Religious Participation and Economic Conservatism

Ben Gaskins Gardner-Webb University
Matt Golder Pennsylvania State University
David A. Siegel Florida State University

Why do some individuals engage in more religious activity than others? And how does this religious activity influence their economic attitudes? We present a formal model in which individuals derive utility from both secular and religious sources. Our model, which incorporates both demand-side and supply-side explanations of religion, is unusual in that it endogenizes both an individual's religious participation and her preferences over economic policy. Using data on over 70 countries from the pooled World Values Survey, we find that religious participation declines with societal development, an individual's ability to produce secular goods, and state regulations on religion, but that it increases with inequality. We also find that religious participation increases economic conservatism among the poor but decreases it among the rich. Our analysis has important insights for the debate about secularization theory and challenges conventional wisdom regarding the relationship between religious participation and economic conservatism.

Why do some individuals engage in more religious activity than others? How does this influence their political attitudes? Religion and its effect on politics has traditionally been treated as a peripheral issue by political scientists (Fox 2001). However, this situation is changing as the influence of religion becomes more visible and contentious (Gill 2001; Philpott 2009). One need only look to the rise of Islamic fundamentalism in the Middle East and parts of Africa, the evangelical upsurge in Latin America, Africa, and parts of East Asia, and the rise of the Christian right in the United States to see the wide-ranging influence of religious groups (Berger 1999). In addition to being key actors in promoting collective action, religious organizations also shape the values and beliefs that influence how individuals behave politically (De La O and Rodden 2008; Guiso, Sapienza, and Zingales 2003; Huber and Stanig 2011; Scheve and Stasavage 2006). For example, religion is widely recognized as being a better predictor of vote choice in developed democracies than income or class (Norris 2004). It is vital, therefore, to understand why it is that some people act religiously and how an individual's religious activity influences her political attitudes.

Scholars generally adopt one of two approaches to explain religious participation. There are those, influenced by secularization theory, who focus on the "demand" for religion. And there are those interested in religious markets who focus on the "supply" of religion. The model we present incorporates both demand-side and supply-side explanations of religious participation. While some scholars examine the causes of religious participation, others focus on its consequences and, in particular, its effect on political attitudes. Our model is unusual in that it endogenizes both an individual's level of religious participation *and* her preferences over economic policy, thereby unifying two largely distinct strands in the economics of religion literature (Iannaccone 1998).

In terms of religious participation, our model indicates that religious activity responds to both demand-side and supply-side features of the religious marketplace. On the demand side, it predicts that religious participation declines with societal development and with an individual's ability to produce secular goods. Our model not only provides a firm microfoundation for secularization theory, something that is largely absent in the existing literature, but also it does so without making the unsustainable claim that religious activity necessarily disappears as societies develop. On the supply side, our model predicts that religious participation declines as state regulations on religion increase. In terms of economic attitudes, the model challenges the conventional wisdom that religious individuals are always more economically conservative than their secular counterparts (Benabou and Tirole 2006; Huber and Stanig 2011; Scheve and Stasavage 2006). Specifically, it predicts that although the religious poor are more economically conservative than the secular poor, the religious rich are less economically conservative than the secular rich. Data from the 1981–2004 pooled World Values Survey (WVS 2006) provide considerable support for our predictions.

Two Debates

Our model addresses two of the central debates in the literature. One debate concerns religious participation, and the other concerns the relationship between religion and economic attitudes.

Religious Participation

For a long time, the dominant paradigm in studies of religion was secularization theory. Secularization theory focuses on the "demand" for religion and, in its most basic formulation, states that religion declines and eventually disappears as societies develop. Secularization theorists differ in terms of whether the demise of religion entails the disappearance of religious beliefs, religious participation, or the general importance of religion in the public sphere. In this article, we focus on demand-side explanations of religion only insofar as they relate to *religious participation.*

Secularization theory has come under criticism over the last two decades. Theoretically, it has been criticized for lacking a firm microfoundation (Gill 2001). And empirically, it has been criticized for its lack of support— several scholars have presented evidence, notably from the United States, suggesting that religion has not decreased over time despite unprecedented levels of devel-

opment (Finke and Stark 1992; Greeley 1989; Stark and Finke 2000). A consequence of this recent scholarship has been the development of newer models of religion, in particular the religious markets model. Unlike secularization theory, the religious markets model assumes that religious demand is fixed and focuses instead on how *supply*-side features of the religious marketplace affect religion. According to religious markets scholars, religion flourishes when religious organizations compete for adherents (Chaves and Cann 1992; Finke 1990, 1998; Gill 1999; Stark and Iannaccone 1994). This is because competition forces these organizations to exert more effort and provide greater benefits to attract adherents. Countries in which religious organizations are heavily regulated by the state are expected to exhibit low levels of religious participation.

Though we recognize the insights provided by supply-side arguments, we believe that it is a mistake to discard demand-side explanations of religion entirely. One reason is that previous research has focused on relatively wealthy states that lack sufficient variation in societal development to appropriately evaluate secularization theory. In our own analyses, we overcome this problem by employing data from the WVS that exhibit considerable variation in socioeconomic development. A second reason has to do with the fact that secularization theory *can* be given a firm microlevel foundation by recognizing that religious and secular goods are often substitutes. In what follows, we present one of the first formal models to combine demand-side and supply-side arguments.

Our model differs from existing approaches in several ways. On the supply side, active denominations decide whether to enter the religious marketplace and if so adopt a particular level of doctrinal strictness. On the demand side, individuals make two choices. They first choose to affiliate with a denomination and adopt that denomination's doctrinal strictness. They then decide on how much religious participation to engage in. No extant model involves this dual decision on the part of the individual. This is important both theoretically and empirically. Existing models implicitly treat doctrinal strictness as equivalent to a given level of religious participation (Barros and Garoupa 2002; McBride 2008, 2010), and empirical studies frequently employ measures of religious participation to test what are, in fact, claims about denominational affiliation (Montgomery 2003). In our model, we treat doctrinal strictness and religious participation as conceptually distinct, if related, choices, creating a closer connection between theory and empirics.

The demand side of our model is also more complex than that found elsewhere. In addition to explicitly

incorporating societal development, our model recognizes that there are multiple factors influencing religious participation. For example, an individual's religious participation is likely to depend on the participation levels of others. This is especially the case for those seeking a social outlet or in situations where religious benefits are club goods. However, there may be other social motivations for acting religiously that are not dependent on the participation levels of others. One could imagine, for instance, that there is a desire within a denomination to conform to some norm of behavior regarding participation or that there is a desire to impress via excess.

Religious Participation and Economic Attitudes

In a separate strand of the literature, there is an active debate about the impact of religion on economic attitudes (Guiso, Sapienza, and Zingales 2003; Iannaccone 1998). Our model is able to contribute to this debate because it endogenizes an individual's level of religious participation *and* her economic preferences. Rather than focus on attitudinal differences across religious denominations, we address the different policy preferences held by the religious and nonreligious. A limitation of several studies in this area is that their models fail to take account of the political economy of redistribution, making it difficult to draw firm predictions about the relationship between religious activity and economic attitudes. Two studies represent exceptions to this criticism.

In one study, Huber and Stanig (2011) examine how electoral competition between three groups, identified by income and religion, affects the tax rate. They suggest that the rich have incentives to form a coalition with the religious poor—the religious poor promise not to demand higher taxes, and the rich promise, in return, to increase their charitable donations to the religious poor. An issue with their model is that it does not endogenize religious participation and so does not allow the secular poor to act religiously in order to obtain the benefits accruing to the religious poor. This seems inappropriate, though, particularly given a world in which the *religious* poor can expect to receive a substantial amount of club goods. This point highlights the importance of jointly modeling religious participation and economic conservatism in the same theoretical framework.

In the second study, Scheve and Stasavage (2006) employ a model of social insurance to examine the relationship between religious participation and welfare-spending preferences. They find that religious individuals prefer lower levels of social insurance provision than their secular counterparts and that countries with higher levels of religious participation have smaller welfare states. Our model generalizes and extends the approach taken by Scheve and Stasavage. The primary difference in the models is that we allow individuals to have heterogeneous economic endowments as well as heterogeneous preferences over secular and religious goods. An important consequence of allowing for individual-level heterogeneity is that it is no longer the case that religious participation always increases economic conservatism, as previous studies have claimed.

Model

We start by briefly summarizing the basic structure of our model. There are two sets of actors: religious denominations and individuals. Religious denominations operate on the supply side. They first choose whether to enter the religious market. If they enter, they then adopt a level of doctrinal strictness. Denominations provide benefits to their members in return for religious participation, and they seek to maximize either some function of their membership or some aggregate measure of their members' utility. Individuals in a (large) population operate on the demand side. They derive utility from both the secular and religious worlds. Individuals differ in terms of their ability to earn a secular wage and their ideal level of doctrinal strictness. Individuals have two choices to make. They first choose a level of doctrinal strictness, which may be zero, by joining a denomination. They then choose a level of religious participation, which may also be zero.

There are thus four choices to be made, two by denominations (entry and doctrinal strictness) and two by individuals (affiliation and participation), and we set up a four-period game during which these choices are made sequentially. In what follows, we specify our model more precisely, starting with the secular and religious inputs that go into an individual's expected utility function.

