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ABSTRACT

Effects of religiosity on social behaviour: Experimental evidence from a representative sample of Spaniards*

This study explores the effect of several personal religion-related variables on social behaviour, using three paradigmatic economic games: the dictator (DG), ultimatum (UG), and trust (TG) games. A large carefully designed sample of a Spanish urban adult population (N=766) is employed. From participants' decisions in these games we obtain measures of altruism, bargaining behaviour and sense of fairness/equality, trust, and positive reciprocity. Three dimensions of religiosity are examined: (i) religious denomination; (ii) the intensity of religiosity, measured by active participation at church services; and (iii) converting out into a different denomination than the one raised in.

The major results are: (i) individuals with "no religion" made decisions closer to rational selfish behaviour in the DG and the UG compared to those who affiliate with a "standard" religious denomination; (ii) among Catholics, intensity of religiosity is the key variable that affects social behaviour insofar as religiously-active individuals are generally more pro-social than non-active ones; and (iii) the religion raised in seems to have no effect on pro-sociality, beyond the effect of the current measures of religiosity. Importantly, behaviour in the TG is not predicted by any of the religion-related variables we analyse. Given the accelerating share of "no religion" individuals (in Europe and elsewhere) and the large influx of immigrants – who tend to be more religiously active compared to the native populations – our findings have significant implications for the future pro-sociality patterns in Europe.

JEL Classification: C7, C9, Z12 and Z13
Keywords: church attendance, economic experiments, pro-social behaviour, religion and Spain

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1. Introduction and motivation

Rules and norms of behaviour are fundamental elements of religions. Every single religion contains a system of ideas and rules about how life *should* be lived. The rules are not restricted to the family (or the individual) but cover also the social dimension, that is, how to behave in the community. These social norms prevent individuals from misconduct within the society ("*Thou shalt not kill, not commit adultery, not steal, not bear false witness against thy neighbour, …*", Ten Commandments) and therefore restrain anti-social behaviour. Moreover, most religions promote generosity towards members of the society and also towards foreigners (in Islam the concept of *i'thar*, that is "preferring others to oneself"), especially towards those who need support (in Judaism, one is requested to give one tenth of his earnings to the needy; or "*One who does not give to the poor has no luck*", Proverbs 28:27). Religions also promote egalitarian distribution of resources. As Harrington and Keenan (2005) and Wallis (2005) point out, egalitarianism is behind the idea of religious charity: sharing with those who have less.

One of the basic principles of religions is that God observes what humans do. It follows that individuals believe that they are constantly monitored by Him, who has the power to punish those who deviate from the norm, and reward those who follow the rules (e.g., Johnson and Krueger, 2004; Norenzayan and Shariff, 2008). Punishment and reward are expected in both the current life and the afterlife. Brañas-Garza et al. (2010) provide empirical evidence (based on a large data set, estimating equations of attendance of church services) that both the fear of divine punishment (Hell) and the expectation of divine reward (Heaven) significantly affect church attendance. Interestingly, belief in Heaven (reward) has a stronger incentive for church attendance than belief in Hell (punishment).

Accordingly, religiosity has proved to exert a huge effect on individual decision-making and behaviour. An extensive literature shows that religion and religiosity (as well as other cultural traits) matter to important economic phenomena, such as: educational attainments (Cohen-Zada, D., 2005; Fan, 2008); labor force participation (Fernandez and Fogli, 2009); income and financial assets (Keister, 2003); marriage and inter-faith marriage (Bisin et al., 2004); fertility (Neuman, 1986; Neuman and

Ziderman, 1986; Becker, 1993; Fernandez and Fogli, 2006, 2009; Neuman, 2007; Brañas-Garza and Neuman, 2007; Bar-El et al., 2013).[2]

It was also demonstrated that religion and intensity of religiosity affect social interactions and attitudes: several studies relate to donations (e.g., Flanagan, 1991; Barry, 1996; Brooks, 2003) and show that intensity of religious participation is positively associated with amounts donated in charity giving. Guiso et al. (2003) find a positive relationship between religiosity and trust in others and in institutions. Brañas-Garza et al. (2009) use a sample of Latin American Catholics and show that religiously-active Catholics trust peers and institutions more compared to non-active Catholics and individuals who belong to other denominations.

An accelerating phenomenon (in Europe and elsewhere) is the growing number of individuals who claim to have "no religion". Data from the 2002-2010 waves of the European Social Survey (ESS) include 39.1% of respondents who identify their religion as "no religion" (García-Muñoz and Neuman, 2013b). A recent report published by the Pew Research Centre's Forum on Religion & Public Life (on the 18th of December, 2012) claims that the third largest "religion" is the "no religion" – it is estimated that there are 1.1 billion individuals who claim to have "no religion" (16% of the world population; the majority lives in communist countries, 700 million in China). Christianity is the largest religion (2.2 billion individuals, comprising 32% of the world population) and Islam comes second (1.6 billion individuals, comprising 23% of world population). After the third "no religion" denomination, the fourth is Hindu (1 billion individuals) and the fifth is Buddhism (0.5 billion). Only 14 million individuals belong to the faith of Judaism (0.02 percent of world population). Given the pronounced share of the "no-religion" group it is essential to study their social behaviour as it will have major effects on society.

Another significant phenomenon is the increasing influx of immigrants (into Europe and other regions), who compose a considerable share of the populations in many

[2] There are also studies that show the effect of aggregate country-level religiosity on country-level economic performance. E.g., Barro and McCleary (2003) claim that religious beliefs (at the country level) may stimulate economic growth. We focus however on individual behaviour and these studies are beyond the scope of our paper.

countries.[3] The intensified religiosity of immigrants (compared to natives) became a fundamental issue that could affect all spheres of life, including the economic and social domains. Indeed, a large set of studies relate to the religiosity of immigrants. First-generation immigrants (in European countries and in the United States) appear to be more religious than natives, in terms of church attendance and also in terms of the more intimate activity of prayer (everything else being equal). See Aleksynska and Chiswick (2013), and García-Muñoz and Neuman (2012, 2013a, 2013b), for most recent studies, and Williams (1988) for an earlier study. In Europe (but not in the United States), second-generation immigrants are still more religious than natives (Malepaard et al., 2010; Fleischman and Phalet, 2012; García-Muñoz and Neuman, 2013b). The "religious vitality theory" claims that second-generation immigrants have a lower tendency to assimilate (religiously) if they belong to a minority religion, highlighting the role of religious socialization *within families and communities* rather than within the state (Fleischman and Phalet, 2012). The fact that immigrants in Europe are more religious than the local populations and do not assimilate religiously even in the second generation, combined with the projection that the share of immigrants in European countries will keep growing, leads to the prediction that immigrants will have a pronounced effect on the religious landscape in Europe.[4] If religiosity affects social behaviour as our study tries to explore, the outcome could be major changes in social behaviour and social institutions in Europe, which could as well affect other domains of the society and economy.

[3] The United Nations reports that in 2010 213.9 million people, that constitute 3.1% of the world population, were migrants who lived and worked in a country in which they were not born. Europe had a share of 32.6% in world migrants' stock, and the United States hosted 20% of world migrants. Moreover, the flow of migrants has constantly increased over the last two decades. The United Nations estimated that the number of migrants was 155.5 million people in 1990. It follows that between 1990 and 2010 an increase of 37.5% was evidenced. The increase is even more impressive in Europe (41.3%) and soars to 84.1% in the United States (United Nations, 2009). In many European countries more than 10% of the population are "foreign born" individuals (e.g., Austria, Spain, Sweden, Germany, the UK, the Netherlands; Luxembourg has 32.5% of "foreign born"; See García-Muñoz and Neuman, 2013b, table 1)

[4] Immigration and the religiosity of immigrants are key factors in shaping the religious and demographic landscape of Europe. Based on the demographic advantage of the religious immigrant populations caused by (i) the dramatic decrease in fertility rates within secular native European populations; which (ii) is combined with high fertility rates among the religious immigrant populations; and (iii) coupled with the immigration of more religious groups into secular countries; the long-term consequences will be: 1) a constant and drastic change in the religious makeup, with a growing share of more religious residents in general and of members of Islam faith in particular; and 2) de-secularization and growing religious intensity (García-Muñoz and Neuman, 2013b).

