

# Does Religiosity Promote or Discourage Social Trust? Evidence from Cross-Country and Cross-State Comparisons\*

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**Abstract:** We look at the effect of religiosity on social trust, defined as the share of a population that thinks that people in general can be trusted. This is important since social trust is related to many desired outcomes, such as growth, education, democratic stability and subjective well-being. The effect of religiosity is theoretically unclear: while all major religions call for behaving well to others, religious groups may primarily trust people in their own groups and distrust others, as well as cause division in the broader population. We make use of new data from the Gallup World Poll for 105 countries and the U.S. states, measuring religiosity by the share of the population that answers yes to the question “Is religion an important part of your daily life?”. Our empirical results, making use of regression analysis whereby we control for other possible determinants of social trust and, by using instrumental variables, for the risk of reverse causality, indicate a robust, negative effect of religiosity, both internationally and within the US. When interacting religiosity with the degree of religious fractionalization, we find that the negative effect occurs above a rather low threshold level of fractionalization, where it increases monotonically, in line with our theoretical prediction.

**Keywords:** Trust, Religiosity, Religion, Social Capital

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## 1. Introduction

Social trust refers to trust in people in general and is related to many desired economic and political outcomes, such as higher economic growth (Knack and Keefer, 1997; Zak and Knack, 2001; Berggren et al., 2008), higher education (Bjørnskov, 2009a; Papagapitos and Riley, 2009), better governance (Knack, 2002; Bjørnskov, in press), higher democratic stability (Uslaner, 2003), smaller underground economies (D’Hernoncourt and Méon, 2008) and higher rates of subjective wellbeing (Helliwell, 2006). Consequently, a central question is why the populations in some countries and states are more trusting than in others.

This question has spawned a strand of its own in the literature on social trust, henceforth referred to merely as trust (e.g. Delhey and Newton, 2005; Brown and Uslaner, 2005; Berggren and Jordahl, 2006). Many variables have been suggested as determinants, including income inequality, ethnic diversity, welfare state policies, legal quality, economic development, democracy, having a communist history, and hierarchical religions. However, only few variables have turned out to be robustly associated with social trust (Bjørnskov, 2007; Nannestad, 2008). The search for good explanations of the vast trust differences across countries and states continues, as does the debate between different schools of thought on what to look for.<sup>1</sup>

Here, we expand the literature by providing a broad, international cross-country and an American cross-state analysis of *the effect on trust of religiosity*, by which is meant the fraction of a population that considers religion to be an important part of their daily life. Religion has until recently remained relatively unexplored in the trust literature and, indeed, in economics and political science overall (with some exceptions, such as: Iannaccone, 1998; McCleary and Barro, 2006; Wald et al., 2005; Wald and Wilcox, 2006). This relative neglect is, in our opinion, unfortunate, since there are reasons to believe that people’s perceptions and behavior, both in the economic and political realms, are influenced by religiosity.

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<sup>1</sup> For reasons of space, we do not want to delve into the differences between different schools of thought in the trust literature. However, we note that the recent literature seems to be broadly divided into an “institutionalist” school, arguing that effective institutions of property rights and fair public bureaucracies create social trust, and a “culturalist” school, arguing that social trust has substantially deeper historical roots and cannot be easily created. See Hooghe and Stolle (2003) for a discussion.

The results in the few studies that exist to date are mixed, depending on e.g. the kind of data, the sample, the measure of religiosity, the methodology and the type of religion. Against this background, one motivation for our study is our broad samples that stand in contrast to the focus of most previous studies on one particular country or a small group of countries. We not only cover over 100 countries with very different religious beliefs and traditions but use the same measure for an analysis of the US states, where one religion, Christianity, clearly dominates. Furthermore, the second major motivation for our study is that our measure of religiosity complements the ones used in most previous studies, i.e. religious affiliation or participation, as a share belonging to a certain religion may include a large number of nominal members for whom religion is not important in their daily life and as it is prone to miss religious people who are not members of those particular religions. Likewise, participation may include people for whom religion is not very important.<sup>2</sup>

To illustrate the last point, indicating that our measure may capture actual religiosity, we note that the practical importance of religion provides better measures of religiosity than participation. In Table 1, we cross-tabulate the answers to two questions of the US General Social Survey, concerning church attendance and religiosity, defined through respondents' view of the bible. We provide additional examples in the appendix.

*Insert Table 1 about here*

As can be seen, approximately 4 percent of respondents attend church regularly even though they define themselves as non-religious. Put differently, about 20 percent of those who define themselves as non-believers nonetheless take part in religious activity, making such activity a very noisy indicator of the saliency of religion in society and everyday life. Respondents who attend church regularly trust others to a slightly higher degree than those who do not attend, a difference that could in principle reflect that trusters are more prone to take part in social activities (in the form of charity and volunteering) than non-

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<sup>2</sup> Inspired by Max Weber, McCleary and Barro (2006: 51) state the following: "Our general view is that believing relative to belonging (or attending) is the main channel through which religion matters for economic and other outcomes." This is in line with our way of motivating our measure of religiosity. A very similar problem is carefully outlined by Halman and Draulans (2006) under the heading "belonging without believing and believing without belonging".

trustees (cf. Uslander, 2002). However, non-believers are clearly more trusting than believers. It is therefore of tantamount importance if one measures religiosity by, as we would argue that previous studies have tended to do, simple measures of organizational activity specific to religious organizations. Religiosity is different from religious participation or, we would argue, from religious affiliation.

In this paper, we therefore look at an arguably central although somewhat overlooked question in this literature: Does religiosity, in the sense of being important in daily life, promote or discourage trust? We first list a range of arguments suggesting a theoretically ambiguous answer to the question. However, a set of estimates using a standard measure of trust and the 2007 Gallup World Poll measure of religiosity shows that trust is *negatively* associated with religiosity when religious diversity exceeds a relatively modest level. Instrumental variables (IV) estimates furthermore suggest that religiosity causes less trust. This IV approach can be considered as another contribution of this study to the literature, where the issue of causality has received scant attention thus far (Nannestad, 2008). Lastly, we find that the negative effect of religiosity on trust emerges above a certain, quite low threshold level of religious fractionalization and that there is a monotonically negative relationship between fractionalization and the size of the negative effect.

The rest of the paper proceeds as follows. We first present a brief presentation of the previous literature and a set of informal theoretical arguments for both possibilities, building on religious doctrine and previous literature. After presenting the cross-country and cross-state data on trust, religiosity and a set of control variables, we go on to estimate the relation in a cross-country sample consisting of 105 countries. We repeat this analysis in a sample of 43 US states. In both cases, we apply a sensitivity analysis to see whether the results are robust to the specification of the sample and the model, and we in particular investigate how the effect of religiosity on trust depends on the level of religious fractionalization. A final section concludes.

## **2. How Does Religiosity Affect Trust? Previous Results and Theoretical Arguments**

In this section, we first present a brief review of the existing literature and then consider theoretical grounds for why religiosity might be conducive to or detrimental for trust.

## **2.1. Previous Studies**

Earlier empirical studies on the relationship between religion and trust can be divided into three groups.

A first group consists of cross-country studies of the determinants of trust and has included measures of the share of the population belonging to hierarchical religions, by which is meant the Catholic Church, Islam, and Orthodox churches, or some other religions.<sup>3</sup> The effect of hierarchical religions is generally found to be negative (La Porta et al., 1997; Zak and Knack, 2001; Berggren and Jordahl, 2006; Bjørnskov, 2007); there are some signs of a positive effect of Protestantism (Uslaner, 2002; Guiso et al., 2003; Delhey and Newton, 2005), although one study finds no statistically significant effect (Bjørnskov, 2007). However, the latter study does identify a positive effect of Hinduism and Buddhism in some specifications. Lastly, looking at beliefs, McCleary and Barro (2006) find no statistically significant effect of belief in heaven, hell or an afterlife on trust.

A second group of studies are based on individual-level data. Among them, Alesina and La Ferrara (2002) find no statistically significant effect of religious affiliation on trust; likewise, Welch et al. (2007) find no clear evidence of an association between religiosity, as measured by frequency of prayer, activity in religious congregations and beliefs in absolute morality and the "sinfulness of human nature", and trust. Welch et al. (2004) report that affiliation with Christian churches is related to lower trust, except for those who participate a lot and who report that religion is important, where a positive effect is found. Brañas-Garza et al. (2009) report that Catholic affiliation and observance is positively associated with trust among Latin Americans. In line with some cross-country studies, results in Trautmüller (2009a, b) suggest that church attendance among German Protestants is associated with higher levels of trust.

A third group of studies are also based on individual-level data but are experimental. Anderson et al. (2006) test whether religious affiliation and participation are associated

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<sup>3</sup> Formally, Catholic or Orthodox Christianity are not religions but branches of the Christian religion, but for reasons of brevity, we sometimes refer to them as religions. Furthermore, the term "hierarchical" is standard usage, following Putnam (1993).

with behavior in public goods and trust games and find that the former is unrelated to individual behavior and that the latter has some mild effects. In public goods games, voluntary contributions increased with religious participation, and in certain trust games, individuals with the highest participation rates were both less trusting and more trustworthy. Tan (2006) finds no effect of religion on other-regarding behavior in ultimatum and dictator games conducted in Germany. Tan and Vogel (2008) report that religious trustees are trusted more, especially by religious trusters. Johansson-Stenman et al. (2009) find, for rural Bangladesh, that Muslims and Hindus trust people of their own religion more than they trust others and that Muslims are relatively more distrustful of Hindus.

