

THE GOSPEL AND ECONOMIC BEHAVIOUR: EXPERIMENTAL EVIDENCE FROM A TRUST GAME

by

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ABSTRACT: *This paper studies how individual religiosity affects people's behaviour. In particular here I study the behaviour of the second players in a standard trust game. While the extant literature has looked for religiosity to increase the stakes passed by the subjects, the results presented here show that more religious people tend to choose an even allocation of these resources, whilst the less religious participants are either opportunistic or generous.*

Keywords: religiosity, distribution of resources, trust game, equalitarianism

JEL classification: C93, D30, Z12

1 Introduction

Religions teach their members particular rules and values, whose influence goes beyond the mere individual spirituality; at a macro level, the religious values are considered a major factor that influences the human and the socio-economic development of a population (Weber 1930, Diamond 2005, Woods 2005). Religious values can affect the economic path of development and can influence a society in several ways. In this article, I will study the relationship between religious values and trust and reciprocity. The economics literature has paid great attention to these two last aspects of human behaviour, both from a theoretical and from an empirical point of view. Indeed, a number of economic interactions are based on trust and reciprocity: from the exchanges on eBay to the international trade agreements (Guiso et al. 2009), the parts involved must all trust and reciprocate each other for the exchange to be successful (Smeltzer 1997). Moreover, trust and reciprocity work as a 'lubricant' in the credit market (Harris-White 2003, Yunus 2003) and act as enhancers for growth (Zak and Knack 2001, Barro and McCleary 2003) and cooperation (Guiso et al. 2003).

At the micro level Iannaccone (1994) stresses savings rates and income may depend on the specific religious affiliation of the individual. Iannaccone (1995) provides also evidence of how religious beliefs are important in household production; however, the same author (Iannaccone 1998) warns about the difficulty of isolating the effect

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of religiosity form that of other unobservable psychological factors, what may bias the results presented by the literature. Keister (2003) relates the accumulation of financial assets in early adulthood to religious affiliation and participation. Finally Brañas-Garza et al. (2009) find that religiosity enhances trust.

The goal of this paper is to assess whether and to what extent the religious values learnt may affect the behaviour of the believers, using a measure of religiosity not enough exploited in the extant experimental literature, which has already aimed at understanding whether religious people's behaviour is characterized by pro-social attitudes more than non-religious people's is. The idea of this paper grounds on the pro-social message of the *Gospel* (as a matter of facts the most of the studies on the topic involve Christian populations). Brooks (2003) and Schwadel (2005) find that the intensity of religious participation is positively associated with the amounts donated in charity giving. In particular, these studies consider members of Christian denominations, which all share the *Gospel* as main sacred book. Besides some (sometimes several) theological and doctrinal differences, the core values of the *Gospel* are common to all the Christian denominations and they are taught to all the members. The distribution of wealth is one of the main points of the social doctrines based on the *Gospel*. In particular, charity and solidarity have characterized the Christian communities since the origins. One could therefore expect that Christians are more cooperative, more charitable and more prone to share their wealth than the non-religious (considering an area where Christian religions are predominant). However, the Christian paradigm of charity is not limited to almsgiving, which is a major, but not the only, aspect of charity (Williams 2005). In particular, two other elements are crucial beyond almsgiving: redistribution of wealth and reciprocity; these aim at pursuing an unconditional commitment of the rich to the needs of the others (Gotsis and Merianos 2012). In this sense the Christian doctrine teaches the believers to share their wealth with the poor and to reciprocate positive actions (such as donations).

Holm and Danielson (2005) claim that the decisions of the players in experimental games are driven also by unconditional distribution preferences: donations in a dictator game and shares returned in a trust game correlate significantly. The existence of a moral norm (of religious type in our case) followed by the players could be an explanation. Consistently with Orbell et al. (1992), Anderson and Mellor (2009) find that the attendance to services may sustain cooperation in a public goods game, although it has no significant effect on the average contribution. Anderson et al. (2010) find that religiosity, measured as the frequency of service attendance, does not significantly increase the amounts exchanged in a trust game.¹ In this paper I propose an alternative measure of religiosity: participation to the activities of religious organizations, measured as the time spent weekly by a subject in this type of voluntary organizations. The literature on social capital suggests using this measure, as we can consider participation to religious voluntary associations as a part of the individual stock of social capital, following Putnam (2000), Degli Antoni (2009) and Anderson et al. (2010). I measure the intensity of individual religiosity through the average number of hours spent each week volunteering in religious associations rather than as service attendance. Recently, in a sample of three European countries, Mighele (2012a) finds some weak positive effect of religiosity on the amounts passed by the senders to the

1 Berg et al. 1995.

receivers in a trust game. However, the present article is different from that as here I focus on a specific outcome of the game and not on the general results.

