Application of Economic Concepts on Religious Behavior

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Abstract

This survey gathers the current state of research activity on the emerging economic sub-area *Economics of Religion*. The religious beliefs and activities are analyzed from the viewpoint of economic theory and behavior. The advanced statistical tools and theoretical formulations of economic science can be applied to various problems of religious activity, dogma and social context. Analysis of interrelationship between economic and religious behavior increases our understanding of the nature and behavior of the target subject of economic science scrutiny, *homo economicus*.

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1 Introduction

The history of economic analysis of religion can be traced at least back to Adam Smith (Tribe 1999). Some of his seldom read chapters include argumentation on economic nature of religious practices. He argued that self-interest is the true motivation behind the clergy, just as it is among the secular producers. Similarly, market forces constrain churches just as they constrain secular firms and the benefits of competition, the burdens of monopoly and the hazards of government regulation are as real for religion as for any other sector of the economy (Smith 1776, modern version 1965, book V, chapt.I). Smith analyzes religious questions more intensively in his *Theory of Moral Sentiments* (Smith 1759, modern version 1984), where he states the economic and sociological importance of the consolation and ethical motivation provided by belief in a righteous and omnipotent judge and the concept of eternal life[1].

According to Weber (Weber 1904, engl. 1930), economic development leads to the secularization, not only of individuals, but also of political and social institutions, including churches themselves. Church services would be predicted to become less demanding, for example, by abandoning the use of special religious language, requiring smaller outlays of time by participants, reducing elaborate rituals and requiring less stringent practices. At the same time, religious sects tend to become more like the established denominations.

The presence of an established state church, monopoly in religion, would restrict the religious innovation in society, according to A. Smith. The monopoly providers of religious services tend to become non-innovative, as they lack the connection between financial support and the provision of good service to religious customers. Instead of focusing on the religious needs of their congregants, the clergy tend to engage in secular activities, politics, arts and to intellectual learning, making clergy an elite group, offering services

[1]for an extensive survey on the subject, see Minowitz, P. 1993. *Profits, Priests and Princes. Adam Smith's Emancipation of Economics from Politics and Religion.* Stanford, CA. Stanford University Press

only to other elite groups. On the other hand, the absence of state religion would create a climate for competition among religion providers and forming an open religious market, leading to moderation and quality religious services. Greater religious pluralism would also encourage more religious participation. One important argument against that A. Smith's view is that state religion status would mean government subsidies to church, which would encourage formal religious activity. Therefore, the overall impact of monopoly religion on religious participation could also be positive.

The relationship between economical and religious aspects of the society is most probably two-way directional. On one side, a country's economic development affect its level of religiosity. According to secularization hypothesis, economic and scientific development should cause individuals to become less religious, encompassing also the idea that economic development gives organized religions smaller role in political decision-making and in social and legal processes of the society and that state churches will be abandoned as countries develop. Increasing level of education makes individuals less religious and more skeptical on faith-based claims. The same argumentation leads to notion that membership in deviant religious groups (sects, cults, etc.) is the consequence of indoctrination leading to aberrant values, or abnormal psychology due to trauma, neurosis or unmet needs. That kind of argumentation is still common, even when decades of research has repeatedly proved them false (Iannaccone 1998, pp.1468-1472).

Economic development brings also increase in education, life expectancy, urbanization, changes in age structure and fertility, all affecting also religious needs of the population. If religious beliefs are mainly based on ignorance, then education should decrease the level of church attendance and religious beliefs. Barro and McCleary (2002, p.2) give a contrary argument, which states that religious beliefs are fundamentally non-verifiable and therefore require a considerable degree of abstraction. Theoretical reasoning and scientific activity requires also a capacity for abstraction. If more educated individuals are more capable of the abstractions needed to think scientifi-

cally, then at the same time, they will be more able to make the abstractions needed to support religious beliefs. Another explanation would be that education increases the returns from networks and other forms of social capital. According to this argumentation, more educated humans would participate more in various group activities, including church services. Nevertheless, this view does not say anything on belief formation.

