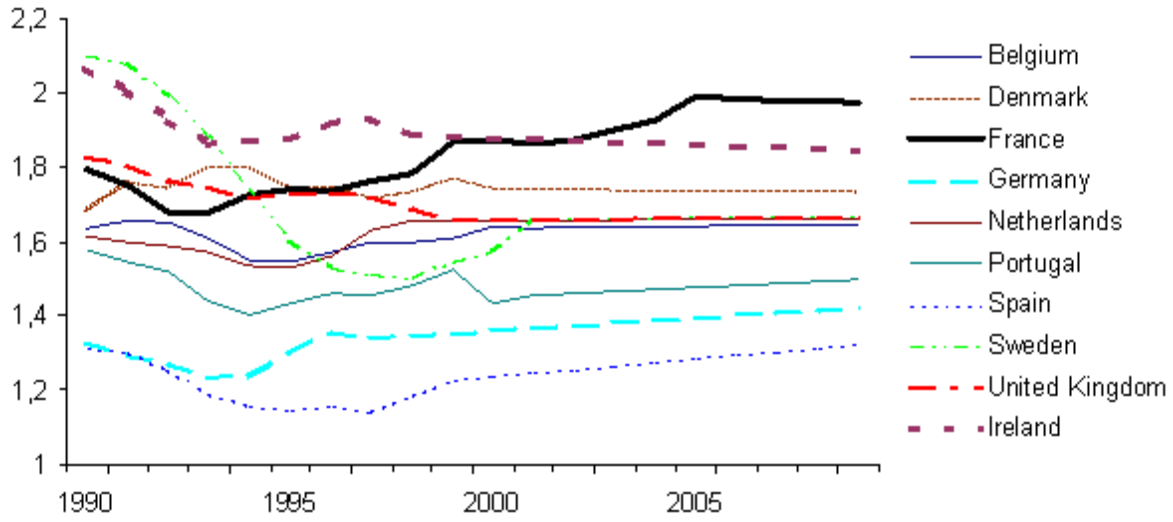

Figure 2: TFR in European Countries since 1990 (US Census Bureau)

3 Data and Strategy of Estimation

Data come from the sample "Enquête Mode de Vie des Français" for the year 2007. It consists in a sample of 3826 French agents aged between 18 and 93. The population is constituted of 2080 women and 1746 men. Only women are considered in the present study. The main reason lies in the fact that men and women do not experience the same pattern

[18]Europe is understood here as countries from the European Union in 2006. Data from Robert-Bobée [2007] (INSEE)

of fertility throughout their life. Women can only procreate during a limited period of time while men are not biologically limited. Furthermore, the measurement of women's fertility is less sensible to measurement errors. After having deleted missing observations, the sub sample is reduced to 1799 observations. Notice that, for robustness checks, the data set will be extended to men.

The sub sample's total fertility rate equals 1,6 children. Among the 1793 women, 466 do not have children while only 121 have more than three children. The average age is about 48. 219 women are less than 28 years old and 952 are more than 45 years old. 1500 have been raised in a Catholic family while only 988 consider themselves as believers and 540 are considered as practicers[19]. Finally, 849 women from the selected sample are currently married.

To measure the impact of religion, it is important to discriminate between the adherence to a specific religion and the religiousness. In the present study, the religious affiliation of agents is divided between major religions (Catholics, Muslims, Protestants, Jews...). It refers to their response to the question: "In which religion have you been raised?". Their actual faith is measured by their response to the question: "Are you a believer?".

As in Williams and Zimmer [1990], Adserá [2006] , Amin et Al [1997], the degree of religiousness is first measured by attendance to religious office. The variable "Office Frequency" goes from zero to five. It equals to one if he announces never going to religious office and five if he goes to office at least once a week. It increases with the respondent's frequency of attendance to offices. For robustness checks, another measure of religiousness is provided: people were asked to evaluate the importance of religion in their own life from zero to ten.

The sample is not reduced to women who have completed their fertility as, for instance, in Fernandez & Fogli [2007] and Breierova & Duflo [2004]. This allows the sample size to be larger and to extend the study to a higher number of generations. If religion has not the same impact on all the generations of women, restraining the analysis to older woman could lead to biased estimations. One could oppose that current and achieved fertility do not describe the same phenomenon. However, during robustness checks, the sub sample of women who have achieved their fertility is studied.

[19] An individual is considered as a Practicer if she declares frequently attending religious offices in addition to religious festivities.

As not all women in the sample have completed their fertility, it is obvious that the age of the respondent has a strong influence on her fertility. The older a woman, the higher her fertility. This partly comes from the postponement of the first birth. Furthermore, women older than 45 are expected to have completed their reproduction process.

Directly introducing the age of the respondent sensibly increases the overall fit of the model. The effect of age reflects, however, much more complex phenomena than the simple position of the respondent in her "reproductive process"[20]. Indeed, age also reflects important cohort effects. During the second half of the twentieth century, France has experienced, among other great transformations, a generalization of education, at least one profound modification in family policies (1994), a strong decrease in the influence of Catholicism, a liberalization of the marriage market and a diversification of the forms of unions. The standard deviation of age is about 16 years. A difference of 16 years between two women can explain their differences in fertility because they are not in the same position in their reproductive process but also because they have experienced differences in the quality of the education system, in family policies, in the prevalence of religious norms in the whole society, etc.

