

Religious Conversion in 40 Countries*

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Abstract

Questions about current and prior religious adherence from the International Social Survey Program and the World Values Survey allow us to calculate country-level religious-conversion rates for 40 countries. These conversion rates apply to religious adherence classified into eight major types. In a theoretical model based on rational individual choice, the frequency of religious conversion depends on factors that influence the cost of switching and the cost of having the “wrong” religion. Empirical findings for a panel of countries accord with several hypotheses: religious-conversion rates are positively related to religious pluralism, gauged by adherence shares; negatively related to government restrictions on religious conversion; positively related to levels of education; and negatively related to a history of Communism. Conversion rates are not much related to per capita GDP, the presence of state religion, and the extent of religiosity. Effects from the type of religious adherence are minor, except for a negative effect from Muslim adherence.

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Countries differ greatly in their adherence rates to the major world religions. Some countries, such as the United States, Australia, South Korea, and many sub-Saharan African countries, currently have a great diversity of religious affiliation. (See Barrett, Kurian, and Johnson [2001] for religious-adherence data.) Others, such as Spain, Italy, the Scandinavian countries, and many majority Muslim countries have a heavy concentration within a single type. These concentrations of religious affiliation are particularly striking if one ignores persons with no religion and considers only major categories of religion (such as counting Muslim as one type). Aside from the within-country patterns, the data show wide differences internationally in the composition of religious adherence. In the long run, the frequency distributions of adherence shares within and across countries reflect religious-conversion rates, along with cross-religion patterns of fertility, mortality, and migration. This study focuses on the conversion part of this relationship.

Lofland and Skonovd (1981) developed a descriptive typology of religious conversion that identified “motifs” over several decades in contemporary U.S. society. Their work demonstrated that conversion takes place within an historical-cultural context and that geographical location was often a significant factor. More generally, they found that conversion as a cultural phenomenon varied over time and across societies and religions. Gartrell and Shannon (1985, p. 32) extended the conceptual framework by observing that “conversion hinges on actors’ perceptions of the expected rewards of converting relative to not converting.” Thus, they applied a rational-choice approach to the descriptive setting of Lofland and Skonovd (1981).

This study follows the spirit of Gartrell and Shannon's (1985) approach by analyzing religious conversion as an individual's decision about whether and when to switch. Conversion restrictions and other policies of organized religions and governments still apply in some places, and these constraints affect personal choices. However, the main influences on conversion decisions are the benefits and costs as perceived by individuals. Therefore, we use a rational-choice framework at the individual level to make predictions about the determinants of religious-conversion rates at the country level.

Empirical investigations of the determinants of religious conversion have typically focused on persons within a single country, most often the United States. Many of these studies analyze switching from one Christian religion to another. In one of the first attempts at survey research on conversion, Starbuck (1897) compared revivalist with non-revivalist conversions among youths in the late 1800s. Starbuck sought to demonstrate that conversion corresponds to stages of human development, especially puberty and cognitive development. Greeley and Hout (1988) took up this approach when discussing youth apostasy. Smith, Faris, Denton, and Regnerus (2003) and Smith and Denton (2005) expanded this line of investigation by using three waves of the National Study of Youth and Religion to assess several variables that influence conversion, including age, gender, race, and geographical region. Other research focused on the interplay between conversion and family relationships (Lehrer [1998, 2004] and Sherkat [2004]).

Beginning in the 1950s, the growth of new religious movements engendered a proliferation of studies on "deviant" conversions to fringe religious groups. A debate

soon erupted over scholarly obsession with cults and new religious movements.¹

According to one side of the debate, conversion was a form of “brainwashing”—a radical psychological transformation of an individual (Clark [1979]). The other side used a rational-choice model to argue that cult conversions could not be dismissed as deviant psychological behavior (Glock and Stark [1965], Lofland [1966], and Stark and Bainbridge [1979]). One argument was that cultic conversion or “social drift” could be explained as behavioral change due to disruption or weakening of social networks (Gartrell and Shannon [1985]).

The social-networking approach was applied to the decline of traditional monotheistic religions, such as Roman Catholicism (Greeley [1989]) and mainline Protestantism (Kelley [1972] and Roof and Hadaway [1979]). This research shifted the focus to conversion out of a religion through apostasy, “switching,” or secularization (Sandomirsky and Wilson [1990]). Rational-choice scholars attempted to explain the decline of traditional monotheistic religions by emphasizing shifts on the supply side of the religion market. In this framework, competing religions were gauged by strictness, social status, and the extent of social networking. However, the demand side of the religion market, involving changes in individual preferences, was incorporated into some of these analyses (Greeley and Hout [1988], Sherkat and Wilson [1995], Sherkat [2001], and Loveland [2003]).² These studies are particularly useful for assessing effects on the propensity to convert from variables such as age, gender, and race.

¹ For summaries of the debate and surveys of the literature on new religious movements, see Robbins (1988), Bromley and Hadden (1993), and Jenkins (2000).

² The literature on religious conversion is vast and multi-disciplinary, including anthropology, economics, psychology, psychiatry, religious studies, sociology, and theology. Examples of country-level studies are Breen and Hayes (1996) on the United Kingdom, Bibby and Brinkerhoff (1973, 1983, 1994) on Canada, Need and de Graaf (1996) on the Netherlands, and Greeley (1994) on Russia.

Religious conversion is often related to intermarriage, which has increased in the post-World War II United States (Greeley [1970, 1989], Mueller and Lane [1972], Hoge and Ferry [1981], and Sherkat [2004]). One finding (Nelsen [1990, pp. 124-25, 131]) is that the mother's religious preference is usually stronger than the father's in determining a child's religious upbringing. In addition, intermarriage is often associated with membership loss by moderate and liberal denominations, because the conversions tend to favor stricter religions (Stark and Finke [2000, p. 125]). Moreover, even when neither spouse converts, the children tend to be raised in the more exclusivist or stricter religion. This process features an indirect form of conversion across generations that may not show up in conversion data—when neither spouse converts, and the children remain in the religion in which they were raised.

Since most existing empirical studies apply to a single country over a relatively short time period, the results cannot be used to assess the effects of country-wide policies and characteristics, such as regulation of the religion market, political regimes such as Communism, and the extent of religious pluralism at the country level.³ The panel of 40 countries that we use allows us to fill this void by examining the effects on religious-conversion rates from these kinds of country-level policies and characteristics.

Section I constructs a theoretical model based on individual choice to consider determinants of religious-conversion rates at the country level. Section II discusses our procedures for using international survey data from the International Social Survey

³The only cross-country analysis of religious conversion that we know of is Duke, Johnson, and Duke (1993). This study uses time series on religious adherence from Barrett (1982) to construct estimates of country-level religious-conversion rates. The problem is that changes over time in the stock of adherents to various religions within a country reflect demographic factors (births, deaths, and international migration by type of religion), as well as *net* changes due to religious conversion. It is not possible to use the Barrett data on religious adherence to get reasonable estimates of gross flows due to religious conversion.

Program (ISSP 1991 and 1998) and the World Values Survey (WVS 2001) to estimate country averages of religious-conversion rates. Section III describes the setup of our empirical analysis. Section IV presents empirical findings on country-level religious conversion rates. Section V discusses specification issues and robustness. Section VI has summary observations.

I. Theoretical Framework

This section works out a simple theoretical model to guide the empirical analysis. Our theory focuses on individual choices on whether to switch from one available religion to another. Then we use this individual analysis to generate hypotheses about the determinants of religious conversion at the country level. That is, our macro-level framework, applied at the country level, is an aggregation of our micro-level reasoning.

Suppose that m types of religions exist in a country. If the religions can be ordered by a single characteristic, such as strictness, we can array the types i along a line at positions z_1, \dots, z_m , where one of these can represent no religion. Differences between religions are then represented by horizontal distances. Alternatively, the types could be arranged around a circle. In this case, the arc-distances measure differences between religions, but there is no sense in which any particular variety exhibits the lowest or highest amount of something like strictness or high tension in comparison to norms held by those outside the religion. (We could also generalize to multiple religion characteristics.)

Our theoretical model differs in some respects from the Stark and Finke (2000, 2002) “niche” model of religion. In their setting, an ideal pluralistic religion market

consists of niches that cover the entire range of individuals' potential religious preferences. In particular, each niche consists of different norms and values. Because their model focuses on the supply side of religion, Stark and Finke do not deal directly with shifting demand, that is, changes in individual preferences over types of religions. Our model focuses on shifting individual demands but allows also for changes on the supply side.

Assume that individual j is "born" (corresponding, perhaps, to the end of dependent childhood at age 16) with religion adherence of type x_j . This type corresponds to one of the z_i . Let $(x_j)^*$ represent person j 's ideal religion at a point in time. The location of this ideal variety depends on the benefits that person j perceives from belonging to alternative religions—these benefits depend on the religion's theology and strictness but can also involve the "quality" of religious services, the social ties offered by a congregation, and so on. Because religion preferences are shaped by family and neighborhood upbringing during childhood, x_j will typically be close to person j 's perceived ideal, $(x_j)^*$, at the time of "birth."⁴ However, religion preferences, $(x_j)^*$, can change over time. We assume that they evolve randomly, following a process with positive variance but no systematic trend. The variance of the random process is important for determining the frequency of religious conversion, but we assume in applications of the model that this variance is the same across time and space. Given this variance, the optimally determined frequency of religion switching will depend on two factors: the cost of switching and the cost of having x_j deviate from $(x_j)^*$. A higher

⁴ Stark and Finke (2000, p. 119) discuss the literature on children's tendencies to adopt the religious affiliations of their parents.

switching cost results in a lower frequency of conversion, whereas a larger cost of deviation results in a higher frequency of conversion.