Economic reasoning implies that anything that raises the cost of religious activities would reduce these actions. As economic development raises the value of time, it implies a rising opportunity cost of participating in religious activities, church attendance and prayer. Enhanced productivity in economy is not accompanied by a similar productivity gain for the time spent in church, unless the improvements in human capital due to rising education would somehow also make the time spent in religion correspondingly more productive.

In this paper, the contemporary research activity of economic science concerning the religious activity and beliefs is presented and summarized. The first step in economic science was to use the framework of classical microeconomic theory on consumer utility maximization by appending religious variables into theoretical model. This has currently lead into more advanced analysis including the scrutiny on religious institutions, religious markets and the accumulation of social capital.

2 Religious production function of a household

Economics of religion did not emerge after A. Smith for until Azzi and Ehrenberg (1975) returned the subject into economic science agenda. Their household production function included religious activity. Viewing religious behavior as an instance of rational choice, rather than an exception to it, modern economists are again analyzing religious behavior at the individual, group and market level. In the model by Azzi and Ehrenberg, individuals allocate their time and goods among religious and secular commodities by maximiz-

ing lifetime and after-life utility (Azzi & Ehrenberg 1975). The main aim in religious participation is "after-life consumption". Households are assumed to maximize an intertemporal utility function which depends upon household's consumption C_t in period t and expected value of the household's after-life consumption A. Household members are assumed to die at the end of period n:

$$U = U(C_1, C_2, \ldots, C_t, \ldots, C_n,\ A) \tag{1}$$

The household religious participation model assumes three motives for church-related activities. First is the *salvation motive*, as consumers may view their expected after-life consumption as being related to their religious participation. Second, *consumption motive*, implies that they may derive current satisfaction from church membership and activities because of inherent religious beliefs or purely social reasons. Third, *social-pressure motive*, is derived from the assumption that church membership and participation will increase the probability of an individual's succeeding in business. That motive will probably be important in areas where only a few established churches exist, especially in the rural areas and for the new entrants to these communities. Consumption (secular) in each period depends upon household inputs of time T_{Ct} and purchased goods X_{Ct}. After-life compensation depend on the household's entire history of religious activities, $R_1, \ldots, R_n$, which in turn depend on the time T_{Rt} and consumption value of religious participation X_{Rt} in period t. Variable A implies mainly the salvation motive and X_{Rt} deals with the consumption motive.

$$C_t = C(T_{Ct}, X_{Ct}) \tag{2}$$

$$R_t = R(T_{Rt}, X_{Rt}) \tag{3}$$

$$A = A(R_1, \ldots, R_n) \tag{4}$$

Azzi and Ehrenberg combined this model with a standard life-cycle budget constraint and the assumption of non-decreasing marginal product of

religious activity in time. According to this model, religious activity should increase with age, because resources devoted to after-life salvation are assumed not to accumulate interest throughout the life-cycle as usual investments do. Similarly, for a given age, the prediction is that religiousness would be higher the lower is one's life expectancy. This depends on the belief that salvation depends on cumulated religious effort, including church attendance and prayer, during one's lifetime. In this case, because of discounting of future expenditures, it would be optimal to postpone outlays until later in life. The arguments about age and life expectancy are stronger if salvation relates especially to activities towards the end of life (as in Catholic dogma, which allows continual sinning and absolution). Optimally, individuals have an incentive to accumulate sins early in life and then make up for them as they get closer to death. In Protestantism, especially in Calvinism, that argumentation does not hold. They view daily moral conduct as an important sign of being a "true" Christian. Additionally, the model predicts stronger age effects for women, whose age-earnings profiles tend to be flatter than men's and the possibility of declining religious activity at young ages when wages rise most rapidly. Any factor which increases the current satisfaction which the household receives from participating in religious activities should lead to an increase in the time it allocates to church activities. Religious participation should be higher in rural areas, as the social values of religious activities are probably higher there.