2 Methodology

The experimental setup is a basic trust game (Berg et al. 1995). This involves couples of people, playing one after the other with each other within each couple. The first member of the couple (i.e. the ‘sender’, who play first) is endowed with some money (200 NOK in our specific case): s/he has to decide how much to pass to the game mate (i.e. the receiver, who has no endowment). The experimenter triples this amount and gives it to the second player, who must decide how much of the received sum s/he wishes to pass back to the sender. This decision ends the game. Both the players have complete information about the rules of the game, and full anonymity is ensured. The second mover may receive some money from the endowment of the partner, and this may stimulate some sentiments² to play a role, thus strengthening the impulse to pass back some positive sum. Here, if the initial hypothesis is true, the intensity of religiosity makes the player’s choice to converge towards even sharing rather than to one of the other two possible outcomes (namely making the partner ending ‘richer’ or ‘poorer’ than him/her-self). This would suggest that among religious people the sense of equal splitting prevails. In particular, the Christian values should induce the receiver to pass back an amount such that the final payoffs are equal. In other words, I am hypothesizing that equal sharing is the way followed by religious people to ‘reciprocate’. If, within religious people, the choice of equal (re-)distribution prevails on the other possible outcomes, this would clearly highlight an influence of religious values on people’s decision process.

To qualify the senders’ behaviour as ‘equalitarian’ is not as easy as for the receivers’. Indeed, the senders (may) expect some reciprocity. In this case, passing $\frac{1}{4}$ of the initial endowment would lead to an unequal final allocation of the total pie. Moreover, even if the senders seek an even distribution, they may look for maximizing their (and the other’s) payoff. In such a case, sending the whole amount would be the best strategy even if the sender seeks equality. In particular, this is the case if the receiver is expected to share the pie in equal parts. Consequently, for the senders, it is not possible to individuate any threshold that identifies the desire of equal sharing.

The existent literature typically measures the individual religious attitude through personal beliefs and/or participation to the services. I adopt a stricter measure of individual religiosity: the time that a person spends weekly within religious voluntary associations. Participation to these groups requires both a religious belief and a positive intention to devote some spare time within an association, among whose goals the propagation of religious values plays a central role. These volunteers show a strong religious attitude, which I assume to be stronger and stronger as the time devoted to the association increases. Another good (perhaps the best) reason to measure the intensity of individual religiosity in this way is that people attending the services do not necessarily translate the religious values in practice in their life. This leaves the researcher with the ambiguity of how to interpret this attendance (social activity, individual need

² We can mention anger, reciprocity or gratefulness; see Fehr and Schmidt (1999), Camerer (2003) and Bouckaert and Dhaene (2004).

of meeting a divine other, belief in God only, belief in the values of the *Gospel*, etc.?). The behaviour of the volunteers in religious organizations instead has to conform to the core values of the religion.³ Eventually, as different religions have different rules about services and attendance, the use of this last as a measure of individual religiosity undermines the possibility of generalizing or of comparing the results of experiments that involve subjects from different religions. For these reasons, the time spent in voluntary associations of religious type helps to interpret the meaning of the variable.⁴

A total of 207 undergraduate students from the University of Oslo⁵ participated in the game, 105 senders (let us call these ‘group A’) and 102 receivers⁶ (let us call these ‘group B’). I classify the choices of the second movers into three categories: opportunistic (keeping a payoff higher than the counterpart’s), equalitarian (transferring an amount of money such that both players end with the same payoff), or generous (transferring an amount of money so that the counterpart ends with a payoff higher than the receiver does)⁷. Three dummy variables are constructed, one for each of the three possible outcomes; this allows for estimating the probability of belonging to one of the three groups by the means of a probit analysis. Since the decision of the As is tripled, only those who receive more than $\frac{1}{4}$ of the initial endowment can choose any of the three possible described outcomes. The other Bs have not access to the full set of choices and therefore are not included in the analysis. Indeed the considered sub-sample is such that, after the first stage of the game and before the second is played, the first mover has an ‘intermediate’ payoff that is lower than the second mover’s.