In the simplest setting, the cost of changing religion for person j is the lump-sum amount γ_j , independently of which religion pairs enter into the change. More realistically, this cost would depend on which pair of religions applies. For example, in terms of belief systems, switches to neighboring religions will typically be less costly than movements to faraway religions—a Methodist who is thinking about converting would likely find it easier to shift to an Evangelical faith or even Judaism or Islam, rather than becoming a Buddhist or Hindu (see Stark and Finke [2000, pp. 123-24]). Moreover, some religions have higher or lower costs for anyone to enter or leave. In any case, the cost γ_j depends on individual and country-wide variables. At the individual level, one determinant of γ_j is education. More educated people are likely to find it easier to change religions because they are better at learning and adjusting to new ways of thinking. The better educated are likely also to have more information about alternative religions and more contact with people of other religions.⁵ At the country level, the switching cost depends on government regulations; for example, legal or religious restrictions on conversion raise γ_j for all persons j within the country.

The cost of allowing x_j to deviate from $(x_j)^*$ depends on the location of other available religions. For example, if x_j is a given distance from $(x_j)^*$, the benefit from switching will be greater the closer an alternative religion, one of the z_i , to $(x_j)^*$. The

⁵Our results on education turn out to support Lehrer (1998, pp. 256-57; 2004), who found that higher levels of educational attainment for exclusivist Protestants raised the probability of marriage outside their faith. Sherkat's findings (2004, p. 618) accord with Lehrer's in that higher levels of educational attainment correlate with higher rates of intermarriage, particularly for women. Sherkat (p. 620) also reports that higher levels of educational attainment for women are correlated with distance of intermarriage, that is, better educated women tend to look geographically farther away for a satisfactory mate.

suitability of alternative religions to the preferences of the typical individual tends to be greater the higher the density of the available religions in a country. The idea, as in Gruber (2005), is that the greater the concentration of the nearby population in a particular religion, the easier it is for potential members to participate in that religion (because the local area can support the appropriate churches, schools, neighborhood groups, etc.). Thus, if a Methodist would really like to become a Muslim, but one's locality has only Methodists and Catholics (and, hence, only Methodist and Catholic houses of worship), the benefit from switching is smaller than it would be if the Muslim faith had a local presence.⁶ The general point is that, the more pluralistic a country's religion market, the higher the typical benefit from making a switch—or, equivalently, the higher the cost of allowing one's current religion, x_j , to deviate from $(x_j)^*$.

The available religions in a country need not be fixed over time. For example, the rise of Evangelicalism in many places made it less costly for persons to belong to that faith. In the model, we could represent this change by introducing at some point in time a shift to a more pluralistic religion market. This kind of change would induce a large amount of religious conversion as a temporary response to the market innovation. Formally, we would predict that religious conversion would depend not only on the current level of religious pluralism but also on past changes in the extent of this pluralism.

The cost of deviation from one's ideal religion depends on how important formal religion is overall. That is, for given locations of available religions, the cost of a deviation of x_j from $(x_j)^*$ will be greater the more important formal religion is to people.

⁶Missionaries of various denominations throughout the centuries understood this point and, therefore, quickly built churches, hospitals or clinics, monasteries, convents, and schools. This infrastructure provided facilities that were complementary with adherence to the religion and, thereby, attracted converts.

For example, our sample of 40 countries includes 14 that were formerly Communist (but none that were Communist at the time of the surveys). Communist governments sought to diminish the overall value attached to religious participation and beliefs (see Froese and Pfaff [2001]). To the extent that this political influence remains effective after the demise of Communism, the value of religion would be smaller and the cost of deviations of x_j from $(x_j)^*$ would be lower.

In contrast, education has been argued to raise the benefits of religion through its social-networking role (Glaeser and Sacerdote [2008]). In a simple application of this argument, more education would multiply the benefit received from the social networks offered by all religions. This multiplication means that more education raises the cost (that is, the foregone benefit) of a given deviation of x_j from $(x_j)^*$.

The secularization hypothesis argues that higher per capita income, which we gauge at the country level by real per capita GDP, lowers the demand for religion, measured by participation in formal religious services and beliefs. (See McCleary and Barro [2006] for an overview and cross-country empirical evidence.) From this perspective, higher per capita income would reduce the cost of a given deviation of x_j from $(x_j)^*$. However, although the evidence suggests that higher per capita income lowers religious participation and beliefs, an increase in per capita income need not reduce the real expenditure per person on religion, and this spending variable is the relevant measure of the value placed on formal religion. Therefore, the predicted impact of per capita GDP on the cost of a given deviation of x_j from $(x_j)^*$ is ambiguous.

Our theoretical framework for religious change is analogous to models of inventory accumulation (called [S,s] models), as applied previously in many contexts.

These models feature two forms of costs: fixed (and possibly also variable) costs for adjusting the level of inventories and costs from allowing the inventory level to deviate at any point in time from its ideal value. In these contexts, optimal behavior entails letting the stock of inventory drift for awhile (reflecting the level of sales) until the stock deviates from the ideal level by enough—by some critical gap—to warrant a discrete adjustment. By analogy, an individual who optimizes over choices of religious affiliation would allow $(x_j)^*$ to evolve to some extent away from x_j . However, a sufficient deviation triggers the payment of the adjustment cost, γ_j , and the choice of a new religion, x_j , that is closer than the former one to the current $(x_j)^*$. When we apply this micro-level reasoning to average behavior in a population, we get that the frequency of changes in religious affiliation will be greater the lower the typical cost of adjustment, γ_j , and the higher the typical cost of deviations of x_j from $(x_j)^*$.

In our empirical analysis, we gauge the frequency of religious change at the country level by the fraction of the adhering population that undergoes a religious conversion by age 30. Given the previous discussion, the model predicts that this religious-conversion rate will be higher if:⁷

- a country has a higher level of religious pluralism,
- a country shifted recently toward greater religious pluralism,
- a country lacks religious and legal restrictions on conversion,

⁷ An increase in the variance of the religious-preference shock raises the frequency of conversion for a given setting of the critical gap (the deviation between actual and ideal religion type that generates a switch). However, a higher variance also motivates people to increase the size of the critical gap. This last response reduces the frequency of conversion. Typically, this second effect will only partially offset the first effect; that is, a higher variance of preferences results, on net, in a higher frequency of conversion. For a derivation in an analogous context (the frequency of price change when these changes entail lump-sum adjustment costs), see Barro (1972, equation [22]). This finding would add additional hypotheses to our list if we could identify variables that influence the variance of the religious-preference shock. However, we have not made progress in this direction.

- a country lacks a history of Communism,
- a country has higher average educational attainment.

Higher per capita GDP has an ambiguous effect on the frequency of religious conversion.⁸

We can augment the basic model to allow for intermarriage. Marriage to a partner of a different religion tends to generate a jump in ideal type of religion, $(x_j)^*$, at the time of marriage. That is, a spouse's strong incentive to match the partner's religion generates a lot of religious conversion around the time of intermarriage. A deeper analysis would treat intermarriage as endogenous, along the lines of Lehrer (1998), taking account of the costs of having different religions and of making shifts in religious adherence. For present purposes, an important point is that the incorporation of intermarriage leaves intact the predictions already derived for the determinants of the frequency of religious conversion.

II. Survey Measures of Religious Conversion

The present analysis assesses determinants of religious conversion across a broad sample of countries. We use the waves on religion from the International Social Survey Program (ISSP) for 1991 and 1998 and the World Values Survey (WVS) around 2001 to measure and analyze religious-conversion rates in 40 countries.

⁸ We can apply the model to Olson's (2008) hypothesis that smaller religious groups tend to have higher turnover rates. That is, the smaller the size of religion i , the larger the predicted number of conversions out or in, when expressed as a ratio to the size of religion i . To get this result in our model, assume that a fraction λ of the members of each religious group is considering conversion, where λ is determined as in our analysis. Suppose that, among those considering conversion, the probability of each destination religion is proportional to the size of that religion. (To get Olson's conclusion, it is crucial that we include the incumbent religion, i , as a possible destination—conversion does not actually occur when this "destination" is chosen.) In this model, the turnover rate for religion i —the expected number who move out or in expressed as a ratio to the size of religion i —can be determined to be $\lambda \cdot (1 - n_i/n)$, where n_i/n is the fraction of the population belonging to religion i . Hence, a smaller n_i/n implies a higher turnover rate.

Iannaccone (2003) used the ISSP data to assess long-term trends in church attendance for 32 countries. He constructed these trends from retrospective questions on attendance rates for respondents and their parents when the respondents were aged 11 or 12. Because respondents were surveyed in the 1990s at various ages 16 and over, the retrospective questions provided information on church attendance for varying dates in the past.