One of the major reasons why immigrants in European countries do not adapt to the religious standards and performance in the receiving countries, in contrast to immigrants in the United States who do, stems from the different incentives behind the intensified religiosity of immigrants: while in the United states, religiosity of immigrants serves as a "bridge" between immigrants and natives that accelerates the assimilation process, in European countries it is a "buffer" and shock-observer against the hardships of integration and serves as "balm to the soul". Empirical evidence for the differing motives at the two sides of the Atlantic is based on the estimation of extended "mass participation equations" and "prayer equations", using data from several waves of the European Social Survey (ESS), the American General Social Survey (GSS), and the International Social Survey Program (ISSP) (See García-Muñoz and Neuman, 2013b, for details). It follows that, while in the United States intensified religiosity of immigrants has social networking effects that lead to assimilation and adaptation within the receiving populations, in Europe the social effects are local and evident only within the immigrant's community.

It should be noted that all the studies cited above on the relationship between religiosity and pro-social behaviour are based on self-reported survey data, rather than the direct observation of the individual's attitude and behaviour. There are several experimental studies that investigate the role of religious denomination and intensity of religiosity on social behaviour, using economic games. Yet the results vary and are not conclusive. For instance, Anderson and Mellor (2009) – using a sample of 64 subjects, at the age of 50 and over – investigate whether religious denomination and intensity of attendance of church services are correlated with cooperation. They are using a repeated *Public Good* experiment, and find that neither denomination nor church-attendance significantly affect contributions to the public good. The experiment was replicated using a sample of 144 students, yielding similar insignificant effects. Anderson et al. (2010), on the other hand, find that contributions increase with frequency of church attendance, among subjects attending religious services. In the same paper, Anderson et al. also find that church attendance does not have a significant effect on the outcomes of a *Trust* game. Using a large sample from three European countries, Migheli (2012) does however find a weak positive effect of religiosity, measured by time devoted to religious associations, on the amounts passed by the senders to the receivers in a trust game. In a similar vein, Eckel and

Grossman (2003) report a positive correlation between attendance at religious services and donations to charities, in an experiment with 168 subjects. Ahmed (2009), using a sample of 102 men, finds that religious students (preparing to enter the clergy in India) are more cooperative in a public good game and give more in a *Dictator* game than non-religious ones.

In order to avoid the causality problems associated with studies that look at correlations, recent research has made use of religious priming in economic experiments. Shariff and Norenzayan (2007), using two samples, of 50 and 78 subjects, find that individuals who were assigned to a treatment with a scramble-sentence task aimed at priming religious concepts, were more generous in a dictator game. However, in a similar experimental setup, using a larger sample of 304 subjects and a modified *Ultimatum* game, McKay et al. (2011) did not find a significant effect of religious priming on subjects' "altruistic" punishment of unfair behaviour, although a significant positive effect was found for those subjects who had previously donated to a religious organization.

In a large experimental study (N>800), Benjamin et al. (2010) explore the impact of religious identity – which was made salient by using a sentence-unscrambling task – on: contributions in a public good game; giving in a dictator game; risk aversion, time discounting and behaviour in a labour market task. Results are unclear: after religious priming, Protestants contribute more to the public good, Catholics contribute less and become less risk averse, while Jews reciprocate more in the labour market game. Also, they find no evidence that "religious identity salience" affects discount rates or purely altruistic generosity in the dictator game. Rand and et al. (2013), based on two experiments with 69 and 547 subjects, analyse the effect of explicit religious primes on subjects' behaviour, in a Prisoner's Dilemma Game. They suggest a positive effect of religious primes on cooperation, at least among Christians. See Norenzayan and Shariff (2008), for a discussion on the origins and the evolutionary roots of religious pro-sociality.

Thus, the literature on how religion affects social behaviour has been largely inconclusive. In this paper, we aim to add to this literature of *Experimental Economics of Religion* (see Hoffman, 2013). Using a large representative sample of a Spanish urban adult population (766 subjects), we explore how individual religious

variables correlate with social behaviour in three canonical economic games. Specifically, from participants' decisions in these games we obtained measures of *altruism* (giving in a dictator game, DG), *bargaining behaviour and sense of fairness/equality* (offer and minimum acceptable offer – MAO – in an ultimatum game, UG), *trust* (passing the money in a binary trust game, TG) and *positive reciprocity* (returning part of the trusted amount in the TG).

Three dimensions of religiosity are considered and examined: the subjects' *religion/denomination* (61.6% are Catholics; 2% Muslims; 0.8% Evangelicals; 4.3% have other religions; and 31.3% are claiming to have "no-religion", hereafter NR[5]); frequency of *church-attendance*; and if the respondent *changed her/his religion* at some point in her/his life (from any denomination to another, including NR; for instance, 12.3% of respondents in the sample changed from Catholic to NR).

The paper aims at answering the following questions: do Catholics (compared to the rest of the sample) exhibit a different social behaviour? Are those who claim to have no-religion (with respect to the rest of the sample, i.e., believers in any denomination) less or more pro-social? Is it just denomination that matters, or is religious intensity (measured by attendance at religious services) the most important variable explaining social behaviour? And, finally, are religion-specific social values transmitted from parents to children? Data on religious conversion can help in answering the last question. It could be learnt from an examination of a group of individuals who currently share the same religion and comparing two within sub-groups: those who always had that religion, versus the sub-group that changed denomination (i.e., was raised within a different religion).

While these are interesting general questions, given the multidimensional nature of both social behaviour and religiosity, it is also essential to unravel in which specific dimensions are religiosity and social behaviour interconnected. Our set of experimental variables will facilitate such an examination.

We believe that our results provide a true reflection of the effects of religion and religiosity on social behaviour, and thus contribute significantly to the relatively

[5] This figure is close to the ESS figure of 39.1% that claim to have "no religion", indicating that in this sense the sample is representative of the European population. The terms "no religion" and "not believing" will be used interchangeably.

scarce existing experimental literature. Our findings are trusted to be highly reliable due to (i) the large sample; (ii) the use of several types of games: DG, UG, and TG; (iii) the composition of the sample, that includes representative ordinary people, with varied socio-demographic characteristics, rather than only University students who compose the majority of samples in experimental economics studies; and (iv) the unique sample that does not consist of only self-selected volunteers who come to the lab (which is common in most studies). Instead, interviewers went to the respondents' places. *The last two features are exclusive and innovative* and distinguish our experiments from the standard experiments presented in the literature.

The paper is structured as follows. The next section describes the research methods. The third section explains the variables of interest (in particular the experimental variables) and provides some basic statistics. Section four presents the findings, and the last section offers concluding remarks and implications.

2. Methods

This section will be divided into two parts. First we describe the sample obtained through a stratified random method. Second we focus on the protocol and the experimental games.

Sampling

The survey-experiment was conducted in Granada (Spain) in 2010. A stratified random method was used to obtain the sample. In particular, the city was divided into nine geographical districts, which served as sampling strata. Within each stratum we applied a proportional random method to minimize sampling errors. This method ensures a geographically representative sample.

Our sample consists of individuals who agreed to complete the survey when the interviewers (who worked in pairs for security and logistic reasons) invited them to participate. Being interviewed in the own apartments decreases opportunity costs (thus increasing the participation rate) and prevents selection-bias (that could exist when volunteers are coming to the lab). In order to control for selection-bias within households, only the individual who opened the door was allowed to participate.

Lastly, the data collection process was well distributed across both daytime and weekday. This sampling procedure resulted in a representative sample of the city's adult population in terms of age and gender. Detailed information of the procedures, including survey and experimental instructions, can be found in Exadaktylos et al. (2013).