According to the same argumentation, racial discrimination may also led to higher non-white religious participation. The model also predicts substitution between time and money devoted to religion. The standard efficiency conditions imply that households with lower values of time will produce religious commodities in a more time-intensive manner, and that members with lower wages will supply more time to religious activity, as women usually do. Especially white male population, who have sharp earnings increase during their early adulthood, the age-religious-participation profile may be U shaped. Women's age-attendance profiles will be steeper than men's. On

the other hand, introduction of an uncertain time of death into the model, leads to the possibility of declining age-religious-participation profiles for the aged. Azzi and Ehrenberg did also experiment models with n as a random variable, but were unable to derive any implications from those alternatives.

It is important to make a distinction between religious beliefs and practice, as suggested by Keely (2003, p.284). Montgomery (1996) notes that the interpretation of that kind of religious consumption framework is problematic in relation to the treatment of belief formation. He argues that it is unclear whether religious capital is a proxy for utilities or probabilities (or both). This notion is relevant, because contemporary economic theory admits that utilities are generally taken to be personal and individualistic in a way that probabilities are not, both used as asymmetric information in expected utility maximization optimization process. Religious preferences are usually associated with the utilities and religious beliefs with the probabilities. Therefore, economists studying religious behavior need to specify more clearly the process by which both utilities and beliefs are formed (Montgomery 1996, p.444). Montgomery offers alternative approach, which he calls methodological existentialism. That idea contains the notion that ultimate reality is unknowable, and further that individuals are compelled to make choices in the face of this uncertainty, even though they lack the information needed to form objective beliefs. This argumentation leads to the cognitive dissonance theory, which says that a state of tension occurs when people simultaneously hold two psychologically inconsistent cognitions (ideas, attitudes, beliefs), and therefore they try to decrease the tension by altering cognitions or adding new cognitions.

Empirical testing of Azzi and Ehrenberg model has produced mixed results[2]. Nevertheless, empirical analysis support the notion that opportunity cost of time affects the religious behavior and leads to variation in both the

[2]Follow-up stydy by Ehrenberg (1977) confirms predictions, same with Neuman, S.(1986). Nevertheless, Ulbrich and Wallace (1983,1984), nor Sullivan, D.(1985) do not support the predictions of the model, especially criticizing the U-shaped age profile assumption

level and time intensity of religious activity (Iannaccone 1998). As wages increase, religious participation becomes more money-intensive, with rates of church contributions rising relative to rates of church attendance. This pattern holds over the life cycle, across households and denominations. Denominations with high earning members, rely strongly on the services of professional church employees, require less time-consuming rituals and hold fewer and shorter meetings. Most empirical analysis does not support the prediction that different values of time explain the large gap between male and female rates of religious activity, and the role of after-life expectations and interest rate formation are unclear when explaining religious age trends.

Azzi and Ehrenberg (1975) model was the first formal model of religious participation and a foundation for subsequent economic models of religion. Since, the original model has been expanded in various ways. They emphasize a wide range of rewards to religious activity, as a sense of purpose, moral instruction, group identity, social support, status and mutual aid. Goods-time production framework is also appended to include information from family background, personal belief and denomination. At the same time, importance of after-life consumption is diminished.

One important extension is the concept of *religious human capital*, appreciated as S_R, following Iannaccone (1998). Religious human capital indexes the stock of religion-specific experience derived from one's past religious activities. Consumer's capacity to produce or appreciate religious commodities will depend not only upon their inputs of time and goods, but also upon religious knowledge, familiarity with religious dogma and social relations within the congregation. Most religious capital is quite specific, related only to one specific denomination. It is also important, that most religious experience and training is received directly from parents and from specific religious institutions. The amount of religious human capital increases with learning by doing and by religious consumption.

$$\Delta S_{Rt} = F(T_{Rt-1}, X_{Rt-1}, S_{Rt-1}) \tag{5}$$

The religious production function (appending the original model with equation 3) is thus:

$$R_t = R(T_{Rt}, X_{Rt}, S_{Rt}) \tag{6}$$

This extension leads to a model of religious habit formation, where religious participation grows over time due to religious "addiction" rather than after-life expectations.