Inspired by the Iannaccone approach, we use different retrospective questions from ISSP 1991 and 1998 and WVS 2001 to calculate religious-conversion rates. We use questions about a person's current and former religious adherence. The ISSP asks about religious adherence currently and when being raised, so that differences imply that at least one conversion occurred between childhood and the current age. The WVS asks whether a person ever had a different form of religious adherence, so that differences imply that at least one conversion took place before the current age. We cannot detect multiple conversions in these data.⁹

In addition to calculating changes of religion, we computed flows from some religion to none and no religion to some. However, these data pertain to overall religiousness and, therefore, to measures of religiosity of the forms considered in McCleary and Barro (2006) and other cross-country studies. Our present empirical investigation relates not to changes in overall religiosity but rather to shifts of affiliation among persons professing some kind of religious adherence.

⁹ For the United States, the General Social Survey (GSS) religion module for 1988 asked questions about multiple religious conversions. Among persons with at least one change (by the time of the survey), 67% indicated one change, 25% two, and 8% three or more. These changes include movements into or out of no religion, as well as shifts within a major group, such as Protestantism.

We focus on movements across major religious groups, rather than less drastic switches of denomination within a major category, such as between forms of Protestantism (Greeley and Hout [1988], Bibby and Brinkerhoff [1973, 1983, 1994]). To get a consistent sample from our three data sources (the two waves of the ISSP and the one wave of the WVS), we had to aggregate the underlying types of religion to an eight-way classification: Catholic, Protestant, Muslim, Hindu, Eastern Religion (including Buddhist), Jewish, Orthodox, and Other Religion.

The main difficulty in implementing the eight-way breakdown of religions consistently involves the Other Religion category. Depending on the level of detail used in each survey, “Other Religion” includes different sets of residual groups. A particular concern is that, in some of the underlying data, Other Religion includes independent Christian churches, which are likely to be largely evangelical, whereas in other data, most independent Christian churches are subsumed in the Protestant category. Since many religious changes in recent years involve movements into independent Christian churches (from Protestant as well as other religions), this distinction is important for obtaining consistent estimates of conversion rates across data sets. We address these concerns by constructing alternative measures of conversion rates based on different groupings of the underlying religions. We also consider a seven-way breakdown that excludes the Other Religion category entirely in the computation of conversions. We find that our main results on the determinants of religious-conversion rates are robust to these alternative classifications.

The ISSP and WVS surveys indicate the current age of the respondent, among persons aged 16 and over. Previous research and data provide information on when in a

life cycle religious conversion typically occurs. Iannaccone (1990, pp. 301-302) finds that, among converts into Catholicism in the United States, 85% converted before age 30.¹⁰ The General Social Survey (GSS) religion module for 1988 indicates that, among persons with at least one change of religion, the breakdown of ages for a person's first change was 76% before age 30, 15% between 30 and 39, and 9% at 40 or over.¹¹ Need and de Graaf (1996, p. 93) find for the Netherlands that most people who leave the church act before age 30. However, this evidence applies to apostasy, not to conversion between religions.

The concentration of religious conversions at ages less than 30 is consistent with an important role for intermarriage in the conversion process, as emphasized by Lehrer (1998) and Sherkat (2004). According to the GSS 1988 religion module for the United States, the reasons given for a person's first change of religion break down into 37% mentioning marriage or family, 25% indicating friends or location, 18% citing issues of theology, and 19% giving other reasons. Thus, intermarriage (a part of the 37% group) is likely to be an important but not overriding element in religious conversion. The significant role for friends and location (the 25% group) is also consistent with finding a concentration of religious conversions at relatively young ages. That is, young people may convert along with switching jobs or changing social networks, both of which may associate with moving to a new location.

¹⁰One difficulty is that the surveys include persons of various ages—converts who were young when surveyed could not possibly have converted when old. In addition, the conversion numbers include shifts from no religion.

¹¹These data have the same issue of age sampling as that described in n. 10. Also, these GSS transitions include movements into or out of no religion, as well as switches within a major group, such as Protestantism.

To accord with the observed patterns by age, we focus our empirical analysis on religious-conversion rates applicable to persons aged 30 and over at the time of each survey. Thus, we concentrate on estimates of completed lifetime conversion rates; that is, rates that apply over the typical person's lifetime. However, our results are not very different if we look instead at the broader group of persons aged 16 and over in the surveys.

The total number of persons, T , surveyed in a given wave break down into those who, at an earlier time, adhered to various religions, R_1, R_2, \dots , and those expressing no religious adherence, N . For illustrative purposes, suppose that there are just two religions, so that

$$(1) \quad T = R_1 + R_2 + N.$$

In comparing with current (survey-date) adherence, denoted by asterisks, nine transitions are possible: $R_1 \rightarrow R_1^*$, $R_1 \rightarrow R_2^*$, $R_1 \rightarrow N^*$, $R_2 \rightarrow R_2^*$, $R_2 \rightarrow R_1^*$, $R_2 \rightarrow N^*$, $N \rightarrow N^*$, $N \rightarrow R_1^*$, and $N \rightarrow R_2^*$. We view religious conversion as comprising $R_1 \rightarrow R_2^*$ and $R_2 \rightarrow R_1^*$. We look at the total of these two changes and do not distinguish between them. The tables that we construct provide information on apostasy, $R_1 \rightarrow N^*$ and $R_2 \rightarrow N^*$, and religious rebirth, $N \rightarrow R_1^*$ and $N \rightarrow R_2^*$, but we do not study these transitions in our statistical analysis.

Let ΔR be the sum of the two forms of religious conversion, $R_1 \rightarrow R_2^*$ and $R_2 \rightarrow R_1^*$. Then the religious-conversion rate is the ratio of ΔR to the total number of persons who began with some religious adherence, $R_1 + R_2$:

$$(2) \quad \text{religious-conversion rate} = \Delta R / (R_1 + R_2).$$

Our analysis uses equation (2) to measure religious-conversion rates. However, we consider the eight categories of religion mentioned before, rather than two.

Tables 1 and 2 describe the sample. The statistics pertain to respondents aged 30 and over for the countries in which the questions were asked that allow computation of religious-conversion rates. Table 1 has the breakdown of current religious adherence for the three survey waves into the eight types of religion and no religion. The ISSP samples are dominated by Christians—Catholic, Protestant, and Orthodox—but the 1998 survey has substantial Jewish representation. The WVS sample has relatively more Orthodox but still has little representation among Muslim, Hindu, and Eastern Religion. The Other Religion category is around 3% of the adhering population for all three surveys. The no-religion percentages are high, ranging from 21% for ISSP 1998 to 30% for WVS 2001.

Table 2 shows matrices of religious transitions for respondents aged 30 and over for the aggregate of countries included in each survey. Each row corresponds to a particular former religion, as shown in the left-most column. The next nine columns correspond to eight current religions or to no current religion. As an example, for ISSP 1998, among the 13,620 persons who had Catholic as their former religion (while being raised), 11,663 were still Catholic at the time of the survey, 264 were Protestant, 2 Muslim, 1 Hindu, 9 Eastern Religion (including Buddhist), 10 Jewish, 2 Orthodox, 143 Other Religion, and 1526 no religious adherence.¹²

Our cross-country analysis focuses on the country-wide religious-conversion rates shown by country and survey wave for persons aged 30 and over in columns 1-3 of Table 3. The conversion rates correspond to the structure of religions indicated by the

¹²The wording of the WVS questions makes it difficult to fill-in all of the cells in the matrix in Table 2. The notes to the table describe our procedures for estimating the numbers that cannot be computed directly from the WVS surveys.

matrices in Table 2. The correlations of the logs of religious-conversion rates among countries sampled more than once are 0.81 between ISSP 1991 and ISSP 1998 (12 countries), 0.63 between ISSP 1998 and WVS 2001 (12 countries), and 0.96 between ISSP 1991 and WVS 2001 (5 countries). For the 12 countries in ISSP 1998 and WVS 2001, the average conversion rates are 0.034 from ISSP 1998 and 0.022 from WVS 2001. Since we view the ISSP surveys as more accurate, we think that the WVS 2001 systematically underestimates conversion rates. Despite these problems, we are reluctant to drop the WVS observations, because we think they provide incremental information. To retain all the data while addressing concerns about varying data quality, we allow in the regressions for different intercepts and error-term variances for observations from the different survey waves.

The average religious-conversion rates, shown in Table 3, are 0.045 for ISSP 1991 (N=13), 0.050 for ISSP 1998 (N=29), and 0.023 for WVS 2001 (N=22). Countries with conversion rates above 10% are Canada (17% in ISSP 1998), the United States (16% ISSP 1998 and 12% ISSP 1991), New Zealand (14% ISSP 1998), and Chile (13% ISSP 1998). Those with conversion rates below 1% are Finland (0.2% WVS), Romania (0.2% WVS), Slovenia (0.3% WVS, 0.6% ISSP 1991, and 0.7% ISSP 1998), Bulgaria (0.2% WVS and 0.4% ISSP 1998), Spain (0.4% ISSP 1998 and 0.6% WVS), Italy (0.5% WVS and 0.6% ISSP 1991), Hungary (0.5% ISSP 1991), Slovak Republic (0.6% ISSP 1998), Cyprus (0.7% ISSP 1998), and Poland (0.8% ISSP 1998).

