Religion and Preferences for Social Insurance*

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ABSTRACT

In this paper we argue that religion and welfare state spending are substitute mechanisms that insure individuals against adverse life events. As a result, individuals who are religious are predicted to prefer lower levels of social insurance than will individuals who are secular. To the extent policy outcomes reflect individual preferences, then countries with higher levels of religiosity should have lower levels of welfare state spending. In formalizing our argument we also suggest that if benefits from religion are subject to a network externality (I derive greater pleasure from religion when others are also religious), it is possible for countries that are similar in terms of underlying conditions to exhibit multiple equilibria with respect to religion and social insurance. We empirically test our predictions using individual-level data on religiosity, individual-level data on social insurance preferences, and cross-country data on social spending outcomes. The findings are strongly supportive of our hypotheses.

One of the major puzzles for political economy involves the question why some governments adopt policies that intervene heavily to redistribute income from rich to poor and to provide social insurance against adverse events, while other governments do much

less in either regard. Existing literature on the political economy of redistribution and the welfare state has identified a number of plausible factors that can influence policy outcomes in this area. These include, among others, prior levels of inequality, labor market structure, issue bundling and coalition politics, constitutional structures, and partisanship.[1] Models produced by economists have also emphasized that countries with otherwise similar economic and political preconditions may nonetheless wind up with widely divergent welfare state outcomes due to learning or expectations mechanisms that generate multiple equilibria.[2] In this paper we argue that religious involvement and social spending can both serve to insure individuals against the effects of adverse life events.[3] As a consequence, religious individuals on average prefer lower levels of social insurance provision than secular individuals. If policy outcomes reflect variation in citizen preferences, then we can also expect countries with higher levels of religiosity to have lower levels of welfare spending. This hypothesis is consistent with important stylized facts, e.g. the large difference in both social insurance provision and religiosity between the United States and many European countries. We show that our hypothesis is also supported by statistical tests that go well beyond this simple comparison, drawing on both cross-country evidence and individual-level data on religiosity and attitudes toward social spending.

Our argument emphasizes differences between individuals who are religious, irrespective of their denomination, and individuals who are not religious, rather than emphasizing differences between individuals of different religious denominations. The latter approach has been more prominent in political economy, due to familiarity with Weber's arguments about Protestantism and capitalism, as well as to observations about the links between Christian Democracy and Catholic doctrine. We suggest that the most relevant cleavage for redistributive politics in advanced industrial countries may be between the religious and the non-religious. Our predictions regarding religion and social insurance involve three core assumptions.

First, adverse life events involving unemployment, illness, or retirement income not only generate monetary costs for individuals, they also generate psychic costs that can involve a loss of self-esteem, stress, or related phenomena.

Second, we assume, consistent with a substantial theoretical and empirical literature in psychology, that religiosity provides some of the same psychic benefits as does being in good health, having a job, or a sufficient retirement income.

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[1] Iversen and Soskice (2001), Moene and Wallerstein (2001), Esping-Anderson (1990), Huber and Stephens (2001), Meltzer and Richard (1981), Swank and Steinmo (2002), Franzese (2002), Swenson (2002), Mares (2004), Roemer (1998, 2001), and Luttmer (2001). See also the contributions in Pierson (2001).

[2] See Benabou (2000), Piketty (1995), Benabou and Tirole (2006), Cervellati, Esteban, and Kranich (2004), Alesina and Angeletos (2005).

[3] This argument builds on an emerging political economy literature on the possible insurance function of religion. See Clark and Lelkes (2004), Gill and Lundsgaarde (2004), Dehejia et al. (2005), Gruber (2005), Gruber and Hungerman (2005), Hungerman (2005), Chen (2004), Chen and Lind (2005). We thank Devesh Kapur for pointing out to us the potential insurance effects of religion.

Finally, we assume that individuals have a utility function where monetary costs and psychic costs are not additively separable. More specifically, we assume, again building on recent empirical findings, that the psychological benefits of religion are greater for those with lower incomes.

Our argument emphasizes how religious involvement can serve as an alternative to social insurance for individuals to buffer themselves against adverse events. In some cases religious participation allows individuals to draw upon communal material support in times of difficulty. While these strictly material benefits from religion may be important, we draw on theoretical and empirical work suggesting that religion can also limit the psychic costs of adverse life events. In the formalization of our argument we focus on these psychic costs. So, for example, if the psychic costs of unemployment involve a loss of self-esteem, then religion may help insulate individuals against this effect, because their self-esteem is linked heavily to their religious engagement. Likewise, if falling ill or suffering a shock to one's retirement income produces stress, then religion may also serve as a buffer against this type of psychic cost. Below we discuss how recent theoretical work by psychologists has emphasized that religious individuals may "appraise" adverse events as being less threatening to their overall self-image, beliefs, or well-being than would be the case for non-religious individuals.[4] This theoretical work is supported by numerous recent empirical studies linking religiosity to higher levels of "subjective well-being" and lower incidence of depression.[5] While some earlier studies by psychologists, and in particular Freud's classic contribution on religion, *The Future of an Illusion* (1927 [2001]), took a more negative view of religiosity, they share a commonality with recent work in emphasizing how religion can function as a buffer against uncontrollable external forces. In choosing the title for his work Freud was certainly aware of Marx's (1844) description of religion as providing an "illusory" form of happiness for the people. In our study we do not seek to establish whether one should view religion positively or negatively in an overall sense, and our principal theoretical propositions do not depend upon which normative conclusion one draws about religion, provided one accepts it can function as a type of insurance.

Working with the above assumptions within a formal model, we show that there should be a negative correlation between an individual's degree of religiosity and the extent to which he or she prefers government provision of social insurance. One further feature of religion is that the benefits individuals derive from it may be subject to a network externality. Individuals derive greater pleasure from being religious when others around them are also religious. The presence of a network externality of this sort can lead to the existence of multiple equilibria with respect to religion and social insurance. As a result, our paper follows several other recent contributions in emphasizing how two countries that are identical in terms of their structural features may nonetheless wind up with very different levels of redistribution and/or social insurance provision in equilibrium.

