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The New Economics of Religion†

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The economics of religion is a relatively new field of research in economics. This survey serves two purposes—it is backward-looking in that it traces the historical and sociological origins of this field, and it is forward-looking in that it examines the insights and research themes that are offered by economists to investigate religion globally in the modern world. Several factors have influenced the economics of religion: (1) new developments in theoretical models including spatial models of religious markets and evolutionary models of religious traits; (2) empirical work that addresses innovatively econometric identification in examining causal influences on religious behavior; (3) new research in the economic history of religion that considers religion as an independent, rather than a dependent, variable; and (4) more studies of religion outside the Western world. Based on these developments, this paper discusses four themes—first, secularization, pluralism, regulation, and economic growth; second, religious markets, club goods, differentiated products, and networks; third, identification including secular competition and charitable giving; and fourth, conflict and cooperation in developing societies. In reviewing this paradoxically ancient yet burgeoning field, this paper puts forward unanswered questions for scholars of the economics of religion to reflect upon in years to come. (*JEL* D64, D72, L31, O43, Z12, Z13)

1. *Introduction*

Economics and religion are closer than some might believe. In the nineteenth century in the United States, religion influenced key economic policy debates through the economics profession because "the very foundation of the American Economic Association by Richard Ely and others associated with the Social Gospel was very much a religious movement" (Oslington 2003, p. xii). Ely's vision in founding the American Economic Association in 1885 was to bring the ethics and ideals associated with the Social Gospel movement into economics

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in order to foster cooperation and greater equality in society, but with a key role for historical and statistical analysis. In so doing, eventually this led to fundamental reforms in US economic policy including unemployment insurance and child labor laws (Bateman and Kapstein 1999).

And yet paradoxically, in a seminal article published in 1998 in the *Journal of Economic Literature*, Laurence Iannaccone introduced a new field of research to a wide audience of economists and other social scientists—the economics of religion. In this paper he argued, "If the study of religion does not yet warrant a *JEL* classification number, let alone the subfield status it enjoys within every other social science, it nevertheless qualifies as new territory within the expanding domain of economics" (Iannaccone 1998, p. 1465). How times have changed—apart from now having its own *JEL* classification number (Z12), its own annual meetings, and a large body of international scholars invested and interested in this issue, the economics of religion has made important strides, with studies that now encompass economic theory, public economics, experimental economics, macroeconomics of growth, economic history, and economic development.[1] As Chen and Hungerman (2014) rightly point out, there has been a six-fold increase in the number of economics papers alone published in this area in the last decade. Although the field is still nascent compared to other fields of economics research, this increase has highlighted that the study of religion now falls firmly within the purview of economic inquiry (McCleary 2011b; Oslington 2014). Consequently, there is a need to illuminate the new directions in the territory in which the economics of religion finds itself today, bringing up-to-date the many important developments in research that have been made along the way. This paper attempts to do this and its ambition is both backward-looking as well as forward-looking. It identifies some of the most important developments in the economics of religion in the last couple of decades, notably: (1) new developments in theoretical models, including spatial models of religious markets and evolutionary models of religious preferences and traits; (2) empirical work that innovatively addresses matters concerning econometric identification in examining causal influences on religious behavior; (3) new research in the economic history of religion that considers religion as an independent, rather than a dependent, variable; and (4) more studies of religion outside the Western world. This paper also puts forward the still many unanswered questions in the economics of religion that I hope scholars will reflect upon in years to come. By highlighting how developments in economic theory, econometric concerns with identification, and new data both historical and contemporary, have changed the way in which research in this field is currently being conducted, this paper attempts in short to survey, to evaluate, and to make suggestions for the "new" economics of religion.

Economic studies of religion contribute in three ways: first, they show how economic and statistical tools can be used to evaluate the role of religion in society; second, they continue to cast light on the economics of nonmarket behavior illustrating the role that norms, values, social capital, and "spiritual capital" may play in influencing human behaviors by affecting both beliefs and actions; and third, they show how culture more broadly, whether through religion

[1] The economics of religion, although it now has its own *JEL* code, still lacks its own journal. This reflects the fact that research in the economics of religion intersects with other fields in economics such as labor economics, public economics, and industrial organization, as well as fields outside economics in sociology and political science. Since authors can publish their work in a variety of venues, this often makes it difficult for a researcher to comprehend a complete grasp of the literature in the economics of religion.

or other kinds of cultural beliefs, affect economic systems. Many social scientists argue that when explaining countries' economic growth, we should evaluate the role of culture more deeply (Landes 1998; Norris and Inglehart 2004) and that as economists, we ought to be vitally concerned about the moral consequences of economic growth (Friedman 2005). Others have argued that the evolution of markets and the evolution of morals, culture, and institutions, including religion, need to be studied together (Friedman 2008; Bowles 1998). On the one hand, religion and culture inform economic behaviors and economic systems, markets, and institutions. On the other hand, one's economic environment is also likely to influence one's beliefs, morals, and religious choices. So the economic approach directly links the study of markets with the study of religion and culture.[2]

In his 1998 review, Iannaccone made a very clear distinction between the economics of religion and other areas of academic inquiry that is worth reiterating here. The economics of religion is research that uses the tools and methods of economics to study religion as a dependent variable or to study religion as an independent variable on other socioeconomic outcomes. In doing so, it draws upon ideas in public economics, labor economics, industrial organization, development economics, and international trade, and uses tools developed in game theory and econometrics. The economics of religion must be distinguished from what might be called "religious economics," which would be the use of religious ideas to provide social commentary on economic systems or behaviors. The economics of religion also does not concern itself with the theological and institutional propagation of personal religious faith and this survey will not venture to comment on these topics. It is not that personal religious faith is unimportant; simply that as economists, it is difficult for us to comment on it appropriately.

Most theoretical research in the economics of religion focuses on the demand side in terms of the preferences of consumers of religion, or on the supply side in terms of the structures of religious organizations. While early work in the economics of religion explored the incentives that individuals might have to hold religious beliefs (Ekelund, Hébert, and Tollison 2002), more recent research is focused quite heavily on the socioeconomic consequences of religion, using economic theory and sophisticated statistical tools. As new data both historical and contemporary has become available, concern with identification of religiosity effects has become more pronounced.

This survey provides a selective, critical review of the literature and I focus mainly on research conducted by economists in the economics of religion. A difficult issue here is drawing a boundary between more general social science research on religion and the work done by economists, because frequently these boundaries intersect. Therefore I have also included the work of noneconomists, notably sociologists and political scientists, that use economists' tools and methods or that address the questions that economists ask. As many ideas in the economics of religion today owe their origins to other disciplines, it is important to give due precedence to ideas that have come into economics from these related social science domains.

In the first section, I discuss definitions of religion, the historical and sociological roots of the economics of religion that first raised three hundred years ago many of the themes we are still investigating today, and a snapshot of global religiosity. This sets the stage to examine a number of themes that currently interest economists of religion including

[2] It is to be acknowledged that when discussing institutions, economists do distinguish between religion and culture.

secularization, pluralism, regulation, religious competition, club goods models, charitable giving, religious service provision, and other themes. I also discuss the evolution of ideas in broadly chronological order in which they have influenced the evolution of this field. Consequently, this survey is divided into six sections—(1) Historical Background and Global Religiosity; (2) Secularization, Pluralism, Regulation, and Economic Growth; (3) Religious Markets, Club Goods, Differentiated Products, and Networks; (4) Identification, Secular Competition, and Charitable Giving; (5) Conflict and Cooperation in Developing Societies; and (6) Unanswered Questions for Future Research in the Economics of Religion.

2. *Historical Background and Global Religiosity*

The economics of religion as a subfield is relatively new, but the study of religion itself is ancient—many other disciplines, notably philosophy, theology, history, anthropology, and sociology have had much to say about religion and religious beliefs. For economists, definitions are central to the process of modeling. There are many different definitions of religion; some are substantive and others are functional, so among scholars there is no commonly accepted definition of religion. Substantive definitions of religion concern investigating religion as a philosophy or as a system of beliefs, and using this to try to understand the world. For example, in his 1928 book *The Religion We Need*, the distinguished Indian philosopher Sarvepalli Radhakrishnan wrote that religion "is an expression of the spiritual experience of a race, a record of its social evolution, an integral element of the society in which it is found" (Radhakrishnan 1928, p. 25). Functional definitions focus on what religion does for people in terms of its role in their lives or supporting them either socially or psychologically. Glock and Stark (1965) define it this way: "Religion, or what societies hold to be sacred, comprises an institutionalised system of symbols, beliefs, values, and practices focused on questions of ultimate meaning" (p. 4). Of course, there are very famous textbook definitions including Durkheim's definition of religion: "A religion is a unified system of beliefs and practices relative to sacred things, that is to say, things set apart and forbidden—beliefs and practices which unite into one single moral community called a Church, all those who adhere to them" (Durkheim 1912).

Probing the economic concern with religion is not restricted to scholars of the twenty-first century. Adam Smith first made reference to the church and competition between religions in *The Wealth of Nations* and in *The Theory of Moral Sentiments*.[3] Smith discusses three concepts that economists of religion still debate—the role of competition, religious institutions including service provision, and religious pluralism (Anderson 1988).[4] As Smith saw it, competition was about an individual buyer or seller raising or lowering their prices in response to conditions prevailing in the market, largely independent of any notion of market structure.[5] By the time Adam

[3] Alfred Marshall's *The Principles of Economics* highlights the fundamental role of religion in molding both an individual's motivations and the course of world history (see Marshall 1890, p. 1). Religion also features in Joseph Schumpeter's *History of Economic Analysis* (1954).

[4] But interpretations of how Adam Smith saw religion are often varied among historians of economic thought: for example, Emma Rothschild (1994), in her interpretation of how Adam Smith viewed the invisible hand, also argues that Smith was critical of established religion in most of his work. She contends that "Smith's comments on religion, like Hume's, are often ironical, and also highly conscious of pious public opinion" (Rothschild 1994, p. 321).

[5] As Anderson writes, "Smith viewed participation in religion as a rational device by which individuals enhanced the value of their human capital" (Anderson 1988, p. 1066). They could then choose both their degree of belief and their degree of participation in religion.

Smith wrote about competition, it was a very familiar concept in the tradition of economics writing at the time. His main contribution lies in using this concept to understand behavior and as a way of organizing society. Smith's arguments are relevant to understanding both contemporary religious violence and the balance between publicly and voluntarily provided services by religious organizations, such as primary schooling and poor relief (Mochrie 2014). These themes recur in more contemporary studies, as discussed in section 5 below. Friedman (2011) argues that the evolution of economics as we know it today was influenced profoundly by changes in religious beliefs in the times in which Adam Smith lived. As he contends, "Further, those at-the-outset influences of religious thinking not only fostered the subsequent spread of Smithian thinking, especially in America, but shaped the course of its reception. The ultimate result was a variety of fundamental resonances between economic thinking and religious thinking that continue to influence our public discussion of economic issues, and our public debate over economic policy, today" (Friedman 2011, p. 166).

Contemporary themes discussed in section 2 about the value of religious pluralism, the relationship between pluralism and religious participation, and the role of the church and the state, is exemplified in the debate between Adam Smith and David Hume. Hume argued for the state sponsorship of one unique religion and also highlighted rent seeking within religious organizations, and the relationship between religion and politics that led to civil disorder (Mochrie 2014). In contrast, Adam Smith argued that religious competition is ultimately good for the consumers of religion and for the nature of the religious product itself because it reduces the capacity of religious organizations to extract rents, caused by poor governance. Smith was concerned that a monopoly religious organization could undermine a state.[6] This has implications for state repression of religion, the debates about international religious freedom, and the relation between the church and the state, a theme I return to in section 2.[7]

Away from economics, in the nineteenth century, social scientists wrote much about religion, including in related fields such as psychology, sociology, and anthropology.[8] In the twentieth century, there was much less written about religion. Glock and Stark quote Gordon W. Allport who wrote that the "subject of religion seems to have gone into hiding" (Glock and Stark 1965, p. x). This all changed with World War II, when much more began to be written about religion in other social sciences exploring themes such as religious commitment and the beginnings of religious competition (Greeley 1962). Sociologists were the first to study modern religion and religious organizations using the

[6] The view of religion supported by the state and getting benefits from a monopolistic state-supported structure of religion is also found in work of sociologists like Peter Berger (1967).

[7] A century later, although himself famous for speaking first of "the wall of separation between church and state" Thomas Jefferson wrote about religion in a letter from Monticello on September 1, 1820, thus: "It excites in him the gratifying reflection that his country has been the first to prove to the world two truths, the most salutary to human society, that man can govern himself, and that religious freedom is the most effectual anodyne against religious dissension: the maxim of civil government being reversed in that of religion, where its true form is 'divided we stand, united, we fall.'" This point of view of Jefferson is very similar to the Adam Smith view of religious competition and freedom, but the importance of religious freedom extends also to the kind of religion that it espouses, for example, religions themselves may be more tolerant and moderate in societies that encourage religious competition.

[8] For example, Sigmund Freud's views on religion are contained in his book *The Future of an Illusion* (1927), in which he thinks of religion as an irrational response to family influences, especially the reassuring need for parental protection, and the power of nature before which man is aware of his own inconsequence and the inevitability of death. Freud goes so far as to argue that religion is linked to the repression of an Oedipus complex by highlighting instead the father's role. Freud thus regarded religion as a sort of collective neurosis.

analogy of firm behavior, focusing on concepts such as competition (Stark and Bainbridge 1987), and this is first found in the work of the sociologist Peter Berger (1963, 1967).[9] This initial notion was developed much further in the seminal works of Roger Finke and Rodney Stark, who developed the thesis into the "religious economies" argument (Finke and Stark 1992). Based on their analysis of religious markets in the United States, Finke and Stark are some of the early scholars who made very important contributions in this area. Their focus was on questions such as the movement from sects to churches, the formation of cults as well as schisms, and renewal movements.[10] The main themes in this research are the idea of religious competition, religious regulation, and new religious movements. In the same tradition, Warner (1993) articulated that a new paradigm had emerged for the sociological study of religion in which he argued that in the United States, organized religion flourished in an open market. What motivated this paradigm was the empirical observation that in the United States in the nineteenth century and the first half of the twentieth century, "societal modernization went hand in hand with religious mobilization" (Warner 1993, p. 1049). Religion in the United States was thus distinct from religion in other parts of the world, particularly the older paradigm of European secularization, and the market for religion was viewed increasingly as very competitive.

