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The economics of faith: using an apocalyptic prophecy to elicit religious beliefs in the field[☆]



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ABSTRACT

We model religious faith as a “demand for beliefs,” following the logic of the Pascalian wager. We show how standard experimental interventions linking financial consequences to falsifiable religious statements can elicit and characterize beliefs. We implemented this approach with members of a group that expected the “End of the World” to occur on May 21, 2011 by varying monetary prizes payable before and after May 21st. To our knowledge, this is the first incentivized elicitation of religious beliefs ever conducted. The results suggest that the members held extreme, sincere beliefs that were unresponsive to experimental manipulations in price.

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1. Introduction

The field of the economics of religion has made substantial progress by focusing mainly on the supply side of the market for religion, such as the industrial organization of religious activity. The demand side, linked to the nature of religious beliefs, has received much less attention (Iannaccone, 1998). This paper investigates what is presumably a key driver of the demand side of religion, namely faith (i.e., religious beliefs), through a simple model and a field experiment.

Studying faith poses conceptual and empirical challenges. On the conceptual side, it must be noted that while faith involves beliefs, it has long been associated (even by famous believers such as Pascal, 1668 and James, 1909) with a *will to believe*, suggesting a non-standard connection between utility and beliefs.¹ On the empirical side, there are challenges to measuring faith. Authors have noted the potential for individuals to misrepresent their beliefs when asked about religion.² These difficulties suggest the use of incentivized elicitation methods, but religious events are typically unobservable

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¹ The dictionary definition of faith separates it from evidence in the statistical or logical sense. According to the Oxford dictionary, faith is “a strong belief in God or in the doctrines of a religion, based on spiritual apprehension rather than proof.” See Montgomery (1996) for a discussion of some of the challenges to an economics approach to faith.

² Kuran (1995) elaborates on the fact that tendencies to conform may lead to a falsification of preferences and beliefs. See Krosnick and Presser (2009) p. 285 on survey response bias more generally. An alternative to measuring beliefs is to track religious participation, but religious participation may reflect desire for community or material benefits rather than a pure reflection of beliefs.

(e.g., God's existence) and therefore participants cannot be rewarded based on accuracy. Despite the long history of religion in human affairs, to our knowledge religious beliefs have never been measured scientifically in an incentivized manner.

In this paper we make three contributions. The first is an approach to bring incentives into the measurement of the level and elasticity of religious beliefs. The key requirement is to locate religious propositions that are (presumably) believed in, and are also falsifiable. Then we can rely on belief elicitation techniques that reward predictions based on their accuracy. The second is the concrete findings of our approach when implemented with a specific religious group, to be described shortly. The third is a formal theory of religious beliefs that explicitly models the experimental intervention and offers a faith-rooted microfoundation for the demand side of religion.

We administered an experiment to implement our elicitation approach, relying on the well publicized prophecy made by Harold Camping, an elderly Christian radio talk show host, who held that May 21st, 2011 would be the “End of the World.” On May 21st, the prophecy went, the biblical Rapture would occur: divine judgement would be passed and the “saved” would ascend to Heaven to meet God, while great cataclysms would ravage the Earth. The “non-saved” would suffer “Hell on Earth” for five months, until all of creation would be annihilated on October 21st, 2011. Camping's prediction attracted a world-wide following, driven by tens of millions of advertising dollars and daily discussion on his Family Radio network, one of the largest Christian broadcasting networks in the U.S.

Our experiment elicited beliefs in the End of the World prophecy by having subjects make time-preference decisions in the weeks prior to May 21st, exploiting the espoused belief of Family Radio followers that money would have no value after May 21st. Thus, Family Radio followers should discount money payable after May 21st to reflect their belief that the prophecy would come to pass, in addition to a pure time preference.³ In order to approximate a control group we also approached members of the Seventh Day Adventist Church (henceforth, SDA), who are theologically similar to the Family Radio members but, crucially for our study, did not consider May 21st a special date.⁴

We offered both the Family Radio and the SDA subjects a choice between \$5 “today” (that is, before May 21st), and a variety of amounts up to \$500 four weeks in the future (after May 21st), using a Becker–DeGroot–Marschak method (Becker et al., 1964, henceforth, BDM) to capture the exact amount payable after May 21st that would make the subject indifferent with \$5 today. For the SDA group, we expected a discount rate that exclusively reflects a pure time preference. If beliefs in the prophecy among Family Radio members are a matter of external profession rather than inner conviction, we would expect their choices to resemble those in the SDA group. If their beliefs were sincere, we would expect their revealed discount rates to be higher.