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[4] See in particular Pargament (1997) and Smith, McCullough, and Poll (2003), who draw on the theory of appraisal developed by Lazarus and Folkman (1984).

[5] Park, Cohen, and Herb (1990), Smith, McCullough, and Poll (2003), Ellison, Gay, and Glass (1989), Pargament (1997).

However, even in the presence of multiple equilibria we would continue to expect to observe a negative correlation between religiosity and social insurance.

We test our predictions empirically using both cross-country and individual-level data. Our data on religiosity are drawn from both the World Values and ISSP surveys and involve questions about both the importance of religion in individuals' lives and time devoted to religious activities. In a series of cross-country tests we find there is a significant negative correlation between religiosity and levels of social spending in the advanced industrial countries. Despite the small sample size, these results remain robust when controlling for a number of other potential determinants of social spending levels, including the proportion of the population over age 65, differences in the representation of religious denominations, and prior levels of inequality. Our results also remain robust when instrumenting for religiosity to control for its potential endogeneity to social spending. In an online appendix to this paper we also consider the robustness of our results to several further controls including government partisanship, wage bargaining coordination, and unionization. While we fully recognize that the usual limitations to cross-country evidence with a small number of cases apply, our results are strongly suggestive of a link between religiosity and welfare spending.

The ISSP surveys also contain several questions that are ideally designed to measure individual preferences with regard to spending on social insurance. The questions are particularly informative because they make clear that there is a trade-off with higher social spending implying higher taxation. Using these data we show that individuals who describe themselves as being religious systematically prefer lower levels of government spending on unemployment insurance, health insurance and retirement benefits, when compared with individuals who are more secular. These results are robust to a wide variety of controls, including individual country effects, age, sex, levels of education and income, as well as to denominational affiliation. In the online appendix to this paper we also demonstrate that our results are robust to the inclusion of the skill specificity data used by Iversen and Soskice (2001). Finally, we also show that the negative correlation between religiosity and preferences with regard to social insurance is robust to including self-identified left–right political orientation of individuals as a control variable.

RELIGION AND SOCIAL INSURANCE

It is well known that there are large differences between advanced industrial countries in terms of levels of income redistribution and social insurance provision. Far less certainty exists about the explanations for these differences. Recent literature has not fully examined to what extent differences in degrees of religiosity might help account for both variation in individual attitudes toward social insurance provision, as well as for the sizeable cross-country differences we observe in actual levels of social spending.

Figure 1 presents a simple scatterplot of the level of social spending in percent of GDP for 22 OECD countries (average 1990–98), plotted against one measure of religiosity from the World Values Survey. Social spending here includes state provision of unemployment benefits, health spending, and retirement benefits. The horizontal axis here corresponds
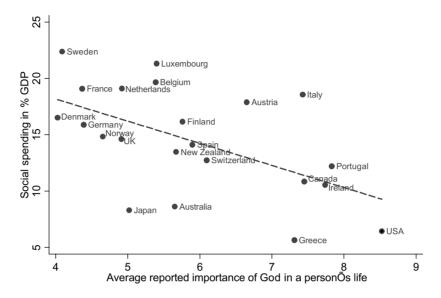
Figure 1. Religiosity and social spending.

to the average response in each country to the question "How important is God in your life?" with 1 corresponding to "not at all" and 10 corresponding to "very". As can be seen, there is a striking negative correlation between the degree of religiosity and levels of social spending. Figure 1 is visually striking, but it of course does not tell us *why* we observe this negative correlation. In what follows we review existing arguments that may shed light on this question. We then outline our own argument.

Existing Arguments

Religious beliefs and activity might influence individual attitudes toward social insurance for a number of reasons. Explanations about religion and redistribution may emphasize differences in attitudes between individuals of different religious denominations, such as Catholic vs. Protestant. Alternatively, explanations may emphasize differences in attitudes between people who are religiously active, irrespective of denomination, and those who do not hold religious beliefs.

Theories emphasizing the importance of denominational differences are well known in political economy, due in large part to Weber's work on Protestantism and the development of capitalism. This type of theory may be relevant for understanding social insurance. So, for example, in cases where a religious tradition suggests that worldly success is attributable to individual merit, one might find that believers prefer low levels of social insurance whereas this would not be the case for members of other religious traditions. One might also suggest that the relative importance of different religious denominations helps determine the types of political parties that form in a country, and these parties themselves lead to different welfare state outcomes. For European countries

it has often been argued that the welfare policies adopted by Christian Democratic parties are influenced by Catholic doctrine and that they differ systematically from the types of welfare policies pursued by Social Democratic parties (Esping-Anderson 1990). Our empirical results suggest that while there is a positive correlation between the percentage of Catholics in a country and levels of social spending, this correlation is generally not statistically significant. Nor is there a significant correlation apparent when considering individual-level data.

Beyond the issue of denominational differences, there are several possible channels through which religiosity, irrespective of denomination, might have an influence on the demand for social insurance. One important possibility is if being religious prompts individuals to become more altruistic, advocating greater spending on the disadvantaged. While religiosity may lead to greater altruism, and consequently greater advocacy of social insurance provision, for certain groups at certain times, the strong negative correlation between social spending and religiosity in Figure 1 strongly suggests that religiosity may also have other effects that work in the opposite direction, and our statistical tests further support this view.

Another possible influence of religion on social insurance is that it may lead individuals to draw particular inferences about how the economy functions. So, for example, individuals who are religious may be more likely to believe that hard effort will be rewarded with a higher income and that exogenous factors like family background do not represent inherent obstacles to economic success. As a consequence, they favor less provision of social insurance. Piketty (1995) argues that differing beliefs about the extent to which income is dependent on individual effort are an important determinant of individual attitudes with regard to income redistribution. Subsequent empirical evidence has supported this claim, demonstrating that differing beliefs about the determinants of economic success are correlated with individual preferences with regard to income redistribution, and social insurance, and that these beliefs are also correlated with cross-country differences in levels of social spending.[6] While the model in Piketty (1995) emphasizes how past personal experience influences beliefs about the "importance of effort", Benabou and Tirole (2006) have suggested that certain individuals may find it useful to maintain a belief that the world is just (in the sense that hard effort is well rewarded) even when faced with contrary evidence.[7] Maintaining a "belief in a just world" helps people with imperfect willpower to motivate themselves. Drawing on Benabou and Tirole's contribution, one might argue that it is likely that individuals with religious beliefs (Protestant or other) have a particularly high propensity to believe the world is just. This does not imply that economic beliefs held by religious individuals are necessarily inaccurate (it may be

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[6]   Piketty (1996), Alesina, Glaeser, and Sacerdote (2001), Alesina and La Ferrara (2005), and Alesina and Glaeser (2004).