## **2.2. Theoretical Arguments**

Turning to the theoretical reasons to expect an association between religiosity and trust, Orbel et al. (1992) report that many seem to think that religion exerts a positive influence on trust: in particular, religious persons were thought to be more cooperative in a prisoners' dilemma experiment. And indeed, there are arguments for a positive effect on trust, mainly based on the idea that religions generally encourage adherents to do well unto others. But there are also arguments for a negative effect, mainly based on the idea that religiosity may create divides between the religious and the non-religious. In the following, we take a closer, albeit brief, look at the arguments regarding a positive effect, a negative effect, no effect and the related causality question.

### *A Positive Effect*

Regarding a positive relationship, religion seems able to influence behavior in various ways. For instance, Iannaccone (1998) surveys studies that document a relationship between religion and criminal activity, drug and alcohol consumption, physical and mental health, and incidence and stability of marriage patterns; Berggren (1997) finds that religious involvement is negatively related to abortion rates, the rate of children born out of wedlock, divorce rates and rates of not paying bills on time; and Putnam (2000) finds signs of religiously active individuals being more involved in donations to charity and

volunteering. Effects of these kinds could arise partly because of the religious teachings and partly because of the social interaction that religiosity often entails.<sup>4</sup>

As for teachings, many religions urge their followers to follow an ethics of reciprocity and generosity toward others. In Judaism, through Hillel (“Do not do to others what would be hateful if done to you”), and in Christianity, through Luke 6:31 (“Do unto others as you would have them do unto you”), this is embedded in the Golden Rule. Likewise, in Islam, Mohammed’s farewell sermon includes the assertion “Hurt no one so that no one may hurt you”. In Judaism, Leviticus 19:34 commands that “The stranger who resides with you shall be to you as one of your citizens; you shall love him as yourself, for you were strangers in the land of Egypt”.<sup>5</sup> Religion may, in this way, make use of or stimulate social or altruistic preferences (see e.g. Fehr and Fischbacher, 2002; and Levitt and List, 2007).

Furthermore, religions often prohibit socially destructive behavior. To the extent that people believe that religious persons adhere to these teachings, such persons are probably perceived as more trustworthy, which may in turn induce trust. If, say, one believes that a religious person does not cheat or steal, because this is prohibited by her religion, then one may feel that this person can be trusted.

It is not only the case that religions urge their followers to follow these teachings – the teachings may be internalized, not least due to conscious efforts to influence children, but are in any case generally enforced, which should make religious people seem even more trustworthy. Enforcement can be undertaken by other devotees or, at least in the minds of the religious, by some deity or cosmic system of justice. For example, many religious groups uphold strict behavioral codes and discipline and ostracize those who break them – for the logic of such rules, see Iannaccone (1992) – and people who behave badly may end up in hell or be reborn as some being with lower consciousness.

As for social interaction, Ruffle and Sosis (2007) argue that collective rituals, that are often important parts of religious life, serve a useful purpose in stimulating social cohesion

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<sup>4</sup> Iannaccone (1998: 1476) argues for a causal effect: “The argument for genuine impact begins with the fact that most religious institutions *are* forthright and specific about their moral – behavioral injunctions and *do* employ many time-tested methods of indoctrination and social control: early education, parental reinforcement, conditional status and membership, appeals to tradition and an all-seeing judge, and collective activities that foster social ties, facilitate monitoring, and raise the cost of disobedience”.

<sup>5</sup> Similar commands or rules can be found in virtually all the major world religions and philosophies, including Buddhism, Hinduism, Confucianism and Sikhism; see Wattles (1996).

and a more favorable attitude toward cooperation. This could also extend to the non-religious. Furthermore, Demerath (2003: 348) states that “at the micro level, religion can foster a sense of ‘social capital’ by giving its lay participants practice in, and encouragement for, participating in wider social and political, whether as mere voters or as intense activists”. Yet, it bears mention that this broad type of effect rests on the assertion that social participation generates trust, a mechanism that is still debated in the trust literature (e.g. Putnam, 2000; Claibourn and Mitchell, 2000; Uslaner, 2002).

In total, decency and honesty towards other people is taught by almost all religions, which may make the religious more trusting. Also, there are enforcement mechanisms and social stimulants that could render it credible that the religiously devout are more trustworthy, which could induce trust from the non-religious, in all, implying a positive religiosity-trust relationship.

### *A Negative Effect*

There are clearly some reasons to expect a positive effect of religiosity on trust. However, there are also some reasons to expect a negative effect. Broadly speaking, such an effect could come about in two different ways: by how religiosity affects the religious and by how religiosity affects the non-religious. We take these in turn.

The idea here is that people for whom religion is important may trust others less, and as their share of the population increases, social trust decreases.<sup>6</sup> In this sense, religion creates a divide in society, where those who believe may consider others as wicked or at least ignorant of and less prone to adhere to important moral insights.<sup>7</sup> After all, the non-believers are not subjected to the same moral teachings, to the same internalization mechanisms, to the same enforcement mechanisms (be it social or divine) or to the same

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<sup>6</sup> At the aggregate level, this mechanism could in principle continue until the share of non-believers is very small, at which point religiosity stops mattering for trust.

<sup>7</sup> Some religious people may hold that without religion, there is no firm, credible basis for moral rules, indeed, that morality may not even exist, which implies that the non-religious, although not necessarily immoral, are more prone to not follow the true moral teachings than those who believe in a divine law-maker. See Garcia and King (2008).



social interaction.<sup>8</sup> To the extent that the religious trust others, then, this is mostly restricted to their own group, as noted by Uslaner (2002). Smith et al. (1998: ch. 4) develop a religious-identity theory and argue that because of pluralist societies, religion makes fruitful use of distinction, engagement, conflict, and threat in relation to others. By defining themselves in relation to what they are *not*, pluralism enables the religious to develop a stronger sense of group boundaries. Through “sacred umbrellas” the religious can form strong bonds between themselves, while interacting with others, who are not part of these bonds. One can well envisage that social trust does not flourish under these umbrellas.<sup>9</sup> Indeed, Guiso et al. (2003: 249) find that religious people are more intolerant of people of different background than themselves, compared to the non-religious, and that they hold a less equal view of women (cf. Emerson and Smith, 2000; Greer et al., 2005).

The character in which a religion is organized and exercised could also play a role in reducing the trust levels of the religious. To the extent that religiosity takes place within a hierarchical religion, such as Islam, Catholicism or Orthodox Christianity, this may discourage trust, as “[v]ertical bonds of authority are more characteristic of the Italian Church than horizontal bonds of fellowship” (Putnam, 1993: 107; cf. La Porta et al., 1997: 336) and as “trends in religious life reinforce rather than counterbalance the ominous plunge in social connectedness in the secular community” (Putnam, 1993: 79). Iannaccone (1998: 1483) notes that more fundamentalist churches often apply stricter behavioral codes and feel a need to monitor members, which may signal an underlying distrust within the family of believers. Everybody is seen as prone to “fall into sin”. And if enforcement within the group is carried out by some third-party entity, such as a group of leaders in a hierarchy or (as thought by the devout) a god, then people do not “need” to trust each other, further reinforcing a tendency for distrust. In line with this, Daniels and von der Ruhr (2008) find that fundamentalist Protestants and Catholics trust others less than do individuals who do not claim a preference for a particular denomination; see also Coreno (2002). As Seul (1999: 553) states:

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<sup>8</sup> In the most serious cases, religion is a basis for terrorism and warfare against perceived enemies. On religion and domestic conflict, see e.g. Fox (2004).

<sup>9</sup> On religious identity theory, see also Ammerman (2003). On identity theory more generally, see Burke and Stets (2009).

Religions frequently supply cosmologies, moral frameworks, institutions, rituals, traditions, and other identity-supporting content that answers to individuals' needs for psychological stability in the form of a predictable world, a sense of belonging, self-esteem, and even self-actualization. The peculiar ability of religion to serve the human identity impulse thus may partially explain why intergroup conflict so frequently occurs along religious fault lines.

As mentioned above, religiosity could influence trust negatively in a second major way, through its effects on the non-religious, who may react to increased religiosity in a way that reduces social trust. The non-religious may consider the religious strange or different, and they may think that they behave well only so long as they expect to get social or divine rewards for doing so, i.e. that honest behavior is not rooted in moral so much as in purely self-interested motives.<sup>10</sup> This is in line with the theoretical discussion in Alesina and La Ferrara (2002), in which people trust those who are “similar” to them (and to the non-religious, the religious may seem dissimilar) and where trust is lower in communities with religious heterogeneity.

### *No Effect*

It remains an option that religiosity could also be unrelated to trust if either the teachings of religions constitute mere talk and if the religious do not pay much attention to them in practice, or if the opposite effects outlined above somehow cancel each other out. In addition, empirical results that show an effect could merely display a spurious correlation due to omitted variables or selection bias. For example, there may be an underlying characteristic that cause some individuals to have both a certain degree of religiosity and a certain degree of trust. In studies where a positive coefficient is obtained, this may instead reflect that certain people have social preferences that induce them to both become religious and to trust others.<sup>11</sup>

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<sup>10</sup> One attractive feature of this second way of explaining a negative effect of religiosity on trust is that this can reconcile the results of studies who find a positive association between religion and trust on the individual level with the results who find a negative association between religion and trust on the aggregate level.

<sup>11</sup> For more on this, see e.g. La Porta et al. (1997: 337), Iannaccone (1998: 1476–1476) and Guiso et al. (2003: 249).

