RECIPROCAL EFFECTS OF SEX AND RELIGION IN ITALY

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Abstract

Christian people share ethical norms opposing extra-marital sex. Consequently, the association between religion and timing at first sex could be bi-directional: (1) when people relax their adhesion to Church, the statistical risk of having first sex should improve (*religiosity effect on sex*); (2) when young Christians have first sex, their connection with religion should diminish (*religiosity adaptation after sex*). When dealing with this topic, a connection between religion and sex has been usually found, but without distinguishing between the two effects. We study the bi-directional effect between first sex and discontinuing church attendance among a representative sample of university students of Italy (i.e., an overwhelming Catholic country) using simultaneous equations and taking into account unobserved heterogeneity. Results show that both effects work, contrasting the results of other authors for USA, where only religiosity effects on sex has been detected. In the paper some hypotheses for explaining this difference are discussed.

1. Introduction

Catholicism shares with the other big « religions of the book » an explicit willingness to regulate sexual, marital and reproductive (SMR) behaviour. This is especially seen mainly in articulated and explicit norms which are intended to guide and uniform the behaviour of the followers. The most important and well grounded ones concern the exclusivity of sexual intercourse within marriage, the ban of birth control practices not based on abstinence, and the indissolubility of marriage.[1] The individual and the collective relevance of these prescriptions make this normative system, at least formally, reciprocal. On the one hand, such exacting norms strongly direct behaviour. On the other hand, such behaviour is so recognizable and important in an individual's life to define a clear boundary between who adopts such norms – and follows the Church – and who disregards them, placing oneself outside it.

Yet, the presence of explicit norms is a necessary condition, albeit not a sufficient one, to guarantee a close reciprocity between adhesion to a religion and respect of its prescriptions on SMR behaviours and attitudes. Such reciprocity needs to be perceived both

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[1] Although these norms are often re-emphasised, this doesn't mean that these have not undergone some modification. For example, while today the Holy Communion is denied to remarried divorcees, this is was not the case in the first centuries of life of the Catholic Church. In year 325, the Canon 8 of the Council of Nicea stated the possibility of re-admitting remarried divorcees to the Holy Eucharistic after a suitable path of penance. This norm has never been formally abrogated by a decree of equal importance (Cereti, 1998).

at an individual and collective level, and there need to be institutions which are capable to reinforce it and make followers comply with it (Goldscheider, 1971; McQuillan, 2004). If these conditions are not in place, on the one hand the norms could not influence the actual behaviour of the followers, on the other hand, who does not respect them may continue to feel close to the religion, and to be recognized as in communion with the Church.[2]

These situation now characterizes almost everywhere the relation between affiliation to the Catholic Church and adhesion to its moral prescriptions on SMR behaviour. More generally – outside the specific context of family and sexual ethics – we can talk of '*bricolage* religion' (self-made religion) (Luckmann, 1979; for Italy see Garelli et al., 2003 and Trombetta, 2004): the majority of people who maintain a relation with the transcendent, 'create' an individual religiosity, accepting or refusing specific beliefs, prescriptions and rituals proposed by one or more religions. The consistency, in reference to a *corpus* of prescribed norms, is replaced by the desire to satisfy one own's specific need of a relationship with God and/or with the religious institution. This individually defined religion becomes one of the items in the 'scale of values' which direct the preferences of the citizens of the post-modern world, even with specific reference to SMR behaviour (Hakim, 2003; van de Kaa, 2004). This happens in a strongly secularized context, where the Church has only limited power to 'oblige' the individual to conform to its own norms.

Yet, even in such a deconstructed context, the reciprocal influence of religion and SMR behaviour and attitudes has not dried up. For some aspects, it seems to have almost vanished. Commenting on the rapid convergence of sexual behaviour and contraception of American Catholics towards the average national behaviour, Westoff and Jones (1979) talk of 'the end of Catholic fertility' (see also Brewster et al, 1998). For other aspects, the reciprocal tie continues to be strong and articulated, as Thornton and Axinn (1992) have shown for example for cohabitation and marriage. As a consequence, even in post-modern social contexts which are largely secularized, to better understand some important aspects of SMR behaviour and attitudes it is important to consider its interconnections with religious behaviour.

In this paper we will examine if the age at sexual debut and the age at ceasing a regular church attendance are interrelated for young Italian students, by means of data from a national survey collected during 2000-01. Obviously, this analysis is not exhaustive in terms of the complexity of the possible connections between religiosity and SMR

[2] These aspects have been thoroughly studied in relation to the control of marital fertility. Where there exists a strong institutional and individualizing presence of the Catholic Church, the control on individual behaviour – hence of SMR behaviour as well – was put into place through a system of rewards and sanctions which essentially involved all the institutions with which each individual interacted: from family to neighbours, from the parish to the school, from the clergy to the civilian authorities (such as doctors and midwives). This is what happened for example in Ireland and Quebec in the 19th century and the early 20th century (Ò Grada, 1991; Gervais and Gauvreau, 2003). In such social contexts, religious affiliation contributed to slow down conjugal fecundity, whereas the lack of affiliation to the teaching of the Church on SMR behaviour coincided with religious exclusion (and often the partly exclusion from the local community). Yet, the case of Quebec and Ireland is quite a particular one: over there the Catholic Church has been the heart of the national and local identity for centuries for two countries colonized by foreigners affiliated to another religion. Generally, the coherence has been less stringent: the norms have not always been rigorously applied, and who behaved in a different way was not always completely excluded at a religious and social level.

behaviour and attitudes in the diverse contexts of the post-modern world. However, it can have some general value for almost four reasons.

Firstly, we have chosen two fields which have a long tradition of empirical measurement. Therefore, the drastic simplification, due to the use of only these two indicators of religiosity and sexual behaviour, is compensated by the awareness of having to do with relatively solid measures, easily comparable in time and space. Secondly, we are able to compare our results for Italy with the USA ones, the only country where this specific topic has been thoroughly studied (Thornton and Camburn, 1989; Hardy and Raffaelli, 2003; Meier, 2003; Rostosky et al., 2003, see part 3). Thirdly, since in Italy – until recently – an overwhelming majority of Italian people has been baptized, and has received a specific Catholic education and the Holy Sacraments (see following section), our findings on individual behaviour can be read in reference to a well-determined institutional context. Finally, the sample survey on Sexuality of Italian Students (SIS) has been constructed with the aim of explaining the early sexual behaviour, reconstructing some processes that – theoretically speaking – could be connected with sex. Consequently, for each one of our students, it is possible to contrast the history of sexual debut with the "history" of Mass participation.

In the next section we will briefly review the research on the religion and the sexual behaviour of the Italian youth, emphasizing the results on the interrelationship between the two topics. Section 3 shows a conceptual framework and a modelling approach, while section 4 illustrates the data and statistical methods. Finally, sections 5 and 6 are devoted to our findings and conclusions.

2. Religion and sex among Italian youth

2.1 Religion

The vast majority of young Italians who today are 20 years old were christened in the Catholic Church soon after their birth; they received Reconciliation and First Eucharistic at the age of 8-10 years old and Confirmation at 14-15 years old (around 85% for people born in Italy during the 1980s, as the Papal Statistical Book shows).[3] These moments – particularly the Baptism and the First Eucharistic – have often been an important rite of passage, emphasised by a preliminary religious teaching (for parents as to Baptism), involving gifts and family celebrations. During childhood and pre-adolescence (aged 6-14), most of the 20 years old attended catechism classes (1-2 hours a week, out of school hours), still active in all 25,695 Italian parishes in which Italy is subdivided (about one every two thousands people). Most of them – although they attended public schools – accepted to have Catholic classes at secondary school as well (about one hour a week). These classes are held by teachers directly chosen by the Church (see indicator [1]). If one chooses to not

[3] These statements are related only to Italian young people. The relationship with religion of young foreigners living in Italy – which nowadays are quite a few especially in the Centre and the North – is obviously very different and strongly determined by the tradition of their own country. According to estimates of 2002, 24% are Catholic immigrants, 21% Christian (mostly Orthodox), 37% Muslims, 18% of other religions or without religion (Caritas Italiana, 2003).

attend the religion class, one has one hour less of schooling a week and this hasn't any particular consequence on the student's school assessment. Consequently, it is a matter of choice rather than a constriction. In 2000 as well the sharp majority of first marriages was celebrated according to the rite in accordance with the Catholic concordat, ratified by a specific agreement between the Italian State and the Catholic Church in 1929, and renewed in 1984. The bride and the groom pronounce their oaths in front of a priest during the wedding Mass, in which they usually receive the Holy Communion as well. In Italy the "agreed rite" has also a civil value. This means that the rite has not to be repeated in front of a State official, as in other mainly Catholic countries, e.g. in France (see indicator [2]).