Demand-Side Secular Utility Inputs

Secular utility for individual i arises from one primary input, her net income, s_i, which comprises (1) her gross income, w_i; (2) her loss in purchasing capability due to taxation, $\tau(w_i)$; and (3) her gain in purchasing capability resulting from social services provided by a secular state, $\sigma(w_i, w_{-i})$. We assume that one's taxes are weakly increasing in one's income, w_i, implying that individuals do not pay more taxes when their income declines. We also assume that the amount of social services one receives is weakly decreasing in one's income, w_i, but

weakly increasing in the income of others, w_{-i}. This implies that individuals do not receive more social services when their income increases and that they do not receive fewer social services when the income of others increases. Both assumptions have empirical support. We also assume that redistribution does not cause perverse incentives—no individual desires less income due to the existence of redistribution.

Assuming a fixed, known wage, w_i, would ignore the role of social insurance in the provision of social services. Income is not always constant, and redistribution that buttresses one's own income is desired most when times are poor. Accordingly, we assume that one's income is a random variable, given by the probability distribution function $f(w_i|e_i)$.[1] This pdf is conditional on e_i, a parameter representing all factors, such as education and health, that influence an individual's ability to earn a secular wage. We assume that this pdf satisfies the monotone likelihood ratio property (MLRP), which implies that worse incomes do not become relatively more likely as e_i rises (Ashworth and Bueno de Mesquita 2006). The ability of individuals to produce a secular wage depends on a population's level of human development. As a result, we let the distribution of e across the population be given by the pdf $g(e|\theta)$, where θ is a population parameter indicating the overall level of development. As before, we assume that this pdf satisfies the MLRP, which implies that a lower ability to produce a secular wage does not become relatively more likely as societies develop.

We now specify how redistribution works across the population. Recall one's net income, s_i. As both $-\tau(w_i)$ and $\sigma(w_i, w_{-i})$ are weakly decreasing in w_i, there must exist a $\underline{w}$ such that redistribution yields a net increase in s_i for all incomes less than this and a (possibly identical) $\overline{w}$ such that redistribution yields a net decrease in s_i for all incomes greater than this. Were one's utility to consist solely of a linear function of s_i, then anyone with $w \geq \overline{w}$ would find the redistribution regime unfavorable ex post, whereas anyone with $w \leq \underline{w}$ would find it favorable ex post. Those in between would be indifferent. This logic translates directly into simple ex ante expected values as well. Because individuals with higher values of e have greater expected values of w given a linear, risk-neutral utility, there must exist analogous values of $\underline{e}$ and $\overline{e}$.[2]

We employ a family of redistribution functions indexed by a single parameter ν that determines the level of redistribution. Specifically, we use a family of functions representing earnings net of taxes and redistribution in which there is some fixed cutoff $\hat{w}$: $v(w_i, w_{-i}; \nu)$, leaving off the cutoff because we do not explicitly vary it. Redistribution increases earnings for all those with $w_i < \hat{w}$ and decreases earnings for all those with $w_i > \hat{w}$.[3] Higher values of ν imply more redistribution and a flatter net earnings distribution; redistribution decreases in income as it approaches the cutoff. We equate preferences over redistribution to preferences over the size of ν and assume in the empirical section that redistributive preferences are one expression of economic conservatism.

Demand-Side Religious Utility Inputs

There are five primary inputs to an individual's religious utility. The first, religious *participation*, comprises the time, effort, and money that an individual devotes to the practice of religion, r_i. Religious goods and benefits are increasing in participation. The second input is the doctrinal strictness, y_i, of the religious denomination with which individual i chooses to associate (Stark and Finke 2000). The third input is the ideal level of doctrinal strictness, z_i, that individual i would like in a denomination if denominations representing all strictness levels were available and if there were no other benefits to be obtained from acting religiously.[4] The fourth input, $p_i(r_{-i})$, is a function of others' religious participation.[5] We consider two possible scenarios: (1) increasing returns to others' participation arising from positive social externalities and (2) decreasing returns to others' participation stemming either from a decreasing marginal gain from religious goods acquired by collective participation or a decreasing need to personally contribute to obtain religious benefits, i.e., the standard collective action problem. The fifth input is the level of exogenous pressure exerted by the state, ϕ, on religious participation. Positive values of ϕ correspond to state repression of religion, whereas

---

[3] One way to think of this cutoff value is as the median income in a population in which tax policy is determined via majority rule, and individuals have single-peaked preferences over policies.

[4] The notion that individuals vary in terms of their ideal level of strictness is consistent with the religious markets model. As Stark and Finke note, "[i]n every known society, people have differed in how much religious intensity they prefer" and, as a result, it is possible to rank individuals along a continuum according to the "intensity of their religious desires and tastes" (2000, 196–97), with more intense preferences indicating a greater "tension" with the secular world.

[5] We assume that $p_i(r_{-i})$ is increasing in r_{-i} but leave its dependence very general. In its simplest form, p_i would just be the aggregate level of participation by others in one's denomination.

[1] Each of the individuals in our model is assumed to be a member of a population large enough that we may treat the distribution of individuals' parameters as continuous.

[2] Allowing for risk aversion does not alter this; both cutoffs in e merely shift upward as individuals are willing to accept lower expected values in exchange for the reduction in risk.

negative values correspond to "blue laws" or other regulations designed to enforce religious standards.

There are two individual-level choice variables. The first relates to an individual's religious participation, r_i. The level of religious participation that an individual chooses depends on a rational trade-off between the benefits that can be obtained via religious participation and the degree to which lost time, money, and effort devoted to participating in religious activities detract from leisure time and the pursuit of secular goods. This trade-off is naturally conditioned by the incentives created by any state regulation or repression of religion.

The second choice variable relates to an individual's decision to affiliate with a particular denomination and adopt its level of doctrinal strictness, y_i. Individuals have ideal levels of strictness, z_i, that they would choose if all levels of strictness were available as denominations and if there were no other benefits to be obtained from acting religiously. Because there are such benefits, however, and because strictness affects desired participation levels via mechanisms like social pressure—a member of an ultraorthodox denomination is likely to experience greater pressure to participate regularly in services than a member of a liberal one—the choice of denomination and its associated strictness is also governed by a rational trade-off. In this case, the trade-off is between the level of participation the denomination induces and one's ideal level of doctrinal strictness, z_i.

In the real world, some countries exhibit higher levels of comfort with doctrinal strictness than others, perhaps because of the way that individuals are socialized as children or because religions differ in the extent to which they emphasize strictness. As a result, we let the distribution of z across the population be given by the pdf $h(z|\rho)$, where ρ is a population parameter indicating a country's overall preference for doctrinal strictness. We assume that this pdf satisfies the MLRP, implying that a lower ideal level of doctrinal strictness does not become relatively more likely as a country increases its preference for doctrinal strictness. For simplicity, and to avoid biasing our results by assuming ex ante that those enjoying high net income are those least likely to prefer more denominational strictness, we assume that the distributions of e and z are independent.

Demand-Side Expected Utility

Putting these secular and religious inputs together, we have the following expected utility function:

$$EU_i = \int \left[u_i^a(w_i - \tau(w_i) + \sigma(w_i, w_{-i}), r_i, p_i(r_{-i}), \phi) \right]$$
$$\times f(w_i|e_i)dw_i - u_i^b(r_i^y(y_i) - r_i) - u_i^c(|y_i - z_i|). \quad (1)$$

The first term, u^a, captures the trade-off between obtaining religious goods and devoting time to obtaining more secular goods. The first element of u^a is one's net earnings, the second is one's level of religious participation, and the third and fourth capture the religious participation of others and the level of religious regulation, respectively. These last two elements condition the trade-off, as they help determine the relative costs and benefits of religious and secular activity. The second term, u^b, captures social pressure to conform to a denomination's strictures and is a function of the difference between the level of participation expected given the chosen strictness y_i, $r_i^y(y_i)$, and one's actual level of participation, r_i. The third term, u^c, captures the cost of deviating from one's ideal level of strictness and is thus a function of the magnitude of this deviation.[6]

We now specify how the utility terms, u^a, u^b, and u^c, depend on their parameters, starting with u^a. We assume that an individual's utility is increasing in one's gross (w_i) and one's net (s_i) income but that she experiences decreasing returns to each. Not all individuals in the real world benefit from religious participation. Consequently, we make no assumptions about the dependence of u^a on r_i. Following the literature, we assume that religious participation is a substitute for income (Iannaccone 1992; McBride 2008, 2010). In other words, individuals experience decreasing returns to increasing income the higher is their religious participation and vice versa. The logic here is straightforward: higher levels of religious participation entail less time available to produce additional income and to enjoy goods procured via income, as well as more net earnings given to the denomination, again leading to less procurement of secular goods. Along similar lines, we assume that religious participation, r_i, and government regulation, ϕ, also act as substitutes in u^a: higher positive values of ϕ make participation increasingly costly, while negative values increase the cost to secular activities, decreasing the relative cost to religious participation.