One of the classic papers written on the economics of religion, Azzi and Ehrenberg (1975), summarized the literature on what the empirical correlates of religiosity had discovered about the United States until then. Some of these trends are still visible, although we now have data on a broad set of countries. At the time, these trends were that women participated more in church-related activities than men;[11] that church attendance increases with age; that there are only weak relationships between income and church attendance, with it usually being positive or backward bending, so that it is highest for those with middle incomes. Racial differences were also observed with African Americans attending church more than whites; and church attendance was found to be higher in rural than in urban areas (Azzi and Ehrenberg 1975, p. 32). Contemporary studies of the United States show the continued importance and practice of religion (Putnam and Campbell 2010).

Contemporary research studies are aided greatly by the availability of much better data than we have ever had on religion previously (Finke 2013). In empirical work, religion is conventionally measured either in terms of religious beliefs, such as prayer and other indicators of "believing," or alternatively in terms of religious participation and attendance such as church going, which are indicators of "belonging." These indicators have been widened now to include data on religious regulations and persecution, which incorporates international regulation and violence indices, a research agenda that

[9] The notion of competition here is an individual buyer or seller raising or lowering his or her prices in response to conditions prevailing in the market.

[10] Some definitions may be useful here: "churches" and "sects" are both religious institutions, but the former depict less tension with the wider world than the latter. As Stark and Finke argue, "*Tension* consists of differences in norms and values and refers to the degree of distinctiveness, separation, and antagonism in the relationship between a religious group and the "outside" world. Put another way, the higher the tension between a religious group and its surroundings *the more costly it is to belong*." (emphasis in original, Stark and Finke 2002, p. 35).

[11] Although women participate more in church-related activities in the United States, in the Islamic world men participate much more in religion-related activities. In some countries, women going to mosques is much more restricted, except in back rows, or upstairs. They are also not required to participate in Friday congregational prayers.

has flourished since 2000 (Grim and Finke 2006). These are used in many studies of religion and the creation of these indices is of fundamental importance to future work on the economics of religion.

Since the 1700s, scholars and writers from Galileo and Voltaire to Mark Twain have forecast the extinction of religion in general or some faiths in particular. Yet with all its consequences, positive and negative, religion continues enduringly to persist. Moreover, faiths once considered on their way to extinction have grown in numbers of adherents and in global significance. The Global Religious Landscape Study showed that a large majority of the world's population continues to be religious by various measures (Pew Forum on Religion and Public Life 2012). This comprehensive demographic study of more than 230 countries and territories estimated that more than 5.8 billion adults and children are religiously affiliated around the globe, representing 84 percent of the 2010 world population of 6.9 billion. The study analyzed 2,500 censuses, surveys, and population registers. As shown in figure 1, the study showed that the world's major religious groups in 2010 were Christians (32 percent), Muslims (23 percent), Hindus (15 percent), Buddhists (7 percent), and Jews (0.2 percent). As many as 16 percent of respondents have no formal reported religious affiliation (although they may have spiritual beliefs or beliefs in a higher power), which makes them the third largest group in their sample. These findings are also consistent with other scholarly work in the sociology of religion that has documented the rise of the "nones" in the United States (see Hout and Fischer 2002; Hout, Fischer, and Chaves 2013). Hout, Fischer, and Chaves (2013) show that in 2012, 20 percent of Americans reported no religious affiliation, a trend that has increased since 1990 (Hout, Fischer, and Chaves 2013). The share of the unaffiliated group probably forms a lower bound because in some countries, such as Saudi Arabia, it is not possible to be unaffiliated by law, and in others it is not possible in practice because of social pressures. Equally, in countries that are officially atheist, the number of unaffiliated may be exaggerated because religious people may falsify their religious preferences to appear irreligious in public (Kuran 1995). For similar reasons, in places where the devout dominate, the percentage of practicing or sincerely believing adherents may also be inflated.

The geographic distribution of religious groups varies considerably (Pew Forum on Religion and Public Life 2012). Many are concentrated in the Asia-Pacific region, especially those who are Hindu, Buddhist, folk or traditional religions, and other world religions.[12] Large numbers of the religiously unaffiliated live in China. The Asia-Pacific also hosts most of the world's Muslims, who also populate the Middle East, North Africa, and sub-Saharan Africa. The Christians are relatively equally distributed in Europe, Latin America, and sub-Saharan Africa. The Jews live mainly in North America and Israel.[13]

3. *Secularization, Pluralism, Regulation, and Economic Growth*

One set of ideas in the economics of religion literature concerns the secularization hypothesis, which predicts how pervasive

[12] The folk religions include African traditional religions, Chinese folk religions, Native American religions, and Australian aboriginal religions. The other world religions include the Baha'i faith, Taoism, Jainism, Sikhism, Shintoism, Tenrikyo, Wicca, and Zoroastrianism, which are not always included in country censuses.

[13] The age distribution of the population also shows that those religions concentrated in China or Western countries have older populations. The median age for Muslims and Hindus at twenty-three years and twenty-six years, respectively, is much lower than the median age for the world's population overall, which is twenty-eight years, or for Jews, which is thirty-six years (Pew Forum on Religion and Public Life 2012, p. 13).

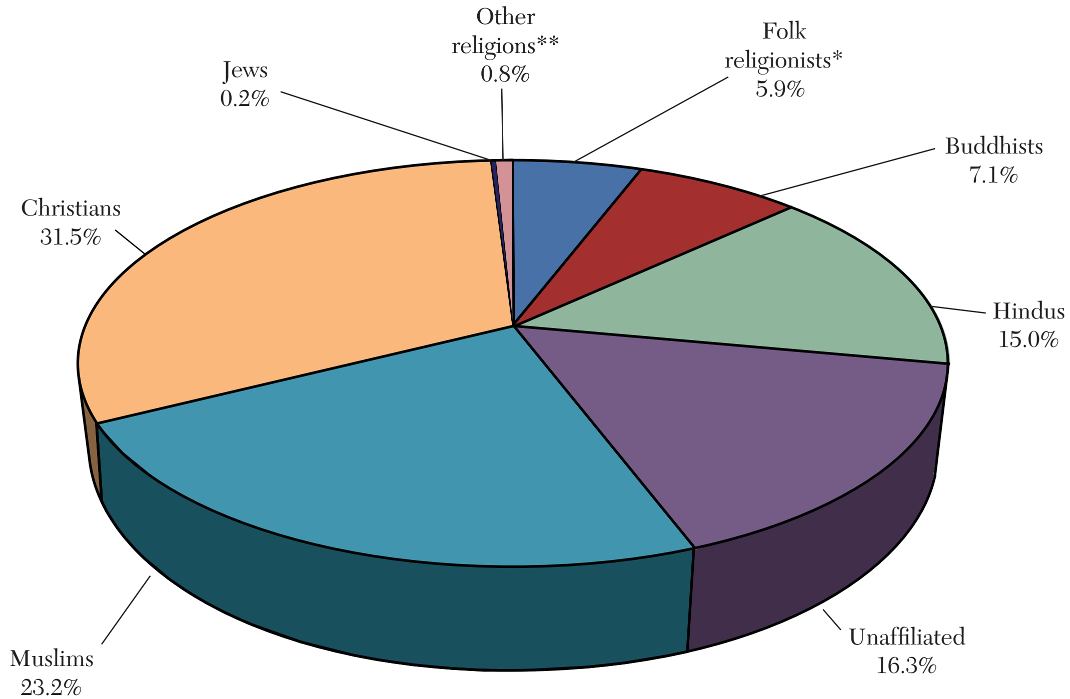

Figure 1. Size of Major Religious Groups in 2010, Percentage of the Global Population

Notes: * Includes followers of African traditional religions, Chinese folk religions, Native American religions, and Australian aboriginal religions.
** Includes Bahai's, Jains, Sikhs, Shintoists, Taoists, followers of Tenrikyo, Wiccans, Zoroastrians, and many other faiths. Percentage may not add to 100 due to rounding.

Source: Pew Research Center's Forum on Religion and Public Life—Global Religious Landscape, December, 2012.

religion is as countries become richer. The main theme of this work is that economic development by increasing education and urbanization leads to decreased religiosity, and the role of organized religion is minimized with development.[14] This is related to debates about religious pluralism and participation, as well as state regulation of religion. This section also evaluates the relationship between religion and growth the other way round, examining the influence of religion on economic growth through cross-country studies.

Among other economists, Jacob Viner (1978) wrote about secularization.[15] In his 1966 Jayne Lectures, Viner defined secularization as "a lessening of the influence on ethical and economic thought of ecclesiastical authority and traditional church creeds, and a shifting of weight from dogma

[14] See Norris and Inglehart (2004) for carefully presented evidence using World Values Survey data to test the secularization thesis. They conclude that "*rich societies are becoming more secular but the world as a whole is becoming more religious*" (emphasis in the original, Norris and Inglehart 2004, p. 217).

[15] Viner's unpublished work was edited posthumously by Jacques Melitz and Donald Winch and reproduced in Oslington (2003).

and revelation and other-worldliness to reason and sentiment and considerations of temporal welfare" (Viner as quoted in Oslington 2003, p. 159). The secularization hypothesis was largely accepted by sociologists until the work of Iannacconne, Finke, and Stark, and others. Their work suggested that rather than focusing only on the demand side, which the secularization hypothesis epitomized, it is also crucial to examine the supply side. It is to be acknowledged that many of the studies of secularization have been based primarily on US data.

The work by Barro and McCleary attempted to reinstate the secularization hypothesis. Barro and McCleary (2003) find that economic development, measured by increases in the standard of living, causes small declines both in religious participation and beliefs. Yet, the effect is ambiguous, because although people in rich countries might spend less time devoted to religion than in poor countries, this is counterbalanced by greater money contribution geared towards organized religion (Barro and McCleary 2005, p. 1348). The European experience, in terms of low religious participation, is also explained by regulations that deter new religious entrants rather than explanations that rely on demand-side issues, while the high levels of participation in the United States are often attributed to more competitive religious markets (Finke and Stark 1992).

The work on secularization was supported by other research on Europe that suggested that the decrease in religious attendance in Europe was not only due to fewer religious "suppliers," but that there was a genuine fall in the demand for religion (Voas 2007). However, as Olson (2011) points out, distinguishing the demand-side influences from the supply-side influences is difficult to do empirically, as they might be related to each other, mainly because religious participation data that measures demand is related to the supply of religious institutions such as churches, and these are also correlated with nonlinearities in population size and density (Olson 2011).

A related question in these secularization debates is whether religious pluralism per se decreases religious participation or not (McBride 2008; Montgomery 2003; Voas, Crockett, and Olson 2002). For many decades, sociologists argued that pluralism reduces religious activity and is associated with the secularization hypothesis. Finke and Stark (1988) argued the reverse—that pluralism increases church membership. Other evidence from the United States also showed that pluralism was associated with increased church attendance (Warner 1993). Pluralism is measured by the population percentage that is affiliated with a particular religious denomination. However, the evidence on pluralism is limited by the statistical methods used to calculate its effects; for example one study shows that correlations between measures of pluralism like a Herfindahl index and religious participation are a function of the data and statistical methods used to calculate these measures (Voas, Crockett, and Olson 2002).

McBride (2008) and Montgomery (2003) use the literature from industrial organization and product differentiation to examine the relationship between pluralism and participation. Using a Hotelling location model of product differentiation, McBride examines the equilibria of the model to show how pluralism and participation arise out of religious demand and supply, illustrating that correlations exist between pluralism and participation, which does not say anything about causality. He shows that participation and pluralism are caused by unregulated entry into religious markets, the low costs of providing religious services, and religious preferences. His model demonstrates that population growth may increase pluralism; that the relationship between religious demand and population size matters depending upon the level of the data used to investigate this relationship; and that religious regulations decrease pluralism but secular regulations may encourage religious participation. Montgomery (2003), while in general being critical of models of this type, puts forward a new measure of religious competition that is a partial order on the set of religious markets so that, for instance, one religious market *A* is considered to be more competitive than the other *B* if the denominations set in *A* includes the set of denominations in *B*. Given this partial order of competition measure, Montgomery's model shows that markets that are more competitive have higher religious participation, although depicting this with US historical data demonstrates a negative relationship.[16] He also shows that there is a relationship between religious competition and the size of the population, so that larger markets are more competitive than smaller markets. This is because larger markets can support a larger range of religious options, and hence demonstrate greater participation. Also, if there are new denomination entrants into the religious market, this may cause incumbent denominations to increase their level of effort. On the empirical side, Hungerman (2013) also suggests that predictions from some of the location models may not always fit the data in all settings.

Taking the secularization hypothesis and religious competition further formally, McBride (2010) examines specifically why "economic growth has not led to a decline in religion despite past predictions that it would" (p. 148). He shows that growth has little effect on a market at the extremes, i.e., either when it is very secularized or when it is highly religious. Economic growth affects religious demand and hence participation, but also supply, as it can decrease the costs of service provision through advertising, better monitoring of the faithful, and so forth, which can increase rather than decrease pluralism. McBride highlights the role of religious market structure so that a monopoly denomination may lower its strictness to become more secularized. Moreover, restricting secular substitutes will increase the demand for religion, but the effect of prohibiting new entry is more complicated. If it is combined with secular restrictions, then there could still be high religiosity. If secular substitutes are not restricted, then the outcome will depend on how incumbent groups react. One of the interesting predictions of the model is that higher income inequality might cause more strict religious groups. So, religious competition on the demand side and on the supply side may lead to the increasing strength of religion, even if secularization occurs, if the religious market is more open rather than more regulated.