Protocol and the experimental games

The interviewers were last-year University students enrolled in a course on "*Field Experiments*". Their performance was linked to their final grade in the course and carefully monitored by the main researchers in real time by means of a web-based system and follow-up calls to randomly selected participants in order to ensure the reliability of the data collected. The interviewers introduced themselves to the potential participants and explained that they were carrying out a study for the University of Granada. Upon agreement to participate, the participants were informed that the data would be used for scientific purposes only and under conditions of anonymity, according to the Spanish Law on Data Protection. One interviewer read the questions clearly, while the other noted down the answers (to the socio-economic questions). The duration of the survey/experiment averaged 40 minutes and 835 observations were finally obtained.

In the first part, extensive socio-economic information of the participants was collected. In the second part, participants played both roles of three paradigmatic games of research on social preferences, namely the *dictator game* (DG), the *ultimatum game* (UG) and the *trust game* (TG). Thus, each participant made five decisions, since the second player in the DG is totally passive. At the beginning of the second part, the participants received some general information about the nature of experimental economic games according to standard procedures. In particular, participants were informed that:

- The five decisions involved real monetary payoffs, coming from a national research project, endowed with a specific budget for this purpose;
- The monetary outcome would depend on the participant's decision, or on both her/his own and another randomly matched participant's decision, whose identity would forever remain anonymous;

- One of every ten participants would be randomly selected to be paid, and the exact payoff would be determined by a randomly selected role (game);
- Matching and payment would be implemented within the next few days;
- The procedures ensure absolute double-blinded anonymity by using a decision sheet, which they would place in the provided envelope and then seal. Thus, participants' decisions would remain forever unknown to: the interviewers, the researchers, and the randomly matched participant.

Once the general instructions had been explained, the interviewer read the details for each experimental decision separately. After every instruction set, participants were asked to write down their decisions privately and proceed to the next task. To control for possible order effects on decisions, the order both between and within games was randomized across participants, resulting in 24 different orders (always setting aside the two decisions of the same game).

On average, the eighty subjects who were randomly selected for real payment earned €9.60 (min €0; max €40).

3. Variables of interest and basic statistics

The data set is very rich and facilitates the use of a large battery of controls (e.g., gender, income, education, age, political views, cognitive skills…). After the exclusion of observations with missing values, we arrived at a sample size of 766 individuals.

Experimental design and variables

We have five basic measurements based on subjects' behaviour in the experimental games, each reflecting a dimension of social behaviour: *genuine altruism*, *strategic altruism*, *fairness*, *trust*, and *positive reciprocity*. The derivation of these elements is described below:

(i) In the DG, subjects had to split a pie of €20 between themselves and an anonymous participant. Subjects decided which share of the €20, in €2 increments,

they wanted to transfer to the other participant. Hence, this variable facilitates the observation of *genuine altruism*/*generosity*;

(ii) In the case of the UG, proposers made an offer (also from a "pie" of €20) to the responder, but implementation was upon acceptance of the offer by the randomly matched responder. In case of rejection neither participant earned anything. For the role of the responder in the UG we used the strategy method, in which subjects have to state their willingness to accept or reject each of the proposals. Since low offers in the UG might be rejected, we consider proposers' generous offers as *strategic altruism*. The subjects' minimum acceptable offer (MAO) as responders in the UG – that is, the minimum amount of money that the subject would accept – reflects a sense of *fairness* (or aversion to inequality, at least to disadvantageous inequality);

(iii) In the TG (a binary version created by Ermisch et al. 2009), the trustor (1st mover) had to decide whether to pass €10 or €0 euros to the trustee (2nd mover). In case of passing nothing, the trustor earned €10 and the trustee nothing. If she/he passed the €10, the trustee would receive €40 (the amount of money was quadrupled). In the second step: the trustee, conditional on the trustor having passed the money, had to decide whether to send back €22, and keep €18 for himself, or keep all €40 without sending anything back, in which case the trustor would not earn anything. Hence, a trustor passing the money in this binary TG reflects *confidence* in the trustworthiness of the trustee, while the trustee returning a positive amount of money indicates *positive reciprocity* since she/he could keep the whole pie.

<u>Religious dimensions</u>

The first section of the survey includes questions on the following aspects of religiosity (relative frequencies of responses in parentheses):

- Item 15 relates to *religious denomination/beliefs*.

  As far as your religious denomination/beliefs are concerned, do you classify yourself as: No religion (31.3%, NR hereafter), *Catholic* (61.6%), *Muslim* (2%), *Evangelical* (0.8%), *other religion* (4.3%)

- Item 15.1 focuses on *frequency of attendance of church (place of worship) services* (relative frequencies among Catholics, in parentheses).

How often do you go to church (place of worship)? Never (40.5%), *less than once a month* (26.6%), *once in a month* (14.1%), *once in a week* (16.7%), *every day* (2.2%)

- Items 16 and 16.1 relate to *changes in the religious denomination.*

  Have you ever changed your religious denomination / beliefs? Yes (16.2%), No (83.8%)

  Individuals who changed denomination were then asked: *Before changing your denomination/beliefs, you identified your denomination / beliefs as: No religion* (0%), *Catholic* (98.3%), *Muslim* (0%), *Evangelical* (0%), *other religion* (1.7%)

The combination of information derived from questions 15 and 16 enables the calculation of the share of subjects who were (raised as) Catholics and currently claim to have "no religion" (NR). Indeed, this group comprises 12.3% of the sample, which also means that the vast majority (75.8%) of those who switched to another denomination were raised as Catholics and are now affiliated with "no religion". This is another indication of secularization in Spain (see also Brañas-Garza et al., 2013).

Definition of socio-economic control variables and descriptive statistics

Table 1 presents descriptive statistics (min, max, mean and SD) of the main variables of interest of this study. Block "a" relates to controls, block "b" to religious dimensions, and block "c" to experimental variables.

The definitions of control variables that are not self-explanatory are the following: *Household income* refers to self-reported household monthly income and consists of 10 categories corresponding to €0-€4,500 (in €500 increments); *Education* refers to the subject's educational level and has 9 categories from "did not study at all" to "a graduate university degree". *Cohabiting* takes on the value of one if the subject declares living with a partner not within wedlock, and zero otherwise.

Impatience corresponds to the number of impatient choices the subject made in an inter-temporal choice task and captures preference for sooner-smaller rewards over larger but more delayed rewards. The measure of impatience is included as a control because the payments of the experiment were delayed, and it has been found to affect

behaviour in strategic social interactions (Curry et al., 2008; Espín et al., 2012; Espín et al., 2013).

Table 1: Descriptive statistics

Variable	*min*	*max*	*mean*	*SD*
a: Controls				
age	16	89	37.677	17.098
*male**	0	1	0.463	0.499
household income	0	9	3.828	2.413
education	0	8	5.065	2.258
*unemployed**	0	1	0.472	0.500
*married**	0	1	0.365	0.482
*divorced**	0	1	0.040	0.197
*widowed**	0	1	0.043	0.203
*cohabiting**	0	1	0.038	0.191
impatience	0	11	7.930	3.008
*risk 1**	0	1	0.137	0.344
*risk 2**	0	1	0.334	0.472
*risk 3**	0	1	0.090	0.286
cognitive skills	0	5	2.522	1.318
many immigr	1	7	4.639	2.181
*big public sector**	0	1	0.619	0.486
b: Religiosity				
*Catholic**	0	1	0.616	0.487
*No religion**	0	1	0.313	0.464
Active Catholic^*	0	1	0.322	0.468
NR-before Cath†*	0	1	0.392	0.489
c: Experimental Games				
DG offer	0	20	7.833	4.285
UG offer	0	20	9.296	2.982
UG MAO	0	10	6.980	3.587
*Trustor**	0	1	0.708	0.455
*Trustee**	0	1	0.711	0.454

Legend: * dummy variable, ^ only among Catholics, † only among non-believers.

