Religious Conversion in 40 Countries*

Robert J. Barro, Jason Hwang, and Rachel M. McCleary

Harvard University, Cornerstone Research, Harvard University

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.

Empirical investigations of the determinants of religious conversion have typically focused on persons within a single country, most often the United States. In the present study, we use survey questions from the International Social Survey Program and the World Values Survey to assess determinants of religious-conversion rates across a broad group of countries.

The conceptual antecedents for our study begin with Lofland and Skonovd (1981), who developed a descriptive typology of religious conversion. Their work demonstrated that conversion takes place within an historical-cultural context in which geographical location was often important. Gartrell and Shannon (1985, p. 32) extended the 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 (1985) by analyzing religious conversion as an individual's decision about whether and when to switch. Conversion restrictions imposed by governments and organized religions continue to apply in some places, and these constraints affect personal choices. However, we can still analyze conversion decisions in terms of 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 in our country-level data.

The prior theoretical work that relates most closely to our framework is the niche model of religion developed by Stark and Finke (2000, 2002). In their setting, an ideal pluralistic religion market consists of niches that cover the full range of individuals'

potential religious preferences. Each niche comprises a set of 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.

Empirical work on U.S. religious conversion has been extensive, beginning with Starbuck (1897), who compared revivalist with non-revivalist conversions among youths in the late 1800s. Starbuck argued that conversion corresponds to stages of human development, especially puberty and cognitive development. Greeley and Hout (1988) applied this approach to youth apostasy. Smith, Faris, Denton, and Regnerus (2003) and Smith and Denton (2005) applies this approach to three waves of the National Study of Youth and Religion to assess determinants of conversion, including age, gender, race, and geographical location. Related studies for other countries 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.

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. For commentaries, see Robbins (1988), Bromley and Hadden (1993), and Jenkins (2000). One perspective was that 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 cultic conversions could not be dismissed as deviant psychological behavior (Glock and Stark [1965], Lofland [1966], and Stark and

Bainbridge [1979]). One point 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 also 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 or switching (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]). These studies are particularly useful for assessing effects on the propensity to convert from variables such as age, gender, and race.

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], Lehrer [1998, 2004], 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

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or stricter religion. This process features an indirect form of conversion across generations that may not show up in conversion data—when the children remain in the religion in which they were raised.

Since most empirical studies apply to a single country over a relatively short 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.[1] Our panel of 40 countries fills this void by examining 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 assess determinants of religious-conversion rates at the country level. Section II discusses our procedures for using international survey data from the International Social Survey Program (ISSP 1991 and 1998) and the World Values Survey (WVS 2001) to estimate country-level religious-conversion rates. Section III describes the setup of our empirical analysis. Section IV presents empirical findings on religious-conversion rates at the

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[1]The 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 a country's stock of adherents to various religions reflect demographic factors (births, deaths, and international migration by type of religion), as well as *net* changes from 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.

country level. Section V discusses specification issues and robustness. Section VI has summary observations.

I. Theoretical Framework

This section constructs 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 along a line at positions $z_1, \ldots, z_m$, one of which 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. (We can also generalize to allow for multiple characteristics of religions.)

Assume that individual j is "born" (corresponding, perhaps, to the end of dependent childhood at age 16) with religious adherence of type x_j, corresponding 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 type depends on the benefits that person j perceives from belonging to alternative religions—these benefits depend on theology and strictness but can also involve the "quality" of religious services, social ties offered by a congregation, and so

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on. Because religious 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 "birth."[2] However, religious preferences, $(x_j)^*$, can change over time. We assume that they evolve randomly, following a process with no systematic trend. The variance of this process is important for determining the frequency of religious conversion, but we assume in applications that this variance is the same across time and space. Given the variance, the optimally determined frequency of religious switching depends on two factors: the cost of switching and the cost of allowing x_j to deviate from $(x_j)^*$. A higher switching cost generates 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 pair of religions enters into the change. More realistically, this cost would depend on which religions apply. For example, in terms of belief systems, switching to a neighboring religion will typically be easier than moving to a faraway religion—a Methodist 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.