This has implications for whether regulation of religious organizations is necessary. One theme in this largely empirical literature is whether or not state religions and a monopolistic structure matters for the freedom of markets (Barro and McCleary 2003; Stark and Finke 2000; Barro and McCleary 2005; North and Gwin 2004; Gruber 2005; Gruber and Hungerman 2008). One concern is whether deregulation or lack of regulation of religious organizations is imperative (Hungerman 2011). Examining a large sample of 188 independent countries of which 40 percent had a state religion, Barro and McCleary (2005) and McCleary and Barro (2006) showed that if a country had a state religion, for given regulation, it provided subsidies to organized religion, and that this affected economic growth. State religions also reflect in higher adherence rates,

[16] McBride's (2008) analysis implies that Montgomery's approach may be looking at only one side of the market, since by measuring competition by the observed diversity of the market, this may ignore demand-side characteristics. This probably explains the finding that there is more competition in larger markets.

a nonlinear effect with population, and per capita GDP has little effect. They also argue that state religions are persistent for countries in which there is no major regime change so that if a state religion existed in 1900, it was much more likely to do so many decades later in 1970 or 2000. McCleary and Barro (2006) show that on the one hand, if state subsidies to religion are provided, then this might increase the demand for religion and religious participation; on the other hand, state regulation decreases religious participation because it affects the supply of religion. In the context of state religions, a wide-ranging study by North and Gwin (2014) develops a model of how a government may establish or disestablish a state church, and then tests the model on a panel dataset of western countries over a sixty-five-year period. They confirm that state religions mostly take hold in countries with homogenous populations, a state religion reduces the overall religiosity of a population in religiously heterogeneous populations, and religious freedom increases both attendance and pluralism.

Secularization research is also moving into more micro-level empirical studies. For example, Buser (2014) examines the effect of income on religiosity in Ecuador. He uses an exogenous source of income variation—a change in the eligibility criteria for a government cash transfer program in Ecuador—in order to estimate a causal effect of income on religiosity using a regression discontinuity approach that deals with the identification issues (discussed further in section 4, below). The Ecuadorian study demonstrates that households with higher incomes have higher church attendance, and are also more likely to be members of Evangelical churches than the more widespread Catholic churches in Ecuador. Moreover, while most of the debates about secularization concern income, there are several papers that examine secularization and education, rather than income, and which find evidence for secularization (Becker and Woessman 2013; Cesur and Mocan 2014; Gulesci and Meyersson 2013; Hungerman 2014a). Hence, the literature has examined the secularization hypothesis empirically, as well as the relationship between religious pluralism, religious participation, and the role of state religions. There seems to be some evidence for the secularization hypothesis, although whether it is driven by demand-side or supply-side changes in religious markets is subject to debate.

Other econometric studies of religion examine the relationship between religion and income the other way round, i.e., they cast light on whether religion has any effect at all on economic growth and performance across countries (Noland 2005). Barro and McCleary (2003) examine the effects of religious participation and beliefs on a country's rate of economic growth. They conclude that believing matters more than belonging, so that for a given level of church attendance, increases in some religious beliefs—notably belief in heaven, hell, and an afterlife—tends to increase economic growth. Economic growth is also affected negatively by church attendance. They show this using instrumental variable analysis where the instruments include the presence of a state religion, religious adherence, and an indicator for religious pluralism. The underlying model behind their work is that religious beliefs affect individual traits that support economic progress. Their work is important in the context of the secularization hypothesis because they present the alternative "religion-market" model, namely that greater religious diversity promotes greater competition between religions, which leads to better services provided, which leads to enhanced participation and beliefs, also influenced by the ability of the state to regulate religious organizations. The influence of the state can work in two ways—either by greater subsidies to religious organizations, the state can increase adherents because better facilities are now better provided. Alternatively, if it is assumed that the state regulates religious organizations by promoting monopoly such as, for example, with very established state religions, then this reduces their ability to be as efficient in their operations, and hence may lead to lower religious participation rates. So the effects of a state religion becomes an empirical question and in their study, they do find evidence that government regulation of religion decreases church attendance; although state religion and state regulation together show a very mildly positive effect on attendance.

In general, the cross-country regression-based studies are interesting, but not without their limitations. Some of them have statistical difficulties such as, for example, those outlined by Voas, Crockett, and Olson (2002). Durlauf et al. (2012) demonstrate the sensitivity of results to instrument choices in such analyses. Durlauf et al. (2012) show that when model-averaging methods are used, there is very little evidence that religion-related variables do in fact predict cross-country differences in income. Durlauf et al. (2012) find that the work of Barro and McCleary (2003) demonstrating an effect of religion on growth is statistically replicable, but not statistically robust. Arguing that "God is not in the details," they find no evidence for the effect of religious beliefs on growth once they control for model uncertainty, although they do find weak evidence for the effect of religious participation on growth (Durlauf et al. 2012, p. 1060).

Cross-country regressions have been the main staple of the macroeconomics of religion since the early days of research in the economics of religion, and the collective set of results from such studies do need to be evaluated critically. Cross-country studies typically use different econometric formulations. A problem is that it is often difficult to evaluate the effects of religion on growth separately from the effect of other factors, notably geography, other institutions, and ethnic fractionalization, which are also important growth determinants. Different results are obtained at the cross-country versus intracountry levels. This is especially true of religion, because diversity may lead to higher religiosity at the country level, where individuals may move to join communities of their same faith, but be detrimental to religiosity within smaller areas, such as the subcountry level where the diversity of beliefs weakens the theological grip of any worldview and leads to lower religiosity, as some studies have shown. Perhaps echoing the historical debates, the evidence foretells that Adam Smith was probably correct about religion at the macro or national level, while David Hume assessed religion better at the micro or community level.

3.1 *The Protestant Ethic, Human Capital, and Democracy*

The economics of religion today is influenced by Max Weber's thesis, which discusses the effect of the Protestant ethic on capitalism (Weber 1904). As Iannaccone reminds us in his 1998 review, "Over the past century, scholars have made many claims about the economic consequences of religion, but none grander than those associated with Max Weber's *The Protestant Ethic and the Spirit of Capitalism*" (Iannaccone 1998, p. 1474). The central thesis of Weber's writing is that there are certain theological aspects of the Protestant doctrine such as "predestination," "election," "calling," and success in business that were seen as contributing to salvation, generating a set of economic attitudes which were the spirit of capitalism. The core of the Weber argument, which describes the interplay between faith and human action, is described by McCleary (2011a) thus: "God demanded of each person a lifetime of works that were ordered by morality. The believer's actions in the world originate in God's grace; this faith in turn justifies itself by the moral quality of the action. The quality of the action, Christian conduct, was defined by a rational system of morality and became the standard by which to measure the glory of God. Thus, salvation by work (daily work, not ascetic activities of monastic communities) was organized and rationally justified in an impartial moral system that applied to the activities of one's daily life and logically led to the rational organization of labor" (McCleary 2011a, p. 4). Thus, Protestantism directly contributed to the rise of modern capitalism by altering it in specific ways. In turn, as Landes (1998) and others have argued, the causality could also have gone the other way so that secular ideas occasioned by capitalist development may have led to less religious attendance as, for example, in Northwest Europe. There are also other critiques of the Weber thesis based on the view that the capitalist spirit predates the Reformation (Tawny 1926; Gorski 2005).

Sociologists have extensively evaluated Weber's thesis (see, for example, Lenski 1961). Among economists, many have been interested in it. For example, Jacob Viner (1978) discussed the Weber hypothesis in one of five chapters on religion that were edited and published posthumously. Viner points out that Weber himself freely acknowledged that there were many predecessors to his writings who remarked on a close historical association between Protestantism and capitalism. However, an important, and often overlooked point in the discussions of Weber—and it is a nuanced observation by Viner on Weber—is that while previous studies hinted at a "correlation," to use the language of modern economics, Weber may have been the first to attribute "causality" to the Protestant ethic.

In Iannaccone's 1998 review paper, he pointed out that the most noteworthy aspect of the Protestant ethic thesis was the lack of empirical support for it. In more recent discourse among economists at least, there has been a renewed interest in revisiting the Weber hypothesis both theoretically and empirically (Cavalcanti, Parente, and Zhao 2007; Basten and Betz 2013). Part of the reason this theory is interesting to economists is because, empirically, economic development in northern Europe could be explained by developments that were associated with Protestantism—e.g., the concern with savings, entrepreneurial activity, the frugality that Puritanism demanded, and the literacy needed to read the scriptures. Since spiritual grace from religion is attained by demonstrating temporal success in one's calling through diligence, discipline, self-denial, and thrift, the Protestant ethic promoted a work ethic that increased savings, capital accumulation, entrepreneurial activity, and investment. An important side effect is that it also encouraged human capital formation and literacy, all of which might have contributed to economic growth in this period. Many empirical studies have sought to establish if these economic relationships are found in historical or contemporary data, both from Europe and elsewhere.

In macroeconomic work, Guiso, Sapienza, and Zingales (2003) revisit the Weber hypothesis to examine the effect of religion on individuals' economic attitudes, rather than looking at outcomes. Using World Values Survey data between 1981 and 1997, they showed that religious beliefs were associated with economic attitudes conducive to economic progress as measured by attitudes towards cooperation, government, women, legal rules, thrift, and the market economy, with different effects across religions, controlling for country fixed effects and individual characteristics. They also used religious upbringing to identify the effect of religion independently of individual characteristics, and by examining attitudes they are able to identify the effect of religion on preferences. In examining attitudes, they found that religious people were more trusting, trusted others and governments more, and believed more that markets are fair, compared to those who were less religious. They also found that religious people in this sample were less sympathetic to women's rights and more intolerant. They also found that trust was associated with participation while intolerance was associated with religious upbringing. Bénabou and Tirole (2006) discuss theoretically the links between having more religious populations, high work effort, and its implications for low taxes and redistribution. An effort to test the Weber work-ethic hypothesis is Basten and Betz (2013), who investigate if Protestantism has effects on the preferences for leisure, redistribution, and state intervention in Switzerland. Using a fuzzy regression discontinuity design, they examine a historical experiment in which two parts of Switzerland in the sixteenth century adopted different religions, Reformed Protestantism and Roman Catholicism. Subsequently using data from 1980 onwards, they find that in those municipalities that were completely Reformed Protestant, support for leisure and redistribution was greater, and support for intervention lower, than in Roman Catholic municipalities.

A renewed interest in revisiting the Weber hypothesis using historical data has also prompted alternative explanations for economic growth. An important side-effect of Protestantism is that it encouraged human-capital formation and literacy. Becker and Woessmann (2009) propose that rather than a work-ethic argument, the human-capital explanation is a more plausible reason for Weber's theory. They argue that Protestants in late-nineteenth-century Prussia had higher human capital, which increased their productivity and hence economic growth for countries dominated by them. Martin Luther's Reformation had unintended consequences with respect to education, as he encouraged every town to have a school, and these authors look at the share of Protestants in a county compared to Catholics and find that literacy in all-Protestant counties was 7–12 percent higher than in all-Catholic counties. To identify causality in the face of the potential endogeneity of Protestantism and literacy, they also use "distance to Wittenberg" in Prussia (the place from which the Reformation began) as their instrumental variable for Protestantism, on the basis that those further away were less likely to adopt Protestantism, to test for the effect on literacy, which they find is very significant. Consequently, this human-capital explanation may provide an alternative theory for Weber's hypothesis. As shown in their work, girls benefited especially from the Protestant emphasis on education, reducing considerably the gender gap in education, and eventually fertility as well (Becker, Cinnirella, and Woessmann 2010).

Relatedly, Jared Rubin (2014) explores econometrically whether the initial spread of the Protestant Reformation was associated with the spread of the printing press because it allowed the ideas engendered by the Reformation to spread to a much wider audience. Examining city-level data on conversion to Protestantism and other factors within the Holy Roman Empire, he shows that cities with a printing press by 1500 were 29 percent more likely to be Protestant by 1600 (Rubin 2014).[17] In keeping with studies that use distance indicators as instrumental variables to deal with potential endogeneity, Rubin instruments for printing presses with the "distance from Mainz," which was the birthplace of printing in 1450. His results are robust even when using a measure of the intensity of printing, as measured by the number of books written in German

[17] The Holy Roman Empire comprises modern Germany, Belgium, Switzerland, Netherlands, Austria, France, Poland, and the Czech Republic (Rubin 2014).

between 1450 and 1600 and printed in a city, rather than only by the existence of a printing press. Again he finds that cities with greater intensity of printing were more likely to adopt Protestantism. So there seems to be some evidence that a more human-capital-based explanation of Weber's theory has some empirical support in the literature.

The role of Protestantism is also relevant in the context of research on missionary activity (Woodberry 2011; 2012). This work locates the study of Protestantism in the context of the broader role of institutions that affect macroeconomic growth (Acemoglu, Johnson, and Robinson 2001). In a masterly paper, Robert Woodberry (2012) relates missionary activity to the formation of democratic institutions. He argues that "conversionary Protestants" influenced the development of democracy around the world because they espoused particular things that spurred democracy, including liberty, education, printing, newspapers, voluntary organizations, and reforms associated with colonialism, creating preconditions for the success of democratic institutions. Religious, moral, and cultural factors shape moral behavior—as he writes, "Many of the major historical and statistical arguments about the rise and spread of democracy collapse when we account for religious factors in a historically sensitive way" (Woodberry 2012, p. 244). Based on a sample of 142 countries, he shows that Protestant missions explain about half the variation in democracy in Africa, Asia, Latin America, and Oceania, and that their inclusion in standard growth regressions makes variables that are popularly used in these regressions insignificant. He argues that there are omitted variables that might drive the relationship between Protestantism and the factors that are ascribed to helping democracy. Encouraging people to read the Bible in their own language and allowing the religious laity to be more involved with religion encouraged factors that prompted democracy, such as the literacy necessary to read the scriptures. More interestingly, he finds that the historical prevalence of Protestant missionaries predicts democracy, although Catholic missionaries do not do so. He also argues that this is because missionary organizations in the nineteenth century in the United States were larger in terms of their size and access to financial resources than most labor unions, NGOs, and banks, with the exception of some very large commercial banks (Woodberry 2012, p. 247). Especially outside Europe, religion influenced both whether countries went in for printing and whether printing led to the development of mass literacy through the publication of newspapers.[18] In cross-national statistical analysis, he shows that the existence of these missions affected printing, education, development, rule of law, corruption, and especially democracy. In summary, the literature has some support for the Weber hypothesis, but also for other explanations including human-capital-based theories, which may be linked to the formation of democratic institutions around the world.