The religious education of the youth – one of the greatest pastoral efforts of the Italian Catholic Church in the last decade – shows clear signs of strain in the last few years. As the previous two indicators show, even if the vast majority of young Catholics is still involved in the initiation of the sacraments and in catechism, a slow erosion can be observed, which is becoming much more marked especially in the larger cities in the North and in the regions where during the second half of the 20th Century there prevailed the sub-culture of left-wing political parties, under the direction of the Communist Party (i.e. Emilia-Romagna, Toscana, and Umbria) – Cesareo et al, 1995.

This decline is certainly due to the progressive diffusion of secularized behaviour. However, during the last years, in Italy as elsewhere in the Western world, the Church has had to reduce its engagement towards the youth also on account of the lack of consecrated young people (see indicator [3]).[4]

Table 1. Some indicators of religiosity of Italian young people and 'catholic religion supply' in Italy

	1983	1987	1992	1996	2000
[1] Proportion of high school Italian students (aged 14-18) who frequent the optional course of catholic religion at public schools	---	---	89	88	88
[2] Proportion of religious first marriages	11	12	13	14	15
[3] Ratio between Italian people aged 15-24 and Italian diocesan priests aged less than 50 years	581	643	720	719	720
[4] "Religion is important in my life" (much or very much) (*)	26.9	31.5	33.9	35.8	30.6
[5] Church attendance (at least 2-3 time a month)	36.4	37.5	35.9	36.2	33.3
[6] "The active care about religion is very important in my life"	12.2	12.7	13.6	14.1	11.3
[7] "During the last three months, I have participated at least three times to the activities of a religious or parish organization"	26.0	27.9	16.3	18.0	---

(*) The same proportions for people aged 18-24 of other countries interviewed in 1993 were the following: 5% Japan; 37% USA; 9% UK; 5% Germany; 7% France; 6% Sweden; 16% Russia (YAA, 1993, p. 118).

Sources:
Indicator [1]: Osservatorio Socio-Religioso del Triveneto, several years.
Indicator [2]: Barbagli et al (2004) p. 131
Indicator [3]: Dalla Zuanna and Ronzoni (2003)

[4] The Italian Church has a pastoral organization oriented to the full time commitment of consecrated people, therefore, rarely laymen are paid for the pastoral activity, unlike other Catholic areas such as Germany and the US (Dalla Zuanna and Ronzoni, 2003). In the past 20 years, the only important exception to the clericalism of the pastoral organisation of the Catholic Church in Italy was the quick diffusion of laymen teachers of religion in public schools, who – as specified above – are paid by the State. Yet, also in this case, the choice, the training and the supervision of these teachers are carried out through the School Department of the Diocesan administration, almost everywhere run by priests.

Indicators [4]-[7]: Five representative IARD surveys on Italian youth, extracting data for people aged 15-24. As religious participation declines with age, and as the age distribution within age class 15-24 has changed during 1983-2000, we have corrected the data published by Rostan (2002, p. 376), standardizing by age, considering specific rates by age of 1983 as reference. The meaning of each indicator here published for each year is the following: it is the proportion of people (e.g. attending church at least 2-3 times a month) that would have been if the age distribution within age class 15-24 had been the same of that realized in 1983. According to our indicators adjusted by age, religiosity decline is smoothed, because of the 'aging' of youth people (within the class 15-24, the proportion aged 21-24 has changed from 37% in 1983 to 49% in 2000). E.g., the unadjusted values of indicator [5] for the five years – those published by Rostan – are: 36.4, 36.7, 34.9, 34.8 and 31.6.

Not withstanding the previously mentioned difficulties, in Italy one can still speak of mass religious socialization during childhood and pre-adolescence. Yet, what are the outcomes of the commitment of the Church? The popular choice of a religious marriage seems to point out to a very common persistence of attitudes and behavior which are close to religion. Yet, in many cases this choice seems to be more a tribute to tradition, to habits and to parents' desire, rather than a conscious consequence of clear-cut religious choices. Indeed, other indicators show that most young people become detached from Church and religion during adolescence (see indicators [4]-[7]), although the proportion of self-declared religious young people is much higher than elsewhere in Europe. Moreover, it is wrong to think of a progressive and relentless decline. Indicators show that this position hasn't ripened over the past years, but that it was already determined at the beginning of the 1980s (thus for young people who were born at the end of the 1950s). Previous surveys show that the detachment of young Italian people from religious practice has to be dated back to the 1960s and the early 1970s (Cesareo et al, 1995, 73-79). On the contrary, the past 30 years are characterized by a steady approach, with the exception of the participation in Catholic groups (indicator [7]), which noticeably declined especially after the early 1990s. As we have already hinted at, this latter factor could be linked to the progressive reduction of ecclesial supply towards young people, because of the shortage of young priests.[5]

In conclusion, during the period 1970-2000 the relationship of young people with the Church became stable in Italy, taking on the following two features: (1) religious socialization and the mass initiation to the sacraments during childhood and pre-adolescence; (2) progressive detachment of the majority of young people from religious practice during adolescence and youth. Such detachment doesn't prevent the majority of young people from getting married in Church. Yet, for more than thirty years now, one Italian youth out of three attends quite regularly Sunday Mass and one out of ten is actively engaged in religious activities.

[5] Other clues show that the story of the relationship between young people and the Church in Italy is not a story of relentless decline. For example, the proportion of young Italian males aged 20-24 and attending diocesan seminary (the schools to priesthood not linked to specific religious orders), soon after having reached the minimum with 1.33 per thousand in 1979-83 has increased, getting to 1.77 per thousand in 1994-98. In spite of this, the number of young priests is due to decrease again, also on account of the decline of births, which went from one million in 1965 to 550,000 at the end of 1990's (Dalla Zuanna and Ronzoni, 2003). Moreover, even if some "historical" Catholic Associations (as for example Azione Cattolica) witnessed the decrease of young people's enrolments in the 1980s and 1990s, there are other Catholic new and old groups that have a strong power of attraction and mobilization, such as spiritual and missionary groups.

2.2 Sex

For the Italian cohorts born in the early 20th century, the sexual initiation occurred in a double standard system which even more marked if compared to central and northern European countries (Bozon and Kontula, 1998; Castiglioni and Dalla Zuanna, 1995; Castiglioni, 2004). For men, the median age at first intercourse was around 18-19, and "the first time" was generally experienced outside a couple relationship, often with older women or with prostitutes – Italy was on of the last European countries to ban brothels in 1958. On the other hand, the majority of women had their first intercourse at marriage or with their husband-to-be just before marriage at an average age of 21-22. Among the married women born in the 1940s, more than half were virgins at marriage.

In Italy, something has started to change with the cohorts born in 1950s. For men the age at intercourse is almost unchanged. What has changed is the context of the sexual initiation, which generally takes place either within a steady couple relationship or in an occasional encounter with girls of the same age. For women the age at intercourse is now equal to that of men in the Centre and North, while in the South women on average have intercourse one year older than men.