One determinant of the switching cost, γ_j, at the individual level is education. More educated people likely find it easier to change religions because they are better at learning and adjusting to new ways of thinking. The better educated tend also to have

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

more information about alternative religions and more contact with people of other religions.[3]

One influence of the switching cost, γ_j, at the country level is governmental regulatory policy. For example, legal or religious restrictions on conversion raise γ_j for all persons j.

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 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 like to become Muslim, but one's locality has only Methodists and Catholics, the benefit from switching is smaller than it would be if the Muslim faith had a local presence. The general point is that, the more pluralistic the

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[3]Our 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.

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 a 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 predict that religious conversion depends 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. 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]). This argument suggests that more education would multiply the benefit received from the social networks offered by all religions. This multiplication means that more education raises the cost 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 from its ideal value. Optimal behavior entails letting the stock of inventory drift (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 change 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 $(x_j)^*$.

Our empirical analysis gauges the frequency of religious change at the country level by the fraction of the adhering population that undergoes a religious conversion by age 30. The model predicts that this religious-conversion rate will be higher if:

- a country has a higher level of religious pluralism,

- a country shifted recently toward greater religious pluralism,

- a country lacks legal and religious restrictions on conversion,

- a country lacks a history of Communism, and

- a country has higher average educational attainment.

In contrast,

- the level of real per capita GDP has an ambiguous effect on the conversion rate.

We can also use the model to evaluate the effects from an increase in the variance of the religious-preference shock. This change raises the frequency of conversion for a given critical gap (the deviation between actual and ideal type of religion that generates a switch). However, a higher variance also motivates an increase in the size of the critical gap, thereby reducing the frequency of conversion. Typically, this second effect only partially offsets the first, so that a larger variance leads, on net, to a higher frequency of conversion. This result 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.[4]

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[4]We can also 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

We can augment the model to allow for intermarriage. Marriage to a partner of a different faith 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 spouses having different religions. For present purposes, an important point is that the incorporation of intermarriage leaves intact the predictions already derived for the determinants 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

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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 necessary 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.

Program (ISSP) around 1991 and 1998 and the World Values Survey (WVS) around 2001 to measure religious-conversion rates in 40 countries.

Iannaccone (2003) used the ISSP data to assess long-term trends in church attendance in 32 countries. He constructed the 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 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.[5]

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

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[5] The General Social Survey (GSS) religion module for 1988 asked about multiple religious conversions in the United States. 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.

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.

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 the two waves of the ISSP and the one wave of the WVS, we aggregated 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 involves the Other Religion category. Depending on the level of detail in each survey, Other Religion includes different sets of residual groups. A particular concern is that, in some of the 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 and 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 provides 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.[6] 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.[7] 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 religious conversion.

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% friends or location, 18% issues of theology, and 19% with other reasons. Thus, intermarriage (part of the 37% group) is likely to be an

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[6]A difficulty with this statistic 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.

[7]These data have the same issue of age sampling as that described in n.6. Also, these GSS transitions include movements into or out of no religion, as well as switches within a major group, such as Protestantism.

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important but not overriding element in religious conversion. The substantial role for friends and location (the 25% group) is also consistent with a concentration of religious conversions at young ages. That is, young people may convert along with switching jobs or changing social networks, both of which associate with moving to a new location.

To accord with observed patterns by age, we focus our empirical analysis on religious-conversion rates for persons aged 30 and over at the time of each survey. Thus, we concentrate on estimates of completed lifetime conversion rates. However, our results are similar for the broader group of persons aged 16 and over.

The total number of persons, T, surveyed in a given wave break down into those who, at an earlier time, adhered to various religions, R1, R2, …, and those expressing no religious adherence, N. For illustrative purposes, suppose that there are just two religions, so that

(1) $T = R1 + R2 + N.$

In comparing with current (survey-date) adherence, denoted by asterisks, nine transitions are possible: R1→R1*, R1→R2*, R1→N*, R2→R2*, R2→R1*, R2→N*, N→N*, N→R1*, and N→R2*. We view religious conversion as comprising R1→R2* and R2→R1*. We look at the total of these two changes and do not distinguish between them. The tables that we construct provide information on apostasy, R1→N* and R2→N*, and religious rebirth, N→R1* and N→R2*, but we do not study these transitions in our present statistical analysis.