This model produces three main implications. First, as children grow older they reverse toward their parents beliefs and denominations. This means harsh restrictions for religion switching and those restrictions are stronger the more distinctive are the religions. Second, if religious switching occurs, it probably happens during the early phases of the life cycle. Over time, the gains from switching diminish. This is due to accumulation of denomination specific religious capital (which would be lost when switching) and decrease of remaining living years for improvement capitalizing. Third, people tend to marry within their own religion. Intermarrying consumers have a strong incentive to adopt the religion of their spouse.

3 Religious institutions

Contemporary scrutiny on economics of religion is increasingly analyzing the religious groups and institutions. Religious behavior is very much dependent on the social context. In household's religious production function models, all religious production is assumed to occur at the level of individuals and households. Institutional model underline the importance of specialized firms or clubs in the production of religious commodities. This line of research is divided into two group. The first view churches as standard, neoclassical firms in which producers (priestly) sell their religious goods and services to (lay) customers. The second view is to see churches as clubs, which are dedicated to the collective production of worship services, religious instruction, social activities and other club services. In these club models, the most members

contribute both to production and consumption of the religious commodities.

3.1 Club models

In these models, religious commodities depend also upon the inputs of fellow church members[3]. This means, that pleasure gained from religious activity depends for example also on how many other people attend the meeting, their greetings, their ability to sing, and others commitment, etc. Household's religious production function becomes:

$$R_t = R(T_{Rt}, X_{Rt}, S_{Rt},\ Q) \tag{7}$$

In the function, Q indexes the quality of the group, which is a function of the religious inputs of the other group members, implying the average amount of time that other members spend doing R. For $i = 1 \ldots n$ members group quality is formally

$$Q = \sum_{j \neq i} \frac{R_j}{n-1} \tag{8}$$

On the contrary to the traditional economic club models, this model emphasizes the positive externalities associated with religious activity. An active church member increases also the utility of other members and free-riders decrease it. In clubs the actions of other members appear in each

[3]examples of religious club models include: Iannaccone (1992). *Sacrifice and Stigma: Reducing Free-Riding in Cults, Communes and Other Collectives.* J. of Political Economy, 100:2, pp.271-297;

Carr, J. and Landa, J. (1983). *The Economics of Symbols, Clan names, and Religion.* J. Legal Studies, 12:1, pp.135-156;

Chiswick, B. (1991). *An Economic Analysis of Philanthropy.* In Contemporary Jewish Philanthropy in America. Kosmin B.A. and Ritterband, P.(eds.) Rowman & Littlefield;

Sullivan (1985). *Simultaneous Determination of Church Contributions and Church Attendance.* Econ. Inquiry, 23:2, pp.309-320;

Wallis, J. (1990). *Modelling Churches as Collective Action Groups.* Int. J. Social Economics, 17:1, pp.59-72

other's objective functions but externalities flowing from those actions are excludable, applying only to club members. For inducing higher levels of participation and screening out free-riders, sacrifices are included. Members benefit from the religious and social activity of other club members through a process not mediated by prices. Nevertheless, benefits have a price, as an efficient club seeks to influence the activities of members by requiring them to submit to prohibitions and sacrifices. This explains why rational humans may want to participate in sects which demand self-sacrifice and employ strict restrictions on the lifestyle of the members. On the other hand, individuals with high market opportunities, may form less demanding mainstream churches.

As presented by E. Berman (2000) the social welfare optimum level of religious activity, R^*, for the whole community (related to wage level $\frac{w}{p}$) is

$$\frac{w}{p} = MRS_{RC}(R^*) + MRS_{QC}(R^*) \tag{9}$$

,where the two terms are the marginal rates of substitution between religious activity and consumption and between group quality and consumption. The pure competitive equilibrium ignores the last term, and thus leads to inefficiency.

The model predicts that sectarian religion correlates with strict behavioral standards, high rates of church attendance and giving, small congregations, dramatic conversations and a relatively large number of minority and lower-class members (Iannaccone 1998, p.1483). Sects cannot exploit economies of scale as fully as mainstream churches, because the monitoring costs increase with group size. Sect membership is more attractive to individuals with limited secular opportunities, as sects impose high costs on high-earning people. Sect membership forms a corner solution with no room for compromise and assumes total abstinence from several secular commodities.