Theoretically, there are two ways in which u^a might depend on $p_i(r_{-i})$. We consider both. In the *positive externalities* case, we assume that r_i and $p_i(r_{-i})$ are complements in u^a. That is, participation by others increases the benefits that arise from one's own participation. Substantively, this is likely to happen when one's primary benefit from religious participation is social. In the *club-goods* case, r_i and $p_i(r_{-i})$ are substitutes. Substantively, this is likely to occur when one's primary benefit from religious participation is material, so that participation by others makes it more likely that the club goods one seeks

[6]For convenience, we assume that each component of equation (1) is thrice continuously differentiable, though this is not necessary for our results.

will be provided without one's own need to contribute as much.

We now turn to u^b. Let $r^d = r_i^y(y_i) - r_i$ be the difference between social expectations about religious participation and one's actual level of participation. In line with the real world, we assume that $r_i^y(y_i)$ is increasing in y_i, so that more strict denominations have higher expectations for participation. Since an individual is likely to be increasingly penalized the more she falls below social expectations for participation, we assume that, for $r_i \leq r_i^y(y_i)$, u^b is increasing in r^d at an increasing rate. The appropriate assumption when $r_i > r_i^y(y_i)$ is not so obvious and, as a result, we consider two cases. In the *conformity* case, going beyond expectations is also frowned upon, and u^b is increasing in $-r^d$ at an increasing rate. In the *social benefits* case, $u^b < 0$ for $r_i > r_i^y(y_i)$, so that the cost term inverts to become a positive social benefit in this range. Here providing more religious participation than expected is viewed favorably, so that $-u^b$ is increasing in $-r^d$, the degree to which participation exceeds expectations, but at a decreasing rate.

Finally, we turn to u^c. We assume that u^c is increasing in the extent to which the doctrinal strictness of one's chosen denomination deviates from one's ideal level of strictness, i.e., $|y_i - z_i|$, and that the marginal increase in u^c is increasing as well.

Note that equation (1) captures an individual's expected utility *conditional* on the participation choices (r_{-i}) and the realized incomes (w_{-i}) of everyone else. With continuous distributions of individuals across both secular and religious dimensions (e and z), though, no single individual can affect the overall tax revenue, the schedule of social services, others' choices of religious participation and strictness, or the entry and strictness choices of denominations. Consequently, contingent on the population parameters that determine the distribution of individuals' participation and strictness, one's own choice problem is purely decision theoretic. Dependence on r_{-i} and w_{-i} is equivalent to dependence on the parameters that determine r_i and w_i in equilibrium across the population. This includes the population parameters θ and ρ, in that the first determines w_{-i}, and they jointly help determine r_{-i}. Thus, we can rewrite v as $v(w_i; \nu, \theta)$[7] and equation (1) as:

$$EU_i = \int \left[u_i^a(v(w_i; \nu, \theta), r_i, \rho, p_i(\theta, \phi, \rho, \nu)) \right]$$

$$\times f(w_i|e_i)dw_i - u_i^b(r_i^y(y_i) - r_i) - u_i^c(|y_i - z_i|). \quad (2)$$

[7]The assumptions on v, $f(w|e)$, and $g(e|\theta)$ imply that v is increasing in θ. In other words, the more developed is society, the greater the tax revenue obtainable for a fixed tax schedule and so the more net earnings each person receives.

The equilibrium of the demand side of our model consists of a level of religious participation $r_i^*(y_i; e_i, z_i, \theta, \rho, \nu, \phi)$ that maximizes equation (2) for a given value of y_i, and a level of doctrinal strictness $y_i^*(e_i, z_i, \theta, \rho, \nu, \phi)$ that maximizes equation (2) once r_i^* is inserted, subject to the constraint that $y_i^* \in Y$, where Y is the set of active denominations. Each denomination in this set is denoted by y^j. The denomination with the minimum doctrinal strictness is taken to be 0. That such an equilibrium exists in all but the social benefits case follows immediately from the assumptions of decreasing returns to, and increasing costs of, religious participation for all individuals, and continuity in the utility functions. For the social benefits case, we need to additionally assume that $r_i \in [0, 1]$, which affects none of our results.

Incorporating the Supply Side

The supply side of our model comprises an "entry and location" game that determines the set of active denominations, Y. Because it is not our primary focus, we take account of denomination entry largely to ensure comparability with extant supply-side models and to avoid assuming that the endogenous variable Y is exogenous. Our assumptions about the supply side, and the propositions that we offer, reflect this. For example, we do not make firm assumptions on the utility functions of denominations, and we do not derive propositions regarding entry locations, i.e., levels of doctrinal strictness. We do, however, derive propositions regarding state regulation and illustrate the robustness of our conclusions to the strategic decisions of denominations about where to locate.

Recall that our model involves a four-period game. The supply side comprises the first two periods.[8] A set D of potential denominations simultaneously decides in period one whether to enter the religious market by paying a cost $c \geq 0$ and then choosing a level of doctrinal strictness that cannot subsequently be changed or to delay until period two. In period two, all potential denominations that have not yet entered either enter and choose a level of doctrinal strictness, or exit. The equilibrium of the supply side is the set of active denominations Y. Denominations may maximize either some function of their membership (McBride 2008, 2010; Montgomery 2003) or some aggregate measure of their members' utility (Barros and Garoupa 2002). Our results are robust to either assumption. The demand side comprises the next two periods. In

[8]To achieve comparability across models, we assume a game form similar to McBride (2010).

effect, all N individuals simultaneously choose y_i, setting each $y_i = y^j$ for some $y^j \in Y$, and then r_i conditional on this choice in doctrinal strictness. We solve the game via backward induction.

Comparative Statics

We now examine the effect of the model parameters e_i, z_i, θ, ρ, ν, and ϕ on religious participation and denomination choice, as well as on attitudes toward economic conservatism.[9] For reasons of space and to better correspond to our focus on religious participation, we omit equilibrium analysis of Y.

Religious Participation

We begin with an interim result that helps us understand later comparative statics. The following lemma states that the more strict the denomination chosen by an individual, the more that individual will engage in religious participation.

Lemma 1 (Strictness). *In the conformity and social benefits cases, an individual's optimal level of religious participation (weakly) increases with the strictness of her chosen denomination.*

Lemma 1 provides the tie between religious participation and denominational strictness: when the latter increases, it puts pressure on the former to do the same. The proof of the lemma also implies that any parameter change that induces one to increase one's equilibrium level of participation for a given level of y also leads one to (weakly) increase y, unless there is also a direct, opposite effect of that parameter on the choice of y. Since y interacts only with r and z in equation (2), the only parameter that may have such a direct effect is z. We show in online Appendix A that the direct effect of z on y is positive. This insight implies that Proposition 1, which addresses religious participation, also holds for denominational strictness.

Proposition 1 (Religious Participation). *An individual's optimal level of religious participation:*

(a) *(weakly) decreases as her ability to produce income increases;*
(b) *(weakly) increases as her ideal level of doctrinal strictness increases;*
(c) *(weakly) decreases as government regulations designed to suppress religious practice increase,*

and *(weakly) increases as government regulations designed to suppress secular practice increase, though in the club-goods case only if incentives to free ride are not too strong;*

(d) *(weakly) decreases with human development, though in the club-goods case only if incentives to free ride are not too strong; and*
(e) *(weakly) increases with the population's preference for doctrinal strictness, though in the club-goods case only if incentives to free ride are not too strong.*

In all cases, one's religious participation decreases in one's ability to earn higher income and increases in one's ideal level of doctrinal strictness. While the first result has to do with the substitutability between income and religious participation, the second follows from Lemma 1 and the fact that an individual will not choose a less strict denomination if her ideal level of strictness were to increase. The way in which one's religious participation responds to aggregate-level parameters like ϕ, θ, or ρ is complicated by the fact that these population-level parameters not only have a direct effect on one's utility but also an indirect effect through their ability to influence the religious participation decisions of *all* individuals as well as the set of active denominations.

In the positive externalities case, where individuals obtain increasing utility in others' religious participation, the direct and indirect effects of changes in the population parameters have the same sign. The result is that one's religious participation decreases with human development and state regulations that inhibit religious practice and increases in the population's preference for doctrinal stricture and state regulations that inhibit secular practice.[10] In the club-goods case, where individuals obtain decreasing utility in others' participation, the same results hold but only if the incentives to free ride are not too strong. In effect, the same results hold so long as the absolute value of the direct effects of the population parameters are greater than that of the indirect effects, which now push individual participation in the opposite direction. A substantive example in which this could be an issue is a denomination in which club goods arise substantially more due to one person's participation than

---

[9]Proofs for all propositions may be found in online Appendix A.

[10]Note that our model produces a likely floor on a *population*'s religious participation, assuming that the distribution of preferences for doctrinal strictness is not degenerate at zero and that individual utilities are not too flat in religious participation. This implies that religious participation will not necessarily disappear with human development. For most empirical situations, the rate of decrease of religious participation with human development will itself be decreasing as participation approaches its floor in a given population.

everyone else's. A change in a parameter that provided incentives for all, including this valued person, to increase their participation might induce others to reduce their own participation, as the incentive to shirk could outweigh the increased incentive to participate.

Note that both demand-side and supply-side effects can be at work here. For example, when incentives to free ride are not too strong, an increase in the population's preference for doctrinal strictness raises the ideal strictness level of everyone in one's denomination (the demand side), which can induce one's denomination to increase its strictness level, forcing one to increase one's level of strictness to stay in it (the supply side). This provides incentives to raise one's religious participation, which is precisely why we say that the direct and indirect effects of varying the population-level parameters push participation in the same direction in the positive externalities case. The incentive to free ride can counteract this, though, if it is great enough.