Only the position in the reproductive process is used in the regressions. This is called the "dummies strategy" where I control my results for less than 28 and more than 45 years old. This makes the interpretation of the effect of age easier. Notice that these dummies also capture cohort effects but these latter will be easier to identify. The results are also provided when the age is directly introduced in the regressions (See Table 7). The impact of proxies for cultural transmission inside the family and for religiosity are always validated.

Women from the entire sample are not necessarily married because, once again, reducing the analysis to married women would induce the presence of a selection bias[21]. Indeed, doing so, I would measure the impact of religion and cultural transmission among married French women and not among French women. It can reasonably be expected that married woman are not characterized by the same sensitivity toward religion and familial values than non married women. I obviously control my results for the respondent's situation on the marriage

[20] By assumption, a woman can be in one of the following situation: not fertile (less than 16 years old, not usefull here), fertile but younger than the average age at first birth (28 for France in 2006), fertile and older than the average age at first birth and in the "completed fertility position" (older than 45 by assumption).

[21] This choice is also made, for instance, by Young [2007] and Miranda [2008].

market.

Family economics argue that female's education and incomes play a major role in the determination of optimal fertility. Two dummies are provided to control if the respondent has only a primary education level or an university level. At least two variables have to be considered to represent income: the female income and the male income. The dataset contains informations on the respondent's annual net income and on the total household income. Then income of male can easily be inferred[22]. Notice that an endogeneity bias can be suspected. Indeed, fertility and income can have common determinants which are not taken into account in the present paper. For example, one can expect that subsidies for day nurseries increase both fertility and incomes (higher labor force participation). This problem will be investigated during robustness checks.

Fertility at the micro level consists in a count variable. Long & Freese [2006] underline that count data have to be analyzed with Poisson regressions or Negative Binomial regressions in order to avoid any doubt of inconsistency and inefficiency. Individual data on fertility structurally exhibit a zero inflated distribution. This characteristic comes from both the postponement of first birth in developed countries and the increase of childlessness since the second World War. In France, the average age at first birth was very close from 28 in 2006. The following regressions make it clear that the zero inflated Poisson regression model should be preferred to a simple Poisson regression model and to a zero inflated negative binomial regression model.

Several robustness checks are implemented. Their goal is to verify wether religion and proxies for cultural transmission really have an impact on fertility. To do so, an alternative measure of religiousness is provided. Furthermore, alternative samples are studied: women being older than 45 and the entire population. This allows to suppress any doubts about the effect of sample selection on the relation between religion and fertility. To check robustness for assumptions on the distribution, an ordered probit regression was run as in Fernandez & Fogli [2007]. An OLS regression is also provided. All robustness checks indicate that religion and transmission of values inside the family are relevant to explain fertility in France.

[22] Notice that, as in Fernandez & Fogli [2007], Melkerson & Rooth [2000], Miranda [2008], etc., reported incomes are current incomes whereas endogenous fertility models deal with life cycle income. As in these contributions, my results are controlled by education and age of the respondent in order to limit this weakness.

4 Results

The assumption that fertility is distributed following a Poisson distribution would result in the following probability of having $y_i = n$ children:

$$\Pr\left[y_i = n \mid x_i\right] = \frac{e^{-\mu_i}\mu_i^n}{n!}$$

where $\mu_i = \exp\left(x_i\beta\right)$ with x_i the individual characteristics. However, individual fertility data often exhibit an excess of zero observations. So in order to take into account the high number of zero in the data set, a Zero Inflated Poisson (ZIP) regression model is proposed[23]. This method allows to explain both the number of children born (with a Poisson model) and the decision not to have children (with a Logit model).

The probability (η_i) for an individual to belong to the group exhibiting a zero count (G^0) is represented by a Logit model:

$$\eta_i = \frac{e^{\delta_i z_i}}{1 + e^{\delta_i z_i}}$$

where z_i are the variables explaining the decision to have children and δ_i the estimated parameters. If an individual belongs to the zero group ($G^0 = 1$), her estimated fertility is always zero. If she does not belong to the zero group ($G^0 = 0$, with probability $1 - \eta_i$), her fertility is assumed to be distributed following a Poisson distribution. Then, her probability to have $n \geq 0$ children equals $\Pr\left[y_i = n \mid x_i\right] = \frac{e^{-\mu_i}\mu_i^n}{n!}$. Finally, the assumed distribution for count fertility is sensibly different from the Poisson regression model. Indeed, the overall probability for a zero count is:

$$\Pr\left[y_i = 0 \mid x_i,\ z_i\right] = \eta_i + (1 - \eta_i)\Pr[y_i = 0 \mid x_i, G^0 = 1]$$

And the probability for a positive count is:

$$\Pr\left[y_i = n > 0 \mid x_i,\ z_i\right] = (1 - \eta_i)\Pr[y_i = n > 0 \mid x_i, G^0 = 0]$$

Obviously, this modified Poisson distribution increases the probability to have a zero count compared to a standard Poisson regression model. As the Poisson regression model

[23] Long & Freese [2006] provide a very simple and enlightening presentation of the method to obtain the zero inflated Poisson regression model.

and the zero inflated regression model are not nested, to determine if the distribution really exhibits an excess of zeros, a Vuong test [1989] is run. The Vuong statistics[24] indicate that the Zero inflated Poisson regression model should be preferred to the Poisson regression model.