4. *Religious Markets, Club Goods, Differentiated Products, and Networks*

While some studies in the economics of religion consider the role of religion on macroeconomic growth, others focus on developing insights from microeconomics. As Iannaccone pointed out in his 1998 review, while the Azzi–Ehrenberg model was the first formal model of religious participation,

[18] Woodberry writes of India: "For example, within 32 years of importing a press to India in 1800, three British missionaries printed more than 212,000 copies of books in 40 languages and, along with other missionaries, created the fonts and paper that dominated South Asian printing for much of the nineteenth century" (Woodberry 2012, p. 250). He also points out that this spurred the Hindus and Muslims to respond, often with religious books that arose in competition.

and the basis of almost all subsequent economic models in this area, the models that came later highlighted a host of other payoffs to religion incorporating the collective dimensions of identity, social support, and mutual aid (Iannaccone 1998, pp. 1480–81). The microeconomic approach has brought many key insights to the study of religion. First, it has highlighted the value of thinking about religion in terms of club goods models, religious markets, and differentiated products in such markets. Second, it has highlighted a role for spatial competition models from industrial organization, and for religious networks. Third, new research in this area is testing economic theories of religion in laboratory and field experiments.

In thinking about religion as an industry or beliefs as a product, it is clear that religion usually has entry costs, and that it competes with other religions (Jelen 2002). As with other products, we can learn about the characteristics of religious goods and how different they are from each other and other products that compete with them. The literature has been concerned with evaluating secular substitutes to religion and philanthropy by religious organizations. Economics has also been useful for thinking about the evolution of congregations and denominations, theoretically and empirically in different institutional contexts. Economists and other social scientists have been proactive in exploring the rational choice approach to understanding religion, but also to understanding how religious competition matters (Becker and Murphy 2000; Montgomery 2003; Putnam and Campbell 2010; Iannaccone and Berman 2008; Bisin and Verdier 2000; Prummer and Siedlarek 2014). This view also examines "spiritual capital"—or religious capital—which embodies the norms and networks organized on the basis of religion. The rational choice approach to the study of religion is found in the work of many economists and sociologists (Azzi and Ehrenberg 1975; Iannaccone 1992, 1998; Montgomery 1996; Stark, Iannaccone, and Finke 1996; Stark and Finke 2000; Berman 2000). In this approach, individuals are rational consumers of religion who decide whether or not to believe, or in which religion to believe, based on a cost–benefit analysis and relative to their initial endowments. In this view, people adopt religion because it is optimal for them to do so and their beliefs and activities may change over time. In a similar way, the supply of religion is explained by churches behaving similarly to clubs or firms in a competitive market, and especially providing services to attract potential customers. One methodological concern for these economic rational choice theories of religion and religious competition is the nature of the objective function and the possibility of multiple equilibria: As Hungerman writes, economists need to decide, "what a congregation's objective function is. Do congregations maximize members, donations, or some ethereal concept of 'religiosity?'"(Hungerman 2011, p. 259; see also Eswaran 2011; Montgomery 2003).

The first formal model of consumer choice in religious markets was that developed by Azzi and Ehrenberg (1975). The paper examined household time allocation and church attendance by developing a multiperiod utility-maximizing model of household behavior including the household's life-cycle religious participation profile. It argued that the relative differences in wages between men and women, and consequently their different opportunity costs of time, could explain their differential involvement in religious activities. The argument here was that as wages increased, less time would be devoted to religious participation. They also extended the model in several ways and tested their theory on church membership and church attendance data from the United States. One of the key assumptions of the model is that there are benefits in the afterlife to religious participation—unlike other forms of participation in nonmarket activities, which have implications for the allocation of time during the individual's lifetime. They identified three motives for church attendance—a "salvation motive" (expected afterlife consumption), a "consumption motive" (satisfaction with current church attendance) and a "social-pressure motive" (where church attendance directly increases the chance of success in business). Most subsequent research in the economics of religion that used the Azzi–Ehrenberg framework has focused on the salvation motive and the consumption motive; fewer studies have focused on the social-pressure motive. They also used the model to explain some of the sociological findings on religious attendance mentioned previously; for example, if market consumption alternatives are limited in rural areas, the social value of religious activities may be higher there, leading to higher participation. If discrimination in the job market reduced the market consumption alternatives of nonwhites, then this could be a factor that drives greater religious participation among nonwhites. Research by Iannaccone also shows that religious activities increase later in life, and why as wages increase, religious participation is reflected more in contributions than in religious attendance per se.

One critique of the Azzi–Ehrenberg framework is that the notion of "freedom of religion" is largely, though not exclusively of course, a Western phenomenon. In India, the Middle East, Tibet, or Indonesia, one is born into a religion and "choice" in this instance typically means giving up one's right to live within the community of one's birth. Practically speaking then, people do not have a choice of religion. This implies that many people may practice a religion that they do not approve of, or which even harms their interests. Kuran (1995) discusses this at length in the context of Islam, Catholicism, and Judaism. For this reason, the Azzi–Ehrenberg framework and other models in the economics of religion sometimes fail to resonate with non-Western religions, precisely because of their neglect of social pressures. In contrast, the club goods models of religion do allow for social pressures within clubs, and it is these models that I discuss next.

4.1 *Club Goods Models*

One of the most influential papers in the economics of religion is the 1992 paper published in the *Journal of Political Economy* by Lawrence Iannaccone. The paper initiated the literature on the club models of religion, which think of religion as a club good that has positive returns to "participatory crowding," showing that this can lead to free-rider problems that are mitigated by costs that increase participation of the devout while at the same time screening out those whose participation is likely to be low.[19] Iannaccone presents an economic analysis of religious groups that explains why religious group members' utility can increase when unusual religious practices and "seemingly inefficient prohibitions" exist. He argues that efficient religions with rational members may adopt practices such as stigma, sacrifice, and other unusual behaviors. If some religions prohibit alternative activities that compete away members' resources, then these prohibitions in effect screen the more committed members from the less committed ones. They also induce substitution towards religious activities because they make participation in alternative activities more costly. The unproductive costs of behavioral requirements can be thought of as a tax on alternative, more secular activities. His analysis also makes a useful distinction between churches and sects,

[19] A "club" is a "voluntary group deriving mutual benefits from sharing one or more of the following: production costs, the members' characteristics, or a good characterised by excludable benefits" (Sandler and Tschirhart as quoted in McBride 2007, p. 396).

where groups that have norms that are very deviant from the existing culture are termed sects while groups that are more consistent with prevailing cultures are termed churches. While this distinction has been usefully applied to Christian religions, I would contend that this distinction is also equally valid for non-Christian and non-Western religions as well. Also, sectarian groups attract those with less "secular" opportunities and again, this is true of non-Christian religions as well.

This work by Iannaccone spawned a distinct line of research within the economics of religion, which is the so-called "club models" of religion. These models have contributed vitally to our understanding of how sects develop.[20] These models are based on the idea that producing and consuming religion has all the features of a collective good and that like other collective goods, there is potential for free riding, lack of commitment, and participation. Hence, in keeping with the broad Iannaccone framework, these models look at stigmas and sacrifice as ways of screening members, and predict that more sectarian communities have tighter networks and higher aid from members than less sectarian religious groups (Iannaccone 1992; Berman 2000; Chen 2010). More recent research that conducts an experimental test of the club model using a sacrifice mechanism within a public goods game, and allowing groups to form endogenously, shows that groups that have preferences for higher sacrifice screen out free-riders and increase their contributions to the public good (Aimone et al. 2013).

A seminal paper in this area is Eli Berman's study of ultraorthodox Jews in Israel (Berman 2000), in which he examined how subsidies to students in Jewish religious schools increased participation and had effects on their labor market outcomes. The core of Berman's argument is that contrary to the predictions of price theory, participating more in prescriptive religion-related activity is highly time-intensive and so should not be observed when there is an increase in real wages. But across the world, the growth of the most time-intensive radical religious movements, whether ultraorthodox Judaism or radical Islam and Hinduism, are occurring precisely as real wages are increasing. Berman skillfully resolves this paradox: using club model explanations, he argues that mutual insurance networks are formed by actions that are religiously motivated. Prohibitions imposed by religions can then be understood in the context of these models because they can be seen as an extreme tax on other secular activities outside the religious club. This increases religious activity among members. Thus, even if real wages are rising, greater strictness of religious observance counteracts this effectively. He also makes the very interesting point that one can also observe "efficient intolerance" if, for example, there is more secular antagonism towards an extreme religious sect, and this also discourages the members of this club from engaging in other secular activities. Using the example of yeshiva attendance in Israel, he argues that subsidies have caused labor supply to fall, because it causes greater sacrifices. This might also explain high fertility rates among these populations. This is because when viewed as a tax, religious prohibitions lower increases in wages, but do not alter the value of women's time, which perhaps explains the higher fertility of these ultrareligious communities.

Other studies of club-goods models of religion include Chen (2010) which is based on a survey of 8,140 households from 1997–1999 in Indonesia. He examines how the Asian financial crisis affected religious participation in Indonesia, showing that those who were most affected by the crisis were more

[20] One paper which examines how a specific denomination fits the club model is McBride (2007) who examines how the Mormon Church fits the club goods model.

likely to increase their religious participation as measured through the study of the Koran and Islamic school attendance; in this way, religious organizations were providing ex post social insurance for people who were the subject of negative income and consumption shocks. Economic distress in particular stimulates religious intensity and this is providing something that other forms of insurance are not providing. Chen also shows that increased religious intensity is not simply a consequence of having more leisure time for religious activities or a decrease in the opportunity cost of time; rather, in response to economic distress, people increased labor and religious intensity.

The evolution of research on club models has also been developed by Abramitzky (2008 and 2009). Sociologists have discussed communes (Bader, Mencken, and Parker 2006; Sosis and Bressler 2003). Abramitzky argues that agricultural communes that share a common set of values, using the example of the Israeli *kibbutzim,* persist and can collapse, and that studying the conditions under which this happens is interesting. He highlights theoretical concerns such as communes trying to maximize equality subject to participation constraints, such as a brain drain caused by more productive members leaving, free riding causing moral hazard, and shirking, which is an incentive compatibility constraint, and constraints caused by adverse selection. Greater equality makes all of these constraints severe and therefore communes such as the Hutterrites and the Israeli *kibbutzim* evolved norms in response to these issues, notably, factors like isolating themselves, group ownership of property, investments in education within the commune, high fertility, and a greater emphasis on ideology and commitment to a religious commune, which have all contributed to the evolution of communes as we know them today. Abramitzky takes forward the club goods models of Iannaccone and Berman by arguing that religious ideology including rituals and increasing homogeneity has a key role to play in the sustenance of the commune—notably, by increasing equality, commitment, loyalty, and the benefits of commune membership, when for example the returns to skills outside the commune increase with economic development. Overall, the club goods models have been very useful in providing an overarching framework within which to view the activities of religious organizations, and to explain religion-related phenomena.

4.2 *Strictness and Networks*

The stigma-screening theory developed in the work of Iannaccone, Berman, and others is a cornerstone of the economics of religion.[21] Their argument is that stigmatizing behaviors in religion screen out potential free-riders, so according to this theory, strict churches in general ought to have fewer free-riders, higher contributions, and better religious goods. While much of the research on the economic theory of religion examines groups in a static context, some research examines religious groups in a dynamic setting. Counter to this established theory and showing that even strict churches have free-riders and target efforts towards them, McBride (2015) argues that religious groups need free-riders to potentially increase future memberships. This argument is very compelling because it suggests that if exposure to a religious good increases religious capital[22] and subsequent commitment, then the church needs to view free-riders as an investment, and that consequently strict churches might permit some free riding to

[21] It should be noted that Iannaccone's work on the strictness thesis built on the work of Dean Kelley and his book on *Why Conservative Churches are Growing* (1972).

[22] Religious capital is defined as "a type of human and social capital that increases an individual's productivity and consumption value of religious goods" (McBride 2015, p. 11).

achieve their objectives. This is because the church uses stigmas as a way of screening out those who are most likely to stay free-riders, concentrating its efforts and managing those who might invest in the church later, even if they free ride in their consumption of religious goods in the present. Moreover, as an individual's religious capital increases, the incentive to free ride diminishes.[23]

Models of religious strictness examine how and why groups become more or less strict. Levy and Razin (2012) examine the relationship between how religions instill religious beliefs, participation, and cooperation. They show that more demanding religious groups are smaller, more cohesive, and comprise those with extreme beliefs. Models of strictness are very useful, but it seems to me that there is a lack of evolutionary models that examine how strict groups grow. In this context, one area that is still relatively underresearched is the economic theory on extremism (Berman 2009; Berman and Laitin 2008; Ferrero 2005). There are papers that address this issue in the context of the evolution of fundamentalism, such as Arce and Sandler (2003, 2009), Epstein and Gang (2007), and Iannaccone (1997). Although it is to be acknowledged that there are many different definitions of fundamentalism, Iannaccone (1997) defines fundamentalism as "the degree to which a group demands sacrifice and stigma or, equivalently, the degree to which it limits and thereby increases the cost of nongroup activities."[24]

Iannaccone (1997) takes forward the ideas in his 1992 paper to examine why a rational person would join a fundamentalist sect if it is costly to do so. He focuses on how behavioral rules arise in fundamentalist groups and makes several predictions that are relevant to study the growth of fundamentalism. Unproductive costs (such as sacrifice, stigma, behavioral rules) perform two functions—they screen out people whose participation would otherwise be low and they increase participation among those who do join. His model predicts that sectarian groups will disproportionately attract poor, less educated, and minority members of the society; that a general decline in secular opportunities (for example an economic recession) will encourage the growth of sects. His model also predicts that the most successful sects maintain an optimal level of tension with the surrounding society, i.e., they set an optimal level of cost for any target population. Finally, a sect can prohibit only those commodities for which it offers a close substitute—arbitrary strictness fails just as much as excessive strictness. As Iannaccone writes, "sectarian religion appeals to people not because the people have deviant wants, but because the sects provide a collective setting in which normal, but unsatisfied, wants can be met." One of the key benefits of being a member of a sect is access to the network. Iannaccone and Berman (2006) take these ideas forward even further to explain why religious extremists sometimes, but not always, engage in violent activities: "Sects are high-powered religious organizations, run by credible leaders and peopled by active members carefully screened for commitment. Sad to say, these same institutional attributes are also keys to the successful 'production' of organized violence, especially clandestine violence." (pp. 119–120).

One important dimension is the role of social networks. For example, a well-established literature in related disciplines such as sociology has found social networks to be important for religion, religious

[23] Related to the club goods models by Iannaccone (1992), Iannaccone (1997), Iannaccone and Berman (2006), and Makowsky (2012) are other papers that examine models of tolerance and intolerance such as, for example, Cerqueti, Correani, and Garofalo (2013).