## *Reverse Causality*

Finally, we need to ask whether there could also be a reverse causal relationship, i.e. one of trust increasing or reducing religiosity. As for trust increasing religiosity, one could imagine the possibility of trusting people being more open to the messages of others. Since some religions try to recruit new followers, they could be more successful in a setting of high trust. As for an effect in the opposite direction, we note that higher trust in ones fellow human beings could arguably reduce the felt need for religion. To some extent, trust in a non-religious setting could therefore substitute for some of the perceived benefits of joining a community of strict teachings that are enforced. Conversely, if individuals feel that other people cannot be trusted, religious beliefs may offer a necessary refuge from an apparently immoral and dangerous material world and the comfort that the virtuous are rewarded in an afterworld.

## *Summary*

This theoretical discussion indicates that religiosity could stimulate, reduce or be unrelated to trust – and that reverse causality could obtain. The main reason to expect a positive effect of religiosity is that religions often teach honesty and generosity toward others and that they provide social arenas that foster cooperation. The main reason to expect a negative effect is that religions may cause division and rift, both in that the religious may distrust the non-religious and people of other religions and in that the non-religious may distrust the religious. As such, one can argue for whatever net effect based on solid theoretical basis. Clearly, the issue of the nature of the relationship must be settled empirically.

## **3. Data and Empirical Strategy**

In order to estimate the association between religiosity and trust, we largely follow the methodology of the existing cross-country literature on the determinants of trust.

First, we use the standard trust measure, which is the share of the population of a country or state which answers “yes” to the question ”In general, do you think most people

can be trusted or can't you be too careful?". While the question may seem vague, a number of studies show that respondents perceive this question as a measure of trust in strangers or people in general and that it correlates well with other measures of non-enforceable but honest behavior (Knack and Keefer, 1997; Uslaner, 2002; Bjørnskov, 2007, 2008b). Nannestad (2008) also notes that surprisingly few respondents – typically below five percent – in surveys refrain from answering the question; hence, even though the question may *a priori* seem vague, most people seem able to provide an unequivocal answer. Furthermore, both in-depth interviews in Uslaner (2002), and the fact that the simple trust question predicts outcomes of trust experiments reasonably well when the stakes of properly anonymized games are of economic significance, suggest that the question measures trust in strangers, i.e., trust without specific information (Sapienza et al., 2007; Ostrom et al., 2009; Thöni et al., 2009). This is also most clearly indicated by recent research showing that social trust picked up by the standard question and questions specifically directed at measuring trust in family and close friends are constructs that are *negatively* associated (Alesina and Guiliano, 2009).

For the cross-country comparisons, we use the average of all available and credible observations in the five waves of the World Values Survey, supplemented by data from the LatinoBarómetro, the AfroBarometer, the Asian and East Asia Barometers, and the Danish Social Capital Project; all of these surveys have asked the same trust question in approximately representative samples.<sup>12</sup> In our cross-state US comparison, we instead use the trust data in Brown and Uslaner (2005), which primarily rest on the 1990s waves of the General Social Survey, supplemented by data from the American National Election Studies and surveys by the Pew Research Center; the combination of these surveys brings the number of respondents in 43 states up to workable numbers.<sup>13</sup>

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<sup>12</sup> Following the literature, we do not consider the Iranian and Chinese World Values Survey data as credible, as the trust observations are outliers in most analyses (cf. Uslaner, 2002; Bjørnskov, 2007). We also exclude the Canadian 2000 observation as other surveys conducted in the same year showed unaltered trust levels since 1995, questioning the validity of the much smaller World Values Survey number.

<sup>13</sup> A “workable” number usually means about 200-500 respondents in each unit, although working with high-quality surveys may allow one to use somewhat smaller sample sizes and still get reasonably accurate estimates. This means that we automatically exclude Hawaii, Idaho, Maine, Nebraska, Nevada and New Mexico, as well as the District of Columbia, which appears as a separate state-like entity in most US surveys.

To get an impression of the differences, the international trust scores range from a low of 3.4 in Cape Verde, with almost similar scores in Trinidad and Tobago and Rwanda, to a well-known high above 60 percent in the Nordic monarchies (Denmark, Norway and Sweden). The range across the 43 US states covered in the sample is a low of 10.5 (Arkansas) to a high of 63 percent (New Hampshire). As such, although the American average is much higher, the cross-state data are not substantially less variable than the cross-country data.

Second, our data on religiosity derive from Gallup (2007), who asked respondents "Is religion an important part of your daily life?". Our measure is the share of the population that answered "yes" to this question. While religiosity can be measured in multiple ways, we consider this question to capture the *saliency* of religion in everyday life, as argued in the preceding section. That is, instead of measuring the concept as is usually done, by either formal membership or attendance at worship, this measure is arguably less sensitive to the type of religion, and in particular religious experience not associated with organized religion. We do not consider differences across religious affiliations (except as a sensitivity analysis), ways or modes of worship or other aspects of religion, but focus on *how* religious people are. Finally, while we only use one variable to measure religiosity, it is worth emphasizing that it not only has the benefit of being available at two analytical levels (cross-country and cross-state), the validity of the question as a measure of religiosity and strength of beliefs has been previously corroborated (Halman and Draulans, 2006).

Like the trust data, the religiosity variable also exhibits very large differences, both across the world and across the US. The least religious countries in the world, according to this question, are Estonia, Sweden and Denmark with scores below 20 percent, while the most religious are Bangladesh, Indonesia and Egypt, the latter with a score of 100 percent. The mean in the present sample is 67 percent while, in comparison, the US mean is 64 percent. The least religious US state is Vermont, which at 42 percent is roughly on par with Spain and Switzerland that form an OECD average. The most religious state, Mississippi, in which 85 percent of the population answered yes, is placed along countries such as India, El Salvador and Malaysia. As such, the Gallup survey confirms that religion is, on average, substantially more important in the US than in most countries belonging to the

Western hemisphere (cf. Inglehart and Baker, 2000; McCleary and Barro, 2006; Pew, 2007).<sup>14</sup>

We follow the recent literature in our choice of control variables; all variables for both analyses are described, with descriptive statistics in Tables A1 and A2 and sources and definitions in Table A3 of the Appendix.<sup>15</sup> In the cross-country analysis these variable include income inequality, controls for monarchies and postcommunist countries, a dummy for the Nordic countries (Denmark, Finland, Iceland, Norway and Sweden) and the shares of the population belonging to either Catholicism, Islam, or an “Eastern” religion (Buddhism and Hinduism).<sup>16</sup> We add these affiliation data in order to ensure that our results in the following are due to differences in religiosity, and not to differences in religious composition.

In a further set of analyses, we add a measure of religious diversity. The measure derives from Alesina et al. (2003) and is calculated as one minus the Herfindahl-Hirschman index of the composition of religious affiliation in the population. In other words, it is the probability that two members of a population, chosen at random, do not share the same religious affiliation. We calculate the same measure of diversity for each of the US states, based on official information on religious affiliations provided by ARDA (2009).<sup>17</sup> In section 4.3, we interact these diversity measures with religiosity in order to

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<sup>14</sup> Using the simple first-stage estimates in the following to predict religiosity suggest that, had US religiosity followed the pattern common to the rest of the world, US GDP per capita ought to have been only a third of what it actually is. Claims that the US resembles a developing country when it comes to such attitudinal factors are therefore not entirely unwarranted.

<sup>15</sup> The relevant literature on cross-country determinants of social trust includes Uslaner (2002), Delhey and Newton (2005), Berggren and Jordahl (2006) and Bjørnskov (2007); the corresponding literature on cross-state determinants includes Robinson and Jackson (2001), Uslaner (2002), Brown and Uslaner (2005) and Bjørnskov (2009b). We in no way claim that this list is exhaustive, only that these studies use the largest and most comparable samples and address one or more of the problems outlined in Nannestad’s (2008) critical survey.

<sup>16</sup> Recent studies providing the basis on which to choose our control variables include Delhey and Newton (2005), Berggren and Jordahl (2006), Bjørnskov (2007) and Jordahl (2009).

<sup>17</sup> The American data distinguish between seven broad groups of religions: Evangelical Protestants, Mainline Protestants, Orthodox Christians, Catholics, Mormons, other groups, and non-claimed individuals. As the non-claimed individuals might belong to either religious group or no group, we calculate the diversity measure based only on claimants. The provider of the data warns that African-American churches are underrepresented, while Muslim and Jewish congregations are only included as approximate estimates in the

test whether a potential effect of religiosity is homogenous across countries/states or varies with the degree of religious diversity.

In the cross-state analysis, we follow the previous literature by including income inequality, the share of African-Americans in the state population, and controls for a set of different birth cohorts to take care of baby-boomer and WWII generational effects. In addition, we include a synthetic measure intended to capture the well-documented generational persistence of trust (cf. Uslaner, 2008). This measure, which we take from Bjørnskov (2009b), is based on the implicit assumption that culturally transmitted trust may not have changed markedly since the major immigration waves in the 19th century. We take advantage of a question in the US Census asking about respondents' family origins, i.e. which country the main part of their ancestors came from. The synthetic trust measure at the state level therefore is the weighted average of current trust in 100 countries identified in the US Census (2008) as potential family origins; the weights are the shares of the state population identifying each of the countries as their family origin.<sup>18</sup>

Most results in the following are obtained by a two-stage least squares estimator in order to allow for the possibility that trust could affect religiosity, as outlined in section 2. We identify the causal effect by the use of instrumental variables that capture established correlates of religiosity. In the cross-country analysis, our instrumental variables are the logarithm to GDP per capita (measured in purchasing-power adjusted USD; baseline year is 2000) and a dummy for countries situated in North Africa or the Middle East, as this region is more religious than would be predicted by its GDP. The reason seems to be that oil and other resources constitute the main part of their production, which therefore does not reflect broader modernization trends. In the cross-state regressions, our instruments are the logarithm to gross state product per capita (measured in purchasing-power adjusted 2000 USD) and the state average voter turnout in presidential elections in the 1990s, which is known to correlate well with religiosity (Gerber et al., 2008). While it could be argued that these instruments should correlate with the error terms of the regressions

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data. Yet, as both problems pertain to the black population and the rather small Jewish population, we believe that the US diversity measure is likely to be a sufficient approximation to a full, 'true' measure.