In order to clearly determine the impact of religion and cultural transmission, a step by step zero inflated Poisson regression model is implemented (see Table 1). In a first regression (Model 1), neither religious nor cultural variables are considered. In a second regression (Model 2), the variables describing the cultural transmission from parents to children are introduced. These variables describe the parental fertility of the respondent and the transmission of family oriented values into the family. In Model 3, I introduce the variable "No Religion" describing if the respondent has been raised in a religious family[25]. In Model 4, the variable "Believer" is added. It equals one if the individual answers "Yes" to the question: "Are you a Believer?". The variable "Office Frequency" measures the respondent's religiousness. It increases from 1 to 6 in function of the his attendance to religious offices in Model 5.

In the present sample, the high number of zero counts is explained by the respondent's age, the size of her town and her "higher education status". The older a woman is, the lower her probability to have no child. Furthermore, a woman who has engaged in higher education and does not live in a small town has a smaller probability to choose not having children. Finally, the excess of zero reflects both the strong postponement of first birth in developed economies (women tend to have their children after 28) and the fact that urban highly educated women more often choose not having children than other woman.

Alternative regressions for the excess of zero have been tested (see Table 3 in appendix). I find that never having been married has no impact on the decision to not have children. This result confirms that limiting the study to married woman could bias the estimation of the impact of cultural background on fertility. Religiousness and to have only low education levels have no significant impact on the probability to be childless.

As shown in Model 2, to have been raised in larger families significantly increases the

[24] Vuong statistics are reported in Table 1.

[25] It takes value one if the respondent has been raised in a religion. Notice that the sample suffers from a selection bias in the sense that other non catholic religions are under represented. Then differences between religious cannot be investigated.

respondent's fertility. Furthermore, the transmission of family oriented values among generations also increases fertility.

Another major result lies in the fact that having been raised in a religious family and proclaiming to be a religious believer do not significantly increase expected fertility[26] (see Table 1). Indeed, in model 4 (Table 1), the variable Believer was, a priori, significant because, putting alone, it brings out two dimensions of the religious background: believing and practicing (religiousness). This is confirmed when religiosity is added in the regressions (see model 5). Finally, religiousness measured by the frequency of offices attendance is the only religious variable which significantly influences fertility.

Following these results, Model 6 indicates that an increase of one standard deviation in the Office Frequency increases the estimated fertility of the respondent by a factor of 1.044. In other word, the estimated fertility of a woman with the maximal religiousness is 24% higher than the expected fertility of a woman without any religiousness. It has to be noticed that the introduction of religious variables does not weaken the impact of proxies for the transmission of fertility patterns and family oriented values inside the family.

The Bayesian Information Criterion (BIC) indicates that Model 6 is very strongly preferred to Model 5. This confirms that both having been raised in a specific religion and being a believer are meaningless to explain fertility behaviors. Following Raftery [1996], the BIC indicates a positive evidence in favor of Model 6 against Model 1 but not a strong evidence. As Model 1 and 6 are nested, a Likelihood Ratio (LR) test can be run. It appears that Model 6 should be strongly preferred to Model 1[27].

Usual predictions of Family economics are also validated. Income of men and women have opposite effects. The income of the woman has a negative impact on her fertility whereas the income of the man has a positive impact. This tends to confirm that opportunity costs of fertility are essentially determined by the woman's income. This interpretation is conditional on the assumption that mothers have to invest a higher part of their time in child rearing. In line with the results of Ahn & Mira [2002], this effect is expected to be smaller in France

[26] The sample suffers from a selection bias in the sense that alternative religions are under represented in the sample. Then specific religious affiliation cannot be tested as a determinant of fertility.

[27] The null-hypothesis is that the coefficient of Office Fraquency, Parental Fertility and family Values are all equal to zero. The probability to prefer model 6 against model 1 while model 1 fits better the distribution than model 6 equals to 0,0002.

than in some other European countries like Germany, Greece and Italy. Indeed, the French infrastructures and fiscal scheme allow women to conciliate a strong participation to the labor market and high fertility.

The impact of school attainment has a significant impact on expected fertility only for less educated women. Indeed, the expected fertility of a woman who has only achieved primary education is 19,1% higher than a woman who has achieved a high school graduation. Women with an university level have a stronger probability not having children but, when they decide having children, their fertility behavior is not significantly different from women who only have a high school diploma.

Finally, women younger than 28 exhibit a lower fertility than others. Indeed, in 2006, the average age of entry in fertility for French woman was 28. Furthermore, women older than 45 are expected to have achieved their reproduction process. In consequence, they mechanically tend to have more children than women who have not yet achieved their reproductive process. Notice that, as mentioned in the preceding section, this effects are also suspected to derive from some cohort effects[28]. However, the fact that the effects of the position in the reproductive process are in adequacy with intuition, indicates that the cohort effects are not too strong.

The following section provides some robustness checks. It checks that the significant role of the cultural background in the Poisson regression model does not come neither from the assumptions on the distribution nor from the chosen measure of religiousness.

5 Robustness Checks

The following subsections test the robustness of my results with regard to assumptions on the distribution, endogeneity of the female income, the measure of religiousness and the sample selection.

[28] Particularly, the generous family policies implemented in France since 1994 have sensibly increased fertility. This could have altered the impact of the variable "More Than 45 yo" because the group of women being older than 45 embodies the group of women who achieved their reproductive process without enjoying generous subsidies for fertility.