[24] It should be acknowledged that fundamentalism is a term that means different things to different people. The six volume Martin Marty–Scott Appleby collection (1994–2004) deals with all the controversies of definition and intricacies of the issues involved.

conversion, and recruitment, and yet this work often lacks formal theoretical models in the spirit of economics, or handles selection effects imperfectly in empirical research. It is here, among other areas, that economists of religion have yet to contribute significantly. The main areas that many existing studies do not examine is the role of network structure, the role of leadership, the authoritarian structure of an organization, the militancy of fundamentalists, and how fundamentalism might arise as a response to secularity or modernity. More research, especially on how fundamentalism spreads spatially in a network structure, is needed. For example, how isolated nodes in the society form new links with the society, how the influence of a fundamentalist leader changes over time, and so forth. While Arce and Sandler (2003 and 2009) are evolutionary models that explain how subpopulations grow and decline as a proportion of the whole population (with the subpopulations differing in assortativity), more research on how fundamentalism spreads over the network would be useful, especially with respect to which parts of the network are most vulnerable. Of these models, Arce and Sandler (2003) specifically examined the rise of fundamentalism using a game-theoretic framework. They divided society into two groups of fundamentalists and others, showing that fundamentalists are more cohesive and less willing to compromise. They use a Nash demand game for modeling the interaction between fundamentalists and others. Other aspects that are worth considering here are interactions between the government and a fundamentalist group, the role of norms, preference changes, and other behavioral criteria, perhaps looking at reputation models more closely.[25] But all this does suggest that the role of social norms, social networks, and social pressures need to be considered more carefully.

The economic theory of religious norms and networks has been widened to examine religious competition in the context of specific religious practices such as veiling among Muslim women (Carvalho 2013; Patel 2012). Carvalho (2013) discusses a theoretical explanation for veiling (the *hijab*, which are head coverings) in which this social practice is a commitment mechanism that limits temptation to deviate from religious norms of behavior. Carvalho argues that even though the rise of the new veiling movement since the 1970s might seem counterintuitive as it is observed mainly among urban, educated, and working women, this practice can be conceived as a strategy for integration, as it allows women to make the most of economic opportunities outside the household while permitting them to adhere to norms that preserve their reputation. This explains the counterintuitive empirical finding that veiling laws have led to a decline in religiosity and bans on veiling have been shown to increase religiosity. In his model, Carvalho shows that the demand for veiling would be highest among women who are from highly religious groups, but who interact in highly "irreligious environments." This is because individuals may value the opinions of their community, regardless of whether they hold those opinions themselves. And veiling emerges as a response to the greater economic integration of women, who do not want to face social disapproval if they come from a more traditional background, and it is a practice that might prevent the agent from engaging in behavior that is religiously prohibited. One of the key contributions is also to model the agent's type as endogenously determined by their social identity.

[25] It should be acknowledged that fundamentalists do differ greatly in their economic outcomes—some in Latin America and East and West Africa are economically successful; others in many Arab nations are economically unsuccessful.

So as religious values spread, even secular types may conform to more religious norms of veiling behavior. The theoretical research on religious strictness and religious networks has widened the scope of theoretical models in the economics of religion, but in my view, this still remains a comparatively less-researched area in the microeconomics of religion.

4.3 *Spatial Location Models*

The theoretical study of religion is also well-suited to models that examine the demand side and the supply side together, for example, models from the economics of industrial organization. A few papers have argued that a useful way to think about religion, such as the emergence of sects with strict rules, is using Hotelling-style spatial location models (see, for example, Barros and Garoupa 2002; Montgomery 2003; Barro and McCleary 2005; McBride 2010), although some of these models do not solve for the full equilibrium outcome. McBride (2008) uses a Hotelling model to understand religious pluralism and participation, discussed above. Iyer, Velu, and Weeks (2014) develop and solve a formal Hotelling-style model to elucidate how religious organizations might differentiate themselves on the strength of religious beliefs and its implications for service provision, as applied to the context of a developing country like India. Their model emphasizes the dependence of the religious decision and the service decision on each other: this interdependence is often mentioned, but not always fully developed formally in the economics of religion literature. This model is also particularly important in societies that have income inequality, a factor that is alluded to in many of the Hotelling-style models, but again, not developed into the thinking as fully.[26] The model suggests that one factor that pushes religious organizations toward more extremes is nonreligious service provision: religious organizations essentially product differentiate to minimize competition in service provision. This model and others that use theories from industrial organization are particularly applicable to religion in developing countries, where inequality may be very high and where the state cannot adequately provide services such as education and healthcare. The model also suggests why, as religious organizations differentiate themselves more, this sets up the potential for greater conflict among them, which may be mitigated then by the same organizations also providing more nonreligious services. Having said that, the location models also raise the issue of whether it is realistic to assume one religion per person. In various parts of the world, people may successfully belong to two religions, a formal religion (like Christianity) and a folk religion. In Africa, for example, people practice two religions at once and may celebrate Muslim or Christian holidays, but also days that involve the spirits of local religions. So perhaps the location models also need to be more complex to take these local factors on board. All this does suggest, though, that the whole area of applying models from industrial organization to the study of religion seems ripe for further research.

4.4 *Experiments*

Reputation is a theme that emerges from both the evolutionary and current experimental research on religion. Some studies are exploring evolutionary models of religion that examine religion as a response to evolutionary behavior by groups that concern issues such as reputation and competition between groups. While some of this work is

[26] Examining World Values Survey data from 1981–2001, Norris and Inglehart (2004) show that economic inequality as measured by the Gini coefficient is strongly related to religiosity as measured by the propensity to engage in religiosity through prayer.

empirical, including agent-based modeling to explain religious regionalism (Iannaccone and Makowsky 2007), economists of religion have also been taking theory to experimental data based on field and laboratory experimental research. A growing number of studies examine how religion affects generosity, trust, and fairness toward strangers (Anderson and Mellor 2009; Henrich et al. 2010; Paciotti et al. 2011), as well as the evolution of cooperation, such as for example among the Israeli *kibbutzim* (Sosis and Ruffle 2004). Paciotti et al. (2011) present experiments that test if religion promotes prosocial behavior in dictator, trust, and public-goods games. Keuschnigg and Schikora (2014) conduct an experiment on voluntary contributions to public goods among religiously heterogeneous groups in India by conducting a laboratory experiment to find that while cultural diversity does not affect contributions in a public-goods game, the interaction between cultural heterogeneity and leadership shows that there is less cooperation from followers in mixed groups. A set of experimental studies also examine religion's impact on health behaviors (both mental and physical), crime, and norms toward charitable giving (Lambarraa and Riener 2012). In this context, one interesting wide-ranging experimental study that amalgamates research from anthropology, experimental psychology, and economics, is that of Norenzayan and Shariff (2008), who examine the evolution of religion in the context of prosocial behavior, i.e., good behavior towards others that might engender a cost to the individual. They highlight the role of reputation and selection that reinforces the relationship between religion, prosociality, and cooperation in general. Their findings show that if religious thoughts are imbibed in experiments, then this increases trust as well as altruism toward strangers. The question is, why that might be the case, and they offer one suggestion: "However, supernatural monitoring, to the degree that it is genuinely believed and cognitively salient, offers the powerful advantage that cooperative interactions can be observed even in the absence of social monitoring" (Norenzayan and Shariff 2008, p. 58). The effect on trust is that religious belief increases trust, decreases the cost of monitoring, and hence increases prosocial behavior. They suggest that further research on issues such as empathy and compassion, which motivate prosocial behavior, is needed. It would also be useful to know more about the substance of the religious thoughts involved, because some religions discourage free riding within the community of believers, but encourage it within the broader community. So more research is needed on the content of religious teachings and if the teachings differ, the experimental results may then only apply to a subset of people in the experiment.

5. *Identification, Secular Competition, and Charitable Giving*

In his 1998 review, Iannaccone alluded to the possibility that religion's statistical effects may be spurious and that "nothing short of a (probably unattainable) 'genuine experiment' will suffice to demonstrate religion's causal impact. Yet one should also recognize that there exist plausible a priori arguments for religion's impact and that despite numerous attempts to root out spurious correlation, many religion effects remain substantively large and statistically significant" (Iannaccone 1998, pp. 1,475–76). For contemporary research on religion, the problems of identifying the causal effect of religiosity on economic outcomes still remains the focus of most current empirical studies. These studies explore the effect of religious competition, secular competition, and policy debates about faith-based welfare programs and the economic regulation of the church.

The difficulty of identifying the causal effect of religion clearly in econometric studies is an important concern, as religious variables do not always help predict cross-country differences in income (Durlauf, Kourtellos, and Tan 2012). This issue is a feature of macroeconomic and microeconomic research on religion (see Hungerman 2011 for a thoughtful review of the statistical issues of identification in models of religion). The main issues arise with respect to measurement error, reverse causality, omitted variables, missing values, and self-selection, which cause the covariates to be correlated with the errors, rendering our regression estimates both biased and inconsistent. Addressing endogeneity, clear identification of religion effects and the heterogeneity of samples are important concerns. The basic problem is that religiosity is endogenous and many studies have attempted instrumental variable strategies such as demographic indicators of various kinds, including religion market density, ethnic heritage, or other instrumental variables, to provide an exogenous source of variation.

There are a number of ways in which economists have attempted to address the issues surrounding religion and endogeneity. For example, some experimental research can "prime" religion, or rely on the exogenous timing of religious events such as the Ramadan fasting period, as discussed below, but this approach may not be easily generalizable to other religions. Some researchers, as discussed below, have used policy events such as blue laws, which are interesting in that they are exogenous to religiosity, but may impact both religious and secular phenomena, so may not be ideal instruments for religions in all situations. Some studies use distance from a historical event, as discussed in section 2, but this requires an assumption that the location and timing of the event is exogenous, and a seminal historical event such as the birth of Protestantism in Wittenberg is not always available in other contexts. Alternatively, one can use a theoretical model to ground an approach that then negates the need for an instrument, but this also requires strong adherence to the model itself, and may not always be applicable to all individuals. Consequently, there is no single accepted solution to the problem of religion and endogeneity, but a menu of options that economists can draw from.

One significant study in this respect is Gruber (2005). He highlights the potential difficulty of evaluating the effect of religiosity on economic outcomes, because of various other factors that are likely to be very highly correlated with the outcomes of interest. He suggests one way of getting around this issue is a measure of religion market density—this is simply the share of the population living in an area that belongs to the individual's own religion. The idea underlying this thinking is that if more people in your area share your religion, then the social interaction effects might affect you more. Moreover, the density itself can be exogenously predicted based on the ancestry in an area. Based on General Social Survey data from the United States, Gruber finds that higher market density causes greater religious participation, higher education and income, lower levels of welfare receipt and disability, higher marriage rates, and lower divorce rates.

Gruber's (2005) identification strategy is important to the development of empirical work on religion, and so is reproduced below. In essence, he estimates religious attendance as a function of religious market density:

$$(1)\quad R_{ia} = \alpha + \beta RELIGDENS_{ia} + \gamma ANCESDENS_{ia} + \delta AGESDENS_{ia} + \theta ANCES_{ia} + \lambda AGES_{ia} + \rho RELIG_{ia} + \pi AREA_a + \tau YEAR_t + \varepsilon.$$

In this equation, R measures religious attendance, i is the individual, a is the area in which she lives, and t is the year. *RELIGDENS* is the percentage of the population in the area that also belongs to individual i's religion. *ANCESDENS* is the density of ancestry group, and *AGESDENS* is the density of the age and sex composition of the group. The model also includes a range of fixed effects for the individual's ancestry (*ANCES*), age and sex, religion, area, and year fixed effects. This approach parcels out the effect of religious market density on the individual's own religious participation. This specification allows us to examine if an individual is more religious if there are a higher percentage of coreligionists in the same area (a higher β) compared to other religionists in the same area, and relative to other coreligionists who live in other areas that have lower market density. Gruber is careful to point out that, even with this specification, there could still be instances of measurement error in calculating the relevant densities. To address these issues, he then creates an instrument for religious density that is based on an individual's ancestry and the ancestries of other individuals living in the area. Gruber's instrument is:

$$(2) \quad PRDEN_{na} = \Sigma r\,[P_{rn} \times (\Sigma n\, P_{rn} \times ANCES_{na})].$$

In this equation, n denotes the ancestries, r denotes the religions, and a denotes the area in which individuals live. $PRDEN_{na}$ is then the predicted density for an ancestry group n in an area a and P_{rn} is the distribution of religious preferences r within each ancestry n. $ANCES_{na}$ is the density of each ancestry group n in each area a. Gruber's approach is important to the literature on identification of religion effects because the ancestry captures the religious density, and it also deals with measurement error. As a further refinement of his strategy, he also excludes the individual's ancestral group when he computes *PRDEN* so that this shows the likelihood that an individual lives with her coreligionists, but based as a calculation of the other ancestral groups resident in the area.

Gruber's approach has many strengths, including that if we have access to data on religion and ancestry in one dataset, such as for example the GSS, and ancestry and outcomes (but not religion) in a another dataset, such as for example the US Census, then these two datasets may be combined to study religion even when data on religion is not available in all the datasets being used for a study. It should also be acknowledged that while the Gruber study is very important to empirical studies of religion, its focus is on non-Hispanic white males. So while this approach may be very intuitive in thinking about Catholics in America, it may be less intuitive for other groups, faiths, and ethnicities. The value of this approach may also be constrained if ancestry data is unavailable, or if everyone is of the same ancestry, because then religious density may not be as useful if people are self-selecting not only on the basis of their religion, but also on their location.

If we can identify religion effects in this way, among others, then it allows us to demonstrate the effect of religion on various economic outcomes. For example, using a variety of identification strategies including religious market density, sibling fixed effects, and others, some studies show that religious participation is associated with less depression, greater happiness, and more mental-health stability (Mellor and Freeborn 2011). Others point to a relationship between religion, aging, and health (Deaton 2011), and a lower likelihood of committing crimes (Gruber and Hungerman 2008). In this context, economists have also used secular variables as a way to distinguish between subpopulations, identifying the effect of religiosity clearly as discussed in more detail below.