Let ΔR be the sum of the two forms of religious conversion, R1→R2* and R2→R1*. The religious-conversion rate is the ratio of ΔR to the number of persons who began with some religious adherence, R1+R2:

(2)   religious-conversion rate = $\Delta R/(R1 + R2)$.

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 former religion, as shown in the left-most column. The next nine columns correspond to eight current religions or no current religion. As an example, for ISSP 1998, among the 13,620 persons who had Catholic as their former religion, 11,663 were still Catholic at the time of the survey, 264 were Protestant, 2 Muslim, 1 Hindu, 9 Eastern Religion, 10 Jewish, 2 Orthodox, 143 Other Religion, and 1526 no religious adherence.[8]

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[8]The 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.

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 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 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 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 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. In addition, measuring the local composition of religious adherence and matching these data to the individual observations from ISSP and WVS is probably impossible.

III. Setup of the Empirical Analysis

We use a regression system with three equations. The dependent variables are the logs of religious-conversion rates from ISSP 1991, ISSP 1998, and WVS 2001, as shown in Table 3.[9] The estimates allow the error variances to differ for the three samples and

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[9]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.

for the residuals to be correlated across survey waves for a given country.[10] 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.

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

regressions. The first three columns are for the regression samples, dictated mainly by

availability of religious-conversion data, and the last three columns apply to 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 theoretical

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

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[10]We use the seemingly-unrelated or SUR estimation technique. See Wooldridge (2002,

Ch. 7).

one used for the ISSP and WVS surveys.[11]   Barrett also provides information on the fraction of the population having no religious adherence.

The form of the pluralism variable is suggested by a matching model, applied as an example to marriage between persons with different 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 different, religious adherence. The first concept we use is one minus the usual Herfindahl index of religious-adherence shares among persons with some adherence. This measure—the sum of the squares of the religion-adherence shares—is appropriate if persons with some religion randomly encounter other persons with some, but possibly different, 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 (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 allow for assortative mating—persons of the same religion being more likely to match—the probability of a religious mismatch could be substantially smaller than the number given by either of the religious-pluralism variables. However, the

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[11] 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.

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.

The theory suggests that religious conversion depends on past changes in religious pluralism, as well as the current level. Based on data from Barrett, Kurian, and Johnson (2001), we calculated 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 that matter for the religious-conversion data—which pertain to conversions not too much prior to the survey dates around 1991, 1998, and 2001. Therefore, we are pessimistic about our ability to isolate effects from past changes in religious pluralism.

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

Fox and Sandler provide four indicators for legal restrictions that impact on 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 sample have legal restrictions of the first two forms. These direct restrictions on conversion tend to exist in predominantly Muslim countries.[12]

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[12]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.

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.

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).[13] 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).[14] The dummy variables for Communism 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.

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

[14]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).

Data on monthly attendance at formal religious services, holding various religious beliefs, and self-classifying as a religious person come from 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 better educated than the broad sample of 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.[15] We think that the main concern is 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 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.

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

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.

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, 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 religious 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 real 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 per capita income on the value attached to formal religion.

The average years of school attainment of the adult population in 1990 has a significantly positive coefficient: 0.21 (s.e. = 0.05).[16] 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 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

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[16] 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).

religions in the United States in the 1988 GSS religion module. However, this research is not directly comparable to ours, because Loveland's definition of religious 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. These results are in Table 6, column 1. The pattern of estimated coefficients 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 existence 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 regression 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 are insignificant when we use 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 view 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 religious 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 concern is that the estimated regression coefficients can be biased if one or more of the explanatory variables are jointly determined with religious-conversion rates. As an example, when citizens have a greater propensity to switch religions, governments

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may react by changing policy toward religious conversion, thereby making the 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 estimated 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 little change in the magnitude or statistical significance of the other estimated coefficients. This result suggests that the potential bias in the other estimated coefficients 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 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 estimated coefficients 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 the 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, and the log of per capita GDP becomes significantly negative. 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 reassuring that the overall pattern of results is robust to this drastic change in definition of religious conversion.