After the game, the participants filled in a questionnaire that collected information about their participation to religious and other voluntary associations, as well as their use of social networks such the telephone and the Internet. Of course also knowing how much time the participants spend in other forms of socialization (for example hanging out with friends) would have been relevant for the analysis; unfortunately the data do not contain this piece of information. In particular, the players were asked to indicate the average time spent per week communicating with friends through these means. The inclusion of also other types of associations and networks allows to control for the level of sociality of each participant. Indeed, people who spend more time in

3 Often these volunteers are asked to transmit these values to other people (generally children; think of the parish youth clubs, to catechism courses, etc.). Of course, there is the possibility that some people who volunteer in religious associations are in facts not religious. However, since they volunteer in this type of associations, it is likely that they share the Christian values at the basis of these associations.

4 The inclusion of some information about service attendance would have completed the data. Unfortunately, no question about this was asked in the questionnaire.

5 All from the School of Economics, but none had taken any course in Game Theory or related topics.

6 The difference between the number of participants in the two groups reflects the fact that some people in both groups had to be excluded because they violated the requirement of anonymity in filling their forms.

7 The existing experimental literature does not provide a definitive explanation for this behaviour. Apparently more than just generosity justifies it: the original designers of the game talk about reciprocity, others about gratefulness, social paradigms, etc. However here it is neither my intention, nor the aim of the paper, to discuss this point. The etiquette that I attach to this behaviour is purely motivated by practical reasons, and the semantic choice is aimed at driving the attention of the reader intuitively towards the outcome of the choice.

Table 1 – Descriptive statistics

	Mean	Standard deviation
Amount passed to A	155.06	118.08
Amount received from A	365.46	176.18
Male (as % of the sample)	41.3	49.51
Time spent in activities for voluntary associations (mins.)		
<i>Religious</i>	20.78	80.14
<i>Sports</i>	144.66	216.35
<i>Cultural</i>	56.00	108.48
<i>Political</i>	43.50	158.00
Time spent in chats with friends through		
<i>Thelephone (mins.)</i>	96.62	93.71
<i>Text messages (number)</i>	56.32	55.30
<i>Internet (mins.)</i>	288.10	285.04
Respondents having a job (%)	68.82	46.58

religious associations might do so because their personal is naturally more social, and, therefore, their behaviour depends on their whole sociality rather than on their attitude towards religion. The questionnaire asked the participants about how much time they spent in different ‘types’ of associations. This is, of course, a limit, since each of these types embraces several different associations, which is not possible to isolate in the questionnaire. However, I chose to present monolithic categories rather than leave the responder free to list the associations of which s/he is a member for practical reasons. A large number of different associations would have rendered the analysis deeper, but the price for this would have been a substantial reduction in the sample variance and therefore in the quality of the estimates.⁸

The total time required by each session (i.e. reading the instruction, choosing the amount to pass and filling in the questionnaire) was between 30 and 40 minutes.

Table 1 presents the descriptive statistics of the variables used in the following analysis. We can see that in the sample females are slightly more than males; time spent in activities within religious organizations is relatively few, if compared to the time spent in other types of associations.

3 Results and discussion

In the first stage all the members of religious associations passed about 54% of their initial endowment, while the non-members transferred more than 67% (Table 2).⁹

⁸ Consider the case where only a subject volunteers in a particular association. In this case, the identification of the effect of that particular association would be impossible. As a consequence, I preferred to ‘buy’ the possibility of better identifying the effect of volunteering in religious associations, paying with lesser details on the different aims of different religious associations.

⁹ For the analyses presented in Table 1, two sub-samples were individuated, according to the passed amount expressed in percentage of the endowment. The threshold that divides the

Table 2 – Mann-Whitney for passed amounts (% of the endowment). Group A.

	Amount passed	z-statistic
Whole sample		
Members of religious organisations	54.60	-1.311
Non-members of religious organisations	67.31	
<i>Significance</i>	–	
Players who contributed more than 1/4 of the endowment		
Members of religious organisations	68.67	-0.280
Non-members of religious organisations	70.73	
<i>Significance</i>	–	

“–” means non significant at any conventional level.