Exploring secular variables to obtain identification is related to the interaction between religious competition and secular competition because religion may provide a form of social insurance. Some work has examined whether households who contribute to religious organizations are better able to insure against income shocks (Dehejia, DeLeire, and Luttmer 2007). Self-insurance provided by religious organizations may have implications for social insurance provided by the government. There might be less demand for social insurance in more religious areas, and when social insurance is being provided and provided well, this might also "crowd out" insurance functions being provided by religious organizations (Hungerman 2005). Dehejia, DeLeire, and Luttmer (2007) study whether participation through contributions provides consumption insurance, compared to participation through attendance that provides happiness insurance against income shocks, using data from the US Consumer Expenditure Survey from 1986–2000. In their survey, they find that religious contributions represent about 1.2 percent of household income. They also find some limited evidence that the form of insurance provided by organizations differs by race. Norris and Inglehart (2004) provide cross-sectional evidence that rising state coverage, for example health-care plans or pensions, decreases religiosity. Chen (2010) presents religious groups as providing insurance benefits. Related to thinking about religion as insurance, research on Protestants in the United States has assessed whether changes in the business cycle affect religiosity by examining the relationship between macroeconomic conditions and Protestant religiosity, finding a countercyclical component to participation in evangelical Protestant denominations, mainly due to lower socioeconomic status, and a procyclical component for mainline Protestants (Beckworth 2009).

An alternative strategy that economists have used to aid identification is to examine the "charity gap"—religious giving in the context of more general secular charitable giving. The research on giving to religious charities is closely related to work on charitable giving (Andreoni 1989; Andreoni 1990). A third of charitable giving in the United States goes to religious causes (Engelberg et al. 2014); but even in the United Kingdom, which is less religious on average, data from the National Council for Voluntary Organisations' *UK Civil Society Almanac 2010* shows that religious and international organizations obtain the greatest share of income from individuals; each receiving approximately 40 percent of their total income from individual donations (NCVO/CAF 2010).

In this context, Hungerman's work (2005) has focused on the public policy implications of the intersection between religious and charitable giving, secular institutions, taxation, and public spending. His focus is on how religious institutions may compete with other secular institutions such as schools, local government, or shopping malls, which may be even more important than competition between religious organizations themselves. He finds that congregations in his survey are more concerned with secular competition than with competition from other religious groups (Hungerman 2011). This work also stems from a methodological concern to find instrumental variables that identify the effect on religion of policy changes ostensibly unrelated to religiosity or demographics. Hungerman's research examines policy changes that concern formal governmental regulation of religion, especially the United States' blue laws, which controlled economic and other activities on Sundays and resulted in decreases in religious participation. Gruber and Hungerman (2007) examine historic public goods provision in the Great Depression; they argue that such provision can crowd out religious provision of these goods.

Hungerman (2014) has pursued these identification issues further, showing how the club-goods model can be used to generate an empirical test for whether religious rules and proscriptions alter people's behavior. The test allows rigorous study of this topic, even in settings where exogenous changes in religious rules are unavailable, i.e., where it is difficult to find an instrumental variable for religiosity. Religious individuals may be more responsive to variation in secular incentives such as, for example, changes in blue laws, casino openings, and variations in laws that concern the minimum legal drinking age. Highly religious individuals are very responsive to changes in secular incentives. These identification issues continue to be very important in the context of empirical research on religion.

In this context, one study examines the structure within religious organizations themselves—notably, whether religious personnel, such as pastors, and their labor inputs have a causal effect on religious attendance and church growth (Engelberg et al. 2014). This study examines Methodist congregations in Oklahoma between 1961 and 2003, showing that better pastors sizably and significantly increase church growth, and that a pastor's performance in his first church, which is usually randomly assigned in Methodist groups, predicts significantly their future performance, so that while pastor effects are important in churches that are both large and small, better-performing pastors are invariably assigned to larger congregations. The study observes a particular church under the tenure of different pastors. This study overcomes identification issues by using the random assignment of pastors in their first church in order to predict subsequent performance. Another carefully done empirical paper is Hanson and Xiang (2013), which examines how a denomination's doctrine, as well as its governance structure, influences its capacity to attract adherents. Based on US Protestant denominations in 2005, and focusing on their foreign operations, they show that religious denominational strictness attracts more adherents where service provision is weaker and where the risk of vulnerability through disease or diasters is higher.

While this paper dealt with Christian churches, another series of papers looks at Islam, using the exogenous timing of Ramadan to explore the effects of religious fasting on outcomes (Oosterbeek and van der Klaauw 2013; Almond and Mazumder 2011; Majid 2013).[27] These papers take advantage of Ramadan as a treatment variable and their contribution is important both conceptually, in terms of examining the effect of Ramadan practices in Islam on educational and other economic outcomes, and econometrically, in terms of having found a way to identify the effects of religion on outcomes that takes advantage of the exogenous timing of the fasting period. For example, Oosterbeek and van der Klaauw (2013) estimate the effect of Ramadan on the educational outcomes of economics students who are Muslim but who live in the Netherlands, and where teaching and exam dates are not adjusted for the fasting period, as is the case in countries that are Muslim. The fast is expected to reduce academic performance because the students have less nutrition, hence may be less able to concentrate and to study. They examine data over five academic years from 2003–08 and use a difference-in-difference framework that uses the number of fasting weeks over the duration of an introductory microeconomics course, and which varies yearly. If students observe Ramadan, then this has a negative impact on their academic

[27] Ramadan is a religious fast undertaken by Muslim men and women for about a month each year, in which they eschew all food and drink between sunrise and sunset. The fast is undertaken to encourage patience and piety, and the timing of Ramadan follows the Islamic calendar.

achievement, reducing the final grades of Muslim students by approximately 10 percent of a standard deviation. Interestingly, there is no difference between male and female students, and the Ramadan effect is not caused by lower attendance in the introductory microeconomics course.

Majid (2013) studies the effects of in utero exposure to Ramadan fasting over the life cycle and finds very significant school performance differences among Indonesians in during childhood and in the labor market in adulthood, based on whether mothers fasted during pregnancy and when they fasted. Children whose mothers fasted also had lower birth weight, performed more child labor, and scored lower on cognitive tests, suggesting that the practice of mothers fasting during pregnancy should be minimized.

Almond and Mazumder (2011) show that for Arab parents in Michigan in the United States between 1989 and 2006, mothers' prenatal adoption of Ramadan fasting rules causes lower birth weight in babies, although the magnitude of these effects is small. The timing of prenatal nutrition is important here, as Almond and Mazumder compare births that overlap with Ramadan fasting with those that do not, estimating a reduced-form effect of Ramadan on births. They estimate an intent-to-treat effect that does not rely, for identification, on the decision to fast. They also examine Census data on Muslims in Uganda in 2002 and in Iraq in 1997 to show that adults there are 20 percent more likely to be disabled or to have mental or learning disabilities with even larger effects if the first month of their mothers' pregnancies coincided with the Ramadan fasting month. Some studies of Ramadan fasting investigate macroeconomic outcomes. For example, Campante and Yanagizawa-Drott (2013) study whether Ramadan fasting has a negative effect on output growth in Muslim countries, and if it increases subjective well-being. They argue that rather than the direct effects of reduced nutritional intake having an impact on productivity, Ramadan affects the relative preferences of Muslims between work and religiosity by changing beliefs that may influence labor-market choices.

Studies that use Ramadan fasting systematically exploit the timing of the fasting period and the geographic location of countries that observe Ramadan rules as an exogenous source of variation. Yet this type of tidy exogenous instrument may not always be available for other religions. What we have learned from all of these empirical studies of different religions is that economists are coming up with innovative ideas to aid identification, whether by relying on innovative instruments that are drawn from religious, ancestral, or secular factors, or by deferring to long-standing religious practices, to demonstrate causally the effect of religion on various educational, health, labor market, and other economic outcomes.

6. *Conflict and Cooperation in Developing Societies*

Most research in the economics of religion has focused on developed countries. With the availability of new data, economists now are examining particular religions in varied historical time periods, also drawing lessons from this experience for religious networks in contemporary developing societies. This literature has focused both on conflict and on cooperation engendered by religion, and is an exciting area of research in the economics of religion. In this section I discuss the literature on terrorism; trade, politics, and conflict; religiously provided social services; religion and finance; and I make the case for the need for a wider scope in our studies in the economics of religion on developing societies.

At the time of writing Iannaccone's 1998 survey and subsequently in other reviews

(Iannaccone and Berman 2008; Iyer 2008), the point was made that most religion research is on the United States and other developed countries in the Western world. There is still a great need for studies on Latin America, Africa, the Middle East, and Asia. There is notable work on the Middle East with a range of work by Kuran (2010), Chaney (2013), El-Gamal (2006), and others; and a few studies of India and China (Yang 2012). From the perspective of developing societies, or those in which there is greater uncertainty, economics is valuable because it illustrates how religion and religious norms might act as an informal coordinating mechanism. The kind of spontaneous social coordination that religion creates through increasing trust, morals, informal incentives or through imposing social sanctions are very important in these societies, especially when there is an absence of well-developed legal systems and formal markets. In this context, the relationship between religion and public-goods provision is an important focus that economics brings to a discussion of religion. Studies in this area include Berman (2009) and Iyer, Velu, and Mumit (2014), which highlight the important but less-studied area of religion and service provision in contemporary developing countries. Other studies focus more specifically on religious beliefs. For example, Clingingsmith, Khwaja, and Kremer (2009) examine whether participation in the hajj (the pilgrimage to Mecca) as decided by a lottery among Pakistani pilgrims has effects on religious practices. The hajj participation increases orthodox Islamic rituals such as prayer and fasting, but also increases tolerance towards other ethnic groups and others' religions in general, as well as more benign attitudes towards women. Studies of religious revival movements among the middle classes, for example in Egypt, show how development might make societies more prone to religious revivals. Binzel and Carvalho (2013) develop a model to show how this is related to factors such as aspirations, education, public-sector employment, and inequality.

Examining conflict and cooperation in developing societies has been aided by the availability of much better data. Sociologists and political scientists have been very active in using data to address important issues that concern international religious freedoms and religious restrictions.[28] These include the relationship between religious institutions and the state, whether the state permits religious freedom or forms alliances with certain religions, and movements that might restrict those freedoms (Finke 2013). This research also examines the consequences of restrictions for religious conflict. In early work, Finke (1990) and Finke and Stark (1992) argued that religious freedoms in the United States led to the "churching of America" because religious freedoms increased the supply of religion by altering the incentives for both religious producers and consumers. Finke (2013) takes this argument further by examining the relationship between religious freedoms and social conflict, specifically whether countries have laws that restrict religious freedoms. Finke (2013) points out that how the state views religion or minority groups may affect whether they promote or hinder religious freedoms, and that whether states have the institutional capacity to enforce religious freedoms, including whether a country has an independent judiciary, is important. Religious restrictions may also alter how organizations function, and religious market structure more widely, including by affecting religious persecution (Finke 2013; Grim and Finke 2011). Grim and Finke (2011) document that many people in the world have been facing an increase in persecution. This interest

[28] For example, Roger Finke (2013) defines religious freedoms as the "unrestricted practice, profession and selection of religion" (p. 299).

in religious freedoms and restrictions is also echoed in the recent literature from political science. For example, Fox and Tabory (2008) used the *Religion and State* dataset between 1990 and 2002 to argue that state support for religion affected religious pluralism and that state regulation of religion is negatively correlated with religiosity if religiosity is measured by religious attendance, although they also find that religious beliefs are affected less.

6.1 *Terrorism*

Empirical research has been exploring the links between religion, economics, and terrorism, both within and across national boundaries (Berman and Laitin 2004; Sandler and Enders 2004; Krueger 2007; Keefer and Loayza 2008; Berman 2009). In particular, Krueger (2007) investigated whether income was related to transnational terrorism. The general conclusion that emerged in this work is that weak property rights and poor civil liberties might matter more for the incidence of international terrorism than poverty. Berman (2009) examined terrorism in the Middle East, arguing that many religious groups such as, for example, the Hamas, provide spiritual services alongside social and welfare services in the regions where they operate. Sandler and Enders (2004) provide an economic perspective on transnational terrorism.[29] They argue that transnational terrorist incidents are transboundary externalities, to the extent that any actions undertaken by country authorities or terrorists in one country can impose costs and benefits on other countries. Antiterrorist activities might sometimes create unintended consequences. Transnational terrorism actually results in very few deaths, relative to other kinds of hazards, and there is frequently a cyclical pattern to transnational terrorism. The data show that terrorist incidents come in waves and cycles due to demonstration effects; and because of economies of scale in planning terrorist attacks, this can lead to terrorist incidents being clumped together. Although the question of terrorism is separate from, but related to religion, one of the interesting findings of the research in terrorism is that religion-based terrorist groups have been seeing a rise in more recent decades. For example, since the early 1980s, the number of terrorist groups that are religion-based have risen from two out of sixty-four groups in 1980 to twenty-five out of fifty-eight groups in 1995 (Sandler and Enders 2004, p. 305 citing Hoffman). Forming global networks is also important here. For example, terrorists can limit how effective countries are in counteracting terrorists because the externalities are greatest when countries are more uncoordinated in their decision making to counteract terrorism.

6.2 *Trade, Politics, and Conflict*

The concern with conflict all over the developing world is very much a product of its historical evolution. For example, very useful insights have been gained by focusing on Islam and on Judaism. Michalopoulos, Naghavi, and Prarolo (2016) provide a conceptual framework to think about how Islam is related to inequality and preindustrial comparative development. They show that Muslim societies were located along geographically unequal territories near trade routes, and theoretically demonstrate how this might have influenced Islamic thought. Trade routes created different opportunities for areas with dissimilar geographies, such as between areas of fertile and arid land. If there was unequal land distribution with trade, this encouraged predatory behavior by less well-endowed regions. This caused patterns

[29] Sandler and Enders (2004) define terrorism as "the premeditated use, or threat of use, of extranormal violence to obtain a political objective through intimidation or fear directed at a large audience" (p. 302).

of static and dynamic income redistribution that emphasized direct transfers of income. So for Islam to persist, income inequality had to be restrained and this influenced dynamic income redistribution through rules and religious prescriptions on capital accumulation and increased public-goods provision through endowments from religious institutions. Consequently, Islam put forward various obligations and laws for income redistribution and poverty alleviation through the *zakat*, costs on accumulating capital such as the anti-*riba* (interest) laws that increased transactions costs, and contributions to *waqfs*. In turn, Michalopoulos, Naghavi, and Prarolo argue that this affected preindustrial economic development in Islamic countries; this compares to countries in which although Christianity initially enforced laws against usury, the relaxation of usury laws in Europe preceded the Reformation by 150–200 years, indicating that it was not something about the Reformation, but a deeper institutional difference between the Middle East and Western Europe that was the cause for the divergence between them (Rubin 2011). But more generally, more research is needed on the interactions between religion, trust, and cooperation (Gagnon 2014).