For the first cohorts (born in 1950's) the sexual revolution took place at the same time of the decrease of the average age at marriage, which in Italy reaches the minimum level of 22.5 for the women cohort born in 1951-55 (De Sandre et al, 2000, p. 26). As to the cohorts born later, the age at marriage increases rapidly and goes up to over 27 years old for women born in the early 1970's. Unlike North and Central Europe and like other Mediterranean countries, in Italy this sudden increase of age at marriage is not matched by a diffusion of cohabitation or house-sharing with friends or living on one's own.[6] On the contrary, many unmarried Italians continue to live with their parents beyond their 30s.
As a consequence, Italians born in the early 1970s have experienced a long and sexually active period (10-12 years for men, 8-10 years for women) while living with their parents and with the necessity of avoiding pregnancies. It is not a surprise that their contraceptive practices are very high (75% of them used some contraceptive method at first intercourse, against 33% of the cohort born twenty years earlier – De Sandre et al, 2000, p. 108), and their frequency of sexual intercourse has been restrained (Castiglioni et al, 2001).

In conclusion, sexual revolution took place in Italy as well but with its own features which are different from other countries, though similar to Spain for example, as the outcomes of a national research show (INE, 2004). The sexual behaviour of young Italians born in the 1970's and early 1980's can be summed up with three adjectives: belated, moderate and cautious. *Belated* because 18-19 years old is a higher age for first intercourse than that observed in other European countries, not to speak of the United States and other overseas Anglo-Saxon countries. *Moderate* because of the low frequency of intercourse caused by the fact that the partners do not live together. *Cautious*, because of a strong

[6] In fact, cohabitation among young people is spreading in Italy as well, and this trend may continue in the following years as well (Billari e Rosina, 2004). Yet, even those who choose cohabitation leave the parental home at an older age if compared to the countries of Central and Northern Europe: in Italy we can speak of cohabitation of young adults rather than cohabitation of young people.

contraceptive cover. A happy outcome of this behaviour is that there are few young Italian single mothers, and teen's pregnancy rates are among the lowest in developed countries.

2.3 Religion and sexual behaviour and attitudes

In Italy, as elsewhere, religiosity and sexuality are strongly linked. This association – already quite intense in the years preceding the sexual revolution (Fabris and Davis, 1978)[7] – emerges for the younger cohorts as well.

The greater number of statistical valid analyses on national samples referred to the connections between Sunday Mass attendance and age at first intercourse (Ongaro, 2001; Cazzola, 1999; Castiglioni, 2004). Some of the results of a study on this topic can be found in tabel 2. For young Italians born in 1966-77 and interviewed in 1996, Sunday Mass attendance is the variable which is particularly associated with the statistical risk of engaging in first sexual intercourse. Among girls, the median age at first intercourse ranges from 18.6 among those never going to Mass to 21.4 among those going to Mass at least once a week. Among boys of the same two groups, the median age ranges from 17.9 to 21.2. Generally, the authors of the studies we have here referred to explain these results as a sign of the effect of religiosity on sexual behaviour. Yet, up to now in Italy it has never been possible to thoroughly study the direction of this relation. In the survey on sexual behaviour, Mass attendance was asked in reference to the time at interview. Quoting Castiglioni (2004, p. 29): "Religious youth delay their entry into sexual life, behaving consistently with the Church's teaching. However, an inverse mechanism could be also operating. A precocious sexual activity could increase the distance from the Church's moral norms, which could later lead them away from religious practice".

Table 2. Age at first intercourse and attendance of religious services. Odds ratios from four Cox regression models for a representative sample of Italian men and women born in 1966-77 living in the Centre-North and Southern regions, interviewed in 1996 [1]

Attendance of religious services	Men		Women	
	Centre North	South	Centre North	South
Never	2.5**	1.9**	1.9**	2.3**
1-2 times every three months	2.1**	1.5+	1.8**	1.5++
1-2 times a month	1.8*	1.4+	1.7**	1.6*
Once a week or more (reference)	1	1	1	1
Total (censored)	342 (60)	250 (49)	350 (54)	265 (76)

** p<0.01 * 0.01<p<0.05 ++ 0.05<p<0.10 + 0.10<p<0.20

[1] The following variables are pooled in each of the four models: *Population in the place of residence* (< or > 10,000); *Education* (low, medium, high); *Going out at night* (never, 2-3 times a week, every night); *Night-clubbing and discos* (once a month or more, 1-2 times every three months, never in the past three months); *To be successful it is better...* (to risk, to be prudent); *Frequency of risk in everyday life* (often, frequently, sometimes, never); *Ever taken drugs* (yes, no); *Satisfaction with physical appearance* (very, quite, not

[7] As far as we know, the survey by Fabris and Davis – carried out in early 1977 – is the only extensive study on a statistical representative sample of the Italian population. The authors propose several tables in which religiosity is crossed with diverse aspects of sexuality. Although, lacking more complex statistical models, it is not possible to control for the spurious relations, the association of the two variables is almost always strong for both young and adults, for sexual behaviour both within and outside marital life.

satisfied); *Satisfaction with psychological tranquillity* (very, quite, not satisfied). Other variables are not in the models as they are not statistically relevant: parents' social class and education; relation and affective communication within family; number of siblings; extra-school activities.
Source: Castiglioni, 2004, p. 29.

The association between sexuality and religion among Italian youth is also studied for other sexual aspects and, more generally for SMR behaviour and attitudes. Results are very similar to those described in the introduction: For some aspects the Catholics are strongly characterised, whereas for other aspects differences are considerably minor. The differences between Catholics and young people without religion are also closely related to some SMR attitudes. All the hypothetical behaviour listed in table 3 is condemned by the Catholic ethic. Nevertheless, the proportion of Catholics refusing them changes deeply (from 31% for cohabitation to 68% for abortion), and the same happens for differences between Catholics and people far from any religion, although the differences between the two groups are always statistical significant.

Table 3. Contrasting some ethical attitudes between young Catholics and people without religion[1]. Italian young people aged 15-34 interviewed in 2000. % that do agree[2].

	Catholics (1)	*Far from any religion (2)*	*Ratio (2) / (1)*
It is admissible...			
... to cohabit without marriage	79	96	1.22
... to have extramarital sexual intercourse	77	94	1.22
... to try to have a child using IVF	67	84	1.25
... to divorce	63	89	1.41
... to have homosexual experiences	38	69	1.82
... to have sex with a married person	33	63	1.91
... to have an abortion	32	74	2.31
Total	(405)	(202)	---
% on total sample	27.2%	13.5%	---

[1] Young Catholics are people who believe in one God, and go to Mass at least once a month. Young people without religion do not believe in God and never go Mass.
[2] The differences between the two groups are always statistically significant ($p<0.001$ of CHI^2 test applied to 2x2 contingent table merging the two groups).
Source: Rostan, 2002, pp. 380-381.

3. Conceptual framework and modelling approach

The main aim of this paper is to study the reciprocal influence between sexuality and religion among young Italians. In particular we focus on the sexual debut and on discontinuing Mass attendance. These events are the outcome of processes which interact dynamically with each others. "There are very few studies that have explored possible reciprocal relationships between religiosity and first sex" (Meier, 2003, pg. 2). "Our empirical understanding of the association between religiosity and adolescent sexual behaviour is fairly limited" (Hardy and Raffaelli, 2003, pg. 732). Often the two processes are in fact separately analyzed, or cross-sectional data are used that do not allow a separation of the reciprocal effect (Rostosky et al., 2004). Lacking longitudinal data and

"without correctly specifying the causal influence in both directions, empirical estimates of the impact of religion on adolescent sexuality will be biased" (Thornton and Camburn 1989, pg. 641).

From a methodological point of view we analyse retrospective longitudinal data with event history models that explicitly account for the endogeneity of one event as a predictor of the other by taking into account both heterogeneity across individuals due to unobserved factors that may affect each of the two processes and the correlation in the unobserved factors across processes. The timing of the events (first sexual intercourse and discontinuing church attendance) is expressed in terms of the life of the individual, starting from 13 years old. Besides, we take explicitly into account the selection due to the fact that we confine the analysis to the sub-sample of those who at the beginning of the process (13 years old) used to attend Mass and were virgins. Since, basically all the individuals analyzed (some rare cases excepted) were virgins at 13, the selection mechanism is relevant only for religious participation. For the details of statistical models see section 4.2.