Although the difference between these two figures is not statistically significant,¹⁰ the choice of the members of religious associations is much closer to one half than that of the other group. In any case, given the lack of significance and the difficulty of interpreting it, the outcome of the first stage of the game is in line with Anderson and Mellor (2009) and Anderson et al. (2010): there is no significant effect of religiosity on the stakes passed by the As to the Bs. When analysing the stakes returned in the second round, interesting results emerge. Therefore, as already stated, the following discussion focuses on the group of the second movers only. Figure 1 presents the distribution of the amounts passed back by the receivers to the senders. Some retained the whole amount, some, who received the 200 NOK tripled, returned the whole pie (600 NOK) to the sender. However, the most of the players opted for an intermediate choice.

The experimental literature based on the trust game shows that the receivers (to whom the senders have transferred part of their initial endowment) send back an amount that relatively increases with the amount received (Camerer 2003). In other words, the receivers reward the senders' trust by increasing the amount passed back to the senders not only in absolute, but also in relative terms (i.e. as share of what received). Indeed, there is evidence that when the sender transfers high shares of his initial endowment to the receiver, the latter sends back very high stakes of what received so that the senders are very likely to end with a payoff that is much larger both than the initial endowment and than the receiver payoff (Bouckaert and Dhaene 2004). Table 3 reports the results of a multinomial probit regression, where the equalitarian outcome constitutes the baseline. Following what previously stressed, the first control is the amount received by B from A. The figures confirm that the larger the amount (and therefore the share of the initial endowment) sent by the sender, the higher the probability of not behaving opportunistically. The time spent within voluntary religious associations is a significant predictor of all the three behaviours, but the coefficient is negative for the opportunistic

two groups is $\frac{1}{4}$. Senders who transferred $\frac{1}{4}$ or more of the initial endowment allow for a final allocation where both players have the same payoff; transfers below $\frac{1}{4}$ of the initial endowment do not. This is because the amounts passed by the As to the Bs are tripled by the experimenter. Consequently any amount lesser than $\frac{1}{4}$ of the initial endowment necessarily entails that the sender will always end with a larger payoff than the receiver. Since the aim of the paper is to study equal allocations, then the two sub-samples are presented separately.

¹⁰ Indeed it is marginally significant (at 90% level) when a t-test is used instead of the Mann-Whitney test.

Table 3 – Multinomial probit regressions for the three different outcomes

	Opportunistic behaviour		Generous behaviour	
	Coefficient	Marginal effect	Coefficient	Marginal effect
Received amount (NOK)	-0.00941 (0.00195)***	-0.00252 (0.000511)***	-0.00402 (0.00163)**	0.000102 (0.000190)
Male	1.249 (0.604)**	0.227 (0.139)*	1.677 (0.623)***	0.155 (0.0601)**
Time spent in				
<i>religious associations</i>	-0.717 (0.311)**	-0.149 (0.0091)**	-0.901 (0.314)***	-0.0783 (0.0279)***
<i>sports associations</i>	-0.0273 (0.0845)	-0.00958 (0.0249)	0.0195 (0.0634)	0.00481 (0.0104)
<i>cultural associations</i>	0.266 (0.118)**	0.0586 (0.0298)**	0.287 (0.131)**	0.0222 (0.0173)
<i>political associations</i>	-0.299 (0.115)***	-0.0770 (0.0325)**	-0.171 (0.121)	-0.00300 (0.0165)
Communication through				
<i>telephone (mins.)</i>	0.0662 (0.140)	-0.00439 (0.0419)	0.333 (0.171)*	0.0433 (0.0275)
<i>text messages (number)</i>	0.00816 (0.00561)	0.00235 (0.00151)	0.00126 (0.00575)	-0.000411 (0.000676)
<i>internet (mins.)</i>	-0.107 (0.0490)**	-0.00965 (0.00134)**	-0.306 (0.0866)***	-0.0365 (0.0120)***
Having a job	0.526 (0.576)	0.319 (0.124)**	-1.877 (0.574)***	-0.417 (0.112)***
Ethnicity	0.368 (0.272)	0.0729 (0.0712)	0.511 (0.316)	0.0472 (0.0391)
Constant	2.007 (0.972)**		0.893 (1.136)	
Observations	85		85	

Robust standard errors in parentheses.