One theme that unites many economic history studies of religion is conflict and cooperation. Some studies relevant here are those that examine Israeli communes such as the *kibbutz* (Abramitzky 2008 and 2009) because these communes are based on an ideology that stresses cooperation and minimizes conflict. Other research examines the historical basis of conflict and the role of religion and empire in these contexts (Iyigun 2008), studying especially the rise of monotheism, which provided economic and political benefits. Iyigun (2008) shows how Ottoman military activities between the 1520s and 1650s reduced intra-European religious conflict by over 50 percent and also reduced conflicts in Europe more generally.

Some theoretical work has linked religion and politics—for example, how politicians have an incentive to take an extreme stand on issues that might be proscribed by some religions, such as abortion or same-sex marriage, in order to induce their core supporters to vote and make donations (Glaeser, Ponzetto, and Shapiro 2005). Empirical studies highlight the political importance of religious leaders. For example, Chaney (2013) provides the first illustration from economic history that the political power of religious leaders may be important when there are economic downturns. He argues that during floods that are deviant to normal flood levels of the Nile river, allocations to religious structures, compared to secular structures, increase. Religious authorities were also less likely to be replaced. Judges were less likely to be dismissed by the sovereign or to resign when the Nile flood was abnormally high or low. This is because the Nile floods increased the propensity for social unrest and the possibility that the religious leader could coordinate a revolt. These findings are consonant with a wider literature on conflict that suggests that economic crises precipitate the collapse of autocratic regimes because they disrupt the balance of political power. In this case, Chaney argues that power moved in favor of religious authorities in historical Egypt. This resonates with current debates about the rise of the Arab Spring. This work is important in the context of wider research that demonstrates that religious leaders in historical populations may have exercised considerable political patronage and power.

6.3 *Religiously Provided Social Services*

While religion may have an influence on conflict, it also affects cooperation by providing access to services. For example, many religious groups have provided social services such as education, as shown in a national study of congregations in the United States (Chaves 2004) and in other research on secular and religious competition in service provision (Hungerman 2005). In the developing world, the Hamas have provided spiritual services alongside social and welfare services in the regions where they operate (Berman 2009). In contemporary India, in the first large-scale study of the economics of religion there, religious networks are important not only for the religious services they provide, but equally and especially for their nonreligious services, specifically with respect to health and education (Iyer, Velu, and Weeks 2014; Iyer, Velu, and Mumit 2014). Moreover, as religious institutions provide this insurance function, these networks might then determine the extent to which education or health care is taken up, especially where these services are less well-provided for by the state.[30]

6.4 *Religion and Finance*

One aspect of development that seems particularly salient is the financing of religious activity and how religion might influence financial institutions in developing societies. For Islam, there have been detailed investigations by economic historians into financial systems in the Middle East including *zakat*, the alms for charity (Kuran 2004; Kuran 2010; Kuran 2014). Kuran points out that *zakat* emerged as a religious tax in seventh century Arabia; it was mandatory and paid to the Islamic state. Within a few decades, the obligation stopped being enforced by the state and the tax metamorphosed, in essence, into a voluntary act. There are efforts in the twentieth and twenty-first centuries to make it mandatory again. *Zakat* is relevant to studies of conflict and cooperation because in both forms it served as a safety net, reducing conflict.

One interesting question Kuran (2004) addresses is why the West did better economically than the Middle East. The development of financial institutions in the Middle East has influenced economic development in this region, relative to other parts of the world. The Middle East developed institutions from about the seventh through the ninth centuries; Western Europe did so by about the tenth century. By the eighteenth century, the Middle East showed many signs of economic backwardness, mainly due to its social mechanisms and legal institutions, which had stagnated. The main culprits were the law of inheritance under Islam, which hindered capital accumulation; and the *waqf* institution, which used up resources in an organization to provide social services that were often unproductive. Traditional Islamic law also had a role to play because it causes low human capital and inhibits the development of the private sector.

The features of these societies in particular include contract law on the joint ownership of property; finance that was provided without banks and in the absence of corporate structures; Islamic law that only recognized individuals; and public or semipublic goods not being provided by the state. This was coupled with an inheritance system, arbitrary taxation that was unsystematic in its discrimination, and weak property rights. In the case of the inheritance system, an egalitarian system limits the concentration of wealth, but the net effect of this was the fragmentation of wealth, especially financial wealth. In the case of the *waqf*, this was a pious foundation or an unincorporated Islamic trust. Its role was very much to provide social services by turning some forms of property into an endowment to support various kinds of social services such as a mosque, a school, and so forth. The provision was quite egalitarian in that the services were provided to Muslims and non-Muslims.

[30] Religion and service provision is an important aspect of current research in religion because religions do argue that social services are either only a means to attain spiritual ends, to promote religious conversion, or as a moral imperative and so an end in itself, regardless of whether those who are served convert to the religion.

According to Kuran (2004), the *waqf* is an interesting Islamic institution because it arose as a response to poor private property rights. As he points out, Islam's original institutions do not include the *waqf*, which the Qur'an does not mention. However, the *waqf* is regarded as sacred because it served important charitable purposes; the rulers did not confiscate the assets of the *waqf*, as rulers were keen to appear devout. The other advantage of the *waqf* was that if a property was endowed as a *waqf*, this provided it with some immunity against expropriation. Moreover, while there was no formal legal obligation, the rulers did encourage the *waqfs* to provide social services.

Kuran (2010) argues that in addition to the static effects discussed, more importantly over the longer run, the static effects jointly produced negative dynamic effects. The incentives to generate more advanced and flexible organizational forms suitable to modern development were supressed. While this was not a handicap in the Middle Ages, it became a handicap when the West developed and technologies changed. He also points out that one difference was that Western establishments were larger than those in the Middle East. There were also no stock markets or banks in the Middle East. The *waqf* system did not provide as much by way of public goods services as in the West, which saw the development of more organizations that were chartered as corporations. The *waqf* system also led to corruption. It had a positive and a negative side—on the one hand creating a nongovernmental organization; on the other creating social inefficiency. The rule of law was limited; although the two systems started out with similar contract law, due to different inheritance regimes, they followed very different evolutionary paths. By the nineteenth century, the region's legal infrastructure prevented the organizations' becoming more sophisticated and accumulating capital. Moreover, the legal infrastructure was self-enforcing in that there was little incentive to change the infrastructure. So the very legal structures that pushed the Islamic world ahead for centuries following the initial spread of Islam were also precisely the ones that helped keep it behind as Western Europe moved ahead. But this research does suggest that the whole relationship between Islam and economic performance needs more careful review—see Kuran (2014) for an overview of the historical and contemporary links between Islam and economic performance.

More contemporaneously, Iannaccone and Bose (2011) argue that Christian religions can be contrasted with non-Christian ones such as Hinduism, Buddhism, and Islam, which has implications for how fees for religious membership are calculated. Here they develop alternative models to the rational choice approach including "client–practitioner" relationships where individual religious goals can be attained without necessarily requiring collective participation in religious services or other practical forms of religious observance. So they argue that religions that obtain donations for certain services individually performed are different from those who charge membership fees or are government funded. Again, while we have learned much about religion and finance historically, it would be useful to have more studies that document these links for contemporary populations.

6.5 *The Need for a Wider Scope*

In assessing the economic history of religion research, it is very striking that much more has been done on the economics of Islam than on the economics of Hinduism, Buddhism, Jainism, or Sikhism. This seems unusual, especially for Hinduism, as this is equally a very ancient religion and there is much interest in this subject both in South Asia, and in other countries that have Hindu populations. For example, while Hindus make up about 15 percent of the world's population, they make up over 80 percent of the population of India. This compares to Muslims who are approximately 23 percent of the world's population and about 15 percent of India's population. Nevertheless the economics of Islam seems to gain a disproportionate amount of academic attention versus the economics of Hinduism. One possibility for this dearth of interest in Hinduism may simply be that India has done well economically, so possibly when a society is moving ahead, one is less interested in deep forces that might have held it back in past centuries. A few economic history studies that do look at Hindu groups more are those by Jha (2013); and Kuran and Singh (2013). Recent works by Iyer (2002) and Iyer, Velu, and Weeks (2014) discuss more contemporary Hindu populations. If the work on Hinduism is limited, the work on Buddhism is even more so, although with the notable exception of McCleary and van der Kuijp (2010) on Tibet. It would also be very useful to have more research conducted on religion in China, certainly in the context of an increase in economic growth and diminished state repression, which could lead to a growing market for religion (Yang 2012).

One theme that comes up repeatedly in developing countries is the ability of religion not only to foster conflict, but equally to mitigate it and foster cooperation. This finds echo in economic history too—an important study explores how religious and occupational activities fostered cooperation in the context of European medieval institutions such as craft guilds (Richardson and McBride 2009). This theme is echoed also in work on medieval India. For example, Jha (2013) presents an overview of how interethnic complementarities in medieval trading ports led to better institutions and cooperation which minimized the chance of Hindu–Muslim conflict many centuries later. This arose due to specific advantages Muslims had when shipping via the Indian Ocean, due to their coordination with overseas markets through pilgrimages such as the hajj. Although medieval trading ports were more heterogeneous ethnically, they were five times less prone to Hindu–Muslim riots and 25 percent less likely than other towns to experience a religious riot between 1850 and 1950. Jha attributes this to the persistent good institutions which arose in earlier periods and supported and encouraged medieval trade among ethnic groups. This caused some cities like Surat to exhibit greater communal amity many decades later, compared to cities like Ahmedabad. The general theme that trade promotes interethnic and interreligious tolerance is of course a more general argument that goes back to Albert Hirschman's *The Passions and the Interests* (1977), and as we learn from Hirschman, to the giant thinkers of the Scottish and French Enlightenment. Early economists understood that trade also reduces conflict, which then facilitates trade, creating a virtuous cycle. A broader policy implication is that places that suffer conflict can be helped in the long run through policies that promote trade. Therefore, good economics can foster good politics.

This argument is relevant to public goods provision more generally, as well. Iyer, Velu, and Weeks (2014) provide evidence for religious competition and cooperation in contemporary India by examining religious and nonreligious service provision. Based on primary survey data on Indian religious organizations collected between 2006 and 2010 spread across seven major states, the study shows that religious organizations are differentiating themselves on the strength of religious beliefs with respect to other organizations, and are also providing higher education and health services in response to religious competition and as economic inequality increases in India. Another vehicle for fostering cooperation is education; one study examines the relationship between religion and education, emphasizing how religious norms can hinder or encourage some religious groups to bolster their human capital compared with other groups in the same regions (Botticini and Eckstein 2005). Another example from India, Chaudhary and Rubin (2011), discuss the relationship between reading, writing, and religion in colonial India. They contend that those Indian districts that experienced a more recent collapse of Muslim political authority also had better religious authorities who established religious schools. These schools were able to attract more Muslim students, but were less able to promote literacy than state secular schools. This may be one of the reasons for the persistence of institutions that account for lower literacy rates among Muslim communities. It could be that some Muslim students choose religious schools as an indication of piety, but again this explanation is not applicable to India, as Muslim children would also have had access to all public goods, whether provided for by the state or by religious authorities. The authors' explanation is important because it does not emphasize an explanation based on the "pure religion effect" of Islam; rather it is a much more nuanced view that argues that literacy could be determined by the interaction of religious authorities, political groups, and educational institutions. In related work, Chaudhary and Rubin (2013) also examine the mechanisms through which a ruler's identity in the Indian Princely States affected public goods provision in the early twentieth century. This theme of the links between religious authorities and political power seems a recurrent theme in the economics of religion literature.

If the research by economists on South Asian religions is limited, then the work on Africa is even more so. One exception that compares different developing countries is a recent paper by Glewwe, Ross, and Wydick (2014), which examines the operation of child sponsorship programs that are a resource transfer from wealthy countries to children in developing countries, conducted through local churches, and which have strong impacts on adult outcomes including schooling, employment, and leadership within the community. This work compares Bolivia, Kenya, India, and Indonesia and examines how these programs develop aspirations among sponsored children. This work is exciting not only because it explores a new territory for religion research, but also because it uses innovative psychological data in children including their drawings and self-portraits and spiritual changes including religious instruction that are correlated with better outcomes in adulthood. Child sponsorship is correlated with educational aspirations in Kenya and the authors' analysis of children's drawings shows that this also exerts an impact on self-esteem, happiness, and hopefulness in Indonesia. The research is important from a policy perspective, as it highlights how aspirations and self-efficacy can be developed in children in developing countries, both through secular as well as religious programs.

Another paper on Africa that also uses an innovative design in the form of language priming from social psychology in an economics experimental design is Lambarraa and Riener (2012). This study examines charitable giving in the form of the *zakat* and the *sadaqah* among Muslims in educational institutions in Morocco, showing how language, the publicity of donations, and the salience of Islamic values is important to amounts of giving. In their experimental treatments where Islamic values were salient, anonymity of donations increased donations as well as the average level of donations, suggesting that while the norms of charitable giving in Islam encourage giving, equally Islam discourages public displays of giving.

There is an important caveat here, though. Most donations for public goods in Islamic societies were traditionally through *waqfs* (Kuran 2004). In fact, until modern times, most public goods were supplied through *waqfs* funded by individuals. None did so anonymously. In fact, with very few exceptions, donors gave their own names to the public good, whether a mosque, school, park, water fountain, and so forth. Donations through *waqfs* were far more important empirically than charity. It is also worth noting that major donations within Islam today, especially religious donations, carry the name of the founder. So for instance, while mosques always have names, small-scale charity might be anonymous. This is perhaps more consistent with some of the work on the United States that suggests that people also give for public recognition (Andreoni 2001). But the whole area of interesting differences between religious giving in a developed-country context from that in an Islamic country context is worth exploring further. There is thus research that is being conducted on the economics of religion in developing regions that draws both on their economic history and on their current development concerns.