<sup>18</sup> Given the unlikely assumptions that people perfectly identified the origins of their family and that trust was entirely stable over time such that no other influences could be detected, this synthetic measure would perfectly predict state average trust levels. However, we note that this requires that trust is approximately stable across an entire century.

in the following, thus making them invalid, we throughout provide Hansen's J statistic to indicate that this is not the case.

In a set of additional robustness analyses, we split the cross-country sample in different ways. First, in Table 2, we present results that exclude observations with large residuals, observations in the top and bottom deciles of the trust distribution and, in an OLS regression, countries identified as outliers by Cook's D. Second, in Table 3, we present results for our religiosity variable when excluding deciles covering countries with low trust, high trust, low religiosity, high religiosity, Muslim, Catholic, Eastern religion, Orthodox, high incomes, low incomes and an unfree press. These tests, which we outline in more detail below, are made to ensure that results are not driven by countries with extreme data for our main variables.

## 4. Results

Before dealing with robustness and the central causality issue, we start by exploring the bivariate correlations across the world and the US states. That there is some association between religiosity and social trust is visible to the naked eye in both the cross-country sample in Figure 1 and the cross-state sample in Figure 2. The simple correlations are  $-.52$  in the former and  $-.57$  in the latter.

*Insert Figure 1 about here*

*Insert Figure 2 about here*

Judging simply from a bivariate relation yields a surprisingly precise estimate of trust. In the cross-country sample, only 11 countries are more than 1.5 standard deviations off a simple regression line: Mongolia and Trinidad and Tobago in a negative direction, while Canada, the Netherlands, Denmark, Finland, Norway and Sweden, Indonesia, Saudi Arabia and Thailand are substantially more trusting than the simple line suggests. Likewise, only six US states are more than 1.5 standard deviations off the line: Alaska, Arkansas and Delaware in a negative direction, and Utah and both Dakotas in a positive direction. Given the strongly indicative associations in these figures, we proceed to regression results.



#### 4.1. Cross-Country Results

We start with the cross-country results, which we report in Table 2. We first note that the effect of religiosity is negative and significant throughout. The bivariate estimate in column 1 is reduced somewhat when including a set of standard controls, but remains of approximately the same magnitude. We also note that the control variables exhibit the same results as in previous studies: income inequality is strongly significant and negative, Nordic countries are substantially more trusting than other countries, as are monarchies, while the populations in countries with a communist past are less trusting. Only the monarchy result fails once when we exclude the ten percent most trusting countries, among which monarchies are strongly overrepresented. In these respects, our large sample does not exhibit much different characteristics than the smaller country samples used in previous cross-country studies.

*Insert Table 2 about here*

The identifying assumption of our IV estimates is that economic development does not affect the variation of trust not captured by standard controls through other channels than religiosity. This may *a priori* seem like a quite restrictive assumption, yet we note that previous research tends to agree on this point, and that its exclusion is practically unproblematic for our present purpose if measures of formal institutions (known to correlate with both GDP and trust) are only weakly correlated with religiosity (Murray, 2006). We also note that all Hansen J statistics are insignificant; although the test associated with the simple bivariate association in column 1 is doubtful, this is due to variation picked up by control variables in the following columns. As such, we are far from rejecting the assumptions necessary for identifying causality.

Noting this, the results in Table 2 indicate that religiosity discourages trust, as measured at the national level. All other things being equal, the results suggest that moving from average religiosity (67 percent) to a Nordic level (20 percent) would be associated with, on average, an increase in trust of roughly 8-10 percentage points. Moreover, the inclusion of religiosity entirely swallows any clear effects of religious denominations found in previous studies (Berggren and Jordahl, 2006; Bjørnskov, 2007); the religion indicators

fail being jointly significant by a large margin and thus provide no additional information ( $F = .89$ ). Interestingly, the clear negative effect of having large shares of the population adhere to Islam in particular seems to be an effect of Muslim populations being much more religious than most other religions. As such, Arab Muslims in particular come to reflect the hope often attributed to Muhammad: “An Arab is superior to a non-Arab in nothing but devotion” (quoted in Karsh, 2007: 19).<sup>19</sup>

The main result proves to be robust to excluding outliers identified by two different methods in columns 3 and 6 – in the former by calculating residuals from 2SLS results, in the latter by Cook’s Distance in OLS results – and to excluding the top and bottom ten percent of the sample, and as such estimating the effects in a range relevant to most countries.

*Insert Table 3 about here*

In Table 3, we experiment with another set of robustness tests. Here, we exclude countries based on their trust levels (the decile with the highest trust levels or the decile with the lowest trust levels), level of religiosity (the decile with the highest religiosity or the decile with the lowest religiosity), level of economic development (richest half of the sample or poorest half of the sample), or predominant religion (Muslim, Catholic, Eastern religions, Orthodox Christians, and Orthodox Christians including postcommunist countries). In the case of the religious variables, we exclude the ten percent with the largest population adhering to a specific religion, thereby testing whether our results are driven by that particular religion. In the case of Orthodox Christianity, we have two groups of countries: one where we only consider the Orthodox populations and one where we add the postcommunist Central and Eastern European countries. In the former case, a decile is excluded; in the second case, the same countries are excluded, as well as the postcommunist ones, and they together consequently make up more than a decile. The reason for this last exercise is that since countries in Central and Eastern Europe

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<sup>19</sup> We note that these effects are not contingent on which religion people believe in. By calculating the leverage of each observation (DFBetas) on the point estimate of religiosity, it is possible to get a sense of whether countries with population majorities belonging to specific religions have more leverage. Doing so, we find no evidence to indicate that any one confessional religion has more leverage. We nevertheless note that Buddhism, a religious philosophy more than a religion, has relatively less leverage.

experienced half a century of strong political influence from Russia, one of the most Orthodox Christian nations, they may arguably also have taken on certain social characteristics associated with Orthodox Christianity. Finally, we also test whether results are driven by countries with limited political and informational freedom, as measured by the number of violations of press freedom.<sup>20</sup> This last test is to ensure that our findings are not simply due to a potentially spurious correlation between religiosity and the protection of free speech and information.

While the size of our estimate of religiosity varies some, we note that it remains significant throughout. In an additional set of robustness tests (not shown), we also ascertain that our results are robust to including measures of ethnic or religious diversity, alternative codings of the religious composition of the population, and measures of institutional quality capturing legal quality or the extent of democracy, thus conforming with the trust literature (Bjørnskov, 2007; Nannestad, 2008). Given that Hansen's J statistic is never significant and very far from significance when excluding the most obvious outliers, we believe that the significant results can moreover be interpreted as a causal effect of religiosity on trust.

#### **4.2. Cross-state results**

However, one could still fear that international differences of religiosity simply capture other cultural features that are only spuriously correlated with the importance of religion in daily life. Another potential problem could arise if religiosity is primarily associated with trust in relatively poor countries, or if the negative effects do not pertain to Christian denominations. In order to make sure that these worries are unfounded, we therefore also estimate the importance in a cross-section of 43 US states for which credible trust scores exist. This additional approach has a number of advantages.

First, the US is, as always, a good laboratory for retesting cross-country findings, as the set-up of formal institutions and the overall political and popular culture is

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<sup>20</sup> We use the Reporters Without Borders (RSF) measure of press freedom instead of more standard measures of freedom such as indicators of democracy and the rule of law, as it is less correlated with GDP. We thereby partly sidestep the problem of splitting samples based on highly correlated indices purportedly measuring something different. In addition, the press freedom index is arguably a better measure of free speech than most other institutional measures.

approximately the same across the country or, as a minimum, substantially less diverse than in cross-country samples. This alleviates the potential problems of omitted institutional and structural variables endemic to the cross-country literature. Likewise, the US is to a very large extent dominated by Christianity, which allows us to sidestep the issue of basic religious conflicts in society. It also provides a possibility to test whether the negative cross-country findings pertain to Christian religious affiliations, and not simply to other religions.

Second, in the US sample, we have the opportunity to control for cultural differences determined by deep historical roots through creating a synthetic “ancestral trust measure”, following Bjørnskov (2009b). As outlined above, this measure is created as a weighted average of present-day trust levels in 100 countries from which Americans state that their ancestors came and is therefore likely to pick up effects deeply rooted in stable cultures. We note here that if religiosity also includes a component that is approximately stable across generations, the inclusion of ancestral trust is likely to lead us to underestimate the effects of religiosity on trust across the US states, as part of the effect of religiosity in a historical perspective would be included in the synthetic measure of ancestral trust. The estimates in the following can therefore be seen as a lower bound of a “true” long-run effect.

Our identifying assumptions behind the instrumental variables are similar to those in the cross-country analysis. In the cross-state analysis, we assume that GDP per capita and voter turnout in presidential elections do not affect trust through other channels than their association with religiosity. While both could in theoretically plausible ways be connected to trust, we note that Hansen’s J statistic is quite far from significance when including all control variables. The estimates are therefore not likely to overestimate the effects of religiosity.