Risk 1, risk 2 and risk 3 refer to the subject's attitudes toward financial risk and are dummy variables where 1 means that the subject chose the risky option, and 0 if chose the non-risky option. Risk attitudes are controlled for since payments were

probabilistic and both the UG and the TG involve some strategic risk. *Risk 1* captures "risk-loving" in the domain of gains when both the risky and the non-risky option have the same expected value. *Risk 2* captures risk-loving in the gains' domain as well, but in a question where the risky option yields a higher expected value than the non-risky one. Finally, *Risk 3* captures risk loving when the risky option involves possible losses.

'Cogn skills' refers to cognitive skills measured by the number of correct answers in a five-question mathematical test. Two additional controls are included as proxies for political orientation, as religious adherence has been associated with different political preferences, such as racism and conservative attitudes (Guiso et al. 2003). *'Many immigr*' captures the degree of agreement (on a seven-point Likert scale) with the statement *"there are too many immigrants in Spain"*; *Big public sector* is a dummy variable that takes on the value of one if the subject answers positively the question "*Do you think that the public sector in Spain is too large?*".

The religiosity-related variables of block b are the following: *Active*=1 if the respondent reports that she/he attends church services once a month or more, and =0 if attendance is less frequent than once a month; *NR-before Cath*=1 if the respondent changed her/his religious denomination from Catholic to no-religion (= 0 otherwise).

Finally, the experimental variables: *trustor=1* if the subject passed the money to the trustee when in the role of trustor in the TG, and =0 if she/he did not; while *trustee*=1 if the subject reciprocated the trustor's trust, and=0 otherwise.

4. Results

Effect of religious denomination

We will first explore *if the religion/denomination per se has a significant effect on social behaviour*. Two sub-populations are compared: Catholics with the rest of the sample (regressions presented in Table 2); and NR with all others (including Catholics, Table 3). As in many other studies within the field of the *Economics of Religion*, "no-religion/not-believing" is also considered a religious denomination (see for instance, Aleksynska and Chiswick, 2013). We do not relate specifically to social

attributes of other religions (e.g., Evangelical, Muslim), due to their small sample sizes.

Five models are presented in each Table (columns (1) - (5)): DG and UG offers (in €, from 0 to 20) are the dependent variables in models (1) and (2), using a Tobit regression; column (3) explores UG MAO in €, from 0 to 10 (using an OLS regression model). Finally, (4) and (5) are Probit models analysing the behaviour as a TG trustor and trustee, respectively.

Socio-economic variables are included in order to arrive at net effects of our core variables, controlling for socio-economic differences between respondents. The same control variables are used in the two regression sets and their effects are not much different in Tables 2 and 3: *age* has an inverse U-shaped parabolic effect on the individuals' sense of fairness (UG MAO). Both *age* and *age-squared* are significant, indicating that MAO increases with age, reaches a maximum at about 55 and then decreases. No any other relevant effect is found to be related to *age*.

Married people are less likely to ask for equal shares (MAO) in the UG, indicating that they behave closer to the Nash equilibrium compared to singles. *Divorced* are more likely to be generous (DG). Cohabiting individuals offer less in the UG but trust more (pass the money) in the TG. However, both estimates are only marginally significant.

Impatient subjects offer less in the UG – they are less strategically generous – but they ask for a larger share of the pie as responders. Obviously, impatient individuals are not easy to manage in bargaining and agreement processes. A deeper analysis of this result is reported in Espín et al. (2013), where it is argued that impatience may be associated with a preference for spiteful competition in bargaining.

Turning to the effect of *risk attitudes*: risk-lovers in the gains' domain (*risk 1*) ask for more money in the UG (which is somehow a risky strategy) but they don't reciprocate in the TG (indicating that they are not very pro-social). Quite consistently, those who are ready to lose money (*risk 3*) risk their own money as trustors in the TG. Contrary to *Risk 1* these subjects seem pro-social: they share more in the DG and UG, ask less in the UG, and trust and reciprocate more in the TG. In any case, these results

should be treated with caution, given that the three *risk* variables are correlated (multicollinearity).

Table 2: Catholics versus non-Catholics

	DG offer	UG offer	UG MAO	Trustor	Trustee
	(1)	(2)	(3)	(4)	(5)
Catholic	0.625	0.318	0.573**	0.026	-0.158
	(0.479)	(0.238)	(0.271)	(0.116)	(0.129)
age	0.024	-0.011	0.110**	0.007	-0.000
	(0.082)	(0.053)	(0.043)	(0.021)	(0.021)
age sq.	-0.000	0.000	-0.001**	-0.000	0.000
	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)
male	-0.392	-0.055	-0.083	-0.082	0.043
	(0.392)	(0.214)	(0.242)	(0.103)	(0.111)
house income	-0.139	0.008	0.083	-0.002	-0.015
	(0.104)	(0.058)	(0.064)	(0.024)	(0.026)
education	0.008	0.049	-0.096	-0.015	-0.004
	(0.110)	(0.073)	(0.065)	(0.026)	(0.026)
unemployed	-0.467	-0.030	0.412	0.165	-0.100
	(0.417)	(0.240)	(0.290)	(0.103)	(0.128)
married	0.697	0.023	-1.239***	0.238	0.084
	(0.701)	(0.405)	(0.472)	(0.172)	(0.196)
divorced	2.030**	0.074	-1.043	0.058	0.231
	(0.800)	(0.699)	(0.734)	(0.275)	(0.294)
widowed	-0.398	0.061	-0.146	0.332	0.243
	(1.007)	(0.580)	(0.768)	(0.281)	(0.386)
cohabiting	-0.163	-0.849*	-0.308	0.450*	-0.301
	(1.216)	(0.463)	(0.721)	(0.259)	(0.310)
impatience	-0.096	-0.084**	0.093**	0.007	0.011
	(0.081)	(0.040)	(0.046)	(0.018)	(0.021)
risk 1	-0.238	0.011	1.174***	-0.134	-0.414***
	(0.562)	(0.309)	(0.371)	(0.133)	(0.150)
risk 2	0.653	-0.130	-0.169	0.183*	-0.099
	(0.403)	(0.269)	(0.316)	(0.104)	(0.104)
risk 3	1.695***	0.816**	-1.002*	0.920***	0.569***
	(0.598)	(0.371)	(0.596)	(0.219)	(0.185)
cogn skills	-0.148	-0.023	0.245**	0.001	0.096**
	(0.179)	(0.094)	(0.106)	(0.044)	(0.042)
many immigr	-0.302***	-0.104	0.027	-0.094***	-0.080***
	(0.098)	(0.065)	(0.060)	(0.027)	(0.025)
big public sector	0.421	0.027	0.298	-0.017	0.118
	(0.389)	(0.259)	(0.265)	(0.114)	(0.125)
Constant	9.834***	10.179***	3.351***	0.360	0.569
	(2.235)	(1.148)	(1.102)	(0.480)	(0.564)
LR	3.171***	1.520**	2.829***	95.259***	131.556***
ll	-2047.19	-1907.167	-2030.929	-436.102	-414.165
N	766	766	766	766	766

Notes: Dependent variables are displayed on top of the columns. Tobit estimates for models (1) and (2), OLS for model (3) and Probit for models (4) and (5). Robust SEs clustered by interviewer are presented (in parentheses). All regressions control for order effects. * p<0.1, ** p<0.05, *** p<0.01.

Individuals with better *cognitive skills* demand more money as responders in the UG, but they are also more prone to return (to reciprocate) in the TG, indicating that they may have a larger sense of social responsibility.

Finally, those who claim that there are too *many immigrants* share less in the DG, indicating that people who have little empathy for foreigners are also not so nice with locals. In addition, they offer less in the UG, they don't pass money in the TG, and also don't give the money back in the TG. Clearly, those who do not like immigrants are not very pro-social.