We should stress that our empirical analysis uses only country averages of religious-conversion rates. This approach reflects our focus on country-level determinants of conversion, such as national policies and the country-level composition

of religious adherence. For these purposes, we do not lose information by aggregating the conversion data to the country-average level. However, for other purposes—such as studying effects of gender, age, family structure, education, income, the local composition of religious adherence, and so on—it would be beneficial to include also within-country variations at the individual level. One difficulty is that the data from ISSP and WVS on some of the individual variables, such as income and education, are of low quality. Measuring the local composition of religious adherence and matching these data to the individual observations from ISSP and WVS would be challenging and probably impossible. However, it would be useful in future research to attempt to use the micro-level data on religious conversion for our sample of 40 countries.

III. Setup of the Empirical Analysis

We use a regression system with three equations. The dependent variables are the logs of religious-conversion rates computed from ISSP 1991, ISSP 1998, and WVS 2001, as shown in Table 3.¹³ The estimates allow the error variances to differ for the three samples and for the residuals to be correlated across survey waves for a given country.¹⁴ Each equation has its own intercept, thereby allowing for differences across surveys in measured levels of conversion rates. Aside from the different intercepts, the coefficients of the explanatory variables are constrained to be the same across the three survey waves.

¹³ The log form appropriately restricts the conversion rate to non-negative values. (No zero values occur in our main sample but do arise in several cases when we exclude Other Religion in the calculation of conversion rates. For the regressions with this alternative religious-conversion rate, we used the log of the conversion rate plus 0.001.) We could use a logistic form, $\log[x/(1-x)]$, where x is the conversion rate, to restrict the conversion rate not to exceed one. However, since all observed values of x are much less than one, the logistic form is nearly the same as the simpler log form that we use.

¹⁴We use the seemingly-unrelated or SUR estimation technique. For a discussion, see Wooldridge (2002, Ch. 7).

The dependent variables apply at the country level, with each country entering between one and three times. The system does not include fixed effects for countries. The primary reason is that most of the variations in religious-conversion rates (as well as the explanatory variables) are cross-sectional—country fixed effects would eliminate almost all of the information.

Table 4 shows means and standard deviations for the variables used in the regression systems. The first three columns apply to the regression samples, which are dictated mainly by the availability of the religious-conversion data. For comparison, the last three columns give means and standard deviations for broader samples. All means apply to unweighted samples; that is, each country receives the same weight irrespective of population, GDP, and so on.

The independent variables correspond to the hypotheses from the framework described before. The religious-pluralism variable is based on a breakdown of religious adherence for 1970 from Barrett, Kurian, and Johnson (2001); henceforth, referred to as Barrett. We use an eight-way breakdown of religions, corresponding to the one we used for the ISSP and WVS surveys.¹⁵ Barrett also provides information on the fraction of the population having no religious adherence.

The form of the pluralism variable is suggested by a religion-matching model, specifically a model of marriage between persons with differing religions. The variable corresponds to the probability that a randomly selected person with some religious adherence will, in a random encounter, meet a person with some, but differing, religious

¹⁵ Some previous uses of the Barrett adherence data, such as McCleary and Barro (2006), included the category Other Christian, which combines the Barrett categories of independent Christian churches, unaffiliated Christians, and “marginal Christians.” To approximate the ISSP-WVS eight-way scheme, we merged this Other Christian category with Protestant and Anglican in the Barrett numbers.

adherence. The first concept that we employ is one minus the usual Herfindahl index of religion shares among persons with some religious adherence. This measure—the sum of the squares of the religion-adherence shares—is appropriate if persons with some religion randomly encountering other persons with some, but not necessarily the same, religion.

We also consider an alternative pluralism measure that takes account of persons with no religion. This measure applies if people with some religion randomly encounter other persons with some religion (either the same or different) or no religion. Given the distribution across types of religion, the second variable is smaller than the first if the share of the population with no religion is positive (see the notes to Table 3).

If we take account of assortative mating—persons of the same religion being more likely to match with each other—the probability of a religion mismatch could be substantially smaller than the number given by either of the religious-pluralism variables. However, the mismatch probability would still tend to be increasing with the pluralism variables that we use. The religious-conversion rate would, in turn, be increasing in the mismatch probability and, hence, with the pluralism variables. Although we motivated this linkage from intermarriage, we would get the same result for other reasons. That is, aside from marriage considerations, a greater variety of religions available in a country would raise the rate of religious conversion—by making it less costly for persons to switch to alternative religions.

The theory suggests that religious conversion depends on past changes in religious pluralism, as well as the current level of pluralism. Based on the data from Barrett, Kurian, and Johnson (2001), we calculated the pluralism values for 1900, 1970, and 2000. Unfortunately, we lack information between 1900 and 1970. We can compute

the change in pluralism between 1900 and 1970 but this change likely gives little information about the dynamics of pluralism that matter for our religious-conversion data—which pertain to conversions not too much prior to the survey dates around 1991, 1998, and 2001. Therefore, we are not optimistic about our ability to isolate effects from past changes in religious pluralism on the observed conversion rates.

The dummy variable for legal restrictions on religious conversion comes from the Religion & State Data Set compiled by Fox and Sandler (2008). We use the information for 1990, the first year of their data, or for the earliest date available. Since their data show strong persistence over time in these kinds of legal restrictions, the precise date is not critical.

Fox and Sandler provide four relevant indicators for legal restrictions that relate to religious conversion. The restrictions apply to: conversion into minority religions, conversion out of the majority religion, proselytizing, and inter-faith marriage. However, none of the 40 countries in our religious-conversion sample have legal restrictions of the first two forms. These direct restrictions on conversion tend to exist in predominantly Muslim countries.¹⁶ Although the WVS 2001 wave contains many predominantly Muslim countries, the questions that allow calculation of the religious-conversion rate were not asked in any of these countries. We think this omission applies because residents of these countries would likely view a question about having a different religion earlier in life as insulting. For the present analysis, we define our restrictions variable as a dummy that takes on the value one if the country had in place in 1990 (or a nearby date) restrictions on proselytizing or inter-faith marriage. (See Table 3 for the data.)

¹⁶ Among 39 countries with Muslim adherence of at least 50%, 25 have conversion restrictions either out of the majority religion or into a minority religion. 18 have both types of restrictions.

Real per capita GDP in 1990 is the value in 2000 U.S. dollars from version 6.2 of the Penn-World Tables (available online).¹⁷ These data feature purchasing-power adjustments to compare standards of living across countries. Average years of school attainment in 1990 for the adult population aged 25 and over come from Barro and Lee (2001).¹⁸ The dummy variables for Communist regime in 1970, having a state religion in 1970, and having government regulation of the religion market in the 1970s come from Barro and McCleary (2005). The regulation variable, an extension of Chaves and Cann (1992), was based on whether the government appointed or approved religious leaders. The results in McCleary and Barro (2006) showed that religious participation was deterred by current and former Communism, encouraged by the presence of state religion (interpreted as a subsidy effect), and discouraged by government regulation of the religion market.

Data on monthly attendance at formal religious services, holding various religious beliefs, and self-classifying as a religious person come from the survey information given in various waves of the WVS, ISSP, and the Gallup Millennium Survey. These data are discussed in McCleary and Barro (2006). We use here the values from the 1990 WVS if these are available. Then we fill in, as available, numbers (adjusted for differences in average levels across surveys) from WVS 1981, ISSP 1991, WVS 1995, ISSP 1998, Gallup, and WVS 2001.

Table 4 makes clear some of the selection issues related to the availability of the religious-conversion data. The regression sample for religious conversion comprises countries that are substantially richer and more educated than the broad sample of

¹⁷ For Bulgaria and Lithuania, 1990 data were unavailable, and we used the values for 1995.

¹⁸ For Croatia, we used the 1990 value for the former Yugoslavia. For Belarus and Ukraine, we used the 1990 value for Russia (which we took as representative of the former Soviet Union).

countries. The regression sample is over-weighted toward former Communist countries. In terms of religious adherence, the regression sample is slanted toward Catholic, Protestant, Orthodox, and Jewish, and away from Muslim, Hindu, Eastern Religion (including Buddhist), and Other Religion. The regression sample also has over-representation of persons with no religion.

We lack instruments to establish firmly causation from the explanatory variables to the religious-conversion rates.¹⁹ We think that the main issue here concerns the restrictions-on-conversion variable, which is likely to be simultaneously determined (from a political-economy standpoint) with the conversion rate. Since we lack plausible instruments for the restrictions variable (and also have no time-series variations in this variable within countries), we consider later how the deletion of this variable affects the other results. For the religious-pluralism variable, we find that instrumenting the 1970 variable with values from 1900 has little effect on the estimates.

IV. Empirical Findings

Table 5, column 1 shows a baseline regression system for logs of religious-conversion rates from the three survey waves. Although each equation has its own intercept, the estimated intercepts turn out not to differ significantly from each other (p -value = 0.24). The last two lines show the fits of each equation, gauged by R-squared values and standard errors of estimation. The fits for the ISSP waves are similar, with R-squared values in excess of 0.7. That for the WVS wave is only 0.24; we think because of the relatively poor quality of the data. Similarly, the standard error for the WVS equation is much higher than those for the ISSP equations.

¹⁹ For a discussion of instrumental variables, see Wooldridge (2003, Ch. 15).