Religious Participation and Economic Conservatism

Despite the mandatory nature of individual "contributions" to the state redistributive apparatus, it is unlikely that all individuals prefer the same level of redistribution. The fact that our model treats the population as heterogeneous in its earnings and doctrinal preferences means that it has consequences for the distribution of religious participation in the population. This allows us to derive correlations between religious participation and economic conservatism.

In Proposition 1, we ignored the dependence of religious participation on the redistribution parameter v. This is because some individuals in a population prefer more redistribution while others prefer less, and so our analysis differs depending on the segment of the population in question. Specifically, the more likely one's w is to exceed $\hat{w}$, the cutoff for benefiting from state income redistribution, the more likely it is that the redistributive regime will result in decreased net earnings as compared to no redistribution. This intuition is formalized in the following result:

Remark 1 (Redistributive Preferences and Secular Benefits). *The greater one's ability to produce income, the (weakly) less one desires redistribution.*[11]

The logic underlying Remark 1 indicates that those with higher pre-redistribution earnings are likely to see these decrease with greater redistribution. This is, of course, why they don't favor redistribution. Because net earnings and religious participation are substitutes, a decrease in net earnings due to increased redistribution leads to increased incentives toward participation among higher earners in equilibrium and decreased incentives toward participation among lower earners. As we saw with Proposition 1, though, higher or lower *direct* incentives to participate might not be sufficient to determine the sign of the effect of a parameter change. There the complication lay in the strength of the incentive to free ride in the club-goods case, since altering population parameters may affect everyone's equilibrium level of participation. Here the situation has additional complexity due to the split of the population. Because we, unlike previous models, allow for heterogeneity in both income potential and ideal doctrinal stricture, we can have denominations that are heterogeneous in *both* parameters. For example, more well-off people seeking denominational strictness might engage with less well-off people seeking club goods. This implies that the change in p_i associated with a change in v can be complex indeed, requiring detailed knowledge of the distributions of both e and z, rather than just summaries, as well as an understanding of how denominations will respond to a potentially complicated reshuffling of the religious landscape with a change in v. Rather than go through a large number of unenlightening cases, we make the simplifying, but empirically reasonable, assumption of bounded rationality. When responding to changes in redistribution, individuals react to direct incentives and do not consider how others' religious choices or the set of denominations will change. Denominations, not knowing how their membership might change, do not alter their strictness. This yields Proposition 2.

Proposition 2 (Redistribution and Participation).

(a) *The religious participation of lower earners (weakly) decreases in the level of redistribution.*

(b) *The religious participation of higher earners (weakly) increases in the level of redistribution.*

(c) *The religious participation of those in neither the higher nor the lower earning group is unchanging in the level of redistribution.*

Proposition 2 details the effect of redistribution on optimal rates of religious participation but says

---

[11]Although the effect of increasing one's ability to produce income, e, on one's preference for the level of redistribution, v, is clear, the same is not true in the aggregate. This is due to the role of the redistributive cutoff, $\hat{w}$. If we were to fix $\hat{w}$ as development increases, then increasing development would lead to (weakly) less support

for redistribution across society. However, fixing $\hat{w}$ makes little sense if there is an increase in development, because the resulting shift to the right in the distribution of e would alter $\hat{w}$ under most reasonable redistribution rules.

nothing about the effect of religious participation on preferences for redistribution. Note that we cannot simply invert Proposition 2 to get at this because our model assumes a fixed exogenous redistribution schedule and no cost to one's support for redistribution. However, our comparative statics can inform us about preferred levels of redistribution. Consider first one's preferred level of doctrinal strictness, z. Because u^a has no direct dependence on this parameter, increasing z increases r^* by Proposition 1b and shifts the cutoffs that separate the groups of lower and higher earners in Proposition 2. All lower earners view redistribution and religious participation as *substitutes*. As a result, exogenously increasing participation should weakly decrease the desired level of redistribution among lower earners.[12] Similarly, all higher earners view redistribution and religious participation as *complements*. This means that exogenously increasing participation should weakly increase the desired level of redistribution among higher earners. Finally, all those in neither group should observe no change in their desired level of redistribution. This is formalized in Remark 2, which follows directly from the logic just presented and Proposition 2.

Remark 2 (Economic Conservatism).

> *(a) For all lower earners, increasing one's preference for doctrinal strictness (weakly) decreases one's preference for the level of redistribution.*
> *(b) For all higher earners, increasing one's preference for doctrinal strictness (weakly) increases one's preference for the level of redistribution.*
> *(c) For those in neither the higher nor the lower earning group, increasing one's preference for doctrinal strictness (weakly) has no effect on one's preference for the level of redistribution.*

Assuming that economic conservatism is associated with a desire for less redistribution, Remark 2 indicates that lower earners respond to an increased desire for doctrinal strictness by becoming more economically conservative. Increased strictness leads to greater religious participation, which decreases the marginal value of net income. This in turn reduces the desire for redistribution that would increase this income. In contrast, higher

earners respond by becoming more economically liberal. Increased strictness still leads to greater religious participation, which again decreases the marginal value of net income. Now, though, this leads to less resistance to redistribution that would decrease this income. Our claim that the effect of religious participation on economic conservatism depends on an individual's income runs counter to the prediction in the existing literature that religious individuals always prefer lower levels of redistribution than their secular counterparts (Bénabou and Tirole 2006; Huber and Stanig 2011; Scheve and Stasavage 2006).

Empirical Analysis

In this section, we test a number of hypotheses derived from our model regarding individual religious participation, as well as the effect of religious participation on economic conservatism.

Religious Participation

With very few exceptions (Ruiter and van Tubergen 2009), secularization theory has always been tested at the aggregate level (Chaves and Cann 1992; Gill and Lundsgaarde 2004; Iannaccone 1991; McCleary and Barro 2006; Norris and Inglehart 2004; Olson 1999; Verweij, Ester, and Nauta 1997). However, secularization theory must ultimately work at the individual level. Our model produces the following hypotheses about individual-level religious participation:[13]

> *Demand-Side Hypothesis*: Religious participation declines with an individual's ability to produce income (Proposition 1a) and with human development (Proposition 1d).

> *Supply-Side Hypothesis*: Religious participation declines with state regulations on religious activity (Proposition 1c).

To test these hypotheses, we created several measures.[14] *Religious Attendance* captures an individual's level of religious attendance and is measured on a 1–8 scale, with 1 meaning that she practically never attends religious services and 8 meaning that she attends more than once a

---

[12]Of course, lower earners always prefer more redistribution to less. Our statement here does not run contrary to this fact, though. While lower earners always prefer more redistribution, they do so less the more participatory they are. The same is true in reverse: higher earners always prefer less redistribution to more, but this preference declines with religious participation. These relative preferences are not meaningless, as they help determine the salience of political preferences.

[13]For the purposes of our empirical analysis, we assume either that religious goods are not club goods, or if they are, that the incentives to free ride are not too strong.

[14]More detailed information about our data and measures can be found in online Appendix B.

week (WVS 2006). Religious attendance closely matches our theoretical concept of religious participation, r_i, capturing the intuition that being religious entails certain costs and that the benefits from being religious are often restricted to those who actively engage in religious activities.

We employ two measures of human development. *Human Development Index (HDI)* is a composite index capturing three aspects of human development: health, education, and standard of living (United Nations Development Programme 2007). In our upcoming analysis, we employ the natural log of *HDI* to capture the intuition that religious participation declines with societal development but at a declining rate (see note 10). We prefer to use *HDI* as our measure of human development rather than GDP per capita because *HDI* captures a much broader notion of what constitutes human development. This is important because the variable e_i in our theoretical model, which depends on the level of human development, θ, captures anything that can affect expectations about individual income, including things like health and education.[15] *Urbanization* is our second measure of human development and captures the percentage of the population living in an urban environment (World Bank 2009).

To get at an individual's ability to produce income, e_i, we constructed five alternative proxy variables (WVS 2006). *Income* refers to an individual's self-reported current income and is measured on a 3-point scale: low, medium, or high. *Male* is a dichotomous variable indicating whether an individual is male or not. *Older than 65* is a dichotomous variable indicating whether an individual is beyond the typical retirement age or not. *Education* refers to an individual's highest level of education and is measured on a 1–8 scale, where 1 means that the individual has not adequately completed elementary education and 8 means that she has an undergraduate degree or higher. *Social Class* is an individual's subjective evaluation of her social class and is measured on a 5-point scale, where 1 means lower class and 5 means upper class. Given that expected income should be positively associated with current income, being male, being highly educated, coming from a high social class, and not having reached retirement age, religious participation is expected to decline with *Income*, *Male*, *Education*, and *Social Class* but increase with *Older than 65*.