No significant effects of *education*, *income* or *gender* are found. We can therefore conclude that socio-demographics are not very relevant, but some specific personal characteristics related to preferences (risk attitudes, impatience) or cognitive skills are affecting decisions in several games.

Turning now to our core variable of *Religious denomination*, Table 2 focuses on *Catholics* versus the rest of the sample, including NRs. We do not find any sound effect rather than the positive relationship with UG MAO. That is, Catholics tend to ask for more money as responders in the UG. Since we do not find any effect related to generosity (either pure (DG) or strategic (UG proposer)), trust (TG trustor), or reciprocation (TG trustee) we may say that there is a positive effect of being Catholic on the aversion to disadvantageous, but not advantageous, inequality. Interestingly, when the sample is restricted to "standard" religions only, excluding NRs, the effect of UG MAO becomes insignificant too (regression results not presented, can be provided upon request). We can therefore conclude that Catholics do not exhibit a different pro-social behaviour compared to members of other faiths.

In Table 3 the sub-sample of *NR*s is contrasted with the rest of participants (i.e., individuals who belong to the "standard" religions, including Catholics). Results are sharper now: those who classify themselves as NRs are less generous in the DG, offer less as proposers in the UG and claim less money as responders (that might be indicative of a less strict sense of fairness). Hence we may conclude that NRs are less generous and not strongly driven by fairness.

Table 3: Non-believers/No religion versus believers

	DG offer (1)	UG offer (2)	UG MAO (3)	Trustor (4)	Trustee (5)
no-religion	-0.939*	-0.547**	-0.645**	0.039	0.181
	(0.506)	(0.251)	(0.318)	(0.126)	(0.123)
age	0.024	-0.011	0.109**	0.006	0.000
	(0.083)	(0.053)	(0.043)	(0.021)	(0.021)
age sq.	-0.000	0.000	-0.001**	-0.000	0.000
	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)
male	-0.401	-0.055	-0.110	-0.090	0.050
	(0.397)	(0.218)	(0.240)	(0.101)	(0.112)
house income	-0.139	0.007	0.086	-0.001	-0.016
	(0.104)	(0.058)	(0.064)	(0.024)	(0.026)
education	0.019	0.056	-0.090	-0.016	-0.005
	(0.110)	(0.073)	(0.064)	(0.027)	(0.026)
unemployed	-0.441	-0.015	0.428	0.164	-0.107
	(0.412)	(0.239)	(0.292)	(0.103)	(0.128)
married	0.638	-0.017	-1.265***	0.246	0.091
	(0.709)	(0.415)	(0.468)	(0.173)	(0.196)
divorced	1.974**	0.041	-1.061	0.068	0.241
	(0.800)	(0.701)	(0.739)	(0.274)	(0.293)
widowed	-0.434	0.038	-0.172	0.332	0.249
	(1.015)	(0.588)	(0.761)	(0.282)	(0.385)
cohabiting	-0.076	-0.786*	-0.285	0.434*	-0.312
	(1.210)	(0.472)	(0.734)	(0.261)	(0.307)
impatience	-0.097	-0.085**	0.094**	0.008	0.010
	(0.081)	(0.040)	(0.046)	(0.018)	(0.021)
risk 1	-0.200	0.036	1.201***	-0.137	-0.422***
	(0.555)	(0.304)	(0.376)	(0.134)	(0.150)
risk 2	0.673*	-0.120	-0.162	0.181*	-0.101
	(0.404)	(0.268)	(0.320)	(0.104)	(0.104)
risk 3	1.647***	0.780**	-1.008*	0.934***	0.572***
	(0.593)	(0.371)	(0.604)	(0.216)	(0.186)
cogn skills	-0.145	-0.022	0.249**	0.002	0.095**
	(0.179)	(0.095)	(0.106)	(0.044)	(0.042)
many immigr	-0.313***	-0.112*	0.027	-0.091***	-0.079***
	(0.098)	(0.068)	(0.059)	(0.027)	(0.026)
big public sector	0.415	0.021	0.298	-0.016	0.117
	(0.385)	(0.257)	(0.267)	(0.114)	(0.125)
Constant	10.481***	10.611***	3.847***	0.346	0.419
	(2.282)	(1.172)	(1.134)	(0.478)	(0.548)
LR	3.214***	1.612**	2.879***	93.804***	136.593***
ll	-2045.933	-1905.847	-2030.549	-436.072	-413.943
N	766	766	766	766	766

Notes: Dependent variables are displayed on top of the columns. Tobit estimates for models (1) and (2), OLS for model (3) and Probit for models (4) and (5). Robust SEs clustered by interviewer

are presented (in parentheses). All regressions control for order effects. * p<0.1, ** p<0.05, *** p<0.01.

Interestingly, NRs are not different from "believers/individuals with a religion" in terms of trust: neither in terms of passing the pie to the second mover (*trustor*) nor in terms of returning the money (*trustee*). Given that previous results have been inconsistent (e.g., Anderson et al., 2010; Benjamin et al., 2010; Migheli 2012), and based on our carefully-designed large sample, we may conclude that the effects of believing in a religion on trust and trustworthiness, if any, are not clear and may be influenced by other factors, such as the country of residence.

Effect of intensity of religiosity (measured by church attendance)

We will now relate to the effect of *intensity of religiosity* (measured by frequent attendance of church services) on social behaviour, by distinguishing between active worshipers who go to church (place of worship) at least once a month and non-active ones who do not go to church on a regular basis (less than once a month). In order to hold constant the effect of denomination and focus on intensity of religious performance, we will relate to the sub-sample of Catholics, who constitute over 60% of the sample. All other religions have a very low representation that does not allow for a meaningful distinction between active- and non-active worshipers (Muslims - 2%, Evangelicals - 0.8%, and all other religions combined - 4.3%). NRs compose more than 30% of the sample, however a distinction between active- and non-active attenders of church services is obviously meaningless.

Our conjecture is that frequent participation in church services will affect social/moral behaviour: the frequent attenders are more knowledgeable about religious texts and doctrines and in closer contact with the priest, inducing them follow these moral rules and doctrines. On the other hand, those who do not attend church services on a frequent regular basis, have a more vague knowledge of these sacred texts without a continuous updating, and probably also prefer a more relaxed and unrestricted style of life.

The effect of our core variable "being an *Active* Catholic" is interesting: members of this sub-sample do give more in the DG, which is reflecting a clearer sense of altruism and is quite consistent with what we saw in Table 2. In line with Tan's (2006) results suggesting a negative relationship between ritual activity and MAO we

find that *active* Catholics demand less money (than non-active Catholics) as responders in the UG.

Table 4: Active Catholics (attend. ≥ once a month) vs. Non-Active Catholics (< once a month)