The evidence indicates that the vast majority of Family Radio members held extreme beliefs even in the face of direct financial costs—nearly all Family Radio subjects preferred \$5 dollars today to any amount up to \$500 payable after the Rapture. In contrast, the SDA members made choices consistent with time preference parameters estimated in laboratory studies (Frederick et al. 2002). Taken together, these findings indicate that the Family Radio members held sincere and full beliefs in the prophecy. These beliefs matched the ones they reported in a survey after the experiment. To our knowledge, this initial set of findings provides the first experimental documentation of the role played by sincere faith in the demand for religion.⁵

Our second empirical finding is best discussed in the context of our theory. We motivate our model with the observation that religious beliefs are difficult to justify with standard models of Bayesian updating given the lack of concrete evidence (we abstract from the possibility that beliefs are driven by revelation or grace). Consequently, we follow a literature in economics which has explored how, if beliefs can directly yield consumption value, people might willfully manipulate their own beliefs (see inter alia Akerlof and Dickens, 1982, Bénabou and Tirole, 2004, Brunnermeier and Parker, 2005, Köszegi, 2006). In our model, we replace the psychological drivers in those theories (cognitive dissonance or anticipatory utility) with a simple cost–benefit model mirroring Pascal's wager: agents consider that fully believing in a religious proposition will provide salvation (a positive payoff) if a “religious state” occurs (e.g., God exists), but also recognize that these beliefs entail costly actions (such as prayer) regardless. Given this setup, there is a marginal individual, in terms of initial priors on the religious state, such that all agents with a higher prior deliberately choose to believe fully in the religious state. There are three takeaways from the model. The first is that a rational choice leads a subset of individuals to full and sincere religious beliefs. The second is that such choice can lead individuals with similar priors to separate into extreme believers and skeptics, a polarization that we observe in our experimental data. The third is that a change in the cost of distorted beliefs should affect the prevalence of faith if priors were disperse. We test this third prediction by randomly varying the probability of implementation of the BDM lottery across individuals in our experiment, which directly manipulates the cost of a distorted belief. Our second empirical finding is that we find no evidence that beliefs are cost-sensitive. This second finding creates some ambiguity when interpreting our results. While a price-elasticity of beliefs might be the ultimate evidence of the presence of a demand for beliefs, the lack of elasticity does not disprove the theory, as we discuss in detail after presenting our results.

It may be tempting to dismiss our results as simply reflecting the strange apocalyptic beliefs of a very small group of mentally-unsound individuals. However, according to a 2010 Pew Research Center survey, 41% of all Americans believe that Jesus Christ will definitely or probably return to Earth by 2050, an event that in Christian Theology is strongly connected to the Rapture.⁶ This is perhaps not surprising as, according to McGinn (1998), “Apocalyptic is the mother of all Christian

³ In fact, there were numerous media reports about believers in the prophecy making material decisions in anticipation of the events of May 21st, such as spending down bank accounts or winding down businesses. Several subjects told us they were making similar decisions; in a survey implemented *a posteriori* of the experimental interaction 68% of them reported higher spending as a direct result of their beliefs, with the majority reporting increased spending on donations.

⁴ SDA is a large Christian denomination (16.3 million members worldwide, and the 7th largest denomination in United States) which grew out of the Millerite movement, perhaps the quintessential American apocalyptic group whose members expected Judgement Day to occur in 1843. Following the failed prediction, the movement split into multiple groups that continue to hold apocalyptic beliefs today, including the SDA Church, who reject date-setting (but who believe that Jesus Christ's return to Earth is “imminent”), and Jehovah's Witnesses who have maintained date-setting (and continued to make multiple failed predictions). SDA member statistics are available at <http://www.adventist.org/world-church/facts-and-figures/index.html>.

⁵ It may be argued of course that sincerity can only be established in relation to the stakes offered in the experiment. Perhaps \$10,000 would induce different behavior than \$500. But in other realms where survey bias is also suspected—e.g., politics—the introduction of moderate stakes sharply alters response patterns relative to unincentivized surveys (Bullock and Huber 2015). Thus, we believe it is noteworthy that our elicitation of religious beliefs under conditions of privacy and under reasonably sized stakes replicated the survey-based response patterns.

⁶ Both events are associated with the great Tribulation or “end times.” According to the Mercer Dictionary of the Bible (p. 736), much of the analysis of the Rapture is based on Greek words Paul uses when referring to Christ's return, such as “coming” (parousia), “appearing” (epiphania), and “revelation” (apocalipsis).

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