5.1 Overdispersion and Alternative distributions

This subsection provides robustness checks for the distribution. The estimation of count data with a Poisson or Zero Inflated Poisson regression model can be subject to overdispersion. Looking at the summary values, it appears that the sample's variance (1,762) is greater than its mean (1,582). To test for overdispersion[29], a zero inflated Negative Binomial regression model is provided. The negative binomial regression model allows the variance of the distribution to be greater than its mean: $V(y \mid x_i) = \alpha E(y \mid x_i)$. An LR test for the assumption $\alpha = 0$ is proposed. The probability of rejecting $\alpha = 0$ when this is true equals to 0,938. As the data set is not subjected to overdispersion, the zero inflated Poisson regression model should be preferred[30].

Fernandez & Fogli [2007] analyze fertility data at the micro level using ordered probit regressions. I also use this method to test the impact of cultural background on fertility in addition to Ordinary Least Squared (OLS) regressions[31]. The ordered probit regression model (Table II) also indicates that having been raised in a religious family and being a believer have no impact on fertility. LR test for nested model and differences in BIC indicate that the model which includes the religiousness variable (office frequency), the parental fertility and the Family Value variable is preferred to the two other ordered probit models. Expected differential fertility between woman with the maximal religiousness and women without religiousness is about 20%.

In Table II, OLS regressions also conclude that the model which excludes the variables No Religion and Believer should be preferred to other OLS models. The OLS regressions provide results which are closed to the zero inflated Poisson regression model and the ordered probit model.

These regressions confirm that the significance of the relation between religion, cultural transmission and fertility, is not dependent on my assumption on the distribution.

[29] In case of overdispersion, the standard errors in the PRM will be biased downward, resulting in spuriously large z-values and spuriously small p-values (Cameron and Trivedi [1986]).

[30] Because $\alpha = 0$ with a very strong p-value, regressions are not reported. Indeed, values of estimated parameters are indentical in the two regressions. Their only differences lie in the z-statistic for the inflation term which are smaller in the zero inflated negative binomial regression model than in the zero inflated poisson regression model. Nevertheless, significance of each variable remains unchanged.

[31] Long & Freese [2006] underline that count data can sometimes be analyzed with OLS regression.

5.2 Endogeneity Bias and Instruments for Female Income

The Beckerian models of fertility show that fertility and income find common determinants like the cost of the quantity of children which determine both the female fertility and her participation to the labor market. If the female income is endogenous, it would be correlated with errors and result in some inconsistency. In this subsection, I propose to investigate this question in the framework of OLS models. As previously shown, OLS regressions provide satisfying results in comparison to zero inflated poisson and probit models. Dealing with OLS allows to apply simple methods to address endogeneity.

I first perform a Durbin-Hausman-Wu test of endogeneity[32] for the female income which shows that the female income is endogenous. Indeed, the Durbin-Hausman-Wu statistics indicate that the probability to accept exogeneity of the female income while it is endogenous in reality, equals 37,6%. Following this result, I propose to instrument the women's income by the variables "Financial Expert" and "Bank Loan"[33].

The variable "Financial Expert" comes from the answer to the following question: "When you have to make a financial investment, do you consult a Financial Expert?" Respondents has the choice between three answers: "Often", "Sometimes" or "Never"[34]. One can reasonably expect that the answer to this question is negative correlated with income because it is relied on the frequency and amounts of savings but not with fertility. Indeed, consulting financial expert tells nothing about the risk aversion of the respondent. So it is not suspected to be related to prudency or risk taking which could be, however, related to fertility.

The variable "Bank Loan" comes from the response to the following question: "If you needed money, do you expect that you could borrow it to a bank?" As for "Financial Expertise", the *expectation about bank loan* is suspected to be correlated with income but not with the fertility choice[35].

[32] This test simply was was first proposed by Durbin [1954] and separately by Wu [1973] and Hausman [1978].

[33] I choose to use two instruments rather than only one because it allows run Sargan and Difference in Sargan tests for the exogeneity of instruments. Indeed, the Difference in Sargan test (Hansen Sargan test) is a test of overidentifying restrictions (see Wooldridge [2000]).

[34] The variable "Financial Expert" equals to one if the respondent chooses "Often", to two if he chooses "Sometimes" and to three if "Never". Then "Financial Expert" is expected to negatively impact the income.

[35] The variable "Bank Loan" equals one if the answer is "No" and zero if "Yes". Then "Bank Loan" is expected to be negatively correlated to the respondent's income.

Regressions are provided in Table 4 in appendix. As expected, the variables "Financial Expertise" and "Bank Loan" both have a negative and significant impact on income (see "female income regression" in Table 4). Furthermore, after its instrumentation, female income still has a significant negative impact on expected fertility while male income has a positive one. Notice that coefficients of "Primary Education" and "Parental Fertility" and "Office Frequency" still have the same sign but are now smaller. Furthermore "Office Frequency" is now significant at the 5% confidence level and "Primary Education" and "Parental Fertility" at the 10% one. I provide Sargan and Difference in Sargan statistics to test the exogeneity of my instruments. These tests conclude that these latters are satisfying at the 5% confidence level (see Table 4).

Finally, in the OLS framework, there exist an endogeneity bias for female income. After a correction for this bias, the effects I determined in the precedent section remain robust[36].

5.3 An alternative Measure of Religiousness

The data set provides an alternative measure of the respondent's religiousness. It consists in the answer to the question "Between 0 and 10, how do you evaluate the importance of religion in your own life?". This variable is subject to some caveats. Indeed, it consists in a subjective variable while the frequency of church attendance is an objective criterion. Two respondents can have the same religious behavior but different subjective estimates of the importance of religion. An absolute notation makes interpretations harder because differences in evaluations are less objective than differences in church attendance. To weaken this limitation, a variable "Estimated Religiousness" is constructed. It equals: (*i*) 1 if the respondent's answer belongs to [0,3], (*ii*) 2 if his answer belongs to [4,6] and (*iii*) 3 if it belongs to [7,10].