	DG offer	UG offer	UG MAO	Trustor	Trustee
	(1)	(2)	(3)	(4)	(5)
Active	1.028*	0.163	-0.851**	0.175	-0.103
	(0.542)	(0.292)	(0.387)	(0.159)	(0.140)
age	0.039	0.045	0.083	0.027	0.021
	(0.086)	(0.059)	(0.057)	(0.029)	(0.025)
age sq.	-0.000	-0.000	-0.001	-0.000	-0.000
	(0.001)	(0.001)	(0.001)	(0.000)	(0.000)
male	-0.341	-0.175	-0.033	-0.009	0.209
	(0.477)	(0.242)	(0.306)	(0.138)	(0.138)
house income	-0.344***	-0.054	0.139*	-0.032	-0.024
	(0.113)	(0.078)	(0.080)	(0.032)	(0.035)
education	0.080	0.120	-0.107	0.018	-0.025
	(0.125)	(0.085)	(0.077)	(0.035)	(0.036)
unemployed	-1.323**	-0.082	0.071	0.063	0.012
	(0.531)	(0.305)	(0.361)	(0.136)	(0.176)
married	0.265	-0.701	-0.857	0.181	0.081
	(0.766)	(0.493)	(0.536)	(0.226)	(0.250)
divorced	1.396	-0.222	-0.072	-0.019	0.176
	(1.037)	(0.812)	(0.886)	(0.362)	(0.378)
widowed	-0.498	-0.725	-0.008	0.230	0.137
	(1.129)	(0.711)	(0.857)	(0.365)	(0.468)
cohabiting	-2.306	-2.374*	-0.018	0.018	-0.636
	(2.469)	(1.435)	(1.359)	(0.385)	(0.503)
impatience	-0.038	-0.058	0.026	0.020	0.023
	(0.085)	(0.049)	(0.053)	(0.022)	(0.027)
risk 1	-0.237	-0.139	1.023**	-0.102	-0.568***
	(0.596)	(0.413)	(0.472)	(0.188)	(0.219)
risk 2	0.446	-0.281	0.100	0.251*	-0.099
	(0.490)	(0.356)	(0.400)	(0.141)	(0.132)
risk 3	1.945***	1.105**	-0.946	0.901***	0.453*
	(0.622)	(0.478)	(0.642)	(0.263)	(0.236)
cogn skills	-0.108	-0.069	0.410***	-0.097*	0.027
	(0.205)	(0.110)	(0.143)	(0.059)	(0.055)
many immigr	-0.139	-0.099	0.009	-0.096**	-0.082**
	(0.129)	(0.084)	(0.075)	(0.040)	(0.041)
big public sect.	0.158	-0.230	-0.087	-0.177	0.241
	(0.459)	(0.344)	(0.333)	(0.157)	(0.160)
Constant	9.780***	9.861***	4.422***	0.994	0.241
	(2.842)	(1.316)	(1.581)	(0.898)	(0.809)
LR	3.253***	1.333	3.107***	69.559***	110.065***
ll	-1223.316	-1145.235	-1199.287	-256.395	-241.397
N	462	462	462	462	462

Notes: Dependent variables are displayed on top of the columns. Tobit estimates for models (1) and (2), OLS for model (3) and Probit for models (4) and (5). Robust SEs clustered by interviewer are presented (in parentheses). All regressions control for order effects. Ten observations had missing values for church attendance and were dropped. * p<0.1, ** p<0.05, *** p<0.01.

The difference between those with high- and low attendance levels could reflect the effect of religious social interaction on social preferences (see Tan, 2006). While non-active Catholics have a more strict sense of self-centred fairness (i.e., they ask for a more egalitarian distribution), active Catholics are more likely to play the Nash equilibrium, accepting lower offers. Remember that the larger group of *all* Catholics (Table 2) exhibited a tendency of demanding *more* money (and a similar amount compared to members of other "standard" religions, when NRs have been excluded in an unreported regression, see page 18). Combining the two seemingly contradicting findings leads to the conclusion that *within* the group of Catholics, there are major differences between active- and non-active individuals. The larger sub-group of non-actives (67.8% of Catholics) dominates and leads to a larger demand of money when no distinction (related to religious activity) is made. Moreover, our results contribute to the large pool of already existing evidence showing that intensity of religiosity is a very relevant predictor of behaviour, beyond and above the effect of religious denomination.[6]

It should also be emphasized that behaving as if playing the Nash equilibrium (NE - in the case of active Catholics) as UG responder, is not necessarily an indication of selfishness: it is true that pure money-maximizing subjects would accept any positive offer, setting MAO to its minimum value. However, it is also true that extremely pro-social subjects - concerned with other players' payoffs - would accept any offer just to maximize the counterpart's profits (and social welfare). Brañas-Garza et al. (2006) present support for this idea, using information from post-experimental interviews that shows that a large share of those who played the NE argued that "*maybe the*

[6] An examination of the effects of the control variables shows some minor differences between the whole sample and the subsample of Catholics. Nor *Age*, neither the marital-status of *married* are significant predictors of MAO (UG), and *cohabiting* is no longer affecting TG behaviour. The effect of *impatience* disappears for Catholic respondents while the connection between *risk attitudes* and behaviour along the reported games remains basically unaltered. The effect of *Cognitive skills* is also similar in the UG but its relationship with TG behaviour now relates to the role of trustor and becomes negative. The *negative view about immigrants* seems to be less important for the subsample of Catholics, since its negative effect on pro-social behaviour is now restricted to the TG.

other player needs the money" as the principal reason to accept any offer, even zero. In the same vein, the results of Staffiero et al. (2013) indicate that setting MAO at the minimum amount (i.e., zero) may be a symptom of pro-social behaviour.

Another suggestion that playing the NE does not indicate selfish behaviour can be drawn from column (1) in Table 4, which can be used to disentangle selfishness from pro-social preferences. The positive coefficient for *active* Catholics demonstrates that active Catholics give more money in the DG. This is clearly indicating that this sub-sample of *active* Catholics is *less* selfish. We therefore conclude that active Catholics ask for less money in the UG (MAO) because they have a higher sense of solidarity.

Effect of conversion from Catholicism into NR: does childhood religious education matter?

Utilizing the information on the third dimension of religiosity, namely *the experience of conversion into a religion that is different from the one educated/raised in* (see also Brañas-Garza et al. 2013 on converting-out), can shed light on the effects of childhood experience and cultural transmission from parents to their offspring. An extensive literature claims that values and norms (including religious norms) are transmitted across generations (e.g., Bisin and Verdier, 2000, 2001; Bar-El, 2013). The relatively large sample of NRs who were previously Catholic (94 out of 240 who are currently NRs were raised as Catholics and at some stage in life converted to NR), can be used to answer this interesting question.

Table 5 presents the repeated regressions of DG offer, UG offer, UG MAO, trustor and trustee for the sub-sample of individuals who are currently NRs, including a dummy variable for the sub-group of subjects who were raised as Catholics before converting to NR.

The conclusion is quite straightforward. The two sub-groups of NRs are not different in terms of social preferences (insignificant coefficients in all five models). This result contrasts the theory that claims that values are transferred from parents to children. Our data does not lend support to this wide-spread theory. However, we should keep in mind that we relate to a distinct and very special (although growing) group that consists of NR individuals.

Table 5: NRs who were raised as Catholics versus "all-life" NRs

	DG offer	UG offer	UGMAO	Trustor	Trustee
	(1)	(2)	(3)	(4)	(5)
NR-before Cath	0.223	0.037	-0.037	-0.252	0.256
	(0.734)	(0.393)	(0.424)	(0.212)	(0.237)
age	-0.001	-0.004	0.045	0.027	-0.023
	(0.177)	(0.082)	(0.101)	(0.038)	(0.060)
age sq.	0.001	-0.000	0.000	-0.000	0.000
	(0.002)	(0.001)	(0.001)	(0.000)	(0.001)
male	-0.838	-0.205	-0.564	-0.176	0.054
	(0.738)	(0.397)	(0.547)	(0.201)	(0.218)
house income	-0.008	0.069	0.150	-0.022	-0.037
	(0.170)	(0.087)	(0.116)	(0.048)	(0.043)
education	-0.023	0.087	-0.084	-0.044	0.104**
	(0.199)	(0.126)	(0.136)	(0.053)	(0.051)
unemployed	0.899	-0.091	0.984	0.314	-0.411**
	(0.943)	(0.390)	(0.609)	(0.236)	(0.207)
married	0.752	0.706	-2.376**	0.335	-0.022
	(1.220)	(0.776)	(1.176)	(0.367)	(0.381)
divorced	1.624	-1.126	-3.403**	0.171	
	(1.466)	(1.699)	(1.648)	(0.883)	
widowed	-6.162	1.978	0.285	0.338	
	(4.058)	(1.248)	(1.878)	(0.791)	
cohabiting	0.292	-0.319	-0.512	0.840*	-0.340
	(1.369)	(0.439)	(0.772)	(0.467)	(0.424)
impatience	-0.219*	-0.123**	0.193**	-0.005	-0.034
	(0.120)	(0.057)	(0.093)	(0.030)	(0.036)
risk 1	-0.243	0.141	1.878***	-0.279	-0.394
	(1.177)	(0.579)	(0.589)	(0.274)	(0.280)
risk 2	0.958	0.067	-0.198	0.230	-0.294
	(0.896)	(0.420)	(0.504)	(0.217)	(0.231)
risk 3	1.239	0.175	-0.119	1.010*	1.103*
	(1.106)	(0.477)	(0.836)	(0.565)	(0.564)
cogn skills	-0.292	0.000	-0.238	0.353***	0.251**
	(0.394)	(0.189)	(0.193)	(0.090)	(0.107)
many immigr	-0.436***	-0.066	-0.020	-0.048	0.009
	(0.159)	(0.104)	(0.121)	(0.047)	(0.047)
big public sec	0.929	0.202	0.801*	0.383**	-0.191
	(0.710)	(0.384)	(0.426)	(0.188)	(0.213)
Constant	9.523**	5.756	6.767***	-2.014**	0.945
	(4.481)	(3.532)	(2.460)	(0.849)	(1.188)
LR	3.9278***	2.574***	5.310***	93.075***	71.413***
ll	-624.169	-566.919	-623.767	-118.376	-110.599
N	240	240	240	240	229