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

and the generous outcomes, what entails that spending time in religious associations increases the probability of choosing the equalitarian distribution rather than either of the others. This supports the initial hypothesis: the higher the individual endowment of religious capital¹¹ and the more the subjects practice Christian values, the more they are prone to share the resources equally, rather than to choose any other allocation. The analysis of the marginal effects suggests that the aversion to an opportunistic behaviour is stronger than that to a generous behaviour. Moreover, we can notice that men tend to be more generous rather than opportunistic or equalitarian with respect to women. The results reported in Table 3 are particularly interesting. They reveal two aspects that the previous works on the topic had not yet uncovered. First, religiosity has an effect on the behaviour of the subjects who play a trust game. Second, religious people are more likely than the non-religious to follow a logic based on distributive justice. In particular, they tend to split the pie in (two) equal slices, even when controlling for the amount received. This shows that religious people follow behavioural rules that are

11 See *Religion as Social Capital* (2003), C. Smidt, ed. Waco: Baylor University Press.

partially different from those followed by the others. Indeed, the latter tend to respond to the more general logic of increasing the relative amount sent back as the received sum increases. The religious do not do this: they clearly pursue a moral rule that pushes them to share wealth equally. The others follow a rule that pushes them to reward (punish) (non)trustworthy senders, even by sending them back an amount such that the sender ends richer than the receiver. In addition, the religious persons are also less likely than the non-religious to behave selfishly.

The literature on the trust game finds reciprocity and guilt aversion among the reasons that lead the decisions of the players (Camerer 2003). The feeling of guilt arises when an individual(istic) choice leads to an unequal final distribution of the initial resources (Smith 1759/2010 and Goeree and Holt 2000). In this sense, the results presented in this paper may suggest that the Christian values enhance equalitarian allocations via guilt aversion.¹²

Some may argue that another effect is at work here: the receivers may not only desire equalitarian sharing, but they might also aim at not betraying the senders' trust. Although also this effect may drive the results, their validity still holds. Indeed, not only the moral rules of the Christian churches, but also the laic social norms of the Western society stigmatize betrayal. Two reflections help to consider this issue more in depth. First, all the players are, on average, equally concerned about not betraying the sender's trust. Under this hypothesis, the results still show that the religious values have the hypothesized effect on the outcome. The second possibility is that religious people are more concerned about not betraying the sender's trust than non-religious people are. Also in this case the religious values would affect – although indirectly – the outcome of the experiment in the sense hypothesized.

Two other results are also interesting: first, the use of the Internet for communicating with friends is positively associated with the equalitarian behaviour and negatively with the generous. Second: as the time spent within political organizations increases, the probability of behaving opportunistically decreases (Tables 2 and 3). However, there is no significant effect on the other two types of behaviour. What is particularly relevant here, is that the marginal effects for the time spent within religious associations is larger than the sum of the marginal effects of political participation and of communication via the Internet. This suggests that the role played by the religious social capital is stronger than that played by the other types of social capital.

Table 4 presents the results of probit regressions where either the opportunistic or the generous behaviour is compared to the equalitarian behaviour (in Table 3 each behaviour was compared to the other two). This additional analysis supports the previous conclusions. Eventually, Table 3 and Table 4 highlight that also gender influences the outcome. Women tend to be more equalitarian than men, while these last tend to behave more generously than opportunistically (the marginal effect for the first behaviour is larger than for the second in Table 4, while in Table 3 the gender has no significant effect on being opportunistic). Taken together, these results provide also support for the social capital hypothesis: i.e. individual social capital fosters pro-social behaviour.

12 The Christian ethics may strengthen this feeling, making the believers to perceive behaviours contrary to distributive equality as sinful.