As expected, the religious-pluralism variable for 1970 (calculated from adherence shares among the adhering population) has a significantly positive effect on the log of the religious-conversion rate; the coefficient in Table 5, column 1 is 2.9 (s.e. = 0.5). This coefficient means, if interpreted causally, that a one-standard-deviation increase in the religious-pluralism variable (by 0.19 in Table 4) raises the estimated log of the conversion rate by 0.55. That is, at the sample mean conversion rate of 0.050 (for ISSP 1998), the estimated conversion rate would rise by about 70% to 0.087. Looking at Table 3, column 4, we see that low degrees of religious pluralism can explain why religious-conversion rates are particularly low in Spain, Finland, Italy, Poland, and Slovenia. In contrast, the high values of the pluralism variable in Canada and the United States help to explain high conversion rates.

If we re-estimate the system using the 1900 value of the religious-pluralism variable as an instrument, the results change little. The estimated coefficient on the pluralism variable becomes 2.57 (s.e. = 0.52), and the other coefficients change little from those shown in Table 5, column 1. This result provides some support for a causal interpretation of our results; that is, religious pluralism affecting religious conversion, rather than the reverse.

If we add the change in the religious-pluralism variable from 1900 to 1970 to the regression system in Table 5, column 1, this new variable has an estimated coefficient near zero. We think this result applies because the measured change in pluralism is too far in the past to matter for our measured religious-conversion rates. Thus, our results pertain to the long-term relation between the structure of religion adherence and religious-conversion rates, not to effects from changes in the adherence structure.

As expected, legal restrictions that deter religious conversion (involving proselytizing and inter-faith marriage) have a significantly negative relation with the log of the conversion rate, with a coefficient in Table 5, column 1 of -0.84 (s.e. = 0.21). The estimated coefficient implies, if interpreted causally, that the implementation of a legal restriction (moving the dummy variable from zero to one) reduces the estimated conversion rate by nearly 60%—from 0.05 to 0.02 at the sample mean for ISSP 1998. The conversion restrictions that we recorded apply to 25% of the regression sample (see Tables 3 and 4). As noted before, the sample contains no predominantly Muslim countries, many of which have legal restrictions on religious conversion.

Religious conversion is significantly negatively related to former Communism, with a coefficient in Table 5, column 1 of -1.52 (s.e. = 0.20). The regression sample has 35% of the observations as former Communist (Table 4). Previous findings (McCleary and Barro [2006]) indicated that the influence of past Communism on religious participation and belief decayed over time but continued to be significantly negative after 10-15 years. (See also Inglehart and Baker [2000].) Our interpretation is that past Communism has a depressing influence on the value attached currently to formal religion and, thereby, diminishes the propensity for religious conversion.

The log of per capita GDP in 1990 has a negative but small and statistically insignificant relation with religious-conversion rates. The estimated coefficient in Table 5, column 1 is -0.09 (s.e. = 0.19). This result accords with the ambiguous effect noted before for the effect of higher per capita income on the value attached to formal religion.

In contrast, the variable for average years of school attainment of the adult population in 1990 has a significantly positive coefficient: 0.21 (s.e. = 0.05).²⁰ This coefficient implies that a one-standard-deviation increase in educational attainment (by 1.6 years in the regression sample, see Table 4) raises the estimated religious-conversion rate by about 40% (from 0.05 to 0.07 at the sample mean for ISSP 1998). Our interpretation of the education effect is that more education reduces the cost of religious conversion and raises the benefit from formal religion—thereby, raising the propensity to convert on both counts.

Although per capita GDP and education are highly positively correlated, the results show that the sample has sufficient independent movement in these variables to distinguish the effects. The estimated positive impact of education on a country's religious-conversion rate accords with Loveland (2003, Table 2), who found a significantly positive effect from years of education on the probability of switching religions in the United States from the 1988 GSS religion module. However, this research is not directly comparable to ours, because Loveland's definition of religion switching includes movements from some to no religion and vice versa. Lehrer (1998, p. 255) and Sherkat (2004, p. 618) report positive effects of education on individual probabilities of intermarriage in the United States. Through this channel, an increase in education is likely to stimulate religious conversion, particularly for women (Sherkat [2004, p. 620]).

Our results are not very different if we use the alternative definition of religious pluralism—the one discussed before that brings in an effect from the no-religion share.

²⁰ If we break down total years of schooling into primary, secondary, and higher, the estimated coefficients are 0.19 (s.e. = 0.08) on primary, 0.23 (0.12) on secondary, and 0.28 (0.39) on higher. These results accord with the hypothesis that only total years of schooling matter (p-value = 0.92).

These results are in Table 6, column 1. The pattern of coefficient estimates is similar to that in Table 5, column 1, but the fits are somewhat poorer. We focus, henceforth, on the findings with the initial form of the pluralism variable.

Table 5, column 2 adds to the regression system two dummy variables concerning institutional aspects of religion—the presence of a state religion in 1970 and the presence of government regulation of religion in the 1970s. Although these variables were important in an earlier study for explaining religious participation and beliefs (McCleary and Barro [2006]), the two variables are individually and jointly statistically insignificant in the system for religious conversion (p -value = 0.20 for joint significance). This result makes sense because the system already includes a more directly relevant institutional measure, the presence of legal restrictions related to conversion.

We next added measures of religious participation and beliefs (applying typically around 1990). Conceptually, the effects of these variables on religious conversion are ambiguous. Greater participation and belief signify that formal religion is more important to a person, thereby suggesting a higher frequency of religious conversion. However, greater participation and belief also indicate a higher degree of satisfaction with and attachment to a person's incumbent religion and, thereby, predict a lower frequency of religious conversion. In any event, the estimated coefficients were insignificant when we used the extent of monthly or more attendance at formal religious services along with the extent of belief in hell, heaven, or an after-life, or whether people viewed themselves as religious. (Some of these variables were statistically significant for explaining economic growth in Barro and McCleary [2003].) A representative finding

appears in Table 5, column 3, which includes monthly attendance along with the extent of religiousness. The p-value for joint significance of these two variables is 0.70.

We also consider whether religious-conversion rates bear some relation to the composition of religion adherence (in 1970). Effects might arise here if religions differ by costs of joining or leaving or by degree of attachment of members. Among the categories of religion shown in Table 4, the only one that has significant explanatory power for religious-conversion rates is the Muslim share of the adhering population. Table 5, column 4 shows a marginally significant negative effect from the Muslim adherence share. The inclusion of this variable has little impact on the other results, except that the coefficient on the conversion-restrictions variable becomes smaller in magnitude (but remains statistically significant).

V. Specification Issues and Robustness

One potential concern is that the coefficient estimates can be biased if one or more of the explanatory variables are jointly determined with religious-conversion rates. In particular, it might be that when citizens show a greater propensity to switch religions, government policy toward conversion would react, making our restrictions-on-conversion variable endogenous.

We have not been successful in finding plausibly exogenous instruments for the restrictions-on-conversion variable. However, one can get a sense of the potential bias on the other coefficients by examining the impact of removing the restrictions variable from the system. When we drop this variable from Table 5, Column 1, we find there is very little change in either the magnitude or the statistical significance of the remaining

coefficient estimates. This result suggests that the potential bias in the other coefficient estimates may be small.

We have also investigated the robustness of our results to alternative definitions of religious conversion. As noted before, we use alternative approaches concerning the treatments of the categories Protestant and Other Religion in the computation of religious-conversion rates. Table 6, column 2 corresponds to an alternative definition in which all persons labeled as Other Christian are classified as Protestant, rather than Other Religion. This change has little impact for most countries but does matter substantially for Sweden, Norway, and New Zealand. The overall pattern of coefficient estimates is similar to that in the original specification (Table 5, column 1). The main change is the reduction in the coefficient for school attainment. The fits are also poorer than those in the initial specification. Thus, our preference is for the original specification, but the main inferences are robust to this change in definition of conversion.

Table 6, column 3 corresponds to a second alternative definition, which eliminates all conversions associated with Other Religion. This alternative constitutes a more substantial change because the religious-conversion rates are roughly halved. However, the computed conversion rates are still highly correlated with the original values. The regression coefficients show more differences from the original form (Table 5, column 1), but religious pluralism and school attainment remain significantly positive and Communism remains significantly negative. Two differences are that the conversion-restrictions variable is no longer statistically significant, whereas the log of per capita GDP becomes significantly negative at the 5% level. The fits of the equations—particularly for the ISSP waves—are notably poorer than those for the

original specification. Thus, we prefer the original specification but nevertheless find it informative that the overall pattern of empirical estimates is robust to this drastic change in definition of religious conversion.

VI. Summary Observations

Before speculating on broader implications of our results, we begin with a brief summary of the major findings. We used retrospective questions about religious adherence from three international survey waves to construct country averages of religious-conversion rates. Our concept of conversion considers only shifts across major types of religion, using a breakdown of religions into eight broad groups. The conversion rates for the population aged 30 and over vary substantially across countries, ranging from near zero for Spain, Italy, and many former Communist countries in Eastern Europe to over 10% in the United States, Canada, Chile, and New Zealand.

In a theoretical model, the frequency of religious conversion depends on costs of switching and costs of having the “wrong” religion. These concepts suggested explanatory variables to use in our empirical analysis of country-level religious-conversion rates. Several findings accord with the underlying theory: the religious-conversion rate is positively related to the extent of religious pluralism, gauged by the composition of adherence shares; negatively related to government restrictions that inhibit religious conversion; positively related to levels of education; and negatively related to a history of Communism. Given these variables, conversion rates were not much related to per capita GDP, the presence of state religion or state regulation of religion, and the extent of religious participation and beliefs. The composition of

religious adherence was mostly unimportant, except for a small negative effect from the Muslim adherence share.