VI. Summary Observations

Before speculating on broader implications of our results, we provide 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. This model 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 real 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. This better match predicts, in turn, 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) 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 cost 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.

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Table 1

Current Religious Adherence in Religious-Conversion Sample (ages 30 and over)						
	ISSP 1991		ISSP 1998		WVS 2001	
Religion	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. 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 religious adherence and 17,031 indicated some adherence. In a separate question, only 16,918 persons responded when asked which religion they adhered to. The number 7359 was scaled downward accordingly to 7310 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

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

The heading "Table 2, continued" spans the top of the table.

*Data not given directly by WVS.

Notes: Cells show numbers of each religious transition for persons currently aged 30 and over in the aggregate of the sampled countries for each survey wave. The underlying sample sizes for the ISSP were typically between 1000 and 2000 persons per country. The dating of the field work for ISSP 1991 was mostly 1990 or 1991, whereas ISSP 1998 applied mainly to 1996 or 1997. The ISSP provides good information about randomized sampling procedures. WVS 2001 applied to field work between 1999 and 2002 and was similar to the ISSP in sample sizes. The sampling procedures for the WVS are not well documented. ISSP asks about a person's form of religious adherence currently and when being raised. The lists include an array of types of religion and no religion. The WVS

questions first ask whether the respondent is currently a member of a religious denomination and, if so, which. Current members 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 with two different denominations. However, we cannot tell whether persons with a current but no former (and different) denomination were previously in the same denomination or had no religion. To fill in the affected cells, indicated by asterisks, 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 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					
	ISSP 1991	ISSP 1998	WVS 2001	Religious Pluralism 1970	Religious Pluralism 1970 (alt.)	Conversion Restrictions 1990	Communist 1970
	(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

Notes to Table 3

Religious-conversion rates are computed as described in the text and the notes to Table 2. 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 religious-adherence shares among persons who adhere to some religion. The alternative pluralism variable in column 5 equals $(1-H)/(1+n)$, 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.

Table 4 Means and Standard Deviations of Variables						
	regression sample			overall sample		
Variable	**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 religious-adherence shares are fractions of the adhering population in each country.

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).

Independent variables	Coefficients (standard errors in parentheses)			
	(1)	**(2)**	**(3)**	**(4)**
Religious pluralism, 1970	2.91**	2.68**	2.92**	3.17**
	(0.46)	(0.54)	(0.46)	(0.47)
Restrictions on conversion, 1990	-0.84**	-0.87**	-0.88**	-0.66**
	(0.21)	(0.21)	(0.22)	(0.22)
Communist, 1970	-1.52**	-1.76**	-1.61**	-1.47**
	(0.20)	(0.25)	(0.23)	(0.21)
log (per capita GDP), 1990	-0.09	-0.14	-0.20	-0.20
	(0.19)	(0.20)	(0.22)	(0.20)
School attainment, 1990	0.208**	0.185**	0.200**	0.211**
	(0.052)	(0.053)	(0.053)	(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

Table 5 Regressions for Logs of Religious-Conversion Rates (persons aged 30 and over, 40 countries, 3 survey waves)

*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. Separate constant terms, not shown, are in each equation. For the variables shown, the coefficients were constrained to be the same in each equation. The religious-conversion rates are in Table 3, columns 1-3. The religious-pluralism variable is 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**	3.48**	4.10**
	(0.61)	(0.53)	(0.60)
Restrictions on conversion, 1990	-0.86**	-0.78**	-0.09
	(0.23)	(0.24)	(0.26)
Communist, 1970	-1.23**	-1.43**	-1.68**
	(0.22)	(0.23)	(0.27)
log (per capita GDP), 1990	-0.09	-0.10	-0.59*
	(0.21)	(0.22)	(0.25)
School attainment, 1990	0.242**	0.126*	0.209**
	(0.056)	(0.060)	(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 involving Other Religion.