Table 4 – Probit regression for adopting a generous or an opportunistic behaviour vs. an equalitarian behaviour

	Opportunistic behaviour		Generous behaviour	
	Coefficient	Marginal effect	Coefficient	Marginal effect
Received amount (for each 10€)	-0.006 (0.001)***	-0.002 ($5 \cdot 10^{-4}$)***	-0.003 (0.001)*	$-7 \cdot 10^{-4}$ ($3 \cdot 10^{-4}$)*
Male	0.805 (0.469)*	0.243 (0.113)**	1.773 (0.646)***	0.431 (0.159)***
Time spent within:				
religious associations	-0.421 (0.169)***	-0.159 (0.064)***	-0.953 (0.312)***	-0.230 (0.081)***
sports associations	-0.032 (0.067)	-0.012 (0.025)	0.040 (0.057)	0.008 (0.012)
cultural associations	0.190 (0.087)**	0.072 (0.034)**	0.306 (0.191)	0.065 (0.043)
political associations	-0.296 (0.139)**	-0.112 (0.053)**	-0.146 (0.135)	-0.031 (0.028)
Time spent in communications through				
telephone	0.080 (0.114)	0.030 (0.044)	0.290 (0.198)	0.062 (0.042)
text messages	0.006 (0.003)*	0.002 (0.001)*	0.005 (0.010)	0.001 (0.002)
the Internet	-0.072 (0.039)*	-0.027 (0.015)*	-0.288 (0.100)***	-0.061 (0.022)***
Having a job	0.386 (0.486)	0.152 (0.188)	-1.661 (0.491)***	-0.391 (0.125)***
Ethnicity ¹	0.268 (0.236)	0.101 (0.086)	0.407 (0.364)	0.087 (0.081)
Constant	1.151 (0.783)		0.567 (1.246)	
Pr(y = 1)	0.409		0.123	
Number of observations:	73		52	
Pseudo-R ²	0.438		0.434	

*10%; ** 5%; *** 1%.

As already mentioned, Migheli (2012b) finds that religiosity enhances trust. However, the results presented in this article suggest some further consideration. If the distribution of religious people is concentrated in correspondence of the equalitarian outcome (which involves A to pass B a positive amount of money), while the average amount passed by the non-religious sub-sample is lower than the stake needed for the equalitarian outcome, then obviously Migheli (2012a, b) finds a positive effect of religiosity on the amount passed. This does not invalidate the results provided in my paper, but, rather, is consistent with them.

Working students are rather opportunistic instead of generous or equalitarian, perhaps because they have a higher valuation of money or, since they work, they need money to support their studies. Moreover, these subjects are likely from households with lesser financial possibilities than non-working students are. Consequently the marginal utility (and perhaps the general need) of money is larger for the former than for the latter, and therefore the workers are less prone to risk their money than the non-workers are.

Another possible interpretation is that people who are used to work to earn money are less prone to risk it, even when, as in the case of this experiment, the money is received effortlessly. Working students also have a different opportunity cost of time with respect to non-working students. Indeed the former may will, but have no time to volunteer in associations. Nevertheless, working students generally constitute a minority of the whole population of students. Moreover, the introduction of a dummy that identifies the workers should clean the result of spending time in voluntary associations from the different opportunity costs of time.

A possible alternative interpretation of the three choices examined entails the existence of some order between them. In particular, the choices could be interpreted as different degrees of generosity (or, alternatively, of opportunism). In such a way, the generous behaviour represents the highest degree of generosity or the lowest of opportunism), while the opportunistic behaviour represents the opposite. Using this interpretation it may be reasonable to analyse the outcome by the means of an ordered probit regression, instead of a multinomial probit. Table A1 in the appendix shows that the results do not change qualitatively under the just mentioned assumption. While the data do not allow for disentangling the two possible interpretations, the results allow for accepting both of them. Indeed, the impossibility of knowing whether the subjects choose according to a hierarchical rule or not¹³ does not allow preferring a method of analysis to the other. However, future research should try to investigate deeply how the subjects of a trust game form their decisions.

4 Conclusions

This paper provides evidence that Christian religiosity influences behaviour in a trust game. In particular, and contrary to the existing findings in the literature, religiosity is associated with equalitarianism rather than simple generosity in the behaviour of returners.

People who spend time in voluntary religious organizations put in practice and very likely teach the fundamental rules of their religion (in Norway, namely Lutheran Christianity). Among these the even sharing of resources plays a crucial role, and this paper shows that the more a person participates in a religious based network, the more probably he/she will apply this social norm. This result is relevant as also when they are required to allocate resources outside the environment of the association, or, in any case, outside a religious environment they may exhibit the same allocation preference. The results also suggest that – differently from non-religious individuals – the religious subjects interpret reciprocity as equal splitting. In other words: the non-religious are more concerned about reciprocity than about redistributive justice, while the opposite seems to hold for the religious. This result is not straightforward and it is new not only in the literature on experimental economics, but constitutes an advance also for the literature on religious values and distributive justice.