*Insert Table 4 about here*

Table 4 reveals that the negative effect of religiosity on trust in the cross-country analysis remains negative when measured at the level of US states, and quite robustly so. The IV estimates of columns 1-3 all display a negative association, as do the OLS estimates in columns 5-6, while the estimate in column 4, where the top and bottom deciles of the trust distribution are excluded, retains the negative sign but does not attain statistical

significance. However, the size of the estimated coefficient of religiosity is smaller for the US than for the international sample. If one goes from the average level of religiosity (65 percent) to the lowest level (42 percent in Vermont), this entails an increased trust level of about five to ten percentage points; put differently, a one standard deviation shock to religiosity seems to produce a change in trust levels of about one third of a standard deviation.

A notable feature of our analysis is that income inequality, which otherwise is one of the most robust determinants of trust to be found in the literature, is insignificant throughout in our cross-state analysis. One explanation might be that religiosity could be antecedent to inequality. The share of blacks is negatively related to trust throughout,<sup>21</sup> while the cohort effects are generally significant, as is our synthetic ancestral trust variable: a higher degree of such trust increases trust by about the same amount, pointing at the possible importance of a cultural transmission of trust.

We therefore note that the cross-state analysis broadly reproduces the findings from the cross-country analysis above. While the effects in the US are smaller, consistent with the somewhat smaller variation in religiosity across the US, we consistently find that religiosity is negatively associated with trust. Furthermore, at both analytical levels, the size of the estimates is sufficient to warrant real attention. However, as a last point, we note that intuitive theory would predict that the effects are larger when people are more religiously diverse. We briefly turn to this question as a final topic.

### **4.3. Do effects vary with religious diversity?**

Thus far, we have not considered the role of religious fractionalization or diversity. As explicated in section 2.2, there are theoretical reasons to expect a negative relationship between religiosity and trust to interact with the level of religious diversity. In a setting with many and different religious groups, higher religiosity plausibly entails more potential tension and distrust. This can stem from the attitudes of the religious towards other

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<sup>21</sup> It is worth noting that while Gustavsson and Jordahl (2008) find that the share of foreign-born persons in Swedish counties is related to lower trust, the vast majority of the present Black population is born in the US. While the strongly negative association between trust and the size of the Black population therefore cannot be due to nationality, it may still be caused by having an easily identifiable population that also identifies itself outside of a national identity.

religious people, as well as towards the non-religious, and from the attitudes of the non-religious towards the religious.

Table 5 illustrates the fruitfulness of exploring heterogeneity, i.e. of allowing the point estimate on religiosity to vary with religious diversity, a fractionalization measure from zero to one, which denotes the probability of two random people belonging to different religious groups.<sup>22</sup> First, the difference between columns 1 and 2 (where the former just repeats results with the same sample) documents that religious diversity *per se* holds no explanatory power. However, including an interaction term in column 3 both boosts the explanatory power as well as providing clear evidence of a heterogeneous effect of religiosity, which is robust to excluding obvious outliers in column 4.<sup>23</sup>

*Insert Table 5 about here*

This relation is depicted in Figure 3, including the conditional 95 percent confidence interval, which clearly shows that the effect of religiosity on trust increases with the degree of religious diversity in society. The level at which the effect turns negative is .22, or roughly the level in Argentina, Belgium or Denmark. The effect turns significant at a level of approximately .35, which is about the level of India, Israel or Chile. As such, 76 percent of the sample is above the cut-off, and 61 percent significantly so. As the distribution of the full sample of religious diversity in Alesina et al. (2003) is quite close to the one in our sample, the findings indicate that religiosity may be a problem for trust in between two-thirds and three-quarters of all countries in the world.

*Insert Figure 3 about here*

As noted, we also develop a measure of religious diversity across the American states similar to the one used in our cross-country analysis.<sup>24</sup> This allows us to repeat the analysis in section 4.2, including an interaction term between US religiosity and the diversity

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<sup>22</sup> Religious diversity is measured by  $1 - \sum(x_i/x)^2$ , where  $x_i$ =number of people in group  $i$  and  $x$ =total population.

<sup>23</sup> We also note that the interaction between religious diversity and religiosity appears as robust as other estimates. Further robustness tests are available on request from the authors.

<sup>24</sup> The data are available from the authors upon request.

measure. It furthermore allows us to test whether diversity between religious affiliations that are more closely related than religions in the cross-country sample has similar effects.

The results reported in Table 6 to a large extent replicate the findings in the cross-country sample. While the estimated coefficients of the control variables are virtually unchanged and while diversity *per se* adds no explanatory power, the effect of religiosity appears clearly heterogeneous in religious diversity. This result is again robust to throwing out clear outlier observations. As Figure 3, Figure 4 illustrates the heterogeneous relation, including the conditional 95 percent confidence interval. Although the estimate is never positive across the actual levels of diversity found in the US, religiosity fails statistical significance below a relatively low level around .35. This level is quite similar to the one found in the cross-country sample and approximately corresponds to religious diversity in states such as Michigan and Minnesota. As such, roughly three fourths of US states have levels of religious fractionalization above this level. Furthermore, the figure illustrates that the association between religiosity and trust fails the 5 percent significance level at very high levels of diversity, yet we ought to stress that it still passes the 10 percent level.

*Insert Table 6 about here*

*Insert Figure 4 about here*

In summary, we find that religious diversity helps us to better pinpoint the relationship between religiosity and trust and to clarify that the tensions that are attributable to religious fractionalization contribute to explaining why there is a negative effect in most countries and US states.

## **5. Conclusions**

As trust has been shown to be important for the attainment of widely desired goals, such as economic growth, democratic stability and subjective well-being, the question of what stimulates trust constitutes a relevant research topic. We investigate the net effect of religiosity on trust, a topic that social scientists have recently begun to explore. Unlike the previous literature, we make use of a measure of religiosity that measures the share of a

population for which (any) religion is important in their daily life, which we believe better captures “true” religiosity, excluding those members of religions and participants in religious events that are not believers and including those who are not members of established religion but who are nevertheless believers. We furthermore conduct our study on the basis of broader samples than before, in the form of a cross-country analysis covering more than 100 countries and a US cross-state analysis, and we use instrumental variables to delve into the issue of causality.

Our results indicate that religiosity exerts a *negative* influence on trust and that this result is robust to changing the sample in various ways. That is, if religiosity was lower, trust levels would be higher – especially, it turns out, at a cross-country level. There, going from an average degree of religiosity to the lowest degree is related to an increase in trust by eight to ten percentage points. At the US cross-state level, the marginal effect is, again, negative, but somewhat smaller. When deepening the analysis by interacting religiosity and the degree of religious fractionalization, we find that the effect turns negative above a low threshold level in both samples and that the relationship is monotonic.

On theoretical grounds, this result is not surprising, although there are also arguments for a possible positive relationship. We argue that the main reason to expect a positive effect of religiosity is that religions often teach honesty and generosity toward others and that they provide social arenas that foster cooperation. The main reason to expect a negative effect, of the kind we have identified, is that religions may cause division and rift, both in that religious people may distrust those who do not share their beliefs and who are not subject to the same enforcement mechanisms as they are, and in that non-religious people may regard with suspicion those who take religiosity seriously. This seems to be the general case, in countries and states where there is moderate to high religious fractionalization.

A further question is if our results tell us something about whether some religions are more adverse to trust than others. While we in no way consider this an answer, the outliers which we identify by Cook’s D provide a suggestion. These outliers are Indonesia, Japan, Mongolia and Thailand, two with substantially higher trust levels than would be predicted by our specification in Table 2 along with very high levels of religiosity (Indonesia and Thailand, +22 percent) and two with somewhat lower trust levels and relatively low levels of religiosity (Japan and Mongolia, -9 and -14 percent, respectively). These countries are also unified in having strongly Buddhist traditions, a religion without apparent secular



meaning and a specific focus on peace and tolerance. Yet, whether Buddhism is different from other religions in this particular aspect is a question that we cannot provide an answer to here. Likewise, we cannot control for whether people adhere to particularly radical versions of some religion. These matters are topics for future research.

To summarize, while we cannot say that religiosity always and everywhere causes reductions in trust, while we are not able to discern, with our data, how the effect of religiosity comes about and while our findings do not imply that religiosity or religiously based traditions cannot have other, favorable behavioral effects on e.g. corruption or politics (cf. Paldam, 2001), it is quite clear that religiosity is not necessary for trust and that it, probably, has a detrimental effect, both internationally and in the US, especially when there is religious fractionalization.

## **Appendix**

*Insert Table A1 about here*

*Insert Table A2 about here*

*Insert Table A3 about here*

### **Measures of religiosity and trust – US individual data**

Many efforts have been expended on measuring religiosity. The standard in much of the literature, and in particular in the trust literature, is to approximate religiosity with individuals' attendance record at religious service (e.g. Traunmüller, 2009a, b). In other words, the assumption in previous studies has been that individuals who more often attend some form of religious service are necessarily more religious than those who attend less. Our preferred measure in this paper is different, as we argue that the standard approach suffers from potentially serious problems. Specifically, wherever the local church, synagogue or other place of worship serves a role in community life, attendance may simple proxy for sociability and participation in local civil society. As this is the case in many parts of the world, attendance records may only be weakly associated with religiosity. We thus argue that church attendance may yield misleading estimates due to its measuring something different than the saliency of religion in everyday life.