The variable "Office Frequency" has been replaced by the variable "Estimated Religiousness" in the zero inflated Poisson regression model and in the ordered probit regression model (see Table 5 in appendix). In the zero inflated Poisson regression model, "Estimated Religiousness" has a significant positive impact on fertility when the variables "No Religion" and "Believer" are not taken into account. An LR test between the model with "Estimated

[36]Ideally, this method should be applied to the poisson regression model. However, it is confronted to a problem of convergence of the estimators.

Religiousness" and without it, indicates that the first model is preferred at the 5 percent level. The differences in BIC are not conclusive. The expected differential fertility between an agent who strongly care about religion (Estimated Religiousness = 3) and an agent who does not care about religion (Estimated Religiousness = 1) equals to 10,2%. The same kind of results are found with the ordered probit regressions where BIC differences indicates a strong preferences for the model which includes religiousness. Notice that, once again, the impact of the transmission of values into the family, is robust to the introduction of religious variables.

It appears that studying the impact of religion with the variable "Strong Religiosity" is less conclusive than with the Church attendance. This is probably due to the inherent imperfections of this measure. However, whatever the chosen measure and the estimation strategy, exhibiting a strong religiousness always increases fertility, at least at the 5 percent level of confidence.

5.4 Alternative Samples

As mentioned in section 4, all women of the sample have not yet achieved their reproductive process at the moment of the study. This could imply some doubts about what is really measured. Indeed, the fertility of a woman older than 45 years old can be considered as a completed fertility while the fertility of a younger woman can be considered as a current fertility. Model 2 of the preceding section was run on the subsample of women who achieved their reproductive process[37]. Intuitively, the distribution is less suspected to exhibit an excess of zero observations since this was greatly explained by the age of the respondent. Indeed, the Vuong test indicates that the Poisson regression model is preferred to the zero inflated Poisson regression model[38]. An ordered Probit regression model is also provided (see Table 6 in appendix).

In both models, strong religiousness still increases the expected fertility of the respondent. For example, as in the preceding section, the fertility differential between strong practicers (Office Frequency = 6) and agents who do not practice at all, is about 16%.

[37] This reduces the sample's size to only 943 observations. The reduction of the sample to women who have completed their fertility has been used, among others, by Melkersson & Rooth [2000] and Covas & Silva [2000].

[38] The Vuong Statistic equals 0.83.

As mentioned in the discussion about the strategy of estimation, the effect of age is difficult to interpret when it is directly added in the regression. Nevertheless, a zero inflated regression model where the age of the respondent directly enters the determinants of the non zero counts in place of the age dummies, was run (see Table 7). The impact of age on expected fertility is obviously positive and significant. However, the impact of religiousness is smaller than for the entire sample and is significant only at the 5% confidence level. The impact of female's education is no more significant. This result seems to confirm that directly adding the age variable in the regression captures important effects that are independent from the simple position of the woman in her process of fertility. Indeed, it seems to capture, at least, the recent evolution of school enrollment. Despite this limitation, the effect of religiousness is also validated.

Finally, as in Brañas-Garza & Neuman [2006], the zero inflated Poisson regression model is also provided for the entire sample including men and women (Table 6). A dummy "Female" is introduced, it has a positive and significant impact on fertility. On the whole population, the variable "Office Frequency" is strongly significant but exhibits a smaller value than for the women's subsample: maximal differential fertility between strong religiousness and no religiousness equals 18,2%.

6 Conclusion

Studies of the French fertility at the micro level have always been truncated of their religious dimension. Indeed, the French law makes it very difficult to collect individual data on religious affiliation. The data set "Enquête Mode de Vie des Francais" allows, for the first time, to analyze the impact of religion on fertility in France. Furthermore, it provides complementary proxies for cultural transmission into the family: the fertility of the respondent's parent and the transmission of "Family Oriented Values". It appears that having been raised in a religious family has no significant effect on fertility and considering oneself as a believer does not matter either. Religiousness, whatever the measure chosen, has always a positive and significant impact on expected fertility. A woman who has a strong religiousness has an 24 percent higher expected fertility than a woman without religiousness at all.

The present paper also validates usual predictions of family economics. The income of

men has a positive impact on woman's fertility while the women's own income has a negative impact on her fertility. Moreover, the women's school attainment has a negative impact on their expected number of children.

Because the sample suffers from an under representation of Muslims, Jews and Protestants, the religious affiliation could not be properly investigate. Moreover, the ethnic origin of the respondent is not available in the data set. Future works should aim at building a specific data set dedicated to the study of fertility behaviors in France where religious and ethnic informations would be collected. This would allow to make more precise measurement of fertility behaviors and of the impact of culture on it, culture encompassing a richer set of dimensions.