[7]   In their article Benabou and Tirole also consider a model where attitudes toward redistribution depend on religious beliefs. In this case, even when all individuals know the true influence of effort on individual income, they may have different redistributive preferences if they have different beliefs about the extent to which industriousness is rewarded in the afterlife. Individuals who expect that industriousness is rewarded in this manner expect to exert more effort and thus prefer less redistributive taxation.

that non-religious individuals have more biased beliefs), but it does suggest a further mechanism through which religion might influence attitudes toward social insurance provision.

While there is strong empirical support for the proposition that beliefs about "effort" play an important role in determining redistributive preferences, the effect of religiosity on social spending does not appear to pass principally through this channel. In our extensive empirical tests we find that our core empirical result that religious individuals prefer less state provision of social insurance is unaffected by the inclusion of this luck/effort variable.

One further possible channel through which religion may affect social insurance provision is through an issue bundling effect. If political competition involves both a standard left–right dimension where preferences are determined by income, as well as a second dimension, where preferences are determined by religious beliefs, then it may be the case that religious individuals who are favorable to social insurance support political candidates who are less favorable to social insurance but who nonetheless share similar views with regard to the second issue dimension. The second issue dimension could involve questions like whether abortion should be legal, whether homosexual marriage should be legalized, or an issue involving church–state relations. Roemer (2001) has presented a theoretical framework for considering such issue bundling effects, and in a previous contribution (Roemer, 1998) he provides empirical evidence that policy outcomes involving income redistribution may be affected by religion as a second issue dimension. Arguments about issue bundling suggest that religiosity may be correlated with support for candidates who are unfavorable to social insurance, and hence religiosity may be an important determinant of cross-national variation in levels of social spending. These arguments do not suggest, however, that religious individuals should be inherently less favorable to social insurance provision.[8] Since our empirical tests show a negative correlation of religiosity with both cross-country data on social spending and individual data on social spending preferences, this suggests that, while religion may influence social insurance through an issue bundling effect, this is not the only channel through which religion may affect social spending.

The relationship observed in Figure 1 between religiosity and social spending might also reflect a direct substitution effect. According to this argument, individuals who are religious are no less demanding of insurance against adverse events than are other people, but because members of religious congregations receive material insurance benefits directly from their churches, they express less demand for social insurance provided by the state. Several recent papers including Hungerman (2005), Chen and Lind (2005), and Dehejia et al. (2005) have used U.S. evidence to explore whether membership in religious congregations involves a form of monetary insurance where individuals give monetary contributions and members of congregations who suffer adverse events like

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[8] In order to produce this prediction one would need to suggest not only that issue bundling occurs, but also that individuals are subject to a cognitive dissonance mechanism that prompts them to adopt beliefs about redistribution that are in opposition to their individual economic interest. Even this version of the argument does not suggest, however, the partial correlation between individual religiosity and social insurance preferences controlling for left–right ideology that we present below.

unemployment receive tangible benefits from their church. The most direct mechanism for insurance is through charitable spending by churches. Hungerman (2005) shows that for members of the U.S. Presbyterian church, charitable contributions have been negatively correlated with levels of state welfare spending. Dehejia et al. (2005) show that the consumption effects of shocks to household income are attenuated for members of religious congregations, which is also supportive of the direct substitution argument. While these papers support the idea that religious participation can provide an alternative form of monetary insurance to state-sponsored programs, it seems less likely that these findings also provide an explanation for the gaps in social spending observed in Figure 1 between highly religious and highly secular countries. The simple reason for this is that, according to the data used by Hungerman (2005), Chen and Lind (2005), and Dehejia et al. (2005), even in a highly religious country like the United States, religious individuals on average give no more than 2% of their income to churches. This means that in the aggregate the amount of religious giving in the United States pales in comparison with the differences in social spending levels observed in Figure 1 between the United States and more secular countries. In sum, the direct substitution argument is plausible and supported by empirical studies, but it is insufficient to explain the cross-country differences in social spending that we observe within the OECD.

One final possibility regarding the link between religion and social insurance is that the relationship is spurious because both religiosity and social spending are endogenous to a country's level of economic development. The well-known secularization hypothesis suggests that as a country becomes richer its population grows less religious. It is also frequently observed that rich countries tend to have larger welfare states, on average, when compared with poor countries, though the theoretical reasons for this are not firmly established. To the extent that both of these hypotheses are accurate, we would expect to observe a negative correlation between religion and social insurance provision, even if there was no causal relationship between the two variables. In fact, within the sample of high-income OECD countries considered in Figure 1 the level of economic development (measured in terms of log GDP per capita) is only weakly correlated with either social spending or religiosity.

Our Argument and Its Assumptions

Though we believe that religiosity undoubtedly influences welfare state spending through several channels, we place particular emphasis on the possibility that religion and social spending are alternative mechanisms of insurance. While government programs like unemployment insurance, health insurance, and pensions spending help cushion people against the effects of adverse life events, personal engagement in a religion may also dampen the extent to which people are affected by events like job loss, or ill health. In some cases religious participation may bring communal material support. However, we argue below that, beyond any purely material benefits, religious engagement can also provide important psychic benefits for individuals who suffer an adverse event. We focus on these psychic benefits in the formalization of our argument. The main cost of social insurance is that it needs to be financed by taxes, and some individuals inevitably wind up

financing collective insurance without needing to draw heavily on its benefits. One of the main costs of religious engagement involves the time it draws away from other activities that people may find pleasurable. If one accepts that religion and welfare state programs have related, if not identical effects, and that they both have costs, then to the extent that individuals privately insure themselves via religion, they should logically prefer a lower level of insurance by the state.