Notes: Dependent variables are displayed on top of the columns. Tobit estimates for models (1) and (2), OLS for model (3) and Probit for models (4) and (5). Robust SEs clustered by interviewer are presented (in parentheses). *widower*=1 and *divorced*=1 predict success perfectly in model (6), thus the two variables are dropped and 11 observations not used All regressions control for order effects. * p<0.1, ** p<0.05, *** p<0.01.

5. Concluding remarks

A large well-designed sample of Spanish individuals is used to explore the effects of (i) religious denomination; (ii) religious intensity; and (iii) religious conversion on pro-social behaviour, using the Dictator, Ultimatum and Trust Games.

The main results of the paper are the following:

(i) The sub-sample of "no religion" individuals (30% of the sample) is less generous compared to members of any "standard" religion, indicated by passing less money in both the Dictator and the Ultimatum games. In other words, those who classify themselves as NRs are more selfish. In addition, their MAO is lower, that is, they are more likely to accept unfair offers in the UG. Behaving *as if* playing the NE combined with selfishness in the DG is indicative of a perfect rational self-interested behaviour. Given the accelerating shares of "no religion" individuals in Europe (and elsewhere), and assuming that this result can be generalised for other places as well, we can project that the *society could become more self-interested as a result of the dominant role of non-believers.*

(ii) Catholics are willing to reject unfair offers in the UG (higher MAO) more than the rest of the sample. They are not significantly different in terms of other pro-social characteristics. In our Spanish sample the shares of "other religious denominations" is very low. More than 90% of the sample is composed of Catholics and "no religion" respondents. It follows that little can be proposed about the pro-sociability of other religions, and as a result this finding could not be generalized and applied to other (more religiously diverse) countries.

(iii) Religious intensity (measured by active attendance of church services) matters above and beyond denomination: comparing religiously-active Catholics with non-active Catholics, we find that the former are more generous in the DG (while Catholics as a whole do not exhibit a differential behaviour in the DG) and claim less in the UG, that is, like in Tan (2006) MAO decreases with attendance. We can therefore conclude that there are differences in social behaviour *within* the group of Catholics, and *active Catholics exhibit a more pro-social behaviour than non-active*

Catholics (similar results are shown in Eckel and Grossman, 2003, and Ahmed, 2009). Due to the small shares of other denominations, it was not possible to distinguish between active- and non-active worshipers of other religions, other than Catholicism. A generalization of this finding could be relevant for the growing immigrant populations (in Europe and elsewhere, see footnote 3): given that immigrants tend to be more religiously-active, it follows that (at least for Catholic immigrants) the growing shares of immigrants could lead to more societal generosity; due to the small percentage of immigrants in our sample (7%) we could not relate to them in our empirical analysis, but we could still conjecture that they are more likely to behave pro-socially since they are notably more religious.[7]

(iv) The two demographic phenomena described above: increasing numbers of "no religion" individuals on the one hand, and of actively-religious immigrants, on the other hand, have opposing effects on society. Given the much more pronounced growth rates of NRs, we arrive at quite pessimistic projections of a society that could become less generous and less pro-social.

(v) It appears that only the current denomination (or "no denomination") affects social behaviour. Respondents who were raised as Catholics and then converted to "no religion" do not exhibit different social preferences compared to "all life" NRs. This finding is different from what is proposed in the "cultural transmission" literature (Bisin and Verdier, 2001), where it is claimed that cultural transmission of values/beliefs from parents to their offspring is affecting behaviour later in life.

(vi) Like Anderson et al. (2010), we fail to find any significant effect of religious denomination or religious activity on subjects' behaviour in either role of the TG. Given the large number of observations we analyse, such a systematic result is noteworthy and should be further examined. A potential explanation could be that Trust Games are not the proper "device" for the measurement of trust. Indeed, recently, researchers refer to this

[7] In our sample, 21 (out of 53 immigrants) are European and half of them are NRs (52.38%). Within the rest 32 immigrants, the majority (81.25%) is actively religious. The actively-religious immigrants have the following distribution of religious denominations: 7 are Catholic, 11 - Muslim, 1 - evangelical, and 7 belong 'other religions'.

type of problem not as a trust games but as an investment problem (Ashraf et al., 2006; Ben-Ner and Halldorsson, 2010).

References

Ahmed, A.M. (2009). 'Are Religious People More Prosocial? A Quasi-Experimental Study with *Madrasah* Pupils in a Rural Community in India', *Journal for the Scientific Study of Religion* 48: 368-374.

Aleksynska, M. and Chiswick, B.R. (2013). 'The Determinants of Religiosity among Immigrants and the Native Born in Europe', *Review of Economics of the Household*, forthcoming.

Anderson, L.R. and Mellor J.M. (2009). 'Religion and Cooperation in a Public Goods Experiment', *Economics Letters* 105: 58-60.

Anderson, L.R., Mellor, J.M. and Milyo J. (2010). 'Did the Devil Make Them Do It? The Effects of Religion in Public Goods and Trust Games', *Kyklos* 63: 163-175.

Ashraf, N., Bohnet, I. and Piankov, N. (2006). 'Decomposing Trust and Trustworthiness', *Experimental Economics* 9: 193-208.

Bar-El, R., Garcia-Muñoz, T., Neuman, S. and Tobol, Y. (2012). 'The Evolution of Secularization: Cultural Transmission, Religion and Fertility - Theory, Simulations and Evidence', *Journal of Population Economics* 26(3): 1129-1174.

Barro, R. and McCleary, R. (2003). 'Religion and Economic Growth across Countries', *American Sociological Review* 68: 760-81.

Barry, J.S. (1996). 'How a Flat Tax Would Affect Charitable Contributions', Backgrounder No. 1093. Heritage Foundation.

Becker, G.S. (1993). *'A Treatise on the Family'*, Cambridge, Massachusetts: Harvard University Press, first paperback edition.

Ben-Ner, A. and Halldorsson, F. (2010). 'Trusting and Trustworthiness: What are they, how to Measure them, and what Affects them', *Journal of Economic Psychology* 31(1): 64-79.

Benjamin, D.J., Choi, J.J. and Fisher, G.W. (2010). '*Religious Identity and Economic Behavior*', National Bureau of Economic Research: No. w15925.

Bisin, A. and Verdier, T. (2000). 'Beyond the Melting Pot: Cultural Transmission, Marriage, and the Evolution Of Ethnic and Religious Traits', *The Quarterly Journal of Economics* 115(3): 955-988.