We include three variables to capture the extent to which religious activity is regulated, ϕ. *Government Regulation* is a 0–10 index measuring the restrictions placed on religion by state actors. Specifically, it captures state

regulations related to religious mission work, proselytizing, preaching, conversion, and worship. *Government Favoritism* is a 0–10 index measuring the extent to which subsidies, privileges, support, or favorable sanctions are provided by the state to a select religion or a small group of religions. *Social Regulation* is a 0–10 index measuring the restrictions placed on the practice, profession, and selection of religion by nonstate actors such as religious groups or the culture at large. All three variables, which come from the International Religious Freedom (IRF) dataset (Grim and Finke 2006), capture different ways in which various actors seek to control religion and as such are expected to reduce religious participation. To our knowledge, our upcoming analysis is the first to distinguish between *state* and *nonstate* regulation of religion.

Finally, we control for several other factors thought to affect religious participation. *Income Inequality* captures income inequality and is measured in the form of a Gini coefficient (Babones 2008). Norris and Inglehart (2004) argue that income inequality exacerbates existential security threats, encouraging individuals to turn to religion for comfort. Viewed through the lens of our model, though, it becomes clear that income inequality actually affects religious participation in at least two distinct ways. First, inequality may act as a threat that increases the fundamental desire for religious comfort in a way similar to that suggested by Norris and Inglehart. This amounts to a rightward shift of $h(z|\rho)$, which usually leads to an increase in religious participation. However, increasing inequality can also be expected to influence religious participation by changing a country's income distribution. The generality of our model's assumptions prevents us from making a firm prediction about this second causal pathway because one can construct special cases in which inequality increases or decreases participation. That said, we expect increased inequality in most empirical cases to lead to a more positively skewed distribution of $g(e|\theta)$, which, in turn, usually leads to increased religious participation. Thus, we expect income effects from increasing inequality to have a positive effect on religious participation for most cases in our dataset.

In terms of our other control variables, *Communist* is a dichotomous variable indicating whether the state is communist. This variable captures the intuition that individuals pay a higher cost for being religious in a communist state given the hostile stance of communist authorities toward religion. *Postcommunist* is a dichotomous variable indicating whether the state was previously communist. The expectation is that former communist states will exhibit lower levels of religious participation because religious institutions are less likely to have developed into key social institutions and will be less valuable as

[15]Note, however, that our inferences hold even if we use the narrower measure of GDP per capita.

social networks. *Percent Catholic, Percent Protestant,* and *Percent Muslim* measure the percentages of the population comprised by Catholics, Protestants, and Muslims. One reason for including these variables is to capture the fact that some religions place greater emphasis on religious attendance than others. In countries where these religions predominate, people are likely to grow up with greater religious sentiment (higher ρ) and hence greater religious participation. Another reason for including these variables is that they capture the intuition that any network benefits that accrue from being religious are likely to increase with the size of the religious community but that the magnitude of this effect may vary across religions.[16]

To test our hypotheses, we estimate a random-effects model with clustered standard errors using feasible generalized least squares (Cameron and Trivedi 2005). In this model, the religious participation of individual i in country-year j is modeled as a linear function of various covariates:

$$Individual\ Religious\ Participation_{ij}$$
$$= x_{ij}\beta + d_j\gamma + (u_j + e_{ij})$$
$$= x_{ij}\beta + d_j\gamma + \epsilon_{ij}, \qquad (3)$$

where x_{ij} and d_j are individual- and population-level covariates respectively, $u_j \sim (u, \sigma_u^2)$ is a country-year random effect error component, $e_{ij} \sim (0, \sigma_e^2)$ is an individual-specific error component, and $\epsilon_{ij} = u_j + e_{ij}$ is the total error. This is a two-level model, where u_j is a level-two (country-year) residual and e_{ij} is a level-one (individual) residual.

Proposition 1e indicated that religious participation will vary with a state's level of religious comfort, ρ. The fact that ρ is largely unmeasurable means that there will almost certainly be unobserved heterogeneity in our empirical model. Some, but probably not all, of this will be captured by our *Percent Catholic, Percent Protestant,* and *Percent Muslim* variables. The inclusion of random effects is specifically designed to deal with any remaining population-level unobserved heterogeneity.[17] We place

the random effects on the country-year to allow for the possibility that any unobserved heterogeneity might vary both between countries and within countries over time.[18] As expected, statistical tests indicate that a model with these random effects is superior to one without them. Finally, we employ cluster-robust standard errors to take account of the fact that individuals in our theoretical model are clustered within populations, and that, therefore, individual observations within a given country-year are unlikely to be fully independent of one another.

We report the results from seven slightly different model specifications in Table 1.[19] Overall, the results strongly support the *Demand-Side Hypothesis* that religious attendance declines with human development. This can be seen from the negative and statistically significant coefficients on *ln(HDI)* and *Urbanization* in all seven models. In this respect, our analysis is one of the first to provide support for secularization theory at the individual, and not just at the aggregate, level.

The results also strongly support the *Demand-Side Hypothesis* that religious attendance declines with an individual's ability to produce income. For example, Models 2–5 indicate that religious attendance declines with income, being male, and higher levels of education and that it increases after reaching 65 years of age. This is exactly as predicted. As Model 7 indicates, each of these individual-level attributes continues to have the predicted effect even after controlling for the other proxy variables for expected income. The results regarding *Social Class* are intriguing and suggest that social class may have competing effects on religious attendance. In effect, the results in Models 6 and 7 suggest that social class does have the predicted negative effect on religious attendance through its impact on expected income but that social class also has a countervailing positive impact through some other causal mechanism. This is because the coefficient on *Social Class* is statistically insignificant in Model 6 when it is the sole proxy variable for expected income but positive and

---

[16]We summarize how our empirical variables match up with our theoretical concepts and review the predicted sign of the coefficient on each of our independent variables in online Appendix C.

[17]Including country(-year) *fixed* effects would be problematic in this setting. First, over a quarter of the countries in our sample are "singletons" and would be dropped with their inclusion. This is particularly problematic because the omitted countries almost all have low *HDI* scores. In effect, including fixed effects would significantly reduce both our sample size and the amount of variation that we have in one of our primary independent variables. Second, almost all of our population-level variables, in particular our religious regulation variables, are time invariant. As a result, including country fixed effects would cause these variables to drop out and

us to estimate a demand-side-only model of religious participation. Although this is clearly problematic, we should note that our inferences regarding all of the individual-level variables, human development, and inequality remain robust to estimating such a fixed effect model. Moreover, our inferences in general are robust to the inclusion of both regional fixed effects and WVS common-wave fixed effects.

[18]We should note that our results are robust to placing the random effects on the country instead.

[19]It is known that some religions place less emphasis on religious attendance than others. This is true, for example, of Buddhism and is arguably also true of Islam, where regular prayer is often seen as more important than attending religious services. To take this into account, we ran robustness checks where we included regional fixed effects and dropped countries where either Buddhism or Islam was the majority religion. Our inferences were unaffected.

TABLE 1 Determinants of Religious Attendance

	Dependent Variable: Individual Level of Religious Attendance in a Country (1–8)						
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Individual-Level Attributes							
Income		−0.11***					−0.06**
		(0.02)					(0.03)
Male			−0.44***				−0.30**
			(0.08)				(0.13)
Older than 65				0.71***			0.46***
				(0.05)			(0.07)
Education					−0.05***		−0.04***
					(0.01)		(0.01)
Social Class						0.03	0.09***
						(0.02)	(0.02)
Aggregate-Level Attributes							
ln(Human Development Index)	−2.99***	−2.96***	−3.02***	−3.11***	−2.57***	−2.75***	−2.99***
	(0.57)	(0.59)	(0.57)	(0.58)	(0.72)	(0.87)	(0.90)
Urbanization	−0.02***	−0.02***	−0.02***	−0.02***	−0.03***	−0.02**	−0.02**
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Income Inequality	0.04***	0.03***	0.04***	0.04***	0.04***	0.04***	0.04***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Government Regulation	−0.14***	−0.15***	−0.14***	−0.15***	−0.08	−0.07	−0.09
	(0.04)	(0.04)	(0.04)	(0.04)	(0.05)	(0.06)	(0.06)
Government Favoritism	−0.01	−0.03	−0.01	−0.01	0.06	0.05	0.03
	(0.08)	(0.09)	(0.08)	(0.08)	(0.09)	(0.11)	(0.12)
Social Regulation	0.05	0.05	0.05	0.05	0.04	0.06	0.08*
	(0.03)	(0.03)	(0.03)	(0.03)	(0.04)	(0.05)	(0.05)
Communist	−0.90	−0.88	−0.90*	−0.86	−3.33***	−2.96***	−2.64***
	(0.55)	(0.54)	(0.54)	(0.55)	(0.50)	(0.53)	(0.55)
Postcommunist	−0.16	−0.10	−0.16	−0.18	−0.18	−0.02	0.24
	(0.19)	(0.20)	(0.19)	(0.19)	(0.26)	(0.29)	(0.35)
Percent Catholic	0.01***	0.01***	0.01***	0.01***	0.01***	0.02***	0.02***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.004)
Percent Protestant	−0.001	0.00002	−0.001	−0.001	0.001	0.01	0.01*
	(0.003)	(0.003)	(0.003)	(0.003)	(0.004)	(0.005)	(0.01)
Percent Muslim	0.01**	0.01**	0.01**	0.01**	0.01	0.01**	0.01**
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.005)
Constant	3.56***	3.92***	3.77***	3.43***	3.75***	2.58***	2.66***
	(0.58)	(0.59)	(0.58)	(0.58)	(0.90)	(0.91)	(0.91)
σ_u	0.76	0.77	0.77	0.77	0.70	0.70	0.64
σ_e	2.21	2.21	2.20	2.20	2.18	2.17	2.16
p	0.11	0.11	0.11	0.11	0.09	0.09	0.08
Observations	229,262	198,341	229,111	227,504	158,589	111,397	95,555
Countries	71	71	71	71	70	59	56
Overall R^2	0.18	0.18	0.18	0.18	0.19	0.20	0.22
Aggregate-level R^2	0.67	0.67	0.67	0.67	0.71	0.76	0.78
Individual-level R^2	——-	0.002	0.01	0.01	0.003	0.0001	0.01