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Appendix

Table 1: Zero Inflated Poisson Regression Model

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Female Income	-0.056	-0.052	-0.052	-0.050	-0.051	-0.051
	(4.28)***	(3.90)***	(3.92)***	(3.81)***	(3.83)***	(3.85)***
Male Income	0.030	0.028	0.028	0.028	0.029	0.028
	(3.61)***	(3.35)***	(3.39)***	(3.39)***	(3.46)***	(3.39)***
Small Town	0.127	0.128	0.129	0.129	0.125	0.123
	(3.14)***	(3.14)***	(3.17)***	(3.17)***	(3.08)***	(3.03)***
Live In Paris	-0.263	-0.242	-0.245	-0.246	-0.246	-0.241
	(4.34)***	(3.96)***	(4.00)***	(4.03)***	(4.03)***	(3.95)***
Primary Education	0.214	0.201	0.203	0.200	0.202	0.200
	(3.50)***	(3.28)***	(3.32)***	(3.25)***	(3.29)***	(3.27)***
Higher Education	-0.073	-0.06	-0.061	-0.062	-0.068	-0.067
	(1.55)	(1.27)	(1.28)	(1.30)	(1.43)	(1.41)
Never Married	-1.246	-1.242	-1.243	-1.234	-1.237	-1.239
	(13.03)***	(13.00)***	(13.00)***	(12.90)***	(12.92)***	(12.96)***
More Than 45	0.145	0.138	0.144	0.138	0.132	0.125
	(3.40)***	(3.24)***	(3.32)***	(3.19)***	(3.05)***	(2.91)***
Less Than 28	-0.724	-0.731	-0.740	-0.754	-0.756	-0.736
	(3.58)***	(3.50)***	(3.49)***	(3.43)***	(3.37)***	(3.42)***
Parental Fertility		0.034	0.034	0.034	0.034	0.033
		(2.36)**	(2.37)**	(2.37)**	(2.35)**	(2.33)**
Family Values		0.079	0.080	0.077	0.075	0.075
		(3.18)***	(3.22)***	(3.09)***	(3.04)***	(3.02)***
No Religion			0.047	0.079	0.090	
			(0.79)	(1.27)	(1.43)	
Believer				0.070	0.025	
				(1.72)*	(0.53)	
Office Frequency					0.032	0.032
					(1.98)**	(2.72)***
Constant	0.501	0.312	0.299	0.256	0.197	0.234
	(6.91)***	(3.26)***	(3.08)***	(2.56)**	(1.88)*	(2.30)**
Logit						
Age	-0.593	-0.630	-0.642	-0.664	-0.680	-0.648
	(5.43)***	(5.38)***	(5.36)***	(5.35)***	(5.33)***	(5.37)***
Higher Education	1.509	1.543	1.546	1.538	1.571	1.567
	(2.09)**	(2.09)**	(2.09)**	(2.07)**	(2.09)**	(2.11)**
Small Town	-1.349	-1.383	1.383	-1.39	-1.38	-1.38
	(2.24)**	(2.27)**	(2.26)**	(2.27)**	(2.09)**	(2.26)**
Constant	13.684	14.454	14.695	15.145	15.494	14.820
	(3.34)***	(2.83)***	(2.66)***	(2.34)**	(2.21)**	(2.59)***
Pseudo R	0,134	0,137	0,137	0,137	0,138	0,138
BIC	-8362	-8363	-8359	-8354	-8351	-8366
Vuong Statistic	(3.82)***	(3.80)***	(3.80)***	(3.76)***	(3.74)***	(3.76)***

* significant at 10%; ** significant at 5 %; * significant at 1 %
Absolute value of z stat in parentheses

Table 2: Ordered Probit Regression Model and OLS

	OProbit 1	OProbit 2	OProbit 3	OLS 1	OLS 2	OLS 3
Female Income	-0.089	-0.080	-0.080	-0.095	-0.085	-0.084
	(4.88)***	(4.38)***	(4.37)***	(5.14)***	(4.61)***	(4.60)***
Male Income	0.053	0.049	0.051	0.052	0.048	0.049
	(4.55)***	(4.25)***	(4.35)***	(4.42)***	(4.14)***	(4.22)***
Small Town	0.251	0.248	0.250	0.243	0.234	0.236
	(4.38)***	(4.32)***	(4.35)***	(4.09)***	(3.97)***	(3.99)***
Live In Paris	-0.374	-0.344	-0.350	-0.327	-0.299	-0.305
	(4.93)***	(4.51)***	(4.59)***	(4.35)***	(3.99)***	(4.06)***
Primary Education	0.340	0.318	0.321	0.514	0.487	0.489
	(3.47)***	(3.24)***	(3.27)***	(4.90)***	(4.68)***	(4.70)***
Never Married	-1.357	-1.363	-1.360	-1.053	-1.052	-1.048
	(16.00)***	(16.04)***	(15.95)***	(14.12)***	(14.22)***	(14.09)***
More Than 45	0.227	0.197	0.206	0.274	0.232	0.239
	(3.92)***	(3.36)***	(3.49)***	(4.54)***	(3.83)***	(3.92)***
Less Than 28	-1.422	-1.400	-1.410	-0.981	-0.949	-0.957
	(12.25)***	(12.04)***	(12.10)***	(10.17)***	(9.90)***	(9.96)***
Parental Fertility		0.060	0.060		0.059	0.058
		(3.02)***	(3.01)***		(2.87)***	(2.85)***
Family Values		0.143	0.145		0.132	0.134
		(4.10)***	(4.14)***		(3.73)***	(3.78)***
Office Frequency		0.039	0.040		0.060	0.062
		(2.00)**	(1.70)*		(3.00)***	(2.59)***
No Religion			0.143			0.122
			(1.59)			(1.49)
Believer			0.042			0.032
			(0.66)			(0.48)
Constant				1.604	1.138	1.089
				(15.89)***	(8.11)***	(7.56)***
Pseudo R2	0.144	0.149	0.15	0.295	0.31	0.312
(Adj R for OLS)						
BIC	-8482	-8492	-8480			