As an illustration of the main problem, we explore simple differences of social trust among Americans. We here explore simple individual-level differences when splitting parts of the united 1972-2008 file of the US General Social Survey. We have found seven questions that likely capture important aspects of religion and religiosity: 1) the degree to which respondents believe it is "Important to respondent of having faith in" their religion; 2) how likely it is that "Respondent's situation is caused by: God's will"; 3) the degree to which respondents agree that "Life [is] meaningful because God exists"; 4) the degree to which respondents rate the "Importance of believing in God without doubt"; 5) respondents' view of the bible – is it "The word of God", "Inspired words", a "Book of fables", or something "Other";<sup>25</sup> 6) the extent to which the "Respondent considers self to be a religious person"; and 7) how regularly respondents attend church or other religious service. The exact questions are listed in the in Table A4.

*Insert Table A4 about here*

In Table A5, we report the trust scores of the religious versus non-religious shares of the US population, as proxied by each of the seven questions. In Table 1 in the introduction, we cross-tabulate the answers to two questions asked in sufficiently large respondent pool: Church attendance and religiosity, defined through respondents' view of the bible.

*Insert Table A5 about here*

The simple differences in Table A5 rather clearly illustrate that religious Americans tend to be less trusting than those with weak or no religious beliefs, as measured by five of the seven questions. Two questions show no or only minor differences: whether respondent considers themselves to be religious persons, and church attendance. The cross-tabulations in Table 1 further emphasize the need to use measures of the saliency of

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<sup>25</sup> The other option thus includes answers that are not politically correct such as various derogatory and strongly critical views of the bible and religion as a whole.

religion in respondents everyday life instead of either attendance, or other potentially misleading questions.<sup>26</sup>

The table illustrates a main point and, in our view, a main weakness of the existing literature, as approximately four percent of respondents attend church regularly even though they define themselves as non-religious when asked about actual beliefs. Put differently, about 20 percent of those who define themselves as non-believers nonetheless take part in religious activity, making such activity a very noisy indicator of the saliency of religion in society and everyday life. Respondents who attend church regularly are slightly less than two percentage points more likely to trust other people than those who do not attend, a difference that could in principle reflect that trusters are more prone to take part in social activities than non-trusters (cf. Uslaner, 2002). However, non-believers are eight percentage points more likely to trust other people than believers. It is therefore of tantamount importance if one measures religiosity or, as we would argue that previous studies have tended to do, simply measures organizational activity specific to religious organizations.

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<sup>26</sup> With respect to the other question, we note that people often tend to answer this type of question relative to their surroundings. As such, in strongly religious environments, respondents are unlikely to state that they are strongly religious, since their comparison group is equally religious.

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Table 1. Cross-tabulations, church attendance and religiosity

	Attend	Don't	Trust (row)
Believe	44.15	36.48	36.47
Don't	3.56	13.81	43.62
Trust (column)	38.64	36.95	

Table 2. Cross-country determinants

	1	2	3	4	5	6
	2SLS			OLS		
			excl. obs. with residuals > 1.5 std dev.	excl.obs. in trust top and bottom deciles		excl. obs. with large Cook's D
Religiosity	-35.43*** (6.40)	-21.37*** (7.37)	-19.45*** (5.53)	-16.62*** (6.09)	-16.06*** (5.10)	-23.128*** (4.074)
Income inequality		-.26** (.11)	-.22*** (.08)	-.23*** (.08)	-.32*** (.093)	-.258*** (.085)
Nordic country		17.09*** (3.55)	20.85*** (3.13)	-	18.43*** (3.17)	17.852*** (3.097)
Monarchy		8.29** (3.36)	8.40*** (2.75)	1.45 (2.46)	9.06** (3.57)	6.885** (3.191)
Postcommunist		-9.01*** (2.62)	-5.83*** (1.88)	-8.60*** (2.45)	-7.94*** (2.50)	-7.958*** (2.353)
Catholics		-.03 (.02)	-.00 (.02)	-.02 (.02)	-.03 (.02)	-.022 (.021)
Muslims		-.02 (.04)	-.01 (.03)	-.00 (.03)	-.04 (.03)	-.016 (.034)
Eastern religion		.06 (.07)	.05 (.04)	.03 (.04)	.06 (.07)	.035 (.052)
Observations	104	101	90	81	102	98
Pseudo R square	.26	.65	.78	.38	.65	.70
F statistic	30.04	120.59	126.58	14.31	128.66	159.30
RMSE	11.54	7.92	5.85	6.43	8.26	7.43
First stage F statistic	78.60	35.49	42.44	39.53		
First stage R square	.46	.36	.49	.44		
Hansen J stat, p<	.16	.30	.55	.99		

*Note:* \*\*\* (\*\*) [\*] denotes significance at  $p < .01$  ( $p < .05$ ) [ $p < .10$ ]. Instrumental variables are the log to GDP per capita in 2000 and a dummy for North Africa and the Middle East. The outlier countries identified by Cook's D (residuals larger than  $4/N$ ) in column 6 are Indonesia, Japan, Mongolia and Thailand.

Table 3. Cross-country determinants, excluding groups of countries

	1	2	3	4
Excluding:	Low trust	High trust	Low religiosity	High religiosity
Religiosity	-21.72*** (6.79)	-17.09*** (6.98)	-25.93*** (9.27)	-19.07* (11.25)
Excluding:	Muslim	Catholic	Eastern	Orthodox plus
Religiosity	-25.04*** (8.47)	-20.26*** (7.64)	-27.89*** (6.57)	-25.94*** (7.39)
Excluding:	Orthodox	Rich	Poor	Unfree
Religiosity	-19.65*** (7.69)	-13.91* (8.43)	-18.53** (7.88)	-27.43*** (7.52)

Note: \*\*\* (\*\*) [\*] denotes significance at  $p < .01$  ( $p < .05$ ) [ $p < .10$ ]. Instrumental variables are the log to GDP per capita in 2000 and a dummy for North Africa and the Middle East. All regressions include the full specification reported in Table 2. “Orthodox plus” refers to countries with large Orthodox populations plus other postcommunist countries. Unfree is defined as countries with the most violations of press freedom as reported in RSF (2008). Excluded countries are based on deciles, except in the case of rich and poor, which contains one half of the sample each, and “Orthodox plus”, which excludes additional non-Orthodox postcommunist countries.

Table 4. Cross-state determinants

	1	2	3	4	5	6
	2SLS			OLS		
			excl. obs. with residuals > 1.5 std dev.	excl.obs. in trust top and bottom deciles		excl. obs. with large Cook's D
Religiosity	-.77*** (.17)	-.39** (.20)	-.45*** (.17)	-.25 (.24)	-.38*** (.13)	-.46*** (.13)
Income inequality		-13.97 (57.12)	-16.41 (56.07)	55.42 (48.86)	-16.03 (56.20)	-42.16 (51.50)
Black population		-.56** (.24)	-.53** (.25)	-.42** (.22)	-.57** (.24)	-.39* (.23)
Cohort <1916		-2.69** (1.19)	-2.36** (1.14)	-1.92* (1.09)	-2.68** (1.34)	-3.84*** (1.31)
Cohort 1916-30		.670** (.33)	.55* (.30)	.70** (.31)	.67* (.36)	.68** (.33)
Cohort 1931-45		1.53*** (.51)	1.43*** (.46)	1.47*** (.52)	1.54*** (.54)	.98 (.68)
Cohort 1945-60		.55 (.51)	.53 (.53)	-.15 (.52)	.56 (.57)	.25 (.63)
Synthetic ancestral trust		1.01*** (.18)	.99*** (.17)	1.15*** (.13)	1.01*** (.19)	1.12*** (.19)
Observations	43	43	39	35	43	41
Pseudo R square	.32	.76	.83	.69	.76	.79
F statistic	19.43	16.34	31.08	15.25	17.17	23.68
RMSE	9.59	5.75	4.56	4.52	6.47	6.08
First stage F statistic	31.06	11.46	10.55	10.68		
First stage R square	.60	.51	.50	.49		
Hansen J stat, p<	.01	.86	.23	.74		

*Note:* \*\*\* (\*\*) [\*] denotes significance at  $p < .01$  ( $p < .05$ ) [ $p < .10$ ]. Instrumental variables are the log to GDP per capita in 2000 and the average voter turnout in presidential elections in the 1990s. The outlier states identified by Cook's D (residuals larger than  $4/N$ ) in column 6 are Delaware and Florida.

Table 5. Cross-country determinants, allowing for heterogeneity

	1	2	3	4
	No diversity	No interaction	With interaction	excl. obs. with large Cook's D
Religiosity	-15.958*** (5.095)	-15.153*** (4.982)	14.046 (8.598)	12.126* (6.800)
Religious diversity		2.799 (4.676)	51.379*** (10.663)	55.307*** (9.809)
Religiosity * diversity			-63.729*** (14.394)	-67.235*** (12.418)
Income inequality	-.312*** (.093)	-.321*** (.092)	-.251*** (.079)	-.219*** (.072)
Nordic country	18.567*** (3.178)	19.622*** (3.469)	31.498*** (3.392)	31.825*** (3.006)
Monarchy	9.087** (3.577)	9.313*** (3.499)	5.809** (2.944)	5.248** (2.455)
Postcommunist	-8.367*** (2.498)	-8.246*** (2.447)	-7.487*** (2.216)	-7.709*** (2.066)
Catholics	-.283 (.236)	-.214 (.276)	-.166 (.256)	-.161 (.228)
Muslims	-.202 (.363)	-.153 (.374)	-.202 (.363)	.187 (.279)
Eastern religion	.617 (.705)	.661 (.709)	.775 (.653)	.224 (.902)
Observations	102	102	102	95
Pseudo R square	.643	.644	.689	.751
F statistic	126.00	109.58	132.51	135.77
RMSE	8.292	8.316	7.819	6.832

*Note:* \*\*\* (\*\*) [\*] denotes significance at  $p < .01$  ( $p < .05$ ) [ $p < .10$ ]. The outlier countries identified by Cook's D (residuals larger than  $4/N$ ) in column 4 are Indonesia, Ireland, Japan, Morocco, Taiwan, Thailand, Trinidad and Tobago and Turkey.