According to this club model view, a church can be seen as maximizing the welfare of its members. Church is seen as an heterogenous club that pursues enlargement within a set of constraints. The members of the clergy

are agents of the club. The need to align the interests of the clergy with those of the church, constraints the growth of the church. A church is seen as caring for the welfare of its members, but not necessarily of its agents. Therefore, contributions to the church must be used to monitor and limit the discretion of the clergy (Barros & Garoupa 2001).

E. Berman (1999) has analyzed the economic rationality of Israeli Ultra-Orthodox Jews, as they choose to live below the line of economic poverty and accept harsh economic and behavioral sacrifices from the sect. The club model enables the analysis of mutual insurance, state subsidies, economically efficient level of sacrifice and religious politics. State support of a particular religious group introduces inequalities that generate inefficiencies of two types. First, subsidizing groups that use sacrifices as signals of commitment cause increased sacrifice. Second, restriction on the entry of providers of religious services results in under-provision of services.

One extension of club model is a dynamic, overlapping generations model[4], which explains the tendency for new religions to originate as high-cost sects but evolve over time into less demanding churches. Individual's utilities depend on their endowments of religious human capital and secular human capital, which yields higher payoffs in nonsectarian groups. The children of the sect members switch to looser groups or pressure the sect to moderate its costly demands as their wage level increases.

In club models, more free riding is expected in larger churches. Several studies[5] reveal a negative relationship between congregational size and per-member rates of annual giving. Additional work is especially needed to

[4]Montgomery, J.D. 1996. Dynamics of the Religious Economy. Exit, Voice and Denominational Secularization. Rationality and Society, 8:1, pp.81-110

[5]Sullivan (1985);

Stonebraker, R.(1993). *Optimal Church Size. The Bigger the Better?* J. Scientific Study of Religion, 32:3, pp.231-241;

Zaleski, P. and Zech, C.(1994). *Economic and Attitudinal Factors in Catholic and Protestant Religious Giving.* Review of Religious Research, 36:2, pp.158-167;

Lipford (1995). *Group Size and the Free-Rider Hypothesis. An examination of new evidence from Churches.* Public Choice, 83:3-4, pp.291-303

address the endogeneity of size, specifically the selection bias that occurs if large, poorly financed congregations shrink more readily than large well-financed congregations.

3.2 Firm models

Some religious production functions assume churches as profit-maximizing firms and focus the attention to the different roles of clergy and lay people. For analyzing the development of religious doctrine, organizational structure and religious practice, standard neoclassical theory can be applied. Research is done for analyzing individual entrepreneurship in the formation of new religions[6] and using franchising context in church growth analysis[7]. Economic explanations can be addressed to interest rate restrictions, marriage laws, crusades, monasteries and doctrines of heaven, hell and purgatory, by using standard economic theories of monopoly, rent seeking and transaction costs[8].

That way of providing economic rationales for religious practices leads to economic theorizing about the content of a religion. Economists can formally model the religious doctrines and arrive at empirically testable predictions. A church can be seen as a business firm that maximizes profits, for example (Barros & Garoupa 2001, p.5), analyzing Roman Catholic church as a corporation aiming at monopolizing the religious market by regulating social norms (sin and redemption), eliminating competition (Crusades) or controlling usury and exchange doctrines, scientific innovations or the marriage market.

The topics in that area include economics of medieval catholic church[9],

[6]Stark and Bainbridge (1985). *The Future of Religion.* Berkeley, UC Press

[7]Dolin, R., Slesnick, F. and Byrd, J. (1989). *The Organizational Structures of Church and Orthodoxy.* West Econ. Association, Lake Tahoe, NV

[8]Ekelund, R.B. et al (1996). *Sacred Trust. The Medieval Church as an Economic Firm.* New York, Oxford University Press

[9]Hull (1989). *Religion, Afterlife and Property Rights in the High Middle Ages.* Stud. Econ. Anal., 12:1, pp.3-21;

Schmidtchen, D. and Mayer, A. (1997). *Established Clergy, Friars and the Pope. Some*

Calvinist doctrine of predestination[10], emergence of Judaic monotheism[11], distinctive character of religious texts[12], cross-cultural and intertemporal variation in beliefs on the after-life[13] and the relationship between different styles of religious organization[14].