Our proposition about the effect of religiosity on social insurance involves three core assumptions. First, events like job loss or major sickness do not only impose monetary costs on individuals, they also create psychic costs. These psychic costs can involve damage to self-esteem, stress, or the loss of enjoyment from having a network of friends. Empirical evidence supports this proposition.[9]

Our second core assumption is that religiosity provides some of the same psychic benefits as does being in a "good" state in terms of health, employment, or retirement income. Religion may help insure individuals against adverse life events for several reasons. For one, people who are religious may derive psychic benefits from having a network of friends from their church, mosque, or synagogue, and such associations are likely to provide comfort during times of difficulty in the same way as would friends within the workplace. But this type of psychic benefit should logically exist for any type of collective leisure activity. Religiosity may also have more profound psychic benefits that make it exceptional, if not unique, in influencing the way individuals "appraise" adverse events like job loss or ill health (Pargament 1997, Smith, McCullough, and Poll 2003, Park, Cohen, and Herb 1990). So, for example, religious individuals may be more likely to judge that such events do not pose challenges to their self-esteem, their overall beliefs or life goals, and they may even see adverse events as a challenge offering opportunities for spiritual growth. In an extensive study Pargament (1997) demonstrates how religiosity also influences the different "coping" mechanisms that individuals use to confront adverse life events. In making such arguments these authors draw on the theory of stress, appraisal, and coping developed by Lazarus and Folkman (1984). Lazarus and Folkman define cognitive appraisal as "a process through which the person evaluates whether a particular encounter with the environment is relevant to his or her well-being and, if so, in what way" (Folkman and Lazarus 1986, p. 572). This could involve a judgement whether an event poses potential harm to one's self-esteem. They go on to suggest that "A range of personality characteristics including values, commitments, goals and beliefs about oneself and the world helps to define the stakes that the person identifies as having relevance to well-being in specific stressful situations." While Lazarus and Folkman did not themselves emphasize the importance of religiosity for appraisal, it is not difficult to understand why religious beliefs might have an important influence on this process. These ideas of contemporary psychologists about religion as a buffer against external

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9 Clark and Oswald (1994) used data from the British Household Panel Study to investigate the correlation of unemployment with subjective measures of individual well-being and with questionnaires frequently used by psychologists to measure "psychological distress". Based on this second set of measures they found that unemployment produced as large an estimated utility loss as did events like divorce or marital separation. Di Tella, MaCulloch, and Oswald (2003) provide further evidence in this regard.

forces are also consistent with classic work in the field of psychology. So, although Freud (1927(2001)) took a negative view of religion, he too emphasized its role in providing individuals with a mental buffer against external forces.

In addition to the strong theoretical arguments, there is clear empirical evidence to support the idea that religion has positive effects on the psychological state of individuals, and that it helps in responding to adverse life events. A number of studies have demonstrated that individuals who describe themselves as being religious tend to have higher subjectively measured levels of life satisfaction.[10] It is also interesting to note that a number of recent empirical studies have demonstrated that there is a lower incidence of depression in individuals who describe themselves as being religious.[11] In addition to the above empirical evidence, it is important to note that Clark and Lelkes (2004) have shown that individuals who are religious suffer from significantly lower estimated losses in subjective utility as a result of episodes like unemployment. This supports our second assumption quite directly. Finally, at least one study has found that people who describe themselves as being religious tend to purchase significantly less life insurance than do non-religious people, which is also consistent with our assumptions (Burnett and Palmer, 1984).

Our third and final assumption is that individuals have utility functions where monetary consumption and "psychic benefits" are not additively separable.[12] More specifically, we assume that the psychological benefits of religion are greater for those with lower incomes. This is consistent with empirical studies indicating higher levels of religiosity generally and religious coping in response to adverse events specifically among the poor, elderly, minorities, and women (see e.g. Pargament 1997, p. 156). The paper by Dehejia et al. (2005) provides further evidence in this regard from the U.S. National Survey of Families and Households. They find evidence that religious involvement may do more for low-income than high-income individuals to attenuate the negative effects on subjective well-being of adverse events like unemployment. This is consistent with our non-additive separability assumption, as is their conclusion that the psychic insurance effect of religion is more clearly observed for African Americans in the United States than for whites.

FORMALIZING THE ARGUMENT

In this section we present our argument about religion and social insurance in formal terms. In order to do so we first present a basic model of social insurance, in which religion does not figure. We then extend the model to consider the impact of religion on preferences for social insurance.

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[10]   See Ellison (1991), as well as Ellison, Gay, and Glass (1989), who demonstrate that religiosity has a positive correlation with subjective life satisfaction even when controlling for overall levels of sociability.

[11]   See Park, Cohen, and Herb (1990), Smith, McCullough, and Poll (2003).

[12]   Cervellati, Esteban, and Kranich (2004) provide an example of a model of redistributive politics where utility from income and from a "psychic benefit" are not additively separable.

A Basic Model of Social Insurance

We begin by drawing on a simplified version of the model of social insurance first developed by Wright (1986). As in several recent contributions on the political economy of redistribution by Moene and Wallerstein (2001) and Iversen and Soskice (2001), the model incorporates the idea that there are two states of the world: a "good" state and a "bad" state. The most obvious application of this framework in the context of social insurance is to unemployment, where the good state refers to having a job and the bad state refers to being without work. However, this basic modeling assumption can actually apply to any situation where individuals risk being in a bad state that has a negative impact on their income; so this could involve a spell of serious illness, or it could also involve an exogenous event that has a negative impact on one's retirement savings. In our model individuals know whether they are initially in the good or bad state, but they do not know with certainty whether some exogenous circumstance will prompt them to shift into the opposite state. Social insurance involves a commitment by people who end up in the good state to pay taxes that provide a redistributive transfer to those individuals who wind up in the bad state.