Table 6. Cross-state determinants, allowing for heterogeneity

	1	2	3	4
	No diversity	No interaction	With interaction	excl. obs. with large Cook's D
Religiosity	-.39** (.20)	-.38*** (.14)	.08 (.52)	.36 (.46)
Religious diversity		.73 (12.77)	.71 (.73)	1.15* (.66)
Religiosity * diversity			-1.06 (1.13)	-1.87* (.99)
Income inequality	-13.97 (57.12)	-14.59 (55.59)	27.89 (58.81)	4.73 (54.08)
Black population	-.56** (.24)	-.57** (.25)	-.50* (.26)	-.39* (.23)
Cohort <1916	-2.69** (1.19)	-2.69 (1.39)	-2.67* (1.42)	-3.38** (1.36)
Cohort 1916-30	.67** (.33)	.68* (.36)	.53 (.36)	.72** (.31)
Cohort 1931-45	1.53*** (.51)	1.54*** (.55)	1.39** (.55)	1.34** (.59)
Cohort 1945-60	.55 (.51)	.55 (.62)	.29 (.66)	.11 (.67)
Synthetic ancestral trust	1.01*** (.18)	1.02*** (.26)	1.17*** (.31)	1.17*** (.25)
Observations	43	43	43	39
Pseudo R square	.76	.76	.76	.83
F statistic	16.34	14.79	14.64	5.72
RMSE	5.75	6.56	6.59	24.34

*Note:* \*\*\* (\*\*) [\*] denotes significance at  $p < .01$  ( $p < .05$ ) [ $p < .10$ ]. Interaction effects in column 3 are evaluated at a diversity level of zero; full results are illustrated in Figure 4. The four outlier states identified by Cook's D (residuals larger than  $4/N$ ) in column 4 are Delaware, Massachusetts, Florida and Utah.

Table A1. Descriptive statistics, cross-country sample

	Mean	Standard deviation	Min	Max	Observations
Trust	25.48	14.42	3.79	64.27	105
Religiosity	.67	.25	.16	1.00	105
Income inequality	41.39	11.29	21.50	70.70	104
Nordic country	.04	.19	0	1	105
Monarchy	.13	.34	0	1	105
Postcommunist	.24	.43	0	1	105
Catholics	28.25	36.25	0	97.00	105
Muslims	13.00	25.55	0	100.00	105
Log GDP per capita	.29	.45	6.59	10.44	105
Protestant	15.35	25.15	0	95.00	105
Orthodox	12.04	28.02	0	98.00	105
RSF index	22.371	18.072	.25	79.25	103
Religious diversity	.427	.233	.004	.860	105
North Africa and Middle East	.06	.23	0	1	105
Eastern religion	4.70	18.01	0	95.10	103



Table A2. Descriptive statistics, cross-state sample

	Mean	Standard deviation	Min	Max	Observations
Trust	38.08	11.77	10.50	63.00	44
Religiosity	64.77	10.14	42.00	85.00	44
Income inequality	.40	.02	.34	.45	44
Religious diversity	.42	.12	.24	.79	44
Black population	8.85	6.66	0.00	26.68	43
Log GSP per capita	9.77	.17	9.44	10.17	44
Voter turnout	.54	.06	.42	.68	44
Cohort <1916	4.08	1.26	2.062	7.75	43
Cohort 1916-30	19.83	3.80	11.88	31.75	43
Cohort 1931-45	21.78	2.37	13.23	26.29	43
Cohort 1945-60	35.59	3.28	27.96	45.32	43
Synthetic ancestral trust	37.01	5.10	30.95	51.32	43

Table A3. Data definitions and sources

	Source	Definition
<i>Cross-country sample</i>		
Trust		In text
Religiosity	Gallup World Poll	In text
Income inequality	WIID (2009)	Gross income Gini coefficient
Nordic country	Own	Dummy for Nordic country
Monarchy	Own	Dummy for monarchy
Postcommunist	Own	Dummy for communist past
Catholics	CIA (2008) /USDS (2008)	Share of population belonging to Catholic denomination
Muslims	CIA (2008) /USDS (2008)	Share of population belonging to Muslim denomination
Log GDP per capita	Summers and Heston (2006)	Logarithm to GDP per capita (PPP) in 2000
Protestant	CIA (2008) /USDS (2008)	Share of population belonging to Protestant or Anglican denomination
Orthodox	CIA (2008) /USDS (2008)	Share of population belonging to Orthodox Christian denomination
RSF index	RSF (2008)	Number of reported violations of press freedom in 2007
Religious Diversity	Alesina et al. (2003)	One minus Herfindahl-Hirschman index of religious composition of the population
North Africa and Middle East	Own	Dummy for countries situated in North Africa and the Middle East
Eastern religion	CIA (2008) /USDS (2008)	Share of population belonging to Buddhist or Hindu denomination
<i>US Sample</i>		
Trust	Brown and Uslander (2005)	In text

Religiosity	Gallup World Poll	In text
Income inequality	BEA (2008)	Household disposable income Gini coefficient
Black population	US Census	Share of African-Americans in state population
Log GSP per capita	BEA (2008)	Logarithm to state-level GDP per capita (PPP) 1999
Voter turnout		Turnout in presidential elections, 1992-2000
Cohort <1916	US Census	Share of population in 1990 born before 1916
Cohort 1916-30	US Census	Share of population in 1990 born 1916-1930
Cohort 1931-45	US Census	Share of population in 1990 born 1931-1945
Cohort 1945-60	US Census	Share of population in 1990 born 1945-1960
Religious diversity	Own calculation based on ARDA (2009)	One minus Herfindahl-Hirschman index of religious composition of the population
Synthetic ancestral trust	Own calculation	In text

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Table A4. Exact questions, General Social Survey and Gallup World Poll

Question	Response options	Year asked
Importance of believing in God without doubt	Five-point scale from “Very important” to “Not very important”	
Life meaningful because God exists	Five-point scale: “Agree strongly”, “Agree”, “neither agree nor disagree”, “Disagree”, “Disagree strongly”	
Respondent considers self to be a religious person	Four-point scale: “Very religious”, “Religious”; “Slight religious”, “Not religious”	
Important to respondent of having faith in religion	Five-point scale: “One of the most important”, “Very important”, “Somewhat important”, “Not too important”, “Not at all important”	
Which of these statements comes closest to describing your feelings about the Bible?	Four-point scale: “Word of God”, “Inspired words”, “Book of fables”, “Other”	1984, 1985, 1987
Respondent’s situation caused by: God’s will	Four-point scale: “Very likely”; “Somewhat likely”, “Not very likely”, “Not at all likely”	
Frequency of church attendance		All years
Is religion an important part of your daily life?”	Yes/no	2007

Table A5. Individual religiosity and trust, United States

Question	Trust, % religious	Trust, % non-religious	Trust ratio
Importance of believing in God without doubt	36.11	47.89	.75
Life meaningful because God exists	38.86	44.41	.87
Respondent considers self to be a religious person	35.58	36.36	.98
Important to respondent of having faith in religion	34.79	47.53	.73
Which of these statements comes closest to describing your feelings about the Bible?	36.47	43.62	.84
Respondent's situation caused by: God's will	20.79	36.33	.57
Frequency of church attendance	38.64	36.95	1.05