13 The hierarchical rule implies that, in his mind, the subject ordered the different possible outcomes as different degrees of generosity. The horizontal rule (i.e. the alternative option, on which the core analysis of the paper is based) implies that the subject considered the three possible outcomes as different and independent choices not nuanced according to any moral category.

REFERENCES

- ANDERSON L. R. and MELLOR J.M., 2009, 'Religion and cooperation in a public goods experiment', *Economics Letters*, 105, 58–60.
- ANDERSON L., MELLOR J. 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.
- BARRO R. and MCCLEARLY R.M., 2003, 'Religion and economic growth across countries', *American Sociological Review*, 68, 760–781.
- BERG J. E., DICKHAUT J. and MCCABE K., 1995, 'Trust, reciprocity and social history', *Games and Economic Behavior*, 10, 122–142.
- BOUCKAERT J. and DHAENE G., 2004, 'Inter-ethnic trust and reciprocity: results of an experiment with small businessmen', *European Journal of Political Economy*, 20, November, 869–886.
- BRAÑAS-GARZA P., ROSSI M. and ZACLICEVER D., 2009, 'Individual's religiosity enhances trust: Latin American evidence for the puzzle', *Journal of Money, Credit and Banking*, 41, 555–566.
- BROOKS A. C., 2003, 'Religious faith and charitable giving', *Policy Review*, No. 121.
- CAMERER C., 2003, *Behavioral Game Theory. Experiments in Strategic Interaction*. Princeton: Princeton University Press.
- DEGLI ANTONI G., 2009, 'Intrinsic vs. extrinsic motivations to volunteer and social capital formation', *Kyklos*, 62, 359–370.
- DIAMOND J., 2005, *Guns, Germs, and Steel. The Fates of Human Societies*. New York: W. W. Norton.
- FEHR E. and SCHMIDT K.M., 1999, 'A theory of fairness, competition, and cooperation', *The Quarterly Journal of Economics*, 114, 817–868.
- GOEREE J. K. and HOLT C.H., 2000, 'Asymmetric inequality aversion and noisy behavior in alternating-offer bargaining games', *European Economic Review*, 44, 1079–1089.
- GOTSIS G. N. and MERIANOS G., 2012, 'Early Christians representations of the economy: evidence from the New Testament texts', *History and Anthropology*, 23, 467–505.
- GUIISO L., SAPIENZA P. and ZINGALES L., 2003, 'People's opium? Religion and economic attitudes', *Journal of Monetary Economics*, 50, 225–282.
- GUIISO L., SAPIENZA P. and ZINGALES L., 2009, 'Cultural biases in economic exchanges', *The Quarterly Journal of Economics*, 124, 1095–1131.
- HARRIS-WHITE B., 2003, 'India's pluralism and its implications for the economy' in *India Working: Essays on Society and Economy*, Cambridge: Cambridge University Press.
- HOLM H. J. and DANIELSON A., 2005, 'Tropic trust versus Nordic trust: experimental evidence form Tanzania and Sweden', *The Economic Journal*, 115, 505–532.
- IANNACCONE L., 1994, 'Progress in the economics of religion', *Journal of Institutional and Theoretical Economics*, 150, 737–744.