From a substantial point of view, the hypotheses we want to verify are the following. Several studies have highlighted the importance of religiosity on sexual behaviour. The results obtained in the literature essentially agree that church attendance reduce the likelihood of coital debut and it is also positively associated with greater perception of risk of contracting HIV or pregnancy from unprotected intercourse (Miller and Gur, 2002). The Roman Catholic Church reinforces values which discourage the youth from engaging in precocious, or anyhow premarital, sexual intercourse. The adhesion to such values proves to be particularly strong among the youths frequently attending religious events: they "receive frequent religious messages concerning premarital sex, and their religious involvement may facilitate their acceptance of the teaching of their religious institutions". Thus they are "more likely than others to develop sexual attitudes and behaviour that are consistent with religious teachings" (Thornton and Camburn, 1989; p. 642). Our first hypothesis is therefore the following:

H1: "Religious effect": net of common factors (observed or unobserved) discontinuing Mass attendance has a positive effect on the risk of experimenting the first sexual experience.

Many scholars suggest that beside the effect of religion on sexual behaviour, there might also be a reciprocal influence between sexual behaviour and religiosity (Thornton and Camburn, 1989; Benda and Corwyn, 1997; Rostosky et al, 2004). Results in this direction are however controversial, and in particular are not statistically significant for the USA youths (Meier, 2003; Hardy and Raffaelli, 2003). However – from a theoretical point of view – for young religious people the fact of having experimenting premarital sex is likely to produce a cognitive dissonance (Festinger, 1962) with the religious values that oppose such behaviour. The solution to such inconsistency between behaviour and values can be of two kinds. Firstly, the youth, especially if the sexual experience was positive and satisfying, could distance him/herself from religion (*religiosity adaptation*):[8] "the discrepancy between the individual's own position of the church will alter the individual's

[8] "Meaning that the behaviour causes the individual to change his or her religiosity" (Meier 2003).

relationship with the religious institution. The authority of the Church may be questioned, the commitment to the institution weakened, and the involvement in church services restricted" (Thornton, and Camburn, 1989, p. 643). Conversely, in a context characterized by more moralistic and conservative beliefs about sex, the coital debut, especially if emotionally unsatisfying, could be followed by a sense of guilt that temporally leads to freeze the sexual experience and to reinforce the religious involvement: "a sexuality experienced religious teen can reduce cognitive dissonance […] by ceasing to engage in sexual activity" (Hardy and Raffaelli 2003, p. 732). In the literature the effect that is considered to be prevalent is the first one (*adaption effect*). We therefore have the following hypothesis.

H2: "Adaptation effect": net of common factors either observed or unobserved, sexual debut has a positive effect on discontinuing Mass attendance.

The strength of the relationship between sex and religion can be gender differentiated (Rostosky et al, 2003; Meier, 2003). Even the observed or unobserved control factors can have a differentiated impact on gender (for Italy see, for example, Castiglioni, 2004). This suggests that separated analyses should be carried out for males and females.

The control variables explicitly included in the model capture the influence of the cultural and religious orientation of the parents and of the geographical context in which the youth lives. Parental values are important determinants of young adults' behaviour (Thornton and Camburn, 1989; Miller and More, 1990), and this is especially true in Italy (Rosina and Fraboni, 2004). Moreover, studies on sexual behaviour have shown that the Southern regions of Italy are more traditional than those of the North. Lastly, since the relation between first sexual experience and religion can be affected in a substantial way by the fact of living in a couple relationship, we also consider if the youth is involved in a relationship as a control variable.

Also the presence of unobserved factors that could influence both processes must be taken into account. Some of these unobserved factors could influence both domains simultaneously and generate a potential spurious correlation. To correctly estimate the bi-directional causal effects it is therefore important to allow for the correlation among the unobserved heterogeneity term of each process (Lillard 1993). Such heterogeneity represents the unobserved factors that affect the individual choices, mainly attitudes and values. From a theoretical point of view, correlation between unobserved heterogeneities of the two processes could be either positive or negative. It is positive in the case that in the unobserved heterogeneity there prevails factors that in a concomitant way act by increasing (diminishing) the risk of both first sexual intercourse and Mass discontinuance. A factor of this kind could be, for example, the degree of autonomy and freedom, personal values being equal, transmitted by the parents to the adolescent child. The degree of cultural opening up towards the choices of the children, even though these are not agreed upon by the parents, is in fact only partly explicitly kept under control through the educational level of the parents. There also could be a negative correlation. This could happen in the case in the unobserved heterogeneity there prevails factors which favour a conciliation between sexual experience and religious participation. For example, the Catholic religion could be experienced without giving much importance to the prescriptive aspects, and valuing more

instead the positive message of love, trust and openness towards others. Having an affective couple relationship with a partner who shares this same idea of religion could favour a positive interaction between religion and sexuality within a couple.

As in the unobserved heterogeneity all these factors could be merged, we cannot state a priori *the sign of correlation among the common latent factors of the two processes*

4. Data and methods

4.1 Data and variables

Our data were collected by a survey on the sentimental and sexual life of Italian university students (Sex of Italian Students – SIS). A national representative sample of about 5,000 students attending first and second year courses in the state Faculties of Economics and Statistics from December 2000 to June 2002, were interviewed. The main characteristics of this survey – extensively described by Dalla Zuanna and Crisafulli (2004a) – are the following. As in Italy territorial differences are very important determinants of sexual behaviour, particularly for females (Billari and Borgoni, 2002), in order to make a comparison of sexual behaviour among the different Italian regions, students were chosen from homogeneous faculties all over Italy. Students in different faculties probably have different background characteristics, and as a consequence engage in a different pattern of behaviour. Therefore, a geographical comparison would have been very difficult, unless sampling designs which are expansive, complex and hard to manage were used.

According to the data of the Italian Ministry of Education, during the academic year 1999-2000, the faculties of Economics and Statistics were present in 47 universities. These universities were grouped in 15 regions, and for each region one or more universities – according to the number of students enrolled in the faculties of Statistics and Economics – were chosen. Thus, 23 universities were involved in the data collection. The Faculties of Economics and Statistics were also chosen because they have a very high percentage of students attending lessons regularly. Furthermore, in these faculties the numbers of males and females are more balanced. Students attending courses in the few Italian private universities were not included in the sample because they are usually selected for income, skills, and religion. For each of the sampled universities, the students attending first and second year foundation courses were interviewed.

The size of this sample is a significant improvement if compared to previous studies on sexual life carried out in Italy, which usually were made on smaller samples. The respondents are unmarried males (42%) and females (58%), born between 1975 and 1982, and aged between 18 and 26 years at interview (the median age was about 20.5, and 77% of them were 19-21 years old).

The questionnaire is composed of about 200 close questions in 16 pages and takes around 30 minutes to complete. It collects information on respondents' personal and parental background, quality of the relationship with their parents, religiosity (including church attendance of both students and their parents), health status (physical and psychological) and physical characteristics (height, weight, satisfaction with one's physical appearance), school performance, leisure (sports, volunteer work, night-life, etc.), risky

behaviour (smoking, drugs, alcohol, high-speed driving, etc.), friendship network, first sexual intercourse, romantic relationships, living arrangements, opinions and sexual behaviour related to sexually transmitted diseases. A final section deals with opinions and attitudes concerning various aspects of affective and sexual behaviour. Most information refers to different stages of adolescence (ages 11-13, 14-15, 16-18).

The questionnaires were filled in during a one-hour lesson (often during a lesson of Statistics), under the discreet surveillance of both the professor of the course and a researcher, who presented the survey and was ready to answer questions, if there were any. The researcher informed the students that the questionnaires were anonymous and would not be used at an individual level. They were also reminded to be aware of their responsibility for the success of the research. Lastly, the questionnaires were sealed in an envelope and recollected. This practically resulted in a non existent refusal to fill in the questionnaire in class. It is a significant improvement comparing to at least 20-30% of refusals in face-to-face interviews and as much as 50% in postal questionnaires and CATI in Italy as elsewhere (see, e.g., Laumann et al, 1994). Only in a few cases (around 10% of the sample), due to an explicit request from the academic authorities, the questionnaires were given to the students and filled in at home (70% of questionnaires were handed back).