Society is composed of n individuals who are identical except some people begin in the good state and some begin in the bad state. People in the good state at time 0 have an exogenous probability λ of shifting to the bad state, and people who start off in the bad state have a probability θ of remaining in that state. In the context of a multi-period model these two transition probabilities describe a Markov process that would converge to a steady state proportion of individuals in the bad state $u = \frac{\lambda}{1-\theta+\lambda}$. In what follows we consider a single-period model where the economy has already converged to the steady state. We also assume, realistically, that $\lambda < \theta$. In the case of unemployment, one way of stating this assumption in words is that someone who currently has a job is more likely to be employed in the next period than is someone who is currently unemployed. Empirical evidence strongly supports this assumption.[13]

People who wind up in the good state have an income normalized to 1, and they have consumption equal to $c_i = (1 - \tau)$ where τ is the tax rate. People who wind up in the bad state have no income apart from their social insurance benefit f, and they have consumption $c_i = f$. The choice of the tax level and the benefit level must respect a government budget constraint, where u is the proportion of individuals in the bad state.

$$uf = \tau(1-u) \qquad (1)$$

This implies that the benefit rate can be expressed in terms of u and the tax rate $f = \tau \frac{1-u}{u} = \tau \frac{1-\theta}{\lambda}$. Given the above assumptions, people who begin in the good state prefer a tax rate that maximizes Expression 2 with respect to τ. In other words, they face a simple tradeoff whereby a higher tax rate makes it possible to obtain a higher income

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[13] For the United States Shimer (2005) estimates that the probability that in a given month someone who is employed will lose his or her job λ is 0.03, whereas the probability that someone who is currently unemployed will remain unemployed θ is 0.55. Blanchard and Landier (2002) report estimates for France showing similar relative magnitudes for λ and θ.

should they shift to the bad state, but in the case where they remain in the good state, higher taxation implies lower consumption.

$$E[U(\tau)] = (1 - \lambda)U(1 - \tau) + \lambda U(\tau \tfrac{1-\theta}{\lambda}) \tag{2}$$

The preferences of someone who starts off in the bad state follow the same form, except that the probabilities λ and $(1 - \lambda)$ are substituted by θ and $(1 - \theta)$.[14] As long as $U()$ is a concave utility function with standard properties, then people who start off in the good state prefer a lower level of social insurance f than people who start off in the bad state. If it is the case that people who begin in the bad state are a minority of the population, then in a median voter equilibrium the level of social insurance is determined by people who begin in the good state. To get more specific equilibrium predictions about taxes and transfers we henceforth assume that individuals have a utility function characterized by constant relative risk aversion and a risk aversion parameter equal to 1, and so $U(c_i) = \ln(c_i)$. For a person in the good state at time 0 the tax rate τ that maximizes expected utility is now simply $\tau = \lambda$, implying that preferred social insurance is directly proportional to economic risk. A similar exercise shows that someone who starts off in the bad state prefers to set the tax rate at $\tau = \theta$. Under the assumption that $\lambda < \theta$ then people who start off in the bad state prefer a higher tax rate than people who start off in the bad state. If individuals who start off in the good state are in the majority, and policy is determined by majority rule, the equilibrium tax rate is $\tau = \lambda$, the equilibrium benefit rate is $1 - \theta$.

Extending the Model to Consider Religion

We can extend the model above to consider the effect of religiosity on social insurance provision by incorporating the assumptions that shifting from the good to the bad state involves both a monetary and a psychic cost, as well as by suggesting that religion provides psychic benefits similar to those of being in the good state. Individual utility $U(c_i, b_i, z_i)$ now depends on three components: standard consumption, a psychic benefit b, and leisure z.[15] Consumption for individuals in the good and the bad state remains $c_i = 1 - \tau$ and $c_i = f = \tau \tfrac{1-u}{u}$ respectively. The psychic benefit is determined by the following state contingent function, which reflects the effect of the exogenous state variable and the degree of religiosity r_i. Our assumption that individuals derive a psychic benefit proportional to their degree of religiosity is consistent with the previous section's discussion of how religion allows individuals to "appraise" events in a more positive light.

$$\begin{cases} b_i = 1 + r_i & \text{if end up in the good state} \\ b_i = r_i & \text{if end up in the bad state} \end{cases} \tag{3}$$

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[14] $(1 - \theta)U(1 - \tau) + \theta U(\tau \tfrac{1-\theta}{\lambda})$

[15] The advantages and disadvantages of including a psychic benefit directly in a utility function of this sort are discussed by Tirole (2002). For related applications see Akerlof and Dickens (1982), Dickson and Scheve (2006), Cervellati, Esteban, and Kranich (2004), and Lindbeck, Nyberg, and Weibull (1999).

In order to make the choice to become religious meaningful, we also need to include an opportunity cost of religiosity. Following the economics of religion literature, and the initial paper by Azzi and Ehrenberg (1975), we suggest that time spent on religion implies less time available for other activities. In our model people derive a benefit from leisure time z_i, and time spent on religion r_i implies less time available for leisure. The following is a time constraint which is normalized to 1.

$$z_i + r_i = 1 \tag{4}$$

As mentioned above, our main prediction that the preferred tax rate is declining in the degree of religiosity depends upon the plausible assumption that in an individual's utility function $U(c_i, b_i, z_i)$, utility from c_i and from b_i is not additively separable. In what follows we assume for simplicity that leisure z enters the utility function linearly as in Expression 5. In Expression 5 α is an exogenously determined weight which captures the extent to which people for inherent reasons derive pleasure from time spent on leisure activities other than religion. We assume for simplicity that all individuals share the same value of α but later discuss relaxing this assumption.

$$U(c_i, b_i, z_i) = \ln(c_i + b_i) + \alpha z_i \tag{5}$$

A person who starts off in the good state has preferences for taxation and religion that maximize Expression 6 with respect to τ and r (given that for someone who ends up in the good state $b_i = 1 + r_i$, and given the time constraint $z_i + r_i = 1$). In what follows we restrict ourselves to presenting the equilibrium preferences of individuals who start off in the good state.