A broader interpretation of our results starts with a view of religious conversion as one dimension of the fluidity of the religion market. Greater ease of conversion increases religious-convergence rates and leads, thereby, to a better long-run match between actual and ideal forms of religious adherence. Therefore, we would predict an increase in religious participation and beliefs.

In many cases, the improved matching would also raise the degree of religious pluralism and, hence, the extent of competition among providers of religious services. The religion-market model developed by Stark and Bainbridge (1987), Iannaccone (1991), and Finke and Stark (1992) then predicts that the heightened competition and the resulting improvements in service quality would raise levels of religiosity. Hence, the predictions about religiosity in the religion-market model reinforce the effects from the improved matching between actual and ideal forms of religion. Finally, to the extent that enhanced religiosity appears as more intense religious beliefs related to an after-life, the results of Barro and McCleary (2003) predict favorable effects on economic growth.

Before we jump too far down this path, we should note that our empirical results do not detect any statistically significant relation between religious-conversion rates and the extent of religious participation or beliefs (exemplified by the results in Table 5, column 3). That is, holding fixed the independent variables that we considered, there is no remaining (partial) relationship between religious-conversion rates and religiosity. This lack of association may arise because differences in conversion rates do not derive mainly from supply-side factors, such as differences in government regulations that

influence the ease of switching between religions. For example, conversion rates would be low if most people were satisfied with (or at least committed to) their incumbent religions—through this channel, a healthier religion environment would tend to correlate with lower rates of religious conversion.

The broader lesson is that a full sorting out of the interplay between religious conversion and the vibrancy of the religion market requires consideration of the underlying supply and demand factors that determine the rates of religious conversion. We think that our cross-country empirical evidence provides a good start in isolating these underlying factors.

References

- Barrett, D.B. (1982). *World Christian Encyclopedia*, 1st ed., Oxford, Oxford University Press.
- Barrett, D.B., G.T. Kurian, and T.M. Johnson (2001). *World Christian Encyclopedia*, 2nd ed., Oxford, Oxford University Press.
- Barro, R.J. (1972). "A Theory of Monopolistic Price Adjustment," *Review of Economic Studies*, 39, January, 17-26.
- Barro, R.J. and J.W. Lee (2001). "International Data on Educational Attainment: Updates and Implications," *Oxford Economic Papers*, 53, July, 541-563.
- Barro, R.J. and R.M. McCleary (2003). "Religion and Economic Growth," *American Sociological Review*, 68, October, 760-781.
- Barro, R.J. and R.M. McCleary (2005). "Which Countries Have State Religions?" *Quarterly Journal of Economics*, 120, November, 1331-1370.
- Bibby, R. and M.B. Brinkerhoff (1973). "The Circulation of Saints," *Journal for the Scientific Study of Religion*, 12, September, 273-283.
- Bibby, R. and M.B. Brinkerhoff (1983). "Circulation of Saints Revisited," *Journal for the Scientific Study of Religion*, 22, September, 253-262.
- Bibby, R. and M.B. Brinkerhoff (1994). "Circulation of the Saints 1966-1990: New Data, New Reflections," *Journal for the Scientific Study of Religion*, 33, September, 273-280.
- Breen, R. and B.C. Hayes (1996). "Religious Mobility in the U.K.," *Journal of the Royal Statistical Society Series A (Statistics in Society)*, 159, 3, 493-504.

- Bromley, D.G. and J.K. Hadden (1993). *Cults and Sects in America*, Volume 3, *Religion and the Social Order*, Greenwich CT, JAI Press.
- Chaves, M. and D.E. Cann (1992). "Regulation, Pluralism, and Religious Market Structure," *Rationality and Society*, July, 272-290.
- Clark, J. (1979). "Cults," *Journal of the American Medical Association*, 242, 3, 279-281.
- Duke, J.T., B.L. Johnson, and J.B. Duke (1993). "Rates of Religious Conversion: A Macrosociological Study," *Research in the Social Scientific Study of Religion*, 5, 89-121.
- Finke, R. and R. Stark (1992). *The Churching of America 1776-1990*, New Brunswick, Rutgers University Press.
- Fox, J. and S. Sandler (2008). *Religion and the State: A World Survey of Government Involvement in Religion*, New York, Cambridge University Press.
- Froese, P. and S. Pfaff (2001). "Replete and Desolate Markets: Poland, East Germany, and the New Religious Paradigm," *Social Forces*, 80, December, 481-507.
- Gartrell, C.D. and Z.K. Shannon (1985). "Contacts, Cognitions, and Conversion: A Rational Choice Approach." *Review of Religious Research*, 27, September, 32-48.
- Glaeser, E.L. and B.I. Sacerdote (2008). "Education and Religion," *Journal of Human Capital*, 2, Summer, 188-215.
- Glock, C. and R. Stark. (1965). *Religion and Society in Tension*, Chicago, Rand McNally.
- Greeley, A. (1970). "Religious Inter-marriage in a Denominational Society," *American Journal of Sociology*, 75, May, 949-952.

- Greeley, A. (1989). *Religious Change in America*, Cambridge MA, Harvard University Press.
- Greeley, A. (1994). "A Religious Revival in Russia?" *Journal for the Scientific Study of Religion*, 33, September, 253-272.
- Greeley, A. and M. Hout (1988). "Musical Chairs: Patterns of Denominational Change," *Sociology and Social Research*, 72, 75-86.
- Gruber, J. (2005). "Religious Market Structure, Religious Participation, and Outcomes: Is Religion Good for You?" *Advances in Economic Analysis and Policy*, 5, 1, article 5, available at www.bepress.com.
- Hoge, D. R. and K. M. Ferry (1981). *Empirical Research on Interfaith Marriage in America*," Washington D.C., U.S. Catholic Conference of Bishops.
- Iannaccone, L. (1990). "Religious Practice: A Human Capital Approach," *Journal for the Scientific Study of Religion*, 29, September, 297-314.
- Iannaccone, L.R. (1991). "The Consequences of Religious Market Structures: Adam Smith and the Economics of Religion," *Rationality and Society*, April, 156-177.
- Iannaccone, L. (2003). "Looking Backward: A Cross-National Study of Religious Trends," unpublished, George Mason University, July.
- Inglehart, R. and W.E. Baker (2000). "Modernization, Cultural Change, and the Persistence of Traditional Values," *American Sociological Review*, 65, February, 19-51.
- Jenkins, P. (2000). *Mystics and Messiahs: Cults and New Religions in the American History*, Oxford, Oxford University Press.

- Kelley, D.M. (1972). *Why Conservative Churches Are Growing: A Study in Sociology of Religion*, New York, Harper & Row.
- Lehrer, E.L. (1998). "Religious Inter-marriage in the United States: Determinants and Trends," *Social Science Research*, 27, September, 245-263.
- Lehrer, E.L. (2004). "Religion as a Determinant of Economic and Demographic Behavior in the United States," *Population and Development Review*, 30, December, 707-726.
- Lofland, J. (1966). *Doomsday Cult: A Study of Conversion, Proselytization and the Maintenance of Faith*, Englewood Cliffs NJ, Prentice-Hall.
- Lofland, J. and N. Skonovd (1981). "Conversion Motifs," *Journal for the Scientific Study of Religion*, 20, December, 373-385.
- Loveland, M.T. (2003). "Religious Switching: Preference Development, Maintenance, and Change," *Journal for the Scientific Study of Religion*, 42, March, 147-157.
- McCleary, R.M. and R.J. Barro (2006). "Religion and Political Economy in an International Panel," *Journal for the Scientific Study of Religion*, 45, June, 149-175.
- Need, A. and N.D. de Graaf (1996). "Losing my Religion: A Dynamic Analysis of Leaving the Church in the Netherlands," *European Sociological Review*, 12, May, 87-99.
- Mueller, S.A. and A.V. Lane (1972). "Tabulations from the 1957 Current Population Survey on Religion: A Contribution to the Demography of American Religion," *Journal for the Scientific Study of Religion*, 11, March, 76-98.

- Nelsen, H. M. (1990). "The Religious Identification of Children of Interfaith Marriages," *Review of Religious Research*, 32, December, 122-134.
- Olson, D.V.A. (2008). "Why Do Small Religious Groups Have More Committed Members?" *Review of Religious Research*., 49, 353-378.
- Robbins, T. (1988). "The Transformative Impact of the Study of New Religions on the Sociology of Religion," *Journal for the Scientific Study of Religion*, 27, March, 12-31.
- Roof, W.C. and C.K. Hadaway (1979). "Denominational Switching in the Seventies," *Journal for the Scientific Study of Religion*, 18, December, 363-378.
- Sandomirsky, S. and J. Wilson (1990). "Processes of Disaffiliation: Religious Mobility Among Men and Women," *Social Forces*, 68, June, 1211-1229.
- Sherkat, D.E. (2001). "Tracking the Restructuring of American Religions: Religious Affiliation and Patterns of Religious Mobility, 1973-1998," *Social Forces*, 79, June, 1459-1493.
- Sherkat, D.E. (2004). "Religious Intermarriage in the United States: Trends, Patterns, and Predictors," *Social Science Research*, 33, December, 606-625.
- Sherkat, D.E. and J. Wilson (1995). "Preferences, Constraints, and Choices in Religious Markets: An Examination of Religious Switching and Apostasy," *Social Forces*, 73, March, 993-1026.
- Smith, C., R. Faris, M. L. Denton, and M. Regnerus (2003). "Mapping American Adolescent Subjective Religiosity and Attitudes of Alienation Toward Religion: A Research Report," *Sociology of Religion*, 64, Spring, 111-133.