The overall number of questionnaires collected was about 5,200. The questionnaires in which the year of birth or the gender of the respondent were not stated, or that had too many missing or invalid answers, were excluded. Since we decided to restrict our study only to young people who were adolescents in the last decade of the twentieth century, all the respondents who were born before 1975 were also excluded. Thus, the questionnaires available for our analysis were 4,998. For each question, non responses were always lower than 8%. The month at first intercourse (15% of missing data) and at first steady relationship (24%) are an exception, probably because they were more difficult to recall. They were replaced according to the distribution of known values.

We further excluded the questionnaires where it was impossible to determine if (63 people) or when (125) they had first intercourse, when they stopped attending church (85), or if they ever went to Mass (310) or stated to have had first intercourse before 13 (31) or pooled some of these characteristics (326). Thus our sample was finally reduced to 4,058.

This sample has some advantages: a high number of interviewees, an above than average cultural level (an appreciable characteristic for a self-filling, although not complex, questionnaire), and a low number of refusals. However, university students of Economics and Statistics (faculties not considered as the easiest in terms of commitment in Italy as elsewhere) are a particular group: they invest many personal and family resources in education, are subject to greater expectations from their family, and thus they usually delay the formation of their own family. Generally, students delay sex more than early workers (see Miller and More, 1999 for a review, and Castiglioni, 2004 for some results on Italy).

Nevertheless, sexual behaviour and Mass attendance of our sample is not particularly out of the Italian rules, described in the previous section (table 4): the median age at first intercourse is around 19.5 years, and students attending Mass at least 2-3 times a month at their 19th birthday (around the beginning of the first year at university in Italy) are 25% for males and 40% for females. Moreover, their church attendance has speedily declined during their teens, as the proportion going to Mass at least 2-3 times a month when they were 13 were 70% for males and 83% for females. Therefore, although these students

are a selected group – of course not representative of the Italian youth as a whole – the direction of selection is well known, and the timing of their sexual initiation and discontinuing church attendance are not far from that of the average common Italian youth.

Table 4. Proportion of SIS student who stopped attending Mass and experienced their first sexual intercourse by gender and exact age. KM calculations (SPSS program).

	Exact birthdays							
	13	14	15	16	17	18	19	20
	Males (n= 1615)							
% attending Mass	70.1	63.9	53.4	44.8	37.4	30.3	24.9	22.6
% virgins	100	99.6	96.7	91.2	83.4	69.7	55.9	46.2
	Females (n= 2443)							
% attending Mass	82.8	77.4	68.4	59.2	51.0	45.5	39.8	35.9
% virgins	100	99.9	97.2	92.6	82.3	70.0	55.8	47.8

Source: Micro-data of Survey on Italian Students

Here is the list of the variables used in our models:

Experienced first steady relationship (time varying). Students were asked*: Have you ever had a steady relationship? When did this begin?* The possible answers were: month and year, or never happened.

Experienced first sexual encounter (time varying). Students were asked*: Have you ever had sexual intercourse? When did this happen for the first time?* The possible answers were: month and year, or never happened.

Age at stopping Mass attendance. Students were asked: *How old were you when you stopped going regularly to functions of your religion?* There were three possible answers: age (in years); I never went to religious services regularly; I still go to religious services or other functions regularly. Although discontinuing Mass attendance could be a process, rather than a single event, the bet of this article is that the age declared by each student is not far from the "average age" of his/her effective dismissal of the religious habits of his/her pre-adolescence period. As table 4 shows, for many students this age is not far from the time of the interview, and this narrow time period could suggest that the student may remember the timing of the event.

Mass attendance at 13 years old. Students were asked: *Apart from such special occasions as weddings, funerals and baptism, how often did you attend services connected with your religion when you were 13 years old?* We grouped the answers in two subgroups: irregularly attending Mass (at least about once a month), and regularly attending Mass (at least 2-3 times a month). In our opinion, students could easily answer this question as in Italy the 13^{th} year of age is a "crossing year", dividing pre-adolescence from adolescence. Most of people receive the sacrament of Confirmation – after some months of specific religious education – during the last year of junior high school.

Mass attendance (time varying). We created this time varying variable by putting together the information from three variables: a) Mass attendance at 13 years old, b) Mass attendance at the interview (the possible answers were the same as for age 13), c) age at stopping Mass attendance. We created three subgroups: never attending Mass (never or

sometimes during the year), irregularly attending Mass (at least about once a month), regularly attending Mass (from two or three times a month to once a week or more).

Father's and mother's Mass attendance when the student was 13 years old. Students were asked: *Apart from such special occasions as weddings, funerals and baptism, how often did your father and mother attend services connected with their religion when you were 13 years old?* Again we divided the answers into three subgroups: never attending Mass (never or sometimes during the year), irregularly attending Mass (at least about once a month), regularly attending Mass (from two or three times a month to once a week or more).

Geographical area of residence during high school (13-18 years old). Students were asked: *In which province, or foreign country, did you mainly live when attending secondary school?* We grouped Italian provinces in two macro-areas: North Centre, and South. A third subgroup was made of the few students who lived abroad during adolescence.

Parents' education. Students were asked: *What was the highest level of school your mother and father finished?* We created four subgroups: a) lower education (high school not completed or lower) of both mother and father; b) lower education of father and higher education of mother; c) higher education of father and lower education of mother; d) higher education for both parents.

Relationship with parents during adolescence. Students were asked: *Which of the following best describes feelings between you and your father and mother during your adolescence (age 14-18)?* We created two subgroups: distant (including answers: distant, not usually present, or I never saw him/her) and close.

4.2 Statistical methods

We study the causal interdependence between the onset of first sexual encounter and religiosity. Specifically, we would like to study the net effect of discontinuing church attendance on sexual debut and, conversely, the net effect of the first sexual experience on discontinuing Mass attendance. We select as the target population youths who at 13 attended Mass at least once a month (about 72% of the total sample). We use an event history approach with simultaneous hazard rate equations. To take into account the individual heterogeneity we include in each process the appropriate casual effects. To control for the unobserved factors that can concomitantly act on both the processes we allow the casual effects of the two regression equations to be correlated (Baizan et al, 2003; Lillard et al, 1995). To control for selectivity in both processes we included in our model a selection equation. Given the strong diversity of sexual behaviour between males and females, we perform two separate analyses.

The statistical specification of the model applied in this analysis is derived from the framework developed by Lillard (1993). It consists of two simultaneous hazard rate equations, modelling time (from age 13) to First Intercourse (FI) and to Discontinuing Mass Attendance (DMA), both estimated only on young people who still go to Mass at 13 at least once a month. We added a selection equation (Heckman, 1979), to take into account selectivity introduced in the model when including only these individuals. This is necessary, because, as already stated in section 4, respondents who are religious at 13 can be a non-random subset of population.

The model is the following:

$$\begin{cases} \ln h_i^{FI}(t) = y_i^{FI}(t) + \sum_j a_j x_{ij} + \sum_k \alpha_k w_{ik}(t) + \delta \\ \ln h_i^{DMA}(t) = y_i^{DMA}(t) + \sum_j b_j x_{ij} + \sum_k \beta_k w_{ik}(t) + \varepsilon \\ z^* = \sum_j c_j x_{ij} + \theta, \qquad \begin{cases} z = 0 \text{ if } z^* \leq 0; \\ z = 1 \text{ if } z^* > 0; \end{cases} \end{cases}$$

with $\ln h_i^{DMA}(t)$ observed if and only if z = 1.

$$\begin{pmatrix} \delta \\ \varepsilon \\ \theta \end{pmatrix} \sim N\left(\begin{pmatrix} 0 \\ 0 \\ 0 \end{pmatrix}, \begin{pmatrix} \sigma_\delta^2 & \rho_{\delta\varepsilon} & \rho_{\delta\theta} \\ \rho_{\delta\varepsilon} & \sigma_\varepsilon^2 & \rho_{\varepsilon\theta} \\ \rho_{\delta\theta} & \rho_{\varepsilon\theta} & \sigma_\theta^2 \end{pmatrix} \right)$$

If all selection operates through observed covariates, the two equations can be estimated only by using data about individuals who still go to Mass at 13. However, if there is correlation between δ, ε and θ, estimation made using only this sub-sample produces biased coefficient estimates due to a possible self selection mechanism.