3.3 Religious markets

Churches, seen as religious firms, all together constitute a religious market. According to A. Smith (Smith 1776, modern version 1965, pp.740-741), established religions face the same incentive problems that plague other state-sponsored monopolies. Studies for religious competition note that local religious diversity correlates with local rates of religious participation. According to Smith, free religious competition would not only generate more religious activity, but also produce higher quality religious services. Religious *laissez-faire* is the best and most efficient way to satisfy the demand for religious instruction, reduce religious conflict and promote high quality religious activity.[15] Iannaccone (1998) has calculated the Herfindahl index, which measures country's religious concentration. It is denoted as $\Sigma_i S_{ij}^2$, where S_{ij} implies the share of people in country j belonging to denomination i. He found the strong negative relationship between the index and church attendance (Iannaccone 1998, p.1486), and that every available measure of

Institutional Economics of the Medieval Church. J. Instit. & Theor. Economics, 153:1, pp.122-149.

[10]Glaeser (1994). *Incentive, Predestination and free will.* Mimeo

[11]Raskovitch (1996). *You shall have no other Gods besides Me.* J. Instit. & Theor. Economics, 152:3, pp.449-471

[12]Miller, G. (1994). *The Legal-Economic Approach to Biblical Interpretation.* J. Instit. & Theor. Economics, 150:4, pp.755-762

[13]Hull and Bold (1994). *Hell, Religion and Cultural Change.* J. Instit. & Theor. Economics, 150:3, pp.447-464

[14]Allen, D. (1995). *Order in the Church. A property rights approach.* J. Econ. Behav. Organization, 27:1, pp.97-117

[15]Adam Smith's view was contrary to David Hume's, who predicted that religious freedom would encourage fanaticism, superstition and civil unrest.

piety (belief in God, frequency of prayer, etc.) was greater in countries with numerous competing churches than in countries dominated by a single established church. Within each country, the average level of religious belief and participation was consistently lower in the established churches, which enjoy the financial and regulatory support of the state. Increasing religious freedom and the removal of monopolistic state-church status has given a way to free religious market, leading to increase in overall church membership and religious activity, but making also losers. Major denominations that originally enjoyed state support have suffered severe losses relative to new sects. The abolition of state religion (Shinto) in Japan after the 2nd World War, gave birth to 2,000 new religious sects in five years. Democratic regimes seem more likely to arise and survive within Protestant Christian cultures. Government regulation of religion tends to reduce individual welfare, restricting religious innovation and choice, and narrowing the range of religious commodities. State religion promotes monopoly, poor service and low rates of church attendance[16].

Nevertheless, Barro and McCleary (2002, p.27) found the significant positive relation with state religion and church attendance. Their explanation was that state religion typically goes along with substantial state subsidy. An established state religion will help to maintain a low degree of religious pluralism. While Scandinavian countries are examples of state churches with low rates of church attendance, Barro and McCleary note that low attendance depends also on other variables, not just on state religion status. The other system variables, the overall influence of the economic variables and the composition of religious denominations, tend also generate low rates of

[16] similar results are also found in: Stark and Bainbridge (1997). *Religion, Deviance and Social Control.* New York, Routledge;
Iannaccone (1991). *The Consequences of Religious Market Structure. Adam Smith and the Economics of Religion.* Rationality & Society, 3:2, pp.156-177;
Finke and Stark (1992). *The Churching of America, 1776-1990. Winners and Losers in our Religious Economy.* New Brunswick, NJ, Rutgers U Press;
Finke and Iannaccone (1993)

church attendance. Relationship is also significantly positive for religious beliefs, implying that the state sponsorship that encourages church attendance is also successful in engendering high levels of beliefs.