- Smith, C. and M. L. Denton (2005). *Soul Searching: The Religious and Spiritual Lives of American Teenagers*, Oxford, Oxford University Press.
- Starbuck, E.D. (1897). "A Study of Conversion," *The American Journal of Psychology*, 8, January, 268-308.
- Stark, R. and W.S. Bainbridge (1979). "Of Churches, Sects, and Cults: Preliminary Concepts for a Theory of Religious Movements," *Journal for the Scientific Study of Religion*, 18, June, 117-131.
- Stark, R. and W.S. Bainbridge (1987). *A Theory of Religion*, New York, Lang.
- Stark, R. and R. Finke (2000). *Acts of Faith, Explaining the Human Side of Religion*, Berkeley, University of California Press.
- Stark, R. and R. Finke (2002). "Beyond Church and Sect: Dynamics and Stability in Religious Economies," in T. Jelen, ed., *Sacred Markets, Sacred Canopies: Essays on Religious Markets and Religious Pluralism*, Lanham MD, Rowman and Littlefield.
- Stark, R. and C.Y. Glock (1968). *American Piety: The Nature of Religious Commitment*, Berkeley, University of California Press.
- Wooldridge, J. M. (2002). *Econometric Analysis of Cross Section and Panel Data*. Cambridge MA, MIT Press.
- Wooldridge, J. M. (2003). *Introductory Econometrics: A Modern Approach*, 2nd ed., Mason OH, South-Western Publishing.

Table 1
Current Religion Adherence in Religious-Conversion Sample (ages 30 and over)

Religion	ISSP 1991		ISSP 1998		WVS 2001	
	Number	Percent of adhering	Number	Percent of adhering	Number	Percent of adhering
Catholic	5716	47.5	11958	52.1	9192	54.3
Protestant	5198	43.2	6700	29.2	2998	17.7
Muslim	58	0.5	222	1.0	205	1.2
Hindu	10	0.1	11	0.0	6	0.0
Eastern	6	0.1	393	1.7	8	0.0
Jewish	36	0.3	755	3.3	29	0.2
Orthodox	699	5.8	2191	9.5	3936	23.3
Other	310	2.6	720	3.1	544	3.2
Total adhering	12033	100.0	22950	100.0	16918	100.0
No religion	4156	--	6130	--	7310*	--
Total pop.	16189	--	29080	--	24228	--
No religion %	--	25.7	--	21.1	--	30.2

Notes: ISSP is International Social Survey Program (1991 covers 1990-1993, 1998 covers 1998-2000). WVS 2001 is World Values Survey (covering 1999-2003). Samples are those that include questions about former religious denomination and, therefore, allow for determination of religious conversion. Eastern Religion includes Buddhist and other eastern religions. Adhering percentages are relative to the adhering population. No religion percentage is relative to the total population.

*WVS 2001 has 24,390 respondents aged 30 and over, of which 7359 indicated no religion adherence and 17,031 indicated some religion adherence. In a separate question, only 16,918 persons (less than the 17,031) responded when asked which particular religion they adhered to. The number 7359 was scaled downward accordingly to 7310 in order to maintain the ratio of no to some religion indicated by the first question. This number, when added to 16918, gives the total population of 24,228, as shown in the table.

Table 2 Matrices of Religious Conversions, aged 30 and over, all countries										
Former religion	Current religion									
	Catholic	Protestant	Muslim	Hindu	Eastern	Jewish	Orthodox	Other	None	Total Former
ISSP 1991										
Catholic	5560	116	0	0	2	0	0	33	568	6279
Protestant	121	4941	2	0	0	3	1	127	1307	6502
Muslim	0	1	45	0	0	0	0	0	1	47
Hindu	0	0	0	10	0	0	0	1	0	11
Eastern	1	2	0	0	4	0	0	0	4	11
Jewish	0	0	6	0	0	32	0	0	8	46
Orthodox	2	1	0	0	0	0	269	10	37	319
Other	7	47	1	0	0	0	1	120	53	229
None	25	90	4	0	0	1	428	19	2178	2745
Total Current	5716	5198	58	10	6	36	699	310	4156	16189
ISSP 1998										
Catholic	11663	264	2	1	9	10	2	143	1526	13620
Protestant	117	6091	5	1	2	5	8	235	1311	7775
Muslim	2	0	205	0	0	0	5	1	10	223
Hindu	0	0	0	5	0	0	0	0	4	9
Eastern	0	0	0	0	312	0	0	5	37	354
Jewish	6	3	1	0	0	701	1	0	9	721
Orthodox	11	3	0	0	0	3	1556	17	65	1655
Other	22	58	0	4	10	4	0	209	124	431
None	137	281	9	0	60	32	619	110	3044	4292
Total Current	11958	6700	222	11	393	755	2191	720	6130	29080

Table 2, continued										
Former religion	Current religion									
	Catholic	Protestant	Muslim	Hindu	Eastern	Jewish	Orthodox	Other	None	Total Former
WVS 2001										
Catholic	8131*	41	2	1	0	1	20	69	1292	9557*
Protestant	32	2585*	0	0	1	0	5	43	598	3264*
Muslim	1	0	180*	0	0	0	0	0	7	188*
Hindu	0	1	0	4*	0	0	0	0	1	6*
Eastern	1	0	0	0	6*	0	1	0	0	8*
Jewish	0	0	0	0	0	23*	3	0	3	29*
Orthodox	13	10	1	0	0	1	3480*	15	66	3586*
Other	28	47	0	0	0	1	5	367*	75	523*
None	986*	314*	22*	1*	1*	3*	422*	50*	5128	7066*
Total Current	9192	2998	205	6	8	29	3936	544	7310	24228

*Data not directly given by WVS. See the notes.

Notes to Table 2

Cells show numbers of each form of religious transition for persons currently aged 30 and over in the aggregate of the sampled countries for each of three survey waves: International Social Survey Program (ISSP) 1991 and 1998 and World Values Survey (WVS) 2001. The rows have former religions, as indicated in the left-most column, and the next nine columns show current religions. The breakdown is for eight types of religion plus no religion.

The underlying sample sizes for the two ISSP waves were typically between 1000 and 2000 persons per country. The dating of the field work for the ISSP 1991 survey was mostly 1990 or 1991, whereas the ISSP 1998 wave applied mainly to 1996 or 1997. The ISSP provides good background information about the nature of the randomized sampling procedures used in each country. The WVS 2001 survey applied to field work between 1999 and 2002 and was similar to the ISSP in sample sizes for most cases. The nature of the randomized sampling procedures for the WVS is less well documented than for the ISSP. The ISSP asks about a person's form of religion adherence currently and when being raised. The lists include an array of types of religion as well as no religion. The analogous WVS questions have shortcomings, because persons who currently are a member of a religious denomination were asked whether they were ever a member of a different religious denomination—and, if so, which. These questions allow us to match current and former denominations for people who have two different denominations. Unfortunately, we cannot tell whether persons with a current but no former (and different) denomination were previously in the same denomination or had no religious adherence. The affected cells are indicated by asterisks in the table. To fill in these cells, we first estimated the total number of persons with no religious adherence during the various prior years applicable to the WVS questions. We estimated these values by using population non-religion fractions from Barrett, Kurian, and Johnson (2001) for 2000 and 1970. First, we related the Barrett values for non-religion in 2000 to those observed for the current survey date from the 2001 WVS. The correlation was high (0.75), but the WVS values were systematically higher than the Barrett values, by 0.12 on average. We therefore added 0.12 to the Barrett non-religion shares for 1970 to estimate the WVS non-religion fractions for the earlier dates. The final assumption needed to fill in the missing cells is that the ratio of persons coming from the same denomination to those coming from no religion was the same for each current denomination.