$$E[U(\tau, r_i)] = (1 - \lambda) \ln((1 - \tau) + (1 + r_i)) + \lambda(\ln(\tau \tfrac{1-\theta}{\lambda} + r_i)) + \alpha(1 - r_i) \tag{6}$$

If we take the first-order condition for the above expression with respect to τ and simplify, we obtain the following expression for the preferred tax rate, given the level of religiosity r_i. As long as $\lambda < \theta$, then the preferred tax rate is decreasing in the degree of religiosity. As in the previous section, the preferred tax rate of individuals who start off in the good state is also increasing in the degree of economic risk λ.

$$\tau = \lambda(2 + \frac{r_i(\lambda - \theta)}{(1 - \theta)}) \tag{7}$$

When we take the first-order condition of Expression 6 with respect to r and substitute for τ using Expression 7, we obtain the following solution for the degree of religiosity that maximizes expected utility for an individual who starts off in the good state. This shows that the equilibrium degree of religiosity is decreasing in α, the exogenous weight determining relative preferences for leisure, and in addition, equilibrium religiosity is increasing in λ, the degree of economic insecurity for individuals who start off in the good state.

$$r_i = \frac{1}{\alpha} + \frac{2(1 - \theta)}{\theta - \lambda - 1} \tag{8}$$

Based on the above we can substitute into Expression 7 in order to obtain the equilibrium tax rate as a function of the underlying economic parameters.

$$\tau = \lambda(2 + \frac{\lambda - \theta}{\alpha(1 - \theta)} + \frac{2(\lambda - \theta)}{\theta - \lambda - 1}) \tag{9}$$

Since we have assumed that all individuals who start off in the good state are identical, there is no difference between their individual preferences and the actual equilibrium tax rate and level of benefit provision. Likewise all individuals who start off in the good state choose the same level of religiosity r_i. If we extended the model to allow individuals to have different preferences regarding the religion/leisure tradeoff α_i, then there would be differences between preferred tax rates of each individual and the actual tax rate, which would depend on r_m, the median voter's level of religiosity. In this case the equilibrium level of religiosity chosen by each individual r_i, would depend upon a more complicated expression than Expression 8.[16]

One final possibility worth considering in our theoretical discussion is that in a more realistic model of religion and preferences for social insurance we might observe multiple equilibria. So far we have assumed that the psychic benefit people derive from religion depends exclusively on their own actions. In practice, the benefits one derives from being religious may also depend upon choices made by others. In economic terminology we could suggest that participation in religion is likely to involve a network externality – the more I anticipate that others will be religious, the greater pleasure I expect to derive from becoming religious myself. This would fit with Durkheim's (1912) description of religion as being "eminently social". For Durkheim religious activities influence individual beliefs, but they have this influence via the participation in assembled groups and via the creation of certain collective thoughts. As a consequence, we might suggest that the influence religious activities have on one's self-esteem or beliefs is greater in those cases where there is broad religious participation within one's community. Under these assumptions it is possible to show how two societies with relatively similar underlying parameters in terms of economic risk (λ, θ) and preferences regarding leisure time α might actually wind up with very different equilibrium outcomes in terms of religiosity and social insurance.[17] However, even with this result regarding multiple equilibria, our core prediction for empirical testing would remain unchanged, we would expect there to be a negative correlation between religiosity and preferences for social insurance provision, regardless of which equilibrium a society winds up in.

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[16] This expression is: $\dfrac{\lambda^2}{(\lambda(2 + \dfrac{r_m(\lambda - \theta)}{(1 - \theta)}))(1 - \theta) + r_i\lambda} + \dfrac{\lambda - 1}{(\lambda(2 + \dfrac{r_m(\lambda - \theta)}{(1 - \theta)})) - r_i - 2} - \alpha = 0$

[17] For an explicit model of this possibility see Section 3.2 in the working paper version of the current text.

INTERNATIONAL EVIDENCE

In Figure 1 we presented evidence that, consistent with our argument, there is a negative correlation between average levels of religiosity in a country and spending on social insurance. In this section we examine this correlation in greater detail. Specifically, we show that it holds for alternative measures of religiosity, that it is robust to the inclusion of controls for other determinants of social spending, and that there is some evidence that the correlation indicates a casual effect. Our country-level international evidence is primarily based on 22 advanced industrial democracies.[18]

The dependent variable for this analysis is *Social Welfare Spending* equal to the average for the period 1990–98 of central government expenditures on social services and welfare as a percentage of GDP. These data are from Persson and Tabellini (2003) and were selected so that our results could be compared directly to recent findings in the literature on social insurance spending.

The key measures of religiosity are based on country averages of survey responses about religious beliefs and activities from the World Values Survey, Wave 4. We focus our attention on two variables: *God Important* and *Religious Attendance*. *God Important* is equal to average responses to the question "How important is God in your life?" on a scale with 1 corresponding to "not at all" and 10 corresponding to "very". *Religious Attendance* is equal to average responses to the question "Apart from weddings, funerals, and christenings, about how often do you attend religious services these days?" on a scale from 1 "never" to 7 "more than once a week".

The literature on social spending suggests a number of control variables that should be included to estimate the partial correlation of these measures of religiosity with social spending.

- *Gini Coefficient* is equal to the Gini index measuring income inequality based on the average of the closest available observation to 1980 and the closest available observation to 1990.[19] Counterintuitively, recent literature has found this index to be negatively correlated with redistributive outcomes.
- *Population Over 65* is equal to the percentage of the population over the age of 65. In countries with a large portion of retirees, government spending on health and retirement benefits will be higher.
- *Trade Openness* is equal to the sum of exports and imports as a percentage of GDP. A number of papers, beginning with the contributions by Cameron (1978) and Katzenstein (1985), have argued that economic openness in OECD countries is sustained politically by having an extensive welfare state. To the extent these arguments are accurate, we expect *Trade Openness* to be positively correlated with our dependent variable.

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[18] Our cases include Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Japan, Luxembourg, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, UK, and the United States.

[19] This variable, as well as the other independent variables unless otherwise indicated, are from Persson and Tabellini (2003).