Each *y(t)* denotes a piecewise linear Gompertz that captures the effect of the time on the risk. Piecewise linear Gompertz functions are used to approximate continuous functions, and are composed by functions that are linear within each interval. These linear functions are connected at knots given a priori: piecewise linear Gompertz functions are then also continuous functions. This kind of baseline allows for a variety of patterns of the duration dependence in the hazard function. (Baizan et al., 2003; Lillard and Waite, 1993). In this analysis the knots are placed at ages: 13, 15, 17, 19, and 25.

The $\{x_{ij}\}$ denotes time constant covariates. The $\{w_{ik}(\cdot)\}$ are time varying covariates, whose values change at discrete times and that are constant in the time between these changes. Considering the importance of the role of the parents (and especially parental attitudes; Musik and Bumpass 1999; Miller et al., 1997) we include in the model as control variables: the education and the religiosity of the parents, and the type of relationship between parents and adolescent child. As a time-varying covariate we also consider the affective couple relationship.

The random variables δ, ε, and θ capture the unobserved heterogeneity, and are assumed to have a joint trivariate normal distribution (ρ_{hk} is the correlation between the unobserved heterogeneity terms of the equations). The selection equation is a probit equation which requires that its unobserved heterogeneity component θ has predetermined unit variance.

The model estimation was performed using full-information maximum likelihood, as implemented in the package aML 1.04 (Lillard and Panis, 2000). The t-statistics are based on the BHHH procedure (Berndt et al., 1974).

5. Results

Our final model is a system of three correlated simultaneous equations (a probit regression to account for the selection mechanism and two hazard equations for the two interdependent processes of interest), as formally specified in section 4.2.

In a first step (**Model 1**) we have performed two separate analysis of the two processes, without taking into account the unobserved heterogeneity and the correlation between the parallel processes. We have found (Table 5, first panel) a positive and significant effect of the time-varying covariate "discontinuity Mass attendance" on the FI process, and a positive and significant effect of the time-varying covariate "first sexual intercourse" on the DMA process. These results are consistent with the H1 ("religious effect") and H2 ("adaptation effect") hypotheses (see section 3).

Subsequently we have added random effects to control for unobserved heterogeneity (results not shown). The parameter representing the unobserved heterogeneity, σ, proves to be strongly significant in both equations. However, it is definitely greater on the process of discontinuing Mass attendance (σ=2.15 for males and 2.32 for females) than on the transition process to "first intercourse" (σ=0.56 for males and 0.32 for females). Accordingly, by including the unobserved heterogenity there are greater consequences on the effect of sex on the process of DMA (the "adaptation effect", in relation to model 1, goes from 1.64 to 2.54 for males and from 1.79 to 2.90 for females) than on the effect of stopping religious participation on the transition process to FI (the "religious effect", in relation to model 1, goes from 1.76 to 1.83 for males and from 1.81 to 1.85 for females).

The next step was to add the correlation between the two processes as well, thus having a system of two simultaneous equations (**model 2**). We have obtained a negative correlation (-0.28 for males and -0.56 for females), meaning that among the common latent factors there prevails some factors which act in opposite direction on the two processes (i.e. they support a conciliation between sexual experience and religious participation, see section 3). Cleared by the spurious (negative) link created by the unobserved common factors, the mutual positive relationship between FI and DMA cannot but grow considerably stronger. It is indeed what we have obtained (see table 5 - Model 2).

We have then taken into consideration the possible selection mechanism – due to the fact that the analysis is carried out only on the sub-sample of the individuals attending Mass at 13 years old – by resorting to a probit model (Heckman 1979). A multiprocess model is therefore obtained, where first the probability of belonging to the sub-sample of those who attended Mass at 13 years old is simultaneously analyzed, and then, conditioned to attending Mass at 13, the parallel processes of DMA and of FI is analyzed. Initially we have estimated two separate multiprocess models, one for DMA and one for FI. We have found a significant correlation only between the selection equation and the process of DMA on the male population (see appendix).

The final model is a multiprocess model made of three equations simultaneously estimated: a probit regression for the selection mechanism and two interdependent hazard regressions for DMA and FI. Since in a previous model we found no evidence of a selection mechanism acting on the FI process (see appendix), and in order to avoid problems of identifiability in such a complex model, we have decided to constraint equal to 0 the correlation between the probit equation and the hazard equation on the FI process. We have found that once we account for the correlation between DMA and FI the selection effect proves to be negligible. As a consequence, the results obtained in the Final Model are very similar to those obtained in Model 2.

In any case, it is important to notice that in all the models here considered we have found a positive and strong effect of stopping Mass attendance on FI and of first sexual intercourse on DMA. Therefore our data provide empirical evidence of the presence of both a "religious effect" (H1) and an "adaptation effect" (H2).

Lastly, we would like to shortly comment on the results obtained for the other covariates, even though the effects are not directly relevant for our analysis, having being included in the model only as control factors. However, it is interesting to note that Mass attendance of the parents shows a significant effect (in the expected direction) only on the risk of DMA but not on the risk of FI. Living in the South of Italy has a protective effect both on the risk of DMA and on FI for female, while it increases the risk of DMA for males. This reflects a gender difference in religious participation in the South (see Rizzi 2004). Having high educated parents have a positive effect on both the processes, but it is significant only on FI. As expected, being in a couple relationship has a strong positive impact on FI, and a less strong, but substantial, impact on DMA.

Table 5. Results of the multiprocess models on the risk of first intercourse and on the risk of discontinuing Mass attendance. University students attending Mass at 13 years old.

Covariates			Relative risks					
			Males			Females		
			Model 1	*Model 2*	*Model 3*	*Model 1*	*Model 2*	*Model 3*
HAZARD MODEL FOR FIRST SEXUAL INTERCOURSE (FI)								
Spline								
Constant			-6.06 ***	-6.25 ***	-6.25 ***	-7.22 ***	-7.19 ***	-7.18 ***
Age 13-14			0.88 ***	0.84 ***	0.84 ***	0.93 ***	0.89 ***	0.89 ***
Age 15-16			0.47 ***	0.48 ***	0.48 ***	0.53 ***	0.52 ***	0.52 ***
Age 17-18			0.10	0.16 *	0.16 **	0.12 **	0.12 **	0.12 **
age 19 and more			-0.12 *	-0.10	0.10	-0.14 ***	-0.14 ***	-0.14 ***
TIME CONSTANT COVARIATES								
Usually attended Mass at 13	Always		1.00	1.00	1.00	1.00	1.00	1.00
	Sometimes		0.98	0.93	0.93	1.05	0.99	0.99
Father usually attended Mass when the child was 13	Weekly		1.00	1.00	1.00	1.00	1.00	1.00
	Sometimes		1.16	1.15	1.15	1.13	1.09	1.09
	Never		1.25	1.26	1.26	1.25	1.22*	1.22*
Mother usually attended Mass when the child was 13	Weekly		1.00	1.00	1.00	1.00	1.00	1.00
	Sometimes		0.98	0.97	0.97	0.95	0.91	0.91
	Never		0.77	0.75	0.75	1.12	1.07	1.07
Residence during high school	Centre-North		1.00	1.00	1.00	1.00	1.00	1.00
	South		0.95	0.93	0.94	0.81 ***	0.81***	0.81***
	Abroad		1.45	1.60	1.60	0.53 *	0.55	0.55
Education of father F *and mother* M	F low	M low	1.00	1.00	1.00	1.00	1.00	1.00
	F high	M low	1.02	1.02	1.02	1.20 *	1.20*	1.20*
	F low	M high	1.06	1.04	1.04	1.30 **	1.30**	1.30**
	F high	M high	1.18 *	1.21*	1.21*	1.14 *	1.13*	1.13*