Table 3 Religious-Conversion Rates and other Variables							
	Conversion rate			Religious Pluralism 1970	Religious Pluralism 1970 (alt.)	Conversion Restrictions 1990	Communist 1970
	ISSP 1991	ISSP 1998	WVS 2001				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Australia	0.054	--	--	0.43	0.41	0	0
Austria	0.034	0.019	0.020	0.17	0.16	0	0
Belgium	--	--	0.043	0.09	0.09	0	0
Bulgaria	--	0.004	0.002	0.28	0.21	1	1
Belarus	--	--	0.020	0.29	0.17	1	1
Canada	--	0.171	--	0.53	0.52	0	0
Switzerland	--	0.055	--	0.52	0.52	1	0
Chile	--	0.130	--	0.31	0.30	0	0
Cyprus	--	0.007	--	0.40	0.39	1	0
Czech Republic	--	0.024	0.013	0.40	0.33	0	1
Denmark	--	0.019	--	0.03	0.03	0	0
Spain	--	0.004	0.006	0.02	0.02	0	0
Estonia	--	--	0.024	0.53	0.25	0	1
Finland	--	--	0.005	0.03	0.03	1	0
France	--	0.018	0.020	0.14	0.13	1	0
Germany (west)	0.031	0.044	--	0.52	0.51	1	0
U.K. (Britain)	0.070	0.089	--	0.26	0.24	0	0
Greece	--	--	0.038	0.11	0.11	1	0
Croatia	--	--	0.010	0.22	0.21	0	1
Hungary	0.005	0.026	--	0.44	0.38	0	1
Ireland	--	0.019	--	0.17	0.17	0	0
Iceland	--	--	0.039	0.02	0.02	0	0
Israel	--	0.017	--	0.25	0.25	1	0
Italy	0.006	0.027	0.005	0.08	0.07	0	0
Japan	--	0.021	--	0.07	0.06	0	0
Lithuania	--	--	0.018	0.14	0.10	1	1
Latvia	--	0.084	0.039	0.67	0.35	0	1
Netherlands	0.077	0.092	0.044	0.51	0.46	0	0
Norway	0.032	0.031	--	0.00	0.00	0	0
New Zealand	0.070	0.145	--	0.29	0.28	0	0
Philippines	0.040	0.094	--	0.39	0.39	0	0
Poland	--	0.008	--	0.06	0.05	0	1
Portugal	--	0.024	0.020	0.10	0.09	0	0
Romania	--	--	0.002	0.31	0.26	0	1
Russia	0.036	0.085	0.012	0.60	0.29	0	1
Slovak Republic	--	0.006	--	0.32	0.28	0	1
Slovenia	0.006	0.007	0.003	0.09	0.08	0	1
Sweden	--	0.015	0.076	0.04	0.03	0	0
Ukraine	--	--	0.043	0.36	0.22	0	1
United States	0.120	0.159	--	0.45	0.43	0	0

Note to Table 3

Religious-conversion rates are computed, as described in the text and the notes to Table 2, from International Social Survey Program (ISSP) 1991 and 1998 and World Values Survey (WVS) 2001. Sources of other variables are in the notes to Table 4. The religious-pluralism variable in column 4 is $1-H$, where H is the sum of squares of religion-adherence shares among persons who adhere to some religion. This pluralism variable corresponds to the probability that a person meets a person with a different religion in a random encounter among persons with some religion. The alternative pluralism variable in column 5 takes account of non-religion. The formula is $(1-H)/(1+n)$, where $1-H$ is the pluralism variable from column 4 and n is the ratio of persons with no religion to persons with some religion. This alternative variable gives the probability that a person with some religion meets a person with a different religion in a random encounter among persons selected from the entire population.

Variable	regression sample			overall sample		
	N	mean	s.d.	N	mean	s.d.
Religious-conversion rate, ISSP 1991	13	0.045	0.033	--	--	--
Religious-conversion rate, ISSP 1998	29	0.050	0.050	--	--	--
Religious-conversion rate, WVS 2001	22	0.023	0.019	--	--	--
log(conversion rate, ISSP 1991)	13	-3.48	1.05	--	--	--
log(conversion rate, ISSP 1998)	29	-3.55	1.13	--	--	--
log(conversion rate, WVS 2001)	22	-4.20	1.06	--	--	--
Religious-pluralism indicator, 1970	40	0.27	0.19	192	0.32	0.22
Alternative pluralism indicator, 1970	40	0.22	0.15	192	0.29	0.22
Restrictions on conversion, 1990	40	0.25	--	171	0.41	--
Log (per capita GDP), 1990	40	9.56	0.49	176	8.46	1.12
Years of School Attainment, 1990	40	8.83	1.58	119	5.63	2.98
Communist, 1970	40	0.35	--	190	0.18	--
State religion, 1970	40	0.30	--	189	0.39	--
Regulation of religion, 1970s	40	0.40	--	171	0.34	--
Monthly church attendance, 1990, ...	40	0.31	0.21	87	0.40	0.25
Belief in hell, 1990, ...	40	0.29	0.17	81	0.43	0.27
Belief in heaven, 1990, ...	40	0.47	0.22	81	0.59	0.27
Belief in after-life, 1990, ...	40	0.51	0.19	82	0.58	0.23
Religious person, 1990, ...	40	0.63	0.18	79	0.69	0.19
Barrett religion shares, 1970:						
Catholic	40	0.433	0.397	192	0.309	0.365
Protestant	40	0.323	0.355	192	0.216	0.291
Orthodox	40	0.168	0.308	192	0.070	0.201
Jewish	40	0.027	0.136	192	0.007	0.062
Muslim	40	0.020	0.046	192	0.232	0.358
Hindu	40	0.000	0.001	192	0.022	0.104
Eastern Religion (including Buddhist)	40	0.025	0.153	192	0.067	0.214
Other Religion	40	0.004	0.006	192	0.079	0.159
Non-religion share of total population	40	0.123	0.148	192	0.074	0.155

Notes to Table 4

These variables are used in the regressions shown in Tables 5 and 6. The sample of 40 countries comprises those, aside from East Germany (which is missing other data), with religious-conversion data. Means are unweighted averages across the countries. The religion shares are fractions of the adhering population in each country. The Protestant category includes Anglican, independent Christian churches, unaffiliated Christians, and “marginal Christians.”

Sources: Religious-conversion rates, shown in Table 3, are from ISSP 1991, ISSP 1998, and WVS 2001. Religious-adherence shares among the adhering population and non-religion fractions are from Barrett, Kurian, and Johnson (2001). Pluralism indicators are calculated from these shares, as described in the notes to Table 3 and the text. The dummy variable for restrictions on religious conversion (restrictions on proselytizing or inter-faith marriage) is from Fox and Sandler (2008). Real per capita GDP is from Penn-World Tables version 6.2 (available online). School attainment is from Barro and Lee (2001). Dummy variables for Communism, state religion, and regulation of religion are from Barro and McCleary (2005). Church-attendance rates (for monthly or greater attendance) and frequencies of religious beliefs and religiousness are from various waves of ISSP, WVS, and the Gallup Millennium Survey (see the text).

Table 5 Regressions for Logs of Religious-Conversion Rates				
(persons aged 30 and over, 40 countries, 3 survey waves)				
Independent variables	Coefficients (standard errors in parentheses)			
	(1)	(2)	(3)	(4)
Religious pluralism, 1970	2.91** (0.46)	2.68** (0.54)	2.92** (0.46)	3.17** (0.47)
Restrictions on conversion, 1990	-0.84** (0.21)	-0.87** (0.21)	-0.88** (0.22)	-0.66** (0.22)
Communist, 1970	-1.52** (0.20)	-1.76** (0.25)	-1.61** (0.23)	-1.47** (0.21)
log (per capita GDP), 1990	-0.09 (0.19)	-0.14 (0.20)	-0.20 (0.22)	-0.20 (0.20)
School attainment, 1990	0.208** (0.052)	0.185** (0.053)	0.200** (0.053)	0.211** (0.053)
State religion, 1970	--	-0.34 (0.28)	--	--
Regulation of religion, 1970s	--	0.35 (0.20)	--	--
Monthly church attendance, 1990 ...	--	--	-0.52 (0.71)	--
Religious person, 1990 ...	--	--	0.19 (0.77)	--
Muslim adherence share, Barrett, 1970	--	--	--	-4.0* (1.9)
R-squared	.80, .72, .24	.75, .75, .31	.80, .72, .23	.74, .75, .33
standard error of residuals	.45, .58, .90	.50, .55 .86	.44, .58, .90	.52, .55, .85

*p-value < 0.05, **p-value < 0.01

Notes: The system of three equations is for logs of religious-conversion rates from ISSP 1991 (N=13), ISSP 1998 (N=29), and WVS 2001 (N=22). 40 countries appear at least once. Estimation is by the seemingly-unrelated (SUR) technique (see Wooldridge [2002, Ch. 7]). Separate constant terms, not shown, enter into each equation. For the variables shown, the coefficients were constrained to be the same in each equation. The religious-conversion rates are the ones in Table 3, columns 1-3. The religious-pluralism variable is the one in Table 3, column 4.

Table 6 Regressions for Logs of Religious-Conversion Rates: Robustness Checks			
	(1)	(2)	(3)
	alternate pluralism variable	conversion rate with all Other Christian as Protestant	conversion rate with Other Religion excluded
Religious pluralism, 1970	2.96** (0.61)	3.48** (0.53)	4.10** (0.60)
Restrictions on conversion, 1990	-0.86** (0.23)	-0.78** (0.24)	-0.09 (0.26)
Communist, 1970	-1.23** (0.22)	-1.43** (0.23)	-1.68** (0.27)
log (per capita GDP), 1990	-0.09 (0.21)	-0.10 (0.22)	-0.59* (0.25)
School attainment, 1990	0.242** (0.056)	0.126* (0.060)	0.209** (0.069)
R-squared	.76, .64, .23	.70, .65, .14	.74, .60, .17
standard error of residuals	.49, .66, .91	.57, .70, .94	.77, .79 .89

Notes: Column (1) differs from Table 5, column 1, in the definition of the religious-pluralism variable as the one in Table 3, column 5, rather than column 4. Column (2) differs from Table 5, column 1, in the change of the dependent variable to calculate religious-conversion rates by treating all Other Christian as Protestant, rather than Other Religion. Column (3) differs from Table 5, column 1, in the change of the dependent variable to calculate religious-conversion rates by omitting all conversions that involve the category Other Religion. The flow ΔR on the right-hand side of equation (2) in the text then omits changes in which the origin or destination was Other Religion. In this case, the total of persons starting with some religious adherence, which appears in the denominator of the right-hand side of equation (2), also omits persons categorized as Other Religion.