- *Majoritarian* is a dichotomous variable equal to 1 if the lower house of the legislature is elected under plurality rule and 0 otherwise. This is included in order to allow for the possibility that electoral rules influence the size of the welfare state. Persson and Tabellini (2003) present evidence that majoritarianism is associated with a smaller overall state sector.
- *Catholic* is equal to the proportion of World Values survey respondents indicating that they belong to the Roman Catholic religious denomination. Following the discussion above, we may expect more welfare spending in states with more Catholic citizens because of the influence of Catholic social teaching on preferences over redistributive and social insurance policies. The literature suggests that the main mechanism for this effect may be through the prevalence of Christian Democratic governments in Catholic countries though variation in the proportion of Catholic citizens could affect patterns of policy-making more generally.
- *Buddhist* is equal to the proportion of World Values survey respondents indicating that they are Buddhists. This variable is included to account for denominational influences in Japan where membership in Christian denominations is quite rare.[20]

Table 1 columns (1) and (2) report OLS coefficient estimates for the regression of *Social Welfare Spending* on religiosity and these control variables. As can be seen, there is a negative and significant correlation between *God Important* and *Social Welfare Spending*. The magnitude of this estimate is also very significant in substantive terms, as it implies that an increase in *God Important* by 3 points (roughly the difference between France and Canada) is associated with a decrease in welfare spending of 6.0% of GDP.

The estimates in column (2) indicate that there is also a negative correlation between *Religious Attendance* and *Social Welfare Spending*. This estimate is also statistically and substantively significant. The estimate implies that an increase in *Religious Attendance* by 2 points (a little less than the difference between Germany and the United States) is associated with a decrease in welfare spending of 5.6% of GDP.

The results for the control variables in columns (1) and (2) are, with some exceptions, broadly consistent with previous results reported in the literature. The signs of the estimated coefficients are generally consistent with expectations but the standard errors for these estimates are relatively large. For example, the estimates for *Trade Openness* are positive as hypothesized but are significantly different from zero at just the 0.154 and 0.093 levels across the two OLS specifications. The most important estimate for the control variables for the purposes of this paper are those for *Catholic*. The OLS estimates for *Catholic* are positive but have relatively large standard errors.

Although the OLS estimates strengthen the evidence of a correlation between religiosity and social insurance spending, the results are subject to the usual limitations of cross-sectional analyses. Endogeneity and omitted variable bias are two of the obvious concerns of particular interest if we want to interpret the correlations in the OLS analyses

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[20] Although Japan appears an outlier in Figure 1, excluding this variable has little effect on the OLS coefficient estimates for the religiosity measures reported in Table 1. Its inclusion does, however, substantially improve the fit of the first stage of the IV analysis described below.

Table 1. Religiosity and social welfare spending: 1990s cross-country evidence

Regressor	OLS estimates		IV estimates	
God Important	−1.991		−2.601	
	(0.671)		(0.802)	
	0.010		0.001	
Religious Attendance		−2.812		−2.995
		(0.949)		(0.752)
		0.010		0.000
Gini Coefficient	−0.193	−0.175	−0.159	−0.166
	(0.187)	(0.182)	(0.180)	(0.160)
	0.321	0.354	0.376	0.298
Population Over 65	0.807	0.766	0.583	0.710
	(0.656)	(0.625)	(0.549)	(0.469)
	0.239	0.241	0.288	0.130
Trade Openness	0.033	0.036	0.025	0.033
	(0.022)	(0.020)	(0.031)	(0.027)
	0.154	0.093	0.422	0.217
Majoritarian	0.815	−0.805	0.379	−1.041
	(1.793)	(1.682)	(1.674)	(1.667)
	0.656	0.640	0.821	0.533
Catholic	4.379	4.839	5.720	5.156
	(3.189)	(2.997)	(2.993)	(2.712)
	0.191	0.129	0.056	0.057
Buddhist	−13.765	−2.619	−14.705	−2.204
	(3.319)	(4.266)	(3.144)	(3.474)
	0.001	0.549	0.000	0.526
Constant	16.891	15.709	22.821	17.072
	(16.186)	(14.801)	(14.029)	(11.166)
	0.314	0.307	0.104	0.126
Standard error of regression	2.803	2.712	2.360	2.217
R^2	0.766	0.781		
Observations	22	22	21	21
F-statistic for test of excluded instruments			15.92	21.83
F *p*-value			0.000	0.000
Hansen J-statistic			2.491	3.466
$\chi^2(2)$ *p*-value			0.288	0.177

For each estimate, its robust standard error is reported in parentheses followed by the *p*-value. For the IV specifications the endogenous regressors are our religiosity measures and the instruments are *State Religious Support*, *State Religion*, and *Religious Pluralism*.

as indicating the causal effect of religiosity on welfare spending. Keeping in mind that our theoretical framework suggests the possibility of multiple equilibria, it is nonetheless of interest whether exogenous changes to a nation's religiosity influence the magnitude of social insurance spending.

We suggest one possible identification strategy for estimating the causal effect of religiosity on welfare spending using instrumental variables (IV) estimation. One important theory of religiosity that is potentially useful for identifying possible instruments is generally described as the religion-market model (see Finke and Stark 2005, as well as Barro and McCleary 2003a). This argument focuses largely on the impact of state regulation, subsidies, and repression on the extent of religiosity in a country. State regulation of religion can be important to the extent that it either preserves monopoly advantages to a particular denomination or encourages competition for members among religions. The idea is that monopoly religions often fail to provide their customers with good services. When religions compete, they tend to provide more of what people want from religion, increasing overall levels of religiosity. At the same time, states can have perhaps a more direct effect on religiosity by subsidizing religious activities or by actively suppressing religious expression.

To employ these arguments in our identification strategy, we focus on three measures. First, *State Religious Support* ranges from 0 indicating state oppression of religion to 6 indicating either at least one state religion or special recognition without state establishment (for our cases, the observed values of this variable are between 2 and 6).[21] Second, *State Religion* is a dichotomous variable with 1 indicating the presence of a state religion and zero otherwise.[22] Both of these variables measure direct state policy in terms of suppression of and subsidies for religious activity. Third, *Religious Pluralism* is the standard fractionalization index applied to religious groups and has the simple interpretation of being equal to the probability that two randomly selected individuals from a given country do not belong to the same religious group.[23] According to the religion-market model, greater pluralism is associated with more diverse and better choices for potential consumers of religion and thus leads to higher levels of religiosity.