- IANNACCONE L., 1995, 'Household production, human capital and the economics of religion' in M. Tommasi and K. Ierulli, eds, *The New Economics of Human Behaviour*, Cambridge: Cambridge University Press, pp. 172–187.
- IANNACCONE L., 1998, 'Introduction to the economics of religion', *Journal of Economic Literature*, 36, 1465–1496.
- KEISTER L. A., 2003, 'Religion and wealth: the role of religious affiliation and participation in early adult asset accumulation', *Social Forces*, 82, 175–207.
- MIGHELI M., 2012a, 'Assessing trust through social capital? A possible experimental answer', *The American Journal of Economics & Sociology*, 71, 291–327.
- MIGHELI M., 2012b, 'Socialization, trust and reciprocity among young people', *Swiss Journal of Economics and Statistics*, 148(1), 77–95.
- ORBELL J., GOLDMAN M., MULFORD M. and DAWES R., 1992, 'Religion, context and constraint towards strangers', *Rationality and Society*, 4, 291–307.
- PUTNAM R., 2000, *Bowling Alone*. New York: Simon & Schuster.
- SCHWADEL P., 2005, 'Individual, congregational and denomination effects on church members' civic participation', *Journal for the Scientific Study of Religion*, 44, 159–171.
- SMELTZER L. R., 1997, 'The meaning and origin of trust in the buyer-supplier relationship', *Journal of Supply-Chain Management*, 33, 40–48.
- SMITH A., 1759/2010, *The Theory of Moral Sentiments*. Whitefish: Kessinger Publishing.
- WEBER M., 1930, *The Protestant Ethic and the Spirit of Capitalism*. New York: Charles Scribner's Sons.
- WILLIAMS T. D., 2005, 'Beyond distributive justice', *Logos: a Journal of Catholic Thought and Culture*, 8, 90–101.
- WOODS T. E., 2005, *How the Catholic Church Built Western Civilization*, Washington D.C.: Regnery Publishing.
- YUNUS M., 2003, *The Banker to the Poor*. New York: Public Affairs.
- ZAK P. J. and KNACK S., 2001, 'Trust and growth', *The Economic Journal*, 111(170), 295–321.

Appendix: Ordered probit regressions**Table A1 – Ordered probit regressions for the three different outcomes**

Dependent variable	Opportunistic behaviour		Equalitarian behaviour		Generous behaviour	
	Coefficient	Marginal effect	Coefficient	Marginal effect	Coefficient	Marginal effect
Received amount (for each 10€)	-0.055 (0.013) ^{***}	-0.002 (4*10 ⁻⁴) ^{***}	0.056 (0.012) ^{***}	0.002 (5*10 ⁻⁴) ^{***}	-0.003 (0.011)	-0.0005 (0.002)
Male	0.462 (0.366)	0.164 (0.136)	-0.753 (0.426) [*]	-0.283 (0.149) [*]	0.873 (0.406) ^{**}	0.150 (0.078) ^{**}
Time spent within						
religious associations	-0.385 (0.209) [*]	-0.134 (0.071) [*]	0.595 (0.194) ^{***}	0.233 (0.076) ^{***}	-0.460 (0.216) ^{**}	-0.068 (0.032) ^{**}
sports associations	-0.043 (0.068)	-0.015 (0.024)	0.014 (0.046)	0.006 (0.018)	0.039 (0.047)	0.006 (0.008)
cultural associations	0.124 (0.088)	0.043 (0.029)	-0.203 (0.044) ^{**}	-0.079 (0.037) ^{**}	0.158 (0.084) [*]	0.023 (0.014) [*]
political associations	-0.222 (0.137) [*]	-0.077 (0.045) [*]	0.153 (0.115)	0.060 (0.046)	-0.084 (0.077)	-0.012 (0.012)
Time spent in communications through						
telephone	0.010 (0.117)	0.004 (0.041)	-0.138 (0.100)	-0.054 (0.039)	0.223 (0.111) ^{**}	0.033 (0.018) ^{**}
text messages	0.005 (0.004)	0.002 (0.001)	-0.004 (0.004)	-0.001 (0.002)	-0.003 (0.004)	-0.0004 (0.0005)
the Internet	-0.038 (0.041)	-0.013 (0.014)	0.123 (0.037) ^{***}	0.048 (0.014) ^{***}	-0.185 (0.064) ^{***}	-0.027 (-0.001) ^{***}
Having a job	1.025 (0.414) ^{**}	0.311 (0.100) ^{***}	0.243 (0.353)	0.094 (0.135)	-1.587 (0.391) ^{***}	-0.344 (0.103) ^{***}
Ethnicity ¹	0.071 (0.205)	0.025 (0.071)	-0.264 (0.201)	-0.103 (0.079)	0.355 (0.263)	0.052 (0.040)
Constant	0.896 (0.716)		-2.160 (0.750) ^{***}		-0.629 (1.014)	
Pr(y = 1)		0.301		0.423		0.079
Number of observations:	85		85		85	
Pseudo-R ²	0.374		0.361		0.302	

¹ Ethnicity takes values 0, 1, 2, 3 according to the answer of the player to the following question: "Do you feel: 0) from my own region; 1) Norwegian; 2) European; 3) nationality is not important at all.

* 10%; ** 5%; *** 1%.