Not surprisingly, government regulation of religion and Communist regime (which are interconnected) depresses church attendance and some of the religious beliefs. But after the downfall of the Communist regimes in Eastern Europe, the church attendance and beliefs recovered during the 1990s. Supporting the findings of Iannaccone (1998), also Barro and McCleary (2002) found significantly positive relation between religious pluralism in the country and religious activity. The pattern was clear for both church attendance and some beliefs (hell and heaven). This phenomena accords with the argument from the religion-market model that greater pluralism will encourage competition among religion providers and lead to better service and higher rates of attendance.

Barros and Garoupa (2001) analyzed church dogma development and the relationship between religious strictness and membership. Applying the Hotelling (1929) model of horizontal product differentiation, they argue that neoclassical firm theory can be of relevance in understanding church's choice of strictness and its optimal dogmatic response depending on the competitive environment (monopoly, non-church option, emergence of sects, etc.). The church's choice depends on the preferences of the population, the value of the religious good it produces (a local public good) and existence of a rival church, a sect or a non-church. A sect behaves like a Stackelberg follower. With religious freedom, meaning that people have the option of not belonging to a church, the main church becomes less conservative in their views in order to prevent some people from leaving the church. In high participation countries (Spain, Italy), the church can afford to be conservative, whereas when there is low participation the church must become liberal. In multi-denominational economies where the main church competes with another church, the main church is expected to be fairy liberal (as in Scandinavia) and in countries where the dominant church competes with sects, the main church is tending

to be more conservative (in the US). If some individuals change preferences by softening their religious strictness the monopolistic church becomes more liberal to keep them inside the church. Such move opens room for conservative entries in the market and the number of denominations available may increase. The potential entry of sects induces an incumbent church to become more conservative whereas the possibility of opting no religious affiliation has more ambiguous effect, the church may become liberal to compete with non-church or it may become more conservative since the liberals leave the church.

4 Empirical evidence

Over the past 40 years empirical relationship between income, education, urbanization, age structure and numerous measures of religiosity have been investigated[17]. Since the mid-1970s economists have also weighted in, estimating models which are more sensitive to "non-market" variables of economic theory. The main result seems to be that education is a weak but generally positive predictor of religious participation; income is a strong, positive predictor of religious contributions, but a very weak predictor of most other other measures of religious activity, such as church attendance, church membership, frequency of prayer and rates of religious belief. Income or wage effects are almost always dwarfed by those of age, gender and religious upbringing[18].

[17] Lenski, G.E.(1963). *The Religious Factor.* Rev.ed. Garden City, NY, Doubleday;
Stark, (1972). *The Economics of Piety. Religious Commitment and Social Class.* In: Issues in Social Inequality. Thielbar, G.W and Feldman, S.D. eds. Boston, pp.483-503;
Roof, W. and McKinney, W. (1987). *American Mainline Religion. Its changing shape and future.* New Brunswick, NJ, Rutgers U Press;
Stolzenberg, R. Bair-Loy, M. and Waite, L. (1995). *Religious Participation in Early Adulthood. Age and family life cycle effects on Church membership.* American Soc. Review, 60:1, pp.84-103

[18] see Azzi and Ehrenberg, (1975);
Ehrenberg, (1977). *Household Allocation of Time and Religiosity. Replication and Exten-*

Nevertheless, it seems at the same time that styles of religion do vary with income and education. Theologically conservative denominations (fundamentalist, Pentecostal, sectarian) seem to attain a disproportionate share of their members from among the poorer, less educated fractions of society.

Iannaccone (1998) notes that family income has little effect on rates of church attendance but a strong positive effect on total giving. Effect of education is positive and statistically significant. Women and blacks attend church more than men and whites. Members of conservative and sectarian denominations attend religious activities more than other groups and give more money contributions to church than in liberal denominations. Age seems to be an especially strong predictor of church attendance. Older people are more religious. Analysis by Heineck (2001), supports the strong age effect, as age had a positive impact on church attendance and strength of belief for both women and men (using German data). This supports the notion of both the assumption of the addictive character of religion and the decreasing opportunity costs of time alongside the flattening wage profile on the upper end of the age scale. Nevertheless, despite these significant effects, observable factors account for only a small fraction of the total variance in data.