Figure 1. Trust and religiosity across countries

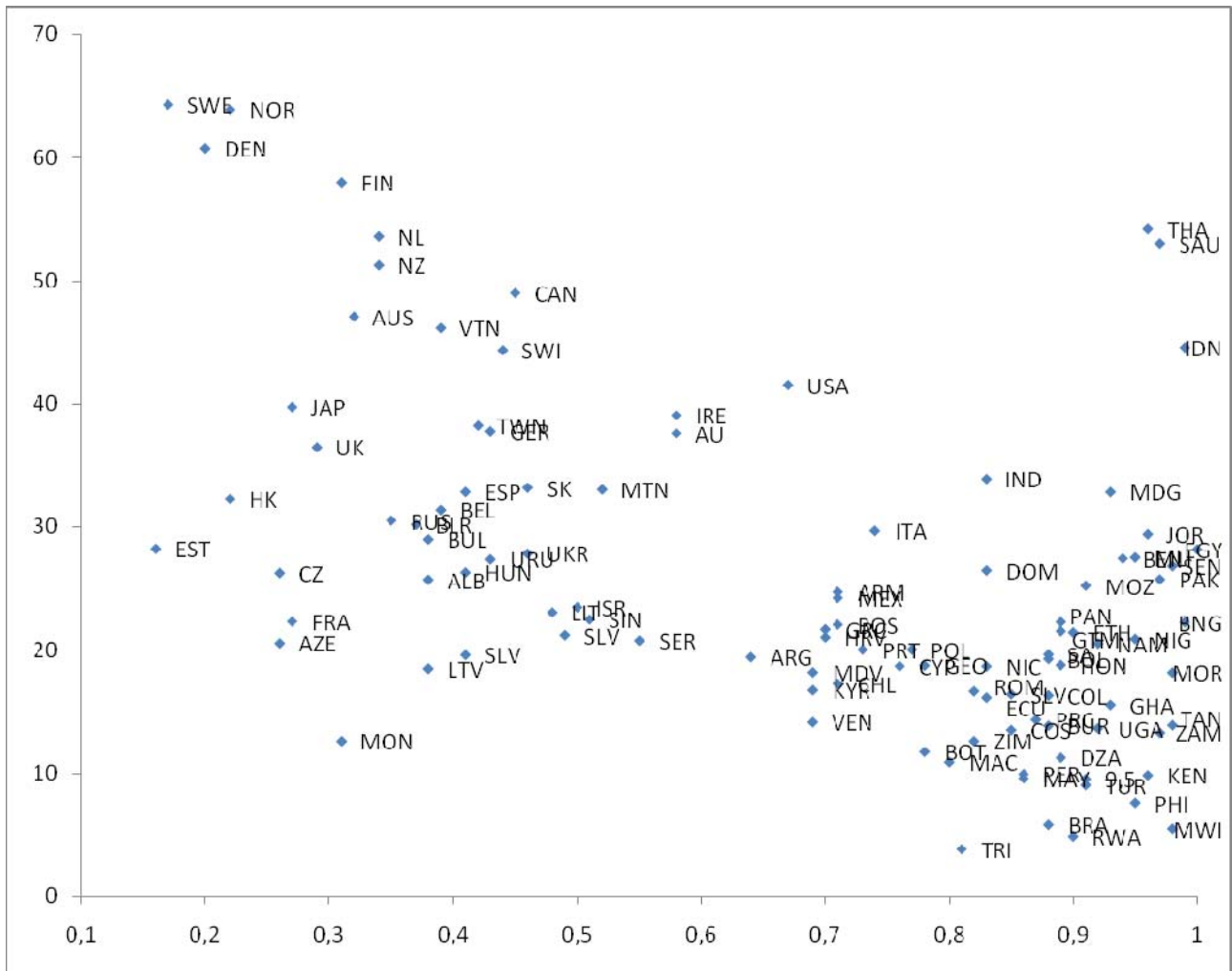


Figure 2. Trust and religiosity across US states

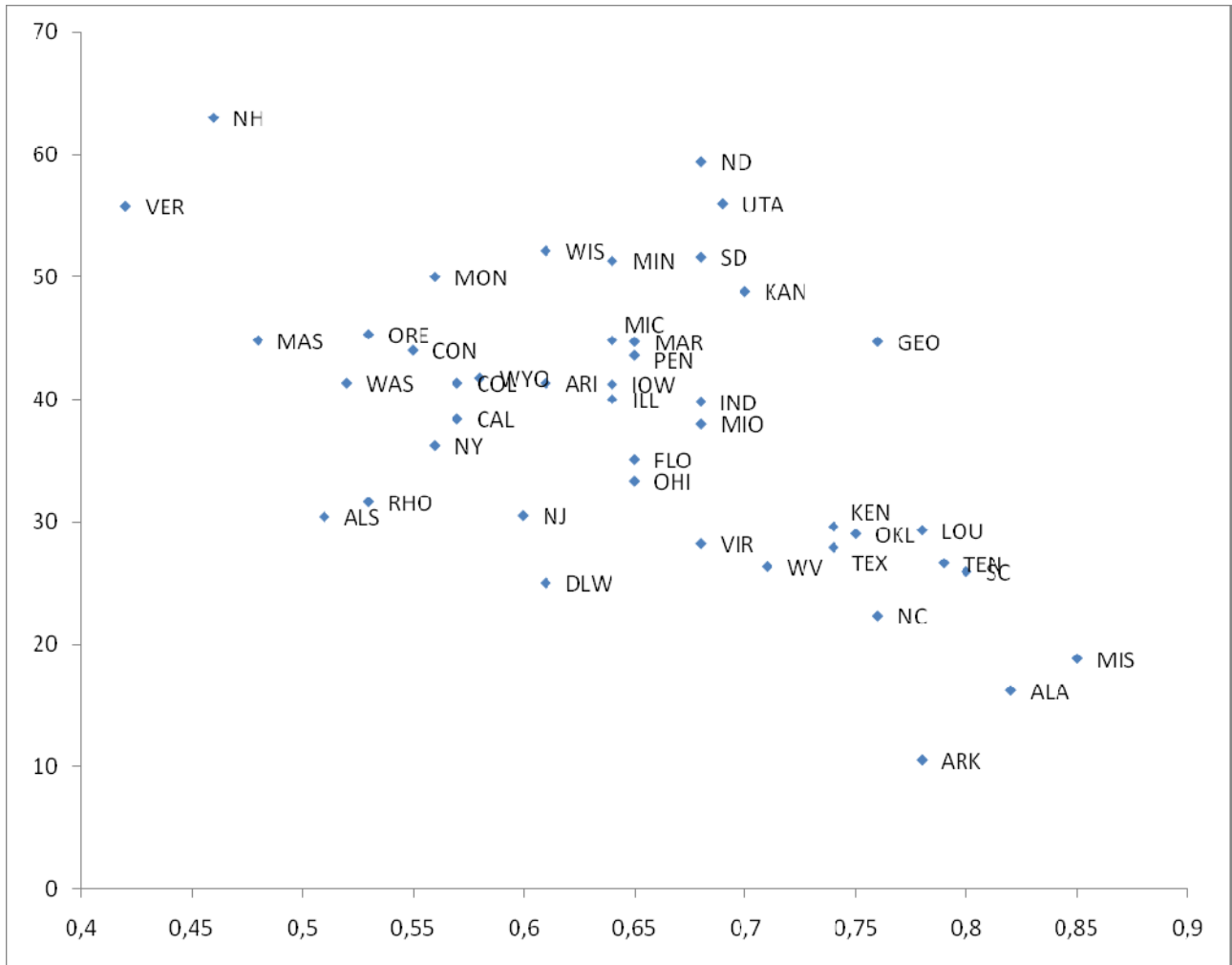


Figure 3. Effects of religiosity with religious diversity, cross-country sample

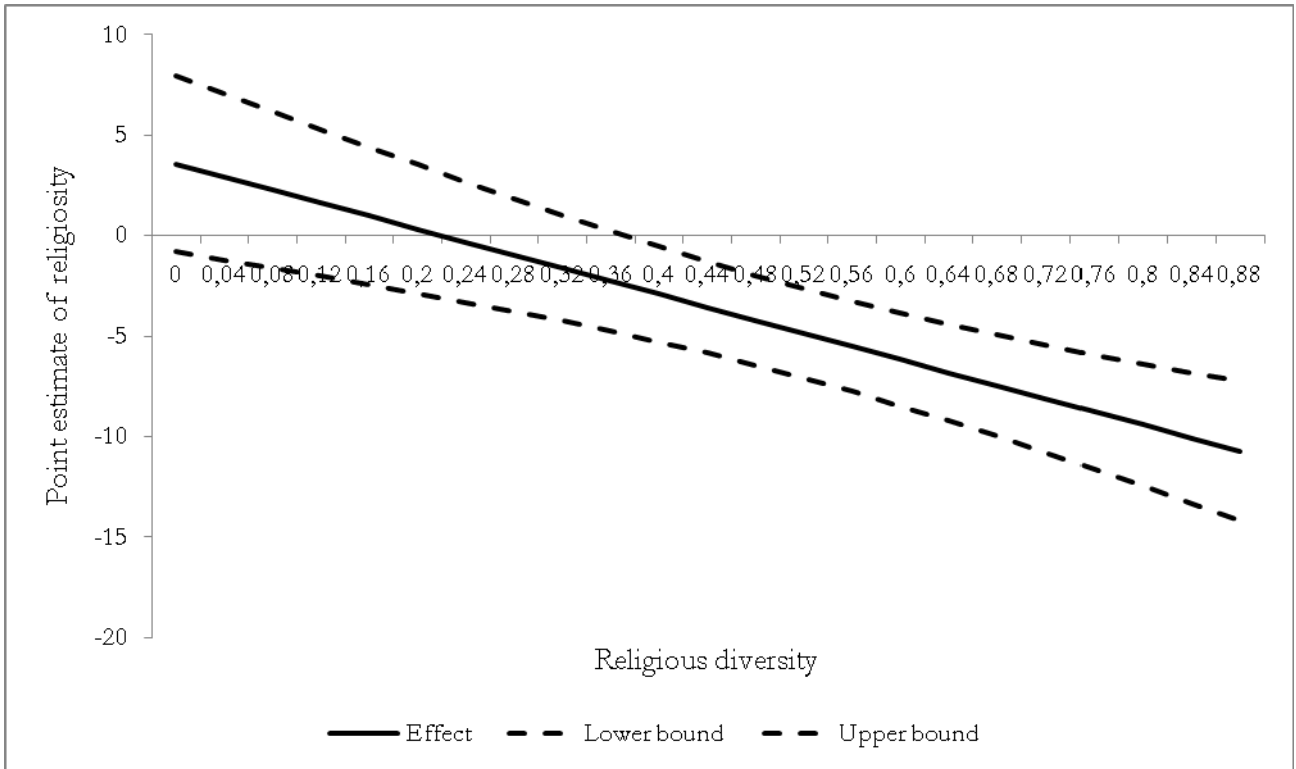




Figure 4. Effects of religiosity with religious diversity, cross-state sample