Note: Cells show coefficients from a random effects (country-year) model estimated via FGLS. Robust standard errors clustered by country-year are shown in parentheses. The dependent variable is an individual's level of religious attendance measured on a 1–8 scale, with 1 meaning that a respondent practically never attends religious services and 8 meaning that she attends more than once a week (WVS 2006). σ_u gives the standard deviation for the country-year random effect error component, u_j. σ_e gives the standard deviation for the individual-specific error component, e_{ij}. p is calculated as $\sigma_u^2/(\sigma_u^2 + \sigma_e^2)$ and can be interpreted as the proportion of the total variance that can be attributed to the aggregate (country-year), rather than the individual, level.
*p < 0.10; **p < 0.05; ***p < 0.01 (two-tailed).

significant once we use the other proxy variables to control for expected income in Model 7. One admittedly post hoc explanation for this positive countervailing effect has to do with the historically close relationship that elites in many countries have had with religious institutions. This close relationship may have resulted in elites being socialized into a higher level of doctrinal strictness, z_i, and/or receiving greater benefits from acting religiously.

Although not as strong, there is also some support for the *Supply-Side Hypothesis*. The fact that the coefficients on *Government Regulation* are consistently negative suggests that state regulations on religion lead to a reduction in religious participation.[20] While government regulations reduce religious participation as predicted, there is little to no evidence that government favoritism or social regulations ever have an effect on religious participation.

In terms of the control variables, there is strong evidence that religious attendance increases with income inequality and with the percentage of the population comprised by Catholics and Muslims. There is also some evidence that religious attendance is lower in communist countries.

Religious Participation and Economic Conservatism

Our model produces the following hypothesis about economic conservatism:

Economic Conservatism Hypothesis: The religious poor hold more economically conservative attitudes than the secular poor. This positive effect of religious participation on economic conservatism declines with income, such that the religious rich hold less economically conservative attitudes than the secular rich (Remark 2).

To test this hypothesis, we created three alternative measures of economic conservatism (WVS 2006). *Income Inequality* is coded on a 1–5 scale, where 1 means that it is very important to reduce income inequality and 5 means that reducing income inequality is not at all important. *Government Responsibility* is coded on a 1–10 scale, where 1 indicates that the government should take more responsibility to ensure that everyone is provided for and 10 means that people should take more responsibility for themselves. *Free Market* is a dichotomous variable where

1 means that a free market economy is desirable and 0 means the opposite. Higher values on all of these variables reflect more economically conservative attitudes. As for our primary independent variables, *Religious Attendance* and *Income* are both measured as before. We control for various individual-level attributes that might also affect economic attitudes: gender, age, and education.[21]

To evaluate the *Economic Conservatism Hypothesis*, we estimate a variety of models in which the economic conservatism of individual i in country-year j takes the following basic form:

$$Economic\ Conservatism_{ij}$$
$$= f(\beta_0 + \beta_1 Religious\ Attendance_{ij} + \beta_2\ Income_{ij}$$
$$+ \beta_3\ Religious\ Attendance \times Income_{ij}$$
$$+ \beta_4\ Individual\text{-}Level\ Controls_{ij} + \epsilon_{ij}). \qquad (4)$$

As before, we include random effects to allow for unobserved heterogeneity at the aggregate level. Given our three dependent variables, we estimate an ordered logit for *Income Inequality*, a feasible generalized least squares model for *Government Responsibility*, and a logit for *Free Market*.

According to the *Economic Conservatism Hypothesis*, higher levels of religious attendance should be associated with increased economic conservatism among the poor. However, this positive effect should decline as individual income increases and eventually become negative. As a result, β_1 should be positive, β_3 should be negative, and the marginal effect of religious attendance, $\beta_1 + \beta_3 Income$, should be negative once individual income becomes sufficiently high. It should be noted that all interactions are symmetric (Berry, Golder, and Milton 2012). In other words, our claim that the effect of religious attendance on economic conservatism depends on an individual's level of income logically implies that the effect of income on economic conservatism depends on one's religious attendance. In this regard, our model predicts that higher levels of income always lead to more economically conservative attitudes but that the magnitude of this effect declines with religious attendance. This implies that β_2 should be positive and that the marginal effect of income, $\beta_2 + \beta_3 Religious\ Attendance$, should be positive for all levels of religious attendance.

We report the results from six different models in Table 2. Extant studies that examine the relationship between religious attendance and economic conservatism

---

[20]Not too much should be read into the fact that these coefficients are statistically insignificant in a few models. This is because robustness tests reveal that the coefficients on alternative measures of government regulation from the Religion and State dataset (Fox 2008) are negative and statistically significant in all seven of the model specifications shown in Table 1.

[21]We should note that including social class as another control variable produces almost identical estimates for our parameters of interest. On the whole, social class either has no statistically significant effect on economic attitudes or it substitutes for the effect of income.

TABLE 2 Religious Attendance and Economic Conservatism

	Dependent Variable: Economic Conservatism					
	Income Inequality (1–5) Ordered Logit		Government Responsibility (1–10) FGLS		Free Market(0–1) Logit	
Religious Attendance	0.004	0.07***	0.01**	0.03***	0.05***	0.13***
	(0.005)	(0.01)	(0.004)	(0.01)	(0.01)	(0.02)
Income	0.23***	0.35***	0.22***	0.28***	0.10***	0.25***
	(0.01)	(0.02)	(0.01)	(0.02)	(0.02)	(0.05)
Religious Attendance ×Income		−0.03***		−0.01**		−0.04***
		(0.01)		(0.004)		(0.01)
Controls						
Male	0.16***	0.16***	0.15***	0.15***	0.30***	0.30***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.04)	(0.04)
Age	−0.01***	−0.01***	−0.002***	−0.002***	−0.01***	−0.01***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Education	0.08***	0.08***	0.07***	0.07***	0.09***	0.09***
	(0.01)	(0.01)	(0.004)	(0.004)	(0.01)	(0.01)
Constant	0.07	0.22	4.75***	4.62***	−0.33*	−0.61***
	(0.09)	(0.15)	(0.09)	(0.10)	(0.18)	(0.20)
Threshold 1	1.33***	1.49***				
	(0.09)	(0.15)				
Threshold 2	2.67***	2.83***				
	(0.09)	(0.15)				
Threshold 3	3.75***	3.90***				
	(0.09)	(0.15)				
σ_u	0.67	0.72	0.92	0.91	0.46	0.46
σ_e	1.81	1.81	2.92	2.92	1.81	1.81
p	0.12	0.14	0.09	0.09	0.06	0.06
Observations	31,637	31,637	142,993	142,993	12,416	12,416
Countries	31	31	79	79	10	10
Log-Likelihood	−41,814.39	−41,796.90			−8,146.60	−8,139.68

Note: Cells show coefficients from a variety of random effects (country-year) models; standard errors are shown in parentheses. The dependent variables, shown across the top of the columns, refer to a respondent's attitudes toward a specific economic issue. All dependent variables are measured so that higher values indicate greater economic conservatism. We employed an ordered logit model to examine attitudes toward income inequality, an FGLS model to examine attitudes toward government responsibility, and a logit model to examine attitudes toward the free market. σ_u gives the standard deviation for the country-year random effect error component, u_j. σ_e gives the standard deviation for the individual-specific error component, e_{ij}; this is $\sqrt{\pi^2/3} = 1.81$ by assumption in both the ordered logit and logit models. p is calculated as $\sigma_u^2/(\sigma_u^2 + \sigma_e^2)$ and can be interpreted as the proportion of the total variance that can be attributed to the aggregate (country-year), rather than the individual, level.
*p < 0.10; **p < 0.05; ***p < 0.01 (two-tailed).

have done so in a purely additive way. These studies have generally either concluded that religious attendance has no effect on economic conservatism or that it increases it (Guiso, Sapienza, and Zingales 2003; Iannaccone 1998; Pyle 1993; Scheve and Stasavage 2006). In the first column associated with each dependent variable in Table 2, we present results from a purely additive model. In line with previous studies, we find that religious attendance either has no statistically significant effect on economic

conservatism (*Income Inequality*) or that it increases it (*Government Responsibility* and *Free Market*).