Aging and illness makes attending church services more difficult and expensive, but may produce more interest into religious beliefs and investing into spiritual activity, as they note the death getting closer. Children, on the other hand, would tend to attend church relatively often because their cost of attendance are relatively low. Also parents may encourage (or dis-

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sion. J. Political Economy, 85:2, pp.415-423;

Long, S. and Settle, R. (1977). *Household Allocation of Time and Church Attendance. Some Additional Evidence.* J. Political Economy, 85:2, pp.409-413;

Ulbrich, H. and Wallace, M. (1983). *Church Attendance, Age and Belief in the Afterlife. Some additional evidence.* Atlantic Econ. J., 11:2, pp.44-51,

Ulbrich, H. and Wallace, M. (1984). *Women's Work Force Status and Church Attendance.* J. Scientific Study of Religion, 23:4, pp.341-350;

Biddle, J.E. (1992). *Religious Organizations*, in: Who Benefits from the Nonprofit Sector? Clotfelder, C.T. (ed.), U Chicago Press, pp.92-133

courage) religious education of the children and may also be participate in church activities.

Another clear finding is that urbanization affects negatively the religious activity. Church services have little competition from other forms of social interaction in rural areas. This negative association would be expected to carry over to religious beliefs if participation in organized services were conductive to the maintenance of these beliefs. One explanation could also be that the uncertainty of economic conditions, and therefore the demand for religious assistance, is larger in rural areas. Another reason may be that agriculture is especially prone to the uncertainties of nature and rural population may therefore have a greater demand for religion as a way to cope with these uncertainties and risks.

Barro and McCleary (2002) analyzed also the phenomenon of superstitions. According to the secularization hypothesis, increased education would produce less religious activity and religious beliefs. As found, that hypothesis is not supported by empirical data, but the hypothesis may gain support if clear superstition beliefs are analyzed. ISSP (International Social Survey Programme) survey data contains three such variables, belief in fortune tellers, horoscopes and good-luck charms. According to study by Barro and McCleary, these variables have a negative correlation with religious activities and beliefs, implying that religious beliefs and superstitious notions are very different. One possible explanation is that religious beliefs are compatible with increased education, but superstitious beliefs are not. However, another possibility is that the superstitions tend to substitute for religious beliefs and activities in societies where standard religious practices are not fully allowed, as superstition seems to be the highest in former Communist countries.

5 Conclusion

More research on economics of religion are needed in analyzing the substance of religion, not just taking the demand for religion as given, but providing insight into the difference in nature between a congregation and any other social group, or the difference between religious activity and other leisure. More "supernatural" commodities are needed (like after-life in Azzi and Ehrenberg (1975) model) to better understand the nature of consumers behavior, values and religion. One distinctive nature of religious goods are that they involve a large amount of risk. Religion is the ultimate credence good, rewards may never materialize and failures may be infinite. This religious uncertainty and risk-taking should be better modelled. Expected utility models might seem like the natural beginning. Nevertheless, objective religious information may simply not exist, leaving no rational way to assign probabilities to most religious claims (Montgomery 1996). Economics of religion should analyze the formation of beliefs and give more attention to the process by which religions seek to shape people's beliefs and values. One alternative, as Keely suggests (Keely 2003), is that economics of religion should focus more on religious institutions, rather than religious beliefs, in order to work toward policy prescriptions to improve countries' economic performance.

Religion seems to be the ideal testing ground for several economic theory issues. These issues include models of value change and belief formation. Religions are both forthright and specific about the beliefs and values they seek to inculcate, making it relatively easy to estimate their impact through surveys and observations. One of the most promising aspect in economics of religion is the fact that religious beliefs and behavior have been documented over many years and across different cultures. Much more is known about the membership, finances and history of churches and denominations than any other type of social organization, making the subject fruitful to empirical econometricians.

The need for scientific analysis of difficult moral and religious questions is increasing all the time. Continuing technical, bio-technical and medical

science development raises new problematic issues, requiring careful analysis also from an economic perspective. For example, problems with human cloning (Gilles 2003), are well suited for scrutiny by using economic methods and argumentation.

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