(continue)

Table 5 (continue)

Covariates			Relative risks					
			Males			Females		
			Model 1	*Model 2*	*Model 3*	*Model 1*	*Model 2*	*Model 3*
HAZARD MODEL FOR FIRST SEXUAL INTERCOURSE (FI)								
TIME CONSTANT COVARIATES								
Relationship with parents during adolescence	F close	M close	1.00	1.00	1.00	1.00	1.00	1.00
	F distant	M close	0.77 **	0.76**	0.76**	1.06	1.06	1.06
	F close	M distant	1.13	1.15	1.16	1.17	1.16	1.16
	F distant	M distant	1.06	1.05	1.05	1.12	1.11	1.11
TIME VARYING COVARIATES								
Couple relationship	Never		1.00	1.00	1.00	1.00	1.00	1.00
	Yes		5.07 ***	5.64***	5.64***	11.27 ***	11.39***	11.38***
Stop Mass attendance	No		1.00	1.00	1.00	1.00	1.00	1.00
	Yes		1.76 ***	2.32***	2.28***	1.81 ***	2.31***	2.33***
HAZARD MODEL FOR DISCONTINUING MASS ATTENDANCE (DMA)								
Spline								
Constant			-4.39***	-10.58***	-10.98***	-4.18***	-9.18***	-9.17***
Age 13-14			0.78***	2.27***	2.35***	0.55***	1.68***	1.67***
Age 15-17			0.03	0.71***	0.75***	-0.11***	0.37**	0.36**
Age 18-19			-0.24**	0.11	0.12	-0.05	0.16	0.16
Age 20 and more			-0.57 ***	-0.46**	-0.45**	-0.47***	-0.35**	-0.35**
TIME CONSTANT COVARIATES								
Usually attended Mass at 13	Always		1.00	1.00	1.00	1.00	1.00	1.00
	Sometimes		2.05***	9.81***	10.41***	1.98***	8.47***	8.39***
Father usually attended Mass when the child was 13	Weekly		1.00	1.00	1.00	1.00	1.00	1.00
	Sometimes		1.56***	3.19***	3.24***	1.43***	2.31***	2.29***
	Never		1.82***	6.05***	5.88***	1.59***	2.88***	2.77**
Mother usually attended Mass when the child was 13	Weekly		1.00	1.00	1.00	1.00	1.00	1.00
	Sometimes		1.25**	1.84**	1.77	1.74***	3.57***	3.34**
	Never		1.47**	2.61*	2.38	1.90***	5.59***	4.91
Residence during high school	Centre-North		1.00	1.00	1.00	1.00	1.00	1.00
	South		1.25***	2.54***	2.64***	0.88**	0.80	0.81
	Abroad		0.86	0.46	0.44	1.01	0.83	0.79
Education of father F *and mother* M	F low	M low	1.00	1.00	1.00	1.00	1.00	1.00
	F high	M low	0.99	0.87	0.88	0.93	0.96	0.94
	F low	M high	0.96	0.96	0.94	0.98	1.00	1.00
	F high	M high	1.13	1.32	1.34	1.09	1.32	1.29
Relationship with parents during adolescence	F close	M close	1.00	1.00	1.00	1.00	1.00	1.00
	F distant	M close	1.12	1.43	1.46	1.21 ***	1.68***	1.67**
	F close	M distant	1.38	2.82	2.97	1.28	1.57	1.56
	F distant	M distant	1.02	1.17	1.18	1.21 **	1.50*	1.50*
TIME VARYING COVARIATES								
Couple relationship	Never		1.00	1.00	1.00	1.00	1.00	1.00
	Yes		1.19**	1.46*	1.48**	1.51***	1.90***	1.90***
Sexual intercourse	Never		1.00	1.00	1.00	1.00	1.00	1.00
	Yes		1.64***	3.93***	3.97***	1.79 ***	3.89***	3.95***
PROBIT MODEL (SELECTION) FOR MASS ATTENDANCE AT 13 years old								
Constant			-	-	-1.71 ***	-	-	-2.36 ***
TIME CONSTANT COVARIATES								
Father usually attended Mass when the child was 13	Weekly		-	-	1.00	-	-	1.00
	Sometimes		-	-	1.57***	-	-	1.18
	Never		-	-	3.37***	-	-	1.73***
Mother usually attended Mass when the child was 13	Weekly		-	-	1.00	-	-	1.00
	Sometimes		-	-	2.04***	-	-	3.26***
	Never		-	-	4.44***	-	-	5.83***
Residence during high school	Centre-North		-	-	1.00	-	-	1.00
	South		-	-	1.23**	-	-	0.80**
	Abroad		-	-	1.86	-	-	1.64**
Education of father F *and mother* M	F low	M low	-	-	1.00	-	-	1.00
	F high	M low	-	-	0.77*	-	-	1.25
	F low	M high	-	-	0.86	-	-	1.09
	F high	M high	-	-	1.05	-	-	1.48***

(continue)

Table 5 (continue)

Covariates	Relative risks					
	Males			Females		
	Model 1	*Model 2*	*Model 3*	*Model 1*	*Model 2*	*Model 3*
UNOBSERVED HETEROGENEITY AND CORRELATION						
Unobserved heterogeneity for FI	-	0.58***	0.58***	-	0.29	0.29
Unobserved heterogeneity for DMA	-	2.83***	2.95***	-	2.54***	2.54***
Correlation: FI & DMA (r1)	-	-0.28**	-0.26**	-	-0.56	-0.57
Correlation: FI & selection (probit model) (r2)	-	-	0.00[a]	-	-	0.00[a]
Correlation: DMA & selection (probit model (r3)	-	-	-0.11	-	-	-0.12

[a] Equal to 0.

6. Conclusions

Just above 50% of the Italian university students of the first two years of Economics and Statistics in 2001 declared to have had sexual intercourse. The chances of experiencing this event is strongly conditioned by the students' religious behaviour: who attend church remains a virgin for a longer time. This result is very similar to what has been found in many other studies on this topic. Yet, for Italy, up to now it has never been possible to clearly identify the direction of the causal effect. Moreover, it is interesting to note that the effect is stronger when in our models we account for unobserved common factors. Indeed, this result shows that the religious effect obtained on timing of sexual debut cannot be considered spurious. It was indeed possible to believe, for example, that it could largely be ascribed to a generic behavioural tendency to keep habits from the childhood and pre-adolescent period which could delay the estrangement from religious practices and the engagement in new affective behaviours. On the contrary, among the Italian university students religious practice has 'its own' effect on sexual behaviour.

30% of the Italian university students in the first two years of Economics and Statistics interviewed in 2001 attend Mass at least 2-3 times a month. This proportion, although high in comparison to other Western countries, is however more than halved than what it was at 13 – as retrospectively declared by the interviewees, i.e. the age in which the majority of these students had their Confirmation, a sacrament that in Italy is imparted at the completion of the course of catechism. The process of religious estrangement is interrelated with the onset of adult affective life. For both boys and girls, the first couple experience and – especially – first sexual intercourse, accelerates the detachment from religious practice. This result – confirmed in all our models, and stronger if we consider the possible correlation between the processes, due to the presence of unobserved common factors – does not confirm what was obtained for the USA case (see, e.g. Meier, 2003): young Americans do not change their religious practice significantly after having experienced their first sexual intercourse.[9]

[9] It is not easy to say if the result here discussed is applicable to the whole population as well or if it is specific to these students only. On one side, the students could have a more "rational" approach, less inclined to accept a conflict between doctrine and behaviour. On the other side, the students could be culturally more equipped to create their own "individual religion", giving at the same time – in their conscience – full adhesion to the Church and engaging in premarital sexual intercourse.