According to our theoretical model, though, these additive results are misleading because they mask the fact that the effect of religious attendance depends on an individual's income level. Compelling evidence for this conditional argument comes from the second column associated with each dependent variable, which presents results from a model that includes an interaction term

FIGURE 1 Religious Attendance, Income, and Economic Conservatism
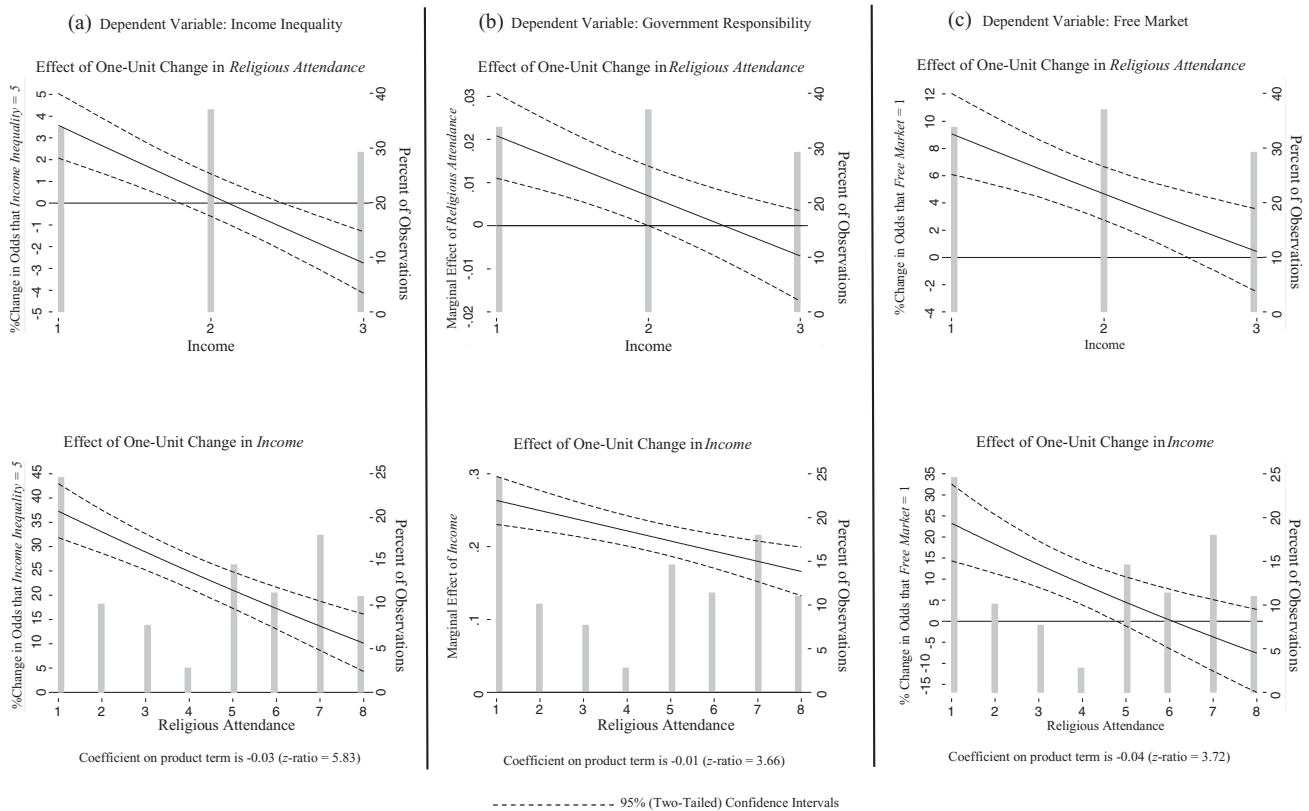
Note: Each column examines the effect of religious attendance and income on one of our three measures of economic conservatism: *Income Inequality*, *Government Responsibility*, and *Free Trade*. The top panel in each column plots the effect of a one-unit increase in religious attendance on economic conservatism across the observed range of income. The bottom panel in each column plots the effect of a one-unit increase in income on economic conservatism across the observed range of religious attendance. The vertical axes on the left in those columns associated with *Income Inequality* and *Free Trade* illustrate the percentage change in the odds that an individual will hold more economically conservative attitudes when we increase either religious attendance or income by one unit. The vertical axes on the left in the column associated with *Government Responsibility* illustrate the marginal effect that religious attendance or income has on attitudes towards government responsibility. The vertical axes on the right of each panel are for the histograms; those in the top panels indicate the percentage of observations in the sample at different values of *Income* and those in the bottom panels indicate the percentage of observations in the sample at different values of *Religious Attendance*.

between *Religious Attendance* and *Income*. As predicted, the coefficient on *Religious Attendance* is now positive and statistically significant for all three dependent variables. This indicates that religious attendance is associated with economic conservatism when income is low. Importantly, the coefficient on the interaction term, *Religious Attendance × Income*, is always negative and statistically significant. This is exactly as predicted and indicates that the positive effect of religious attendance declines with income. Also in line with our predictions, the coefficient on *Income* is positive and statistically significant, thereby indicating that an increase in income is associated with greater economic conservatism among those exhibiting little religious activity.

Figure 1 provides further support for the *Economic Conservatism Hypothesis*. In the top three panels, we plot

the effect of a one-unit increase in *Religious Attendance* on each of our different measures of economic conservatism across the observed range of individual income. In the bottom three panels, we plot the effect of a one-unit increase in *Income* on our measures of economic conservatism across the observed range of religious attendance. The panels associated with each dependent variable differ slightly because of the scale on which the dependent variables are measured. For example, the panels associated with *Income Inequality* and *Free Trade* illustrate the percentage change in the odds that an individual will hold more economically conservative attitudes when we increase the relevant independent variable—*Religious Attendance* or *Income*—by one unit. The panels associated with *Government Responsibility* illustrate the marginal effects that each of the two independent variables has on

attitudes toward government responsibility. To help readers assess the evidence in these marginal effect plots, we overlay a histogram indicating the percentage of observations at the different values of either *Income* or *Religious Attendance.*

As predicted, the plots in all of the top three panels indicate that religious attendance is associated with greater economic conservatism among the poor but that this positive effect decreases with income. In the case of *Income Inequality* and *Government Responsibility*, the effect of religious attendance eventually becomes negative once income is sufficiently high.[22] In other words, increased religious attendance is associated with less economically conservative attitudes toward income inequality and government responsibility among the rich. That the effect of religious attendance does not quite become negative in all cases (*Free Trade*) when income is high is not entirely unexpected given the data. To be precise, our model predicts that religious attendance will only have a negative effect on economic conservatism for those individuals who are wealthy enough that they face a relatively low probability of ever receiving transfers from the tax and redistribution scheme. This group of individuals is likely to be extremely small in any given country. As a result, these individuals are unlikely to be well represented in our sample, and their income is unlikely to be adequately measured by an income variable that has only three levels: low, medium, and high. Given the constraints of the data, the plots shown in the top panels of Figure 1 are remarkably consistent with the *Economic Conservatism Hypothesis.*

Recall that our theoretical model also predicts that income will always have a (weakly) positive effect on economic conservatism at all levels of religious attendance (Remark 1). Considerable evidence in support of this prediction comes from the plots shown in the bottom three panels of Figure 1. In the case of *Income Inequality* and *Government Responsibility*, increased income always has a positive and statistically significant effect on economic conservatism. In the case of *Free Trade*, the positive effect of increased income declines with religious attendance and eventually becomes statistically insignificant among the very religious. Taken together, the plots in the top and bottom panels of Figure 1 provide strong support for the predictions of our model regarding the conditional

relationship between religious attendance, income, and economic conservatism.

Conclusion

In this article, we present a model that contributes to the literatures dealing with the determinants of religious participation and the impact of religion on economic attitudes. Our model is able to unify these largely distinct lines of research in a single theoretical framework. One of the key insights of our theory is that it is important to model religious participation and the political economy of redistribution together when examining the effect of religion on economic attitudes. This is because the level of redistribution influences religious participation, and religious participation, in turn, affects attitudes toward redistribution.

Over the last two decades, secularization theory, with its emphasis on demand-side explanations for religion, has come under sustained attack, with many claiming that it lacks a clear causal story. Indeed, the religious markets model, with its emphasis on supply-side explanations, is widely considered to be the dominant paradigm in studies of religion today. Attempts to artificially pit demand- and supply-side factors against each other are theoretically unappealing, though, with both sets of factors *jointly* determining religious participation. The formal model that we present is one of the first to combine both demand- and supply-side explanations of religious participation.

On the demand side, our model provides a firm micro-level basis for secularization theory's claim that religious participation declines as societies develop. Importantly, our model does not make the unsustainable claim that religious participation necessarily disappears as societies develop. Indeed, it leaves open the possibility that participation may remain high even in highly developed societies. Our model also extends traditional demand-side models by recognizing that an individual's religious participation is likely to depend on the participation of others. This allows us to take account of how collective action problems associated with the provision of religious goods, as well as social expectations and network effects, influence an individual's level of religious participation. On the supply side, our model advances the literature by separating an individual's decision regarding denominational affiliation from her decision regarding religious participation. These are conceptually distinct choices that have so far been elided by existing supply-side models.

In line with our predictions, we find that religious participation declines with human development, an individual's ability to produce secular goods, and economic

---

[22]Although this negative effect does not appear to quite reach conventional levels of statistical significance in the case of *Government Responsibility*, it is important to note that Figure 1 employs two-tailed confidence intervals. This negative effect at high levels of income *is* statistically significant ($p < 0.10$) if we employ one-tailed confidence intervals, something that is justified by the directional nature of the *Economic Conservatism Hypothesis.*

inequality. We also find that it declines with regulations on religion imposed by state actors but not with those imposed by nonstate actors. On the whole, our multi-level analysis in over 70 countries indicates that both demand-side and supply-side factors play an important role in determining religious participation.