Observations 1793

Absolute value of z statistics in parentheses (t statistics for OLS)

* significant at 10%; ** significant at 5 %; * significant at 1 %

Table 3: Alternative Assumptions for the Zero Inflation

	Selected Model	Extended Model	Alternative 1	Alternative 2	Alternative 3
Female Income	-0.051	-0.050	-0.050	-0.050	-0.050
	(3.85)***	(3.76)***	(3.76)***	(3.77)***	(3.76)***
Male Income	0.028	0.027	0.027	0.027	0.027
	(3.39)***	(3.25)***	(3.25)***	(3.25)***	(3.25)***
Small Town	0.123	0.110	0.110	0.110	0.109
	(3.03)***	(2.68)***	(2.68)***	(2.68)***	(2.67)***
Live In Paris	-0.241	-0.231	-0.231	-0.231	-0.231
	(3.95)***	(3.75)***	(3.75)***	(3.76)***	(3.75)***
Primary Education	0.200	0.201	0.201	0.201	0.201
	(3.27)***	(3.28)***	(3.28)***	(3.28)***	(3.29)***
Never Married	-1.239	-1.235	-1.237	-1.236	-1.237
	(12.96)***	(12.27)***	(12.89)***	(12.30)***	(12.29)***
More Than 45	0.125	0.113	0.113	0.113	0.113
	(2.91)***	(2.62)***	(2.62)***	(2.63)***	(2.62)***
Less Than 28	-0.736	-0.564	-0.565	-0.567	-0.558
	(3.42)***	(3.15)***	(3.18)***	(3.18)***	(3.12)***
Parental Fertility	0.033	0.032	0.032	0.032	0.032
	(2.33)**	(2.26)**	(2.26)**	(2.26)**	(2.25)**
Family Values	0.075	0.076	0.076	0.076	0.075
	(3.02)***	(3.06)***	(3.06)***	(3.06)***	(2.98)***
Office Frequency	0.032	0.032	0.032	0.031	0.031
	(2.72)***	(2.70)***	(2.70)***	(2.69)***	(2.68)***
Constant	0.234	0.257	0.257	0.258	0.260
	(2.30)**	(2.53)**	(2.53)**	(2.53)**	(2.55)**
Logit					
Age	-0.648	-0.518	-0.521	-0.519	-0.518
	(5.42)**	(5.47)***	(5.76)***	(5.40)***	(5.39)***
Office Frequency		-0.07	-0.08		
		(0.22)	(0.28)		
Small Town		-1.651	-1.637	-1.631	-1.686
		(2.48)**	(2.56)**	(2.47)**	(2.52)**
Primary Education		-2.92			
		(0.00)			
Higher Education	1.567	1.57	1.541	1.612	1.557
	(2.11)**	(2.09)**	(2.09)**	(2.11)**	(2.12)**
Small Town	-1.38	-1.38	-1.38	-1.342	-1.414
	(2.26)**	(2.19)**	(2.26)**	(2.15)**	(2.29)**
Family Values		-0,123			
		(0.33)			(0.37)
Never Married		-0.24		-0.26	
		(0.29)		(0.31)	
Constant	14.820	13.060	13.134	13.122	13.093
	(5.37)***	(5.37)***	(5.71)***	(5.33)***	(5.30)***
Pseudo R	0,137	0,139	0,139	0,139	0,139
BIC	-8366	-8339	-8354	-8354	-8355

Observations 1793, * significant at 10%; ** significant at 5 %; * significant at 1 %
Absolute value of z statistics in parentheses

Table 4: Instrumental Variables for Female Income

	qb1	Female Income Regression
Female Income	-0.47	
	(3.04)***	
Male Income	0.141	0.207
	(3.81)***	(14.07)***
Less Than 28	-1.353	-0.961
	(7.31)***	(7.93)***
More Than 45	0.319	0.334
	(3.66)***	(4.16)***
Small Town	0.145	-0.199
	(2.01)**	(2.59)**
Live In Paris	-0.125	0.455
	(1.19)	(4.70)***
Primary Education	0.213	-0.445
	(1.74)*	(3.19)***
Never Married	-0.954	0.241
	(10.71)***	(2.51)**
Parental Fertility	0.032	-0.025
	(1.78)*	(0.96)
Family Values	0.087	-0.123
	(1.98)**	(2.68)***
Office Frequency	0.166	-0.036
	(2.37)**	(0.44)
Financial Expert		-0.133
		(2.69)***
Bank Loan		-0.550
		(4.57)***
Constant	1.85	2.350
	(7.24)***	(9.42)***
Sargan Statistic (all instruments)	7.68	
	(0.007)	
C-Statistic for qf18	7.68	
	(0.007)	
Adj R	0.1404	0.303
Difference in Sargan	(7.49)***	
Sargan Statistic	(7.49)***	
Durbin - Hausman - Wu test	-0.48	
(coefficient for residuals)	(3.42)***	

Absolute value of z statistics in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%