Table 1 columns (3) and (4) report IV coefficient estimates for the regression of *Social Welfare Spending* on religiosity and the same set of control variables as before, instrumenting for the religiosity measures.[24] In our IV estimates the coefficient on *God Important* is larger in size and statistically significant at less than the 1% level. The coefficient on our religious attendance variable also becomes slightly more negative and more statistically significant than in the OLS regression.

The table reports two sets of diagnostics for assessing the validity of the identification strategy in this analysis. The F-statistic for excluded instruments (adjusted for heteroskedasticity) indicates whether or not the instruments are significantly

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[21]   See Fox and Sandler (2005) for details.
[22]   This variable is from Barro and McCleary (2003b).
[23]   This variable is from Montalvo and Reynal-Querol (2005).
[24]   Note that Luxembourg is dropped from these specifications because the Barro and McCleary data do not include the variable *State Religion* for Luxembourg.

correlated with the endogenous religiosity regressors, controlling for the other included exogenous regressors. The *p*-value for each F-statistic indicates that the instruments are significantly correlated with *God Important* and with *Religious Attendance* at less than the 0.001 level.[25] Table 1 also reports the result of over-identification tests which indicate that for both specifications there is little evidence to reject the null hypothesis that the over-identification assumptions are valid (the *p*-values for the Hansen J-statistic are 0.288 and 0.177) which is, of course, consistent with there being no correlation between the instruments and the error term.[26] Overall, the IV results provide some suggestive evidence that exogenous cross-country differences in religiosity help explain variation in social insurance spending.

To evaluate the results further, we estimated several alternative specifications.[27] First, we extended the sample to include developing countries. The analysis throughout the paper primarily tests the argument using data from developed democracies. The mechanism by which religion matters for the extent of social insurance provision requires that policy is sensitive to the preferences of citizens which is much more likely to be true in stable, established democratic states. Further, there is good reason to believe that in developing countries religious organizations may play a much more prominent role than is the case in high-income democracies in providing material benefits to directly substitute for social insurance. As a consequence, the high-income cases allow a better test of our own theoretical argument about how religion may serve as a substitute for social insurance programs. Perhaps most importantly, there is significant heterogeneity both within the developing country sample and between both samples. These countries differ substantially on many observed and unobserved characteristics (e.g. years of democracy, history of communism, state strength, human capital formation, etc.) that are potentially relevant for explaining aggregate social insurance provision and correlated with religiosity. With these caveats in mind, we estimated the exact specifications reported in Table 1 for all countries included in both the World Values Survey and Persson and Tabellini's data. The OLS coefficient estimates are negative for both measures of religiosity. The estimates, however, are smaller in magnitude and are less precisely estimated (the coefficient for *God Important* is statistically significant at the 0.054 level and *Religious Attendance* is significant at the 0.097 level). Although the IV estimates are also negative

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[25] For the *God Important* specification, the first-stage coefficient estimates and standard errors for the instruments were: 0.36 (0.29) for *State Religious Support*, 0.48 (0.65) for *State Religion*, and 13.23 (2.20) for *Religious Pluralism*. For the *Religious Attendance* specification, the first-stage coefficient estimates and standard errors for the instruments were: 0.24 (0.18) for *State Religious Support*, 0.54 (0.34) for *State Religion*, and 11.07 (1.61) for *Religious Pluralism*.

[26] Note though that a potential problem with using measures of state subsidy as instruments is that they may be determined by whether the political left or right was most influential in resolving disputes about the relationship between church and state in the late 19th and early 20th century. If left or right dominance during these periods also influences current social insurance provision, this would violate the exclusion restriction.

[27] These results are not reported in the paper but may be reviewed, along with all other unreported results discussed in the paper, in the online appendix at `http:\\www.qjps.com`.

and marginally significant, the instruments are only weakly correlated with the religiosity measures which can significantly magnify bias due to even a weak correlation between the instruments and the error term.

In our second alternative specification, we dropped the United States from each model to check whether American "exceptionalism" in terms of either religiosity or social insurance spending was driving the results. Omission of the U.S. case did not significantly affect the coefficient estimates for our religiosity measures. Third, following Moene and Wallerstein (2001), we omitted a measure of a country's wealth because our cases include only advanced economies. This could potentially bias our estimates because there are theoretical reasons for both welfare spending and religiosity to be correlated with levels of economic development. Including a measure of real GDP per capita, however, does not change our results and in none of the four specifications is real GDP per capita significantly correlated with social spending. Fourth, a number of authors (see e.g. Alesina, Glaeser, and Sacerdote 2001) have argued that ethnic heterogeneity decreases support for social spending because it decreases altruism, perhaps in part through its impact on beliefs about the importance of luck in determining success. Adding this variable to the baseline specification reported in Table 1 also does not substantially affect our estimates. Fifth, we evaluate if our estimates are biased due to the omission of potentially relevant characteristics of each country's national labor market. Adding a measure of the extent of wage bargaining coordination slightly attenuates the magnitude of the OLS estimates of the religiosity coefficients but the estimates are still significantly different from zero at the 0.079 and 0.115 level respectively. Moreover, adding the coordination measure has virtually no effect on the IV estimates and the coefficient estimates for the coordination variable are not significant in any of the specifications. Inclusion of a measure of unionization results in even more modest departures from the estimates reported in Table 1. Sixth, we do not include measures of partisanship in our main analyses because these measures are likely at least in part consequences of the factors that we are trying to estimate the effect of. We did, however, estimate two additional specifications, one including a measure of the extent of Christian Democratic party control of government and one including a government partisanship center of gravity measure. Adding either variable has little effect on the coefficient estimates for the religiosity variables and none of the coefficient estimates for the partisan variables is statistically significant.