Recently, a number of scholars have presented models suggesting that religious participation is associated with economic conservatism (Bénabou and Tirole 2006; Huber and Stanig 2011; Scheve and Stasavage 2006). Notably, these models treat individuals as being identical to one another. As our model indicates, though, it is no longer the case that religious participation is always associated with economic conservatism once we allow for individual-level heterogeneity. Specifically, our model predicts that the religious poor are more economically conservative than the secular poor but that the religious rich are less economically conservative than the secular rich. In other words, the relationship between religious participation and economic conservatism depends on an individual's level of income. A variety of tests provide strong support for this conditional relationship.

Finally, our results regarding religious participation and economic conservatism have important implications for a related literature that looks at the effect of religion on vote choice. Standard political economy models of electoral competition typically assume a one-dimensional policy space defined along economic lines in which voter preferences are driven entirely by their place in the income spectrum. These models predict that the poor will vote for leftist parties, whereas the rich will vote for rightist parties. Empirically, though, we frequently observe the poor voting for rightist parties in apparent disregard for their economic interests. Attempts to explain this anomaly are often based on the idea that religion adds a second moral dimension to electoral competition that cross-cuts the standard economic one (De La O and Rodden 2008; Huber and Stanig 2007; Roemer 1998). In effect, the religious poor can be expected to vote for rightist parties if they weigh this second moral (religious) dimension more heavily than the economic one.

Our model suggests that the religious poor are more likely to vote for rightist parties than one would predict by just looking at their income level, even if we ignore the possibility that religion introduces a second cross-cutting, moral dimension. This is because religious participation directly affects one's economic preferences. The religious poor are simply more economically conservative in the first place than their secular counterparts. Arguments that religion acts as a cross-cutting dimension predict that this second moral dimension should reinforce the economic incentives of the religious rich to vote for rightist parties.

However, we often observe the religious rich voting for leftist parties (De La O and Rodden 2008). Our model provides a potential explanation for this. Again, this has to do with the fact that religious participation can be expected to directly affect one's preferences for economic conservatism. Unlike with the religious poor, our model predicts that the religious rich will be *less* economically conservative than their secular counterparts and, hence, more likely to vote for leftist parties.

References

Ashworth, Scott, and Ethan Bueno de Mesquita. 2006. "Monotone Comparative Statics for Models of Politics." *American Journal of Political Science* 50(1): 214–31.

Babones, Salvatore J. 2008. "Standardized Income Inequality Data for Use in Cross-National Research." *Sociological Inquiry* 77(1): 3–22.

Barros, Pedro Pita, and Nuno Garoupa. 2002. "An Economic Theory of Church Strictness." *Economic Journal* 112(July): 559–76.

Bénabou, Roland, and Jean Tirole. 2006. "Belief in a Just World and Redistributive Politics." *Quarterly Journal of Economics* 121(2): 699–746.

Berger, Peter L., ed. 1999. *The Desecularization of the World: Resurgent Religion and World Politics.* Washington, DC: Ethics and Public Policy Center.

Berry, William, Matt Golder, and Daniel Milton. 2012. "Improving Tests of Theories Positing Interaction." *Journal of Politics* 74(3): 653–71.

Cameron, A. Colin, and Pravin K. Trivedi. 2005. *Microeconometrics: Methods and Applications.* New York: Cambridge University Press.

Chaves, Mark, and David E. Cann. 1992. "Regulation, Pluralism, and Religious Market Structure." *Rationality and Society* 4(3): 272–90.

De La O, Ana, and Jonathan Rodden. 2008. "Does Religion Distract the Poor? Income and Issue Voting around the World." *Comparative Political Studies* 41(4-5): 437–76.

Finke, Roger. 1990. "Religious Deregulation: Origins and Consequences." *Journal of Church and State* 32(3): 609–26.

Finke, Roger. 1998. "Religious Choice and Competition." *American Sociological Review* 63(5): 761–66.

Finke, Roger, and Rodney Stark. 1992. *The Churching of America: 1776–1990.* New Brunswick, NJ: Rutgers University Press.

Fox, Jonathan. 2001. "Religion: An Oft Overlooked Element of International Studies. " *International Studies Review* 3(3): 53–73.

Fox, Jonathan. 2008. *A World Survey of Religion and the State.* New York: Cambridge University Press.

Gill, Anthony. 1999. "Government Regulation, Social Anomie and Protestant Growth in Latin America." *Rationality and Society* 11(3): 287–316.

Gill, Anthony. 2001. "Religion and Comparative Politics." *Annual Review of Political Science* 4: 117–38.

Gill, Anthony, and Eric Lundsgaarde. 2004. "State Welfare Spending and Religiosity." *Rationality and Society* 16(4): 399–436.

Greeley, Andrew M. 1989. *Religious Change in America.* Cambridge, MA: Harvard University Press.

Grim, Brian J., and Roger Finke. 2006. "International Religion Indexes: Government Regulation, Government Favoritism, and Social Regulation of Religion." *Interdisciplinary Journal of Research on Religion* 2(1): 1–40.

Guiso, Luigi, Paola Sapienza, and Luigi Zingales. 2003. "People's Opium? Religion and Economic Attitudes." *Journal of Monetary Economics* 50(1): 225–82.

Huber, John D., and Piero Stanig. 2007. "Why Do the Poor Support Right-Wing Parties? A Cross-National Analysis." Columbia University, unpublished manuscript.

Huber, John D., and Piero Stanig. 2011. "Church-State Separation and Redistribution." *Journal of Public Economics* 95(7-8): 828–36.

Iannaccone, Laurence R. 1991. "The Consequences of Religious Market Structure: Adam Smith and the Economics of Religion." *Rationality and Society* 3(2): 156–77.

Iannaccone, Laurence R. 1992. "Sacrifice and Stigma: Reducing Free-Riding in Cults, Communes, and Other Collectives." *Journal of Political Economy* 100(2): 271–91.

Iannaccone, Laurence R. 1998. "Introduction to the Economics of Religion." *Journal of Economic Literature* 36(September): 1465–96.

McBride, Michael. 2008. "Religious Pluralism and Religious Participation: A Game Theoretic Analysis." *American Journal of Sociology* 114(1): 77–106.

McBride, Michael. 2010. "Religious Market Competition in a Richer World." *Economica* 77(305): 148–71.

McCleary, Rachel M., and Robert J. Barro. 2006. "Religion and Economy." *Journal of Economic Perspectives* 20(2): 49–72.

Montgomery, James D. 2003. "A Formalization and Test of the Religious Economies Model." *American Sociological Review* 68(5): 782–809.

Norris, Pippa. 2004. *Electoral Engineering.* New York: Cambridge University Press.

Norris, Pippa, and Ronald Inglehart. 2004. *Sacred and Secular: Religion and Politics Worldwide.* New York: Cambridge University Press.

Olson, Daniel V. A. 1999. "Religious Pluralism and US Church Membership: A Reassessment." *Sociology of Religion* 60(2): 149–73.

Philpott, Daniel. 2009. "Has the Study of Global Politics Found Religion?" *Annual Review of Political Science* 12: 183–202.

Pyle, Ralph E. 1993. "Faith and Commitment to the Poor: Theological Orientation and Support for Government Assistance Measures." *Sociology of Religion* 54(4): 385–401.

Roemer, John. 1998. "Why the Poor Do Not Expropriate the Rich: An Old Argument in New Garb." *Journal of Public Economics* 70(3): 399–424.

Ruiter, Stijn, and Frank van Tubergen. 2009. "Religious Attendance in Cross-National Perspective: A Multilevel Analysis of 60 Countries." *American Journal of Sociology* 115(3): 863–95.

Scheve, Kenneth, and David Stasavage. 2006. "Religion and Preferences for Social Insurance." *Quarterly Journal of Political Science* 1(3): 255–86.

Stark, Rodney, and L. Iannaccone. 1994. "A Supply-Side Reinterpretation of the 'Secularization' of Europe." *Journal of the Scientific Study of Religion* 33(3):230–52.

Stark, Rodney, and Roger Finke. 2000. *Acts of Faith: Exploring the Human Side of Religion.* Berkeley: University of California Press.

United Nations Development Programme. 2007. *Human Development Report 2007/2008.* New York: United Nations Development Programme.

Verweij, Johan, Peter Ester, and Rein Nauta. 1997. "Secularization as an Economic and Cultural Phenomenon: A Cross-National Analysis." *Journal for the Scientific Study of Religion* 36(2): 309–24.

World Bank. 2009. *World Development Indicators 2009.* Washington, DC: World Bank.

World Values Survey. 2006. "European and World Values Surveys Four-Wave Integrated Data File, 1981–2004, http://www.wvsevsdb.com/wvs/WVSData.jsp, v.20060423."

Supporting Information

Additional Supporting Information may be found in the online version of this article at the publisher's website:

Online Appendix A: Proofs
Online Appendix B: Key Variables
Online Appendix C: Concepts and Measures