Table 5: Alternative Measure of Religiousness

	ZIP 1	ZIP 2	ZIP 3	Oprobit 1	Oprobit 2	Oprobit 3
Female Income	-0.050	-0.050	-0.055	-0.080	-0.080	-0.087
	(3.79)***	(3.79)***	(4.17)***	(4.35)***	(4.34)***	(4.79)***
Male Income	0.030	0.029	0.030	0.052	0.051	0.052
	(3.53)***	(3.45)***	(3.62)***	(4.43)***	(4.31)***	(4.51)***
Less Than 28	-0.750	-0.734	-0.729	-1.410	-1.401	-1.419
	(3.45)***	(3.48)***	(3.57)***	(12.07)***	(12.02)***	(12.21)***
More Than 45	0.133	0.126	0.148	0.207	0.196	0.230
	(3.06)***	(2.91)***	(3.45)***	(3.48)***	(3.32)***	(3.95)***
Small Town	0.134	0.132	0.131	0.258	0.256	0.253
	(3.27)***	(3.23)***	(3.21)***	(4.47)***	(4.43)***	(4.38)***
Live In Paris	-0.244	-0.239	-0.260	-0.349	-0.342	-0.371
	(3.98)***	(3.91)***	(4.27)***	(4.56)***	(4.47)***	(4.88)***
Primary Education	0.174	0.171	0.192	0.288	0.285	0.317
	(2.78)***	(2.75)***	(3.09)***	(2.91)***	(2.87)***	(3.21)***
Never Married	-1.251	-1.252	-1.261	-1.372	-1.371	-1.369
	(12.92)***	(12.95)***	(13.04)***	(15.97)***	(16.01)***	(16.02)***
Parental Fertility	0.030	0.030		0.057	0.057	
	(2.10)**	(2.08)**		(2.83)***	(2.84)***	
Family Values	0.079	0.078		0.146	0.143	
	(3.14)***	(3.11)***		(4.15)***	(4.08)***	
No Religion	0.087			0.143		
	(1.39)			(1.75)*		
Believer	0.010			0.007		
	(0.20)			(0.10)		
Estimated Religiousness	0.059	0.056		0.094	0.083	
	(1.94)*	(2.29)**		(2.18)**	(2.40)**	
Constant	0.193	0.228	0.494			
	(1.81)*	(2.19)**	(6.78)***			
Pseudo R	0.138	0.138	0.134	0.151	0.15	0.145
BIC	-8257	-8270	-8268	-8379	-8391	-8381

Observations 1774, Results for Logit Deleted
Absolute value of z statistics in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%

Table 6: Alternative Samples

	Woman Older Than 45		Entire Sample		
	Oprobit	Poisson	Oprobit	OLS	ZIP
Female Income	-0.063	-0.037	-0.086	-0.090	-0.055
	(2.62)***	(2.25)**	(5.11)***	(5.33)***	(4.42)***
Male Income	0.024	0.010	0.057	0.055	0.032
	(1.60)	(1.03)	(6.86)***	(6.76)***	(5.37)***
Small Town	0.147	0.089	0.184	0.176	0.093
	(1.91)*	(1.75)*	(4.44)***	(4.16)***	(3.17)***
Live In Paris	-0.280	-0.175	-0.350	-0.298	-0.227
	(2.80)***	(2.38)**	(6.07)***	(5.30)***	(4.95)***
Primary Education	0.250	0.179	0.293	0.426	0.183
	(2.49)**	(2.86)***	(4.02)***	(5.55)***	(3.97)***
Never Married	-1.928	-1.758	-1.423	-1.072	-1.334
	(11.95)***	(8.83)***	(21.77)***	(19.36)***	(17.57)***
Parental Fertility	0.055	0.033	0.061	0.062	0.033
	(2.13)**	(1.88)*	(4.15)***	(4.16)***	(3.22)***
Family Values	0.140	0.062	0.120	0.111	0.062
	(3.00)***	(2.01)**	(4.63)***	(4.25)***	(3.40)***
Office Frequency	0.053	0.039	0.048	0.063	0.034
	(2.21)**	(2.45)**	(3.29)***	(4.19)***	(3.33)***
Less Than 28			-1.303	-0.827	-0.529
			(14.51)***	(11.59)***	(3.67)***
More Than 45			0.242	0.277	0.145
			(5.72)***	(6.40)***	(4.65)***
Female			0.345	0.331	0.210
			(5.18)***	(5.00)***	(4.42)***
Constant		0.448		0.763	0.016
		(3.75)***		(7.10)***	(0.20)
BIC	-3467	-3428	-18125		-17833
Observations	938	938	3358	3358	3358

* significant at 10%; ** significant at 5%; *** significant at 1%, Results for Logit Deleted
Absolute value of z statistics in parentheses (t statistics for OLS)

Table 7: Alternative Methods for Age

	Age in the Regression	Dummies Strategy
Female Income	-0.052	-0.050
	(3.93)***	(3.81)***
Male Income	0.035	0.029
	(4.14)***	(3.47)***
Age	0.008	
	(5.58)***	
Small Town	0.134	0.131
	(3.26)***	(3.21)***
Live In Paris	-0.239	-0.240
	(3.90)***	(3.92)***
Primary Education	0.106	0.174
	(1.64)	(2.79)***
Never Married	-1.239	-1.255
	(12.70)***	(12.98)***
Parental Fertility	0.037	0.031
	(2.59)***	(2.13)**
Family Values	0.080	0.077
	(3.20)***	(3.09)***
Office Frequency	0.084	0.115
	(1.98)**	(2.74)***
More Than 45		0.124
		(2.87)***
Less Than 28		-0.749
		(3.45)***
Constant	-0.110	0.239
	(0.87)	(2.34)**
Pseudo R	0,139	0,139
BIC	-8277	-8272

Absolute value of z statistics in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%
Results for Logit Deleted