7. *Unanswered Questions for Future Research*

"The learned have their superstitions, prominent among them a belief that superstition is evaporating" (Wills 1990, p. 15 as cited in Warner 1993, p. 1046).

In his 1998 review, Iannaccone pointed out that several gaps existed in the economics of religion research agenda—the first gap was that economics research had "sidestepped" the substance of religion and had not given enough thought to using broader conceptions of religion into formal models. The second gap was that religious uncertainty had not been formally analyzed. The third gap was that economists had not said much about belief formation, even though beliefs are central to all religions. And Iannaccone argued that if progress was to be made on these gaps, then economists needed not just better models, but greater emphasis on empirical work that was initiated by the sociologists of religion. If we evaluate the progress on the lacunae that Iannaccone's survey identified, then it seems that as economists of religion, we *have* made progress in coming up with better models and testing them empirically. But on Iannacone's three basic gaps, I think we may still have some way to go.

In evaluating the lessons from research conducted since Iannaccone's paper, this paper argues that religion continues to persist and that it is necessary to survey the research that has been done on the economics of religion over the last couple of decades. It has attempted a selective review of this literature. Although much research is being conducted on the economics of religion, there are a number of unanswered questions for future research that remain. First, what does it really mean to be religious? Is it intrinsic or more socially driven? Second, at a macro level, we have seen a great deal of economic development across a range of countries, and yet religion seems both very pervasive and persistent. Why is religion still so pervasive and persistent even as countries are becoming richer? If it is the case that richer countries are becoming more secular, but the world is becoming more religious, then more work on the secularization hypothesis, and how it interacts with factors like income inequality, is needed. Third, especially in non-Christian and non-Western societies, such as for example in India or China, what might make the nature of religion there similar to or different from the United States or northwestern Europe? We need to further our understanding of the economics of Islam, Hinduism, Buddhism, Jainism, Sikhism, and tribal religions, especially in Africa, the Middle East, and South Asia. In this context, there are four areas of research that I argue are still relatively underresearched by economists of religion: (1) religion and demography; (2) religion, political processes, and their interactions with economic processes; (3) the marketing, management, and communication aspects of religion; and (4) how the economics of religion can contribute to broader debates about science and religion.

Religion and demography is an area where identification issues arise, and which is comparatively less explored by economists of religion. Neuman and Ziderman (1986), Neuman (2007), Lehrer and Chiswick (1993), Adsera (2006), Iyer (2002), Lehrer (2009), Trinitapoli and Weinreb (2012), and Berman, Iannaccone, and Ragusa (2014) are some studies that have explored the role of religion in demography in a variety of regions including Israel, Spain, India, Africa, Europe, and the United States. Iyer (2002) examines religious differences in the age at marriage, contraceptive choices, and fertility rates among Hindu and Muslim women in South India, showing that the effect of religion, though important, is still outweighed by the socioeconomic characteristics of religious groups. Trinitapoli and Weinreb (2012) examine whether religion provided support and education, or whether it contributed to the spread of AIDS, based on fieldwork in Malawi and drawing on surveys on other countries in sub-Saharan Africa. They find that individual religiosity is a key predictor of HIV status, and religion is used to provide interpretative depth to the disease, as well as how religious organizations influence prevention, and in the process attract new members. This work also highlights the role of religious networks in handling the disease. Norris and Inglehart (2004) show that if we examine demographic indicators by type of society, the most religious societies have the highest fertility rates, the lowest life expectancy, higher infant mortality rates, and lower rates of male and female survival than more secular or moderate societies (Norris and Inglehart 2004, p. 232). Of course, it is to be acknowledged that there is a very large demographic literature on this topic, but it is still striking that economists have focused rather less on this particular issue than might have been expected. Identification concerns probably explain much of this, but since over 84 percent of the world's population currently report a religious affiliation (Pew Forum on Religion and Public Life 2012), more research on religion and demography clearly would be welcome. Specifically, it would be important to evaluate the balance between a "pure religion effect" on fertility, and other factors such as the socioeconomic characteristics of different religious groups, their minority group status and its effects on fertility, mortality, and migration. The demographic composition of populations, especially in developing countries and with their consequences of population aging, will still need to be understood more fully. Looking more at the links between religion and demography echoes what was suggested first by Thomas Malthus. Malthus's theory of population was put forward as a theory of mind, and so the theology that underlies it contained an optimism that offset the often pessimistic conclusions of the demographic theory.[31] As Pullen (1981) argues, Malthus's

[31] Malthusian theory in essence is that while population grows at a geometric rate, food supply grows at an arithmetic rate. It leads as Malthus discussed to the "very striking consequence" that per capita incomes fall to subsistence. Hence, the only way to avoid absolute poverty is by indulging in "moral restraint"—the Malthusian preventative checks such as delayed marriage and control of smaller family size without which the positive checks of war, starvation, and disease would affect the population adversely. Malthus's theory is often thought of as gloomy, and he himself described his theory thus: "The view that he has given of human life has a melancholy hue, but he feels conscious that he has drawn these dark tints from a conviction that they are really in the picture, and not from a jaundiced eye or an inherent spleen of disposition. The theory of mind which he has sketched accounts for the existence of most of the evils of life!" (Malthus 1817).

theory shows how population pressure helps man develop the productive potential of the land, which in turn stimulates the mind. He points out that in the original first edition of Malthus's *Essay* there were two chapters on theology that were removed from subsequent editions, but the framework underlying the Malthusian theory becomes more comprehensible if viewed in the context of these two chapters. As Pullen writes, "It would probably not be an exaggeration to say that Malthus intended the *Essay* to be as much a theological treatise as a treatise in economics, demography or sociology." (Pullen 1981, p. 52).

Apart from demography, the links between religion, human capital, and immigration need to be better explored (Chiswick 2005; Carvalho 2013). These links are crucial both for the historical literature, specifically in the context of testing the Weber hypothesis, and in the context of contemporary countries. For example, exploring the interactions between labor-market decisions, education, and religion for men and women in the United States and the links between religion, marriage patterns, demography, and transmission of ethnic and religious traits, is important (Chiswick 2014; Lehrer 2009; Bisin and Verdier 2000). The studies on religion and human capital also examine historical populations; for example, some explore Jewish occupational selection using historical data from the eighth and ninth centuries (Botticini and Eckstein 2011). Botticini and Eckstein (2011) show that rabbinical Judaism, which emphasized the reading of the Torah and educating children, influenced the subsequent economic success of the Jews many centuries later. This is because it allowed the selection of Jews into professional occupations that were skilled, with high returns (Chiswick 2006). But more research on these areas, both for developed and developing countries, is needed.

The second area that warrants further work is the whole field of religion, political processes, and their interaction with economic processes, including political competition and, relatedly, conflict. Thoughtful studies from political science reveal how political leaders encourage religious freedom when such laws affect their ability to stay in power or increase economic well-being (Gill 1998; 2007). Using a regression discontinuity design on Turkish municipalities over a six-year period, Meyersson (2014) shows that when conservative Islamic mayors are elected in Turkey, women's secular high school educational attainment actually goes up, while the effects for men are much smaller. The mechanism includes Islamist mayors building more strictly conservative dormitories for conservative women that make it easier for women to attend college because their families do not object, although it should also be noted that the mechanisms are not as well understood. This effect for women is also persistent, influencing other decisions such as adolescent marriage. Economic studies show how political competition can lead to policies that work against some minorities, which can influence hatred against them (Glaeser 2005). Some studies like Chaney (2013) do discuss the relationship between political power and religious authority, but more work is needed here, especially for countries in the Middle East and elsewhere, where these issues are most relevant. As datasets on conflict are being collected with increasing care, this will allow studies of religion, politics, and conflict. One issue for these studies is religion as an explanatory variable in a regression—our work will need to be more nuanced at appreciating the identification issues and some reflection on causality will be important, but this is a comparatively underexplored area of research.

Third, applying theories from management, marketing, and the media would be a fruitful way to think about religion, as well. Some work is making a start toward discussing these issues (Miller 2002; Iyer, Velu, and Mumit 2014; Iannaccone and Bose 2011; Gentzkow and Shapiro 2004; Tracey 2012), but it is nascent days for this field. As religious organizations are themselves becoming more professional in the way they are presenting and marketing themselves to populations globally, there seems to be a very large gap in studies that blend theories from the marketing and management literature, to examine their behavior and operations more closely. This research will have profound implications for how open or regulated religious markets are likely to be in different parts of the world.

In the area of religion and management, one important study is that by Miller (2002). Miller explores the insights that strategic management theory brings to understanding religious organizations, especially how organizations may achieve competitive advantage. The strategic management perspective is important, as it highlights issues such as reputation, undertaking change in very traditional organizations, and the role of networks. As Miller points out, nowadays the boundaries between religion and other industries which scholars are interested in can often become blurred. This is because religious organizations can become more secularized, and secular organizations can in turn become "spiritualized" (Miller 2002, p. 437). Religious organizations will innovate in the face of pressures that they might face, but how they do so determines how successful their strategy is. Miller argues that the marketing of religion often involves aspects such as credible commitments, social legitimacy, market segmentation, and price discrimination, but that religious organizations also have the ability to shape the very structure of the industry through political strategies and alliances. These aspects of religious organizations need much further research.

A related issue here is the role of the media, perception, and the part they play in contemporary religion, witnessed most clearly in the Arab Spring from 2010 to 2013. Gentzkow and Shapiro (2004) wrote an early paper on the importance of favorability ratings and the manner in which perceptions were not in accordance with reality, using survey data from Gallup Polls of over 10,000 respondents in a range of Muslim countries. They investigated whether respondents who were better informed by the news media knew about world events more, but overall, they did not find any consistent effect of media and education on attitudes, although particular news media and education had different bearing on perceptions and attitudes. While this study was not conclusive, it does highlight the more general importance of investigating how the media can influence religion through its effects on perceptions and attitudes. This is also related to questions concerning religion and identity. More generally research on religion and identity, especially how one conceives of oneself and how one is perceived by others, is an important avenue for future research.

The final area that the economics of religion still needs to address more fully, which this article has not covered in any depth, but which strikes me as being important, is to understand how economics can contribute to wider debates about the gulf between science and religion. The two are popularly regarded as not compatible mainly because of perceptions that religious beliefs become less important when scientific progress happens. Religion is often viewed as unscientific because it is popularly believed that when scientific discoveries happen, they are frequently opposed to religious practices or make them seem less believable. But Albert Einstein's (1950) words are prescient: "Science without religion is lame; religion without science is blind."[32] Moreover, empirically Finke and Stark (1992) show that

[32] Albert Einstein, *Out of My Later Years*, chapter 8, part 1, p. 26 (1950).

church membership rates increased in the United States over the same two centuries that witnessed vast developments in science and technology, while education and religion are also very much correlated with each other. In evaluating science and religion, Stark, Iannaccone, and Finke write,

> "For most of its history, the *scientific* study of religion was nothing of the sort. Despite the immense antagonism expressed towards 'faith,' the field itself rested almost entirely on faith. To be sure, this faith consisted of secular doctrines, but it remained faith insofar as scholars clung to the doctrine of secularization, religious irrationality, and the incompatibility of science and religion despite strong evidence to the contrary."
>
> *(Stark, Iannaccone, and Finke 1996, p. 436).*

The economic approach to religion is useful because it brings economic ideas about maximization, preferences, and notions of equilibrium firmly into the picture. Stark, Iannaccone, and Finke suggest that "the economic framework provides the best context in which to incorporate these constraints, model religious behavior, and measure religion's effects" (Stark, Iannaccone, and Finke 1996, p. 437).

My view is that the economics of religion is helpful to broader debates about science and religion (Wilson 2002). This is because economics contributes to the study of religion, providing perspectives that are unavailable through other approaches. For example, science has many open questions about how the natural world works. While the scientific method is leading us to more interesting and unanswered questions about how the world works, it is also increasing uncertainty and ambiguity about it. So it is necessary to have some kind of belief structure to continue to investigate and to understand the world (Smith 2008). The scientific method itself is axiomatic and uses theory to construct hypotheses and to test them empirically. But as prominent philosophers have pointed out, where are the axioms themselves coming from? That is more subjective. And the social sciences and the study of social structures like religion might help us understand better the subjectivity that underlies or drives the creation of the axioms and the axiomatic approach (Evans and Evans 2008).[33] Moreover, the study of religion suggests a common desire to help understand the physical and social world better. Hence, it is likely that the study of religion will influence the scientific method and the scientific method in turn will influence the study of religion. Although current research in the economics of religion has been very scientific in its approach, it has still not dealt with questions of beliefs, as much as the membership of organized religious institutions. I think this still remains one of the important unanswered questions in the economics of religion.

The economics of religion as a field has grown in recent decades by leaps and bounds. This review has attempted to survey the state of research in this field. It has highlighted secularization, pluralism, and economic growth; club goods, differentiated products, and networks; issues with identification, secular competition, and charitable giving; conflict and cooperation in developing societies; and finally it elucidates unanswered questions for future research in the economics of religion. If there is one criticism that can be leveled at the economics of religion literature more generally it is that while much of this literature takes ideas from other fields within economics and then applies them to the study of religion, there are relatively fewer ideas from this literature

[33] As Iannaccone argued persuasively, "Although beliefs lie at the core of every religion, economists have yet to say much about the formation of beliefs, religious or otherwise, nor have they given much attention to the process by which religions seek to shape people's beliefs and values" (Iannaccone 1998, p. 1491).

that cross the gap the other way, i.e., where an idea specific to the economics of religion crosses over to contribute to economics more generally. To me, this suggests that while much research is being conducted in this lively and policy-relevant field, there is much more work yet to be done.

More importantly, there is much more work that *must* be done, because if we examine the entire history of mankind, more people have died on account of religion than on account of the stock market.[34] This simple fact alone must warrant economists' continued interest in studying the social and economic consequences of religion. And whether we like it or not, the fact remains that religion has been a tremendous force throughout history, in all corners of the globe, and continues to exercise influence. Over the centuries, given the resources that religions have controlled and their power over individuals and their minds, we must expect that there would be major economic consequences. Of course, the methods we use to examine religion will remain scientific, rigorous, and relevant, yet as economists we must also think more about how such research can be converted into sound intuition, practical economic ideas, or social policy that has relevance for the current state of the world's religions. Going forward, economics and religion may need to be much closer than some might believe.

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[34] I am grateful to my Cambridge colleague William Brown for pointing this out to me.

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