Bisin, A. and Verdier, T. (2001). 'The Economics of Cultural Transmission and the Dynamics of Preferences ', *Journal of Economic Theory* 97: 298-319.

Bisin, A., Topa, G. and Verdier, T. (2004). 'Religious Intermarriage and Socialization in the United States', *Journal of Political Economy* 11(3): 615-664.

Brañas-Garza, P. and Neuman, S. (2004), 'Analyzing Religiosity within an Economic Framework: The Case of Spanish Catholics', *Review of Economics of the Household* 2 (1): 5-22

Brañas-Garza, P. and Neuman, S. (2007). 'Parental Religiosity and Daughters' Fertility: The Case of Catholics in Southern Europe', *Review of Economics of the Household* 5(3): 305-327.

Brañas-Garza, P., Cobo-Reyes, R. and Dominguez, A. (2006). 'Si él lo necesita: Gypsy Fairness in Vallecas', *Experimental Economics* 9(3): 253-264.

Brañas-Garza, P., García-Munoz T. and Neuman S. (2010). 'The Big Carrot: High-Stakes Incentives Revisited', *Journal of Behavioral Decision Making* 23(3): 208-313.

Brañas-Garza, P., Rossi, M. and Zaclicever, D. (2009). 'Individual's Religiosity Enhances Trust: Latin American Evidence for the Puzzle', *Journal of Money, Credit & Banking* 41: 555-566.

Brañas-Garza, P., García-Munoz T. and Neuman S. (2013). 'Determinants of Disaffiliation: An International Study', *Religions* 4(1): 166-185.

Brooks, A.C. (2003). 'Religious Faith and Charitable Giving', *Policy Review* 121.

Cohen-Zada, D. (2005). 'Preserving Religious Identity Through Education: Economic Analysis and Evidence From the US', *Journal of Urban Economics* 60(3): 372-398.

Curry, O.S., Price, M.E. and Price, J.G. (2008). 'Patience is a Virtue: Cooperative People have Lower Discount Rates', *Personality and Individual Differences* 44: 778-783.

Eckel, C.C. and Grossman, P.J (2003). 'V Rebate versus Matching: Does How We Subsidize Charitable Contributions Matter?', *Journal of Public Economics* 87: 681-701.

Ermisch, J., Gambetta, D., Laurie, H., Siedler, T. and Noah Uhrig, S.C. (2009). 'Measuring People's Trust', *Journal of the Royal Statistical Society A*, 172, 749-769

Espín, A.M., Brañas-Garza, P., Herrmann, B. and Gamella, J.F. (2012). 'Patient and Impatient Punishers of Free-Riders", *Proceedings of the Royal Society of London B*, 279 (1749): 4923-4928.

Espín, A.M., Exadaktylos, F., Herrmann, B., and Brañas-Garza, P. (2013). 'Short- and Long-run Goals in Ultimatum Bargaining", ESI Chapman Working Papers: 13-17.

Exadaktylos, F., Espín, A.M. and Brañas-Garza P. (2013). 'Experimental Subjects are not Different', *Scientific Reports* 3: Article Number 1213.

Fan, C.S. (2008). 'Religious Participation and Children's Education: A Social Capital Approach', *Journal of Economic Behavior and Organization* 65: 303-317.

Flanagan, J. (1991). *Successful Fundraising: A Complete Handbook for Volunteers and Professionals*. Chicago: Contemporary Books.

Fernandez, R. and Fogli, A. (2006). 'Fertility: The Role of Culture and Family Experience', *Journal of the European Economic Association* 4(2-3): 552-561.

Fernandez, R. and Fogli, A. (2009). 'Culture: An Empirical Investigation of Beliefs, Work and Fertility', *American Economic Journal* 1(1): 146-177.

Fleischmann, F. and Phalet, K. (2012). 'Integration and Religiosity among the Turkish Second Generation in Europe: A Comparative Analysis across Four Capital Cities', *Ethnic and Racial Studies* 35(2): 320-341.

García-Muñoz, T. and Neuman, S. (2012). 'Is Religiosity of Immigrants a Bridge or a Buffer in the Process of Integration?: A Comparative Study of Europe and the United States', IZA Discussion Paper No. 6384. Bonn

García-Muñoz, T. and Neuman, S. (2013a). 'Immigration-Religiosity Intersections across the Atlantic: Europe and the United States', In: Constant A. and Zimmermann K.F. (eds.). *The International Handbook on the Economics of Migration*. Edward Elgar Publishing Limited.

García-Muñoz, T. and Neuman, S. (2013b). 'Bridges or Buffers? Motives behind Immigrants' Religiosity - A Comparative Study of Europe and the US', *mimeo.*

Guiso, L., Sapienza, P. and Zingales, L. (2003). 'People's Opium? Religion and Economic Attitudes', *Journal of Monetary Economics* 50(1): 225-282

Harrington, D. (S.J.) and Keenan J. (S.J.) (2005). *Jesus and Virtues Ethics: Building Bridges between New Testament Studies and Moral Theology*. Maryland: Rowman and Litterfield.

Hoffman, R. (2013). 'The Experimental Economics of Religion', *Journal of Economic Surveys* 27(5): 813-845.

Johnson, D.P. and Kruger, O. (2004). 'The Good of Wrath: Supernatural Punishment and the Evolution of Cooperation', *Political Theology* 5(2): 159-176.

Keister, L.A. (2003). 'Religion and Wealth: The Role of Religious Affiliation and Participation in Early Adult Asset Accumulation', *Social Forces* 82: 175-207.

Maliepaard, M., Lubbers, M. and Gijsberts, M. (2010). 'Generational Differences in Ethnic and Religious Attachment and their Interrelation: A Study among Moslem Minorities in the Netherlands', *Ethnic and Racial Studies* 33(3): 451-472

McKay, R., Efferson, C., Whitehouse, H. and Fehr, E. (2011). 'Wrath of God: Religious Primes and Punishment', *Proceedings of the Royal Society B: Biological Sciences*, 278(1713), 1858-1863.

Migheli, M. (2012). 'Assessing Trust through Social Capital? A possible Experimental Answer', *The American Journal of Economics & Sociology* 71: 291-327.

Neuman. S. (1986). 'Religious Observance within a Human Capital Framework: Theory and Applications', *Applied Economics*: 1193-1203.

Neuman, S. (2007). 'Is Fertility Indeed Related to Religiosity', *Population Studies* 61(2): 219-224.

Neuman, S. and Ziderman, A. (1986). 'How Does Fertility Relate to Religiosity: Survey Evidence from Israel', *Sociology and Social Research* 70(2): 178-180.

Norenzayan, A. and Shariff, A.F. (2008). 'The Origin and Evolution of Religious Pro-sociality', *Science* 322: 58-62.

Pew Research Center's Forum on Religion & Public Life. (2012). '*Global Religious Landscape*', http://www.pewforum.org/2012/12/18/global-religious-landscape-exec/.

Schwadel, P. (2005). 'Individual, Congregational and Denomination Effects on Church Members' Civic Participation', *Journal for the Scientific Study of Religion*, 44: 159-171.

Shariff, A.F. and Norenzayan, A. (2007). 'God is Watching You: Priming God Concepts Increases Pro-social Behavior in an Anonymous Economic Game', *Psychological Science* 18: 803-809.

Staffiero, G., Exadaktylos, F. and Espín, A.M. (2013). 'Accepting Zero in the Ultimatum Game does not Reflect Selfish Preferences', *Economics Letters* 121: 236-238.

Tan, J.H.W. (2006). 'Religion and Social Preferences: An Experimental Study', *Economics Letters* 90(1): 60-67.

United Nations Population Division (2009). '*International Migrant Stock: The 2008 Revision Population Database'*.

Wallis, J. (2005). *God's Politics*. San Francisco, CA: Harper Collins Publishers.

Williams R.B. (1988). *Religions of Immigrants from India and Pakistan: New Threads in American Tapestry.* New York: Cambridge University Press.