In our opinion, this difference between the USA and Italy is perhaps the most interesting result of this study. To explain what this actually means, it could be useful to refer back to sections 1 and 2. SMR behaviour not in line with the ethical norms of a religion can actually affect how close one feels to one's religion if the incompatibility is felt at an individual and collective level, and if there are institutions capable of reinforcing them and making their followers comply with them. Today's Italy is very different from how it was before the behavioural changes of the 1960s and 1970s, when the Church – particularly in some regions and in some rural contexts – was capable to guide the political and moral life, and the laws of the State (on adultery, divorce, abortion, contraception...) followed closely the Catholic teachings. It is hard to believe that nowadays an Italian priest can deny the Holy Communion or access to an event organized by the Church to youth who are "suspected" of having engaged in premarital sex. However, as shown in section 2.1, in Italy – in spite of the difficulties of the last years – the Church keeps on having a strong ability to involve adolescents. Moreover, the Italian mass media echoes more than in other countries the word of the Catholic hierarchy, especially the Pope, on topics related to SMR behaviour where the traditional norms are vigorously reinforced, leaving little room to the individual interpretation. Lastly, in Italy, unlike in USA, the Catholic Church is present everywhere. Therefore, for a young Catholic it is difficult to being exposed to religious opinions on SMR behaviour which are not those proposed by the Catholic Church and she/he is more unlikely to be involved in a love story with a non Catholic person. In this context of religious monoculture, it could be that many young people clearly perceive the incompatibility between sexual intercourse and religious affiliation. As a consequence, for many of them first sexual intercourse might accelerate the voluntary detachment from the Church. In light of these results, we would like to see similar studies carried out on other countries. It would be interesting for example to compare the Italian case to countries with a similar degree of presence of Catholic religion but which are culturally distant (such as Poland or Ireland), and with more secular but culturally similar countries (such as France).

Finally, we would like to define the value of our results. We have shown a reciprocal interaction between the two processes of the onset of adult sexuality and estrangement from a regular religious practice. However, the large majority of practicing young Catholics – even with a delayed first sexual intercourse – do not arrive at marriage as virgins. At the time of the interview, most of the self-declared "very religious" students have already had first sexual intercourse (Rizzi, 2004, p. 249). This result goes with the one shown in table 3: only 33% of young Italian Catholics going to Church at least once a month interviewed in 2000 stated that it is not admissible to have sexual intercourse before marriage. Consequently, the bricolage religion (or better, the bricolage sexual ethic) is an important component of the approach to sexuality also for the young Catholic people of Italy.

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Appendix A

Table A1. Results of the two separate multiprocess models on the risk of first intercourse and on the risk of discontinuing Mass attendance. University students attending Mass at 13 years old.

Covariates			Relative risks			
			Males		Females	
			Model 1	*Model 2*	*Model 1*	*Model 2*
HAZARD MODEL FOR FIRST SEXUAL INTERCOURSE (FI)						
Spline						
Constant			-6.19**	-	-7.33***	-
Age 13-14			0.87***	-	0.92***	-
Age 15-16			0.49***	-	0.54***	-
Age 17-18			0.15*	-	0.15***	-
age 19 and more			-0.10	-	-0.13***	-
TIME CONSTANT COVARIATES						
Usually attended Mass at 13	Always		1.00	-	1.00	-
	Sometimes		0.98	-	1.05	-
Father usually attended Mass when the child was 13		Weekly	1.00	-	1.00	-
		Sometimes	1.21	-	1.12	-
		Never	1.42	-	1.24	-
Mother usually attended Mass when the child was 13		Weekly	1.00	-	1.00	-
		Sometimes	0.91	-	0.90	-
		Never	1.05	-	1.01	-
Residence during high school	Centre-North		1.00	-	1.00	-
	South		0.97	-	0.82***	-
	Abroad		1.62	-	0.51*	-
Education of father F *and mother* M	F low	M low	1.00	-	1.00	-
	F high	M low	0.99	-	1.19	-
	F low	M high	1.03	-	1.31**	-
	F high	M high	1.21*	-	1.12	-
Relationship with parents during adolescence	F close	M close	1.00	-	1.00	-
	F distant	M close	0.76**	-	1.07	-
	F close	M distant	1.18	-	1.20	-
	F distant	M distant	1.05	-	1.12	-
TIME VARYING COVARIATES						
Couple relationship	Never		1.00	-	1.00	-
	Yes		5.49***	-	11.73***	-
Stop Mass attendance	No		1.00	-	1.00	-
	Yes		1.81***	-	1.85***	-
HAZARD MODEL FOR DISCONTINUING MASS ATTENDANCE (DMA)						
Spline						
Constant			-	-10.06***	-	-8.74***
Age 13-14			-	2.09***	-	1.57***
Age 15-17			-	0.66***	-	0.34***
Age 18-19			-	0.04	-	0.16*
Age 20 and more			-	-0.45*	-	-0.35**
TIME CONSTANT COVARIATES						
Usually attended Mass at 13		Always	-	1.00	-	1.00
		Sometimes	-	7.86***	-	7.67***
Father usually attended Mass when the child was 13		Weekly	-	1.00	-	1.00
		Sometimes	-	2.08***	-	2.22***
		Never	-	2.12	-	2.67***
Mother usually attended Mass when the child was 13		Weekly	-	1.00	-	1.00
		Sometimes	-	1.57*	-	3.07***
		Never	-	1.62	-	4.54***
Residence during high school	Centre-North		-	1.00	-	1.00
	South		-	1.70***	-	0.82
	Abroad		-	0.59	-	0.72
Education of father F and mother M	F low	M low	-	1.00	-	1.00
	F high	M low	-	1.03	-	0.89
	F low	M high	-	1.39	-	0.97
	F high	M high	-	1.32	-	1.29
Relationship with parents during adolescence	F close	M close	-	1.00	-	1.00
	F distant	M close	-	1.30	-	1.75***
	F close	M distant	-	2.21	-	1.57
	F distant	M distant	-	1.19	-	1.51**

(continue)

Table A1 (continue)

Covariates				Relative risks			
				Males		Females	
				Model 1	*Model 2*	*Model 1*	*Model 2*
HAZARD MODEL FOR DISCONTINUING MASS ATTENDANCE (DMA)							
TIME VARYING COVARIATES							
Couple relationship	Never			-	1.00	-	1.00
	Yes			-	1.54**	-	1.87***
Sexual intercourse	Never			-	1.00	-	1.00
	Yes			-	2.89***	-	2.92***
PROBIT MODEL (SELECTION) FOR MASS ATTENDANCE AT 13 years old							
Constant				-1.70 ***	-1.71 ***	-2.36***	-2.36***
TIME CONSTANT COVARIATES							
Father usually attended Mass when the child was 13		Weekly		1.00	1.00	1.00	1.00
		Sometimes		1.56***	1.60***	1.18	1.18
		Never		3.33***	3.50***	1.72***	1.73***
Mother usually attended Mass when the child was 13		Weekly		1.00	1.00	1.00	1.00
		Sometimes		2.02***	1.99***	3.25***	3.26***
		Never		4.47***	4.25***	5.78***	5.83***
Residence during high school	Centre-North			1.00	1.00	1.00	1.00
	South			1.24**	1.25**	0.81***	0.80**
	Abroad			1.75	2.03*	1.63***	1.64**
Education of father F *and mother* M		F low	M low	1.00	1.00	1.00	1.00
		F high	M low	0.77*	0.78	1.26*	1.26*
		F low	M high	0.86	0.83	1.09	1.09
		F high	M high	1.05	1.05	1.48***	1.48***
UNOBSERVED HETEROGENEITY AND CORRELATION							
Unobserved heterogeneity for FI				0.50	-	0.36	-
Unobserved heterogeneity for DMA				-	2.74	-	2.37***
Correlation: FI & DMA (r1)				-	-	-	-
Correlation: FI & selection (probit model) (r2)				0.64	-	-0.72	-
Correlation: DMA & selection (probit model (r3)				-	-0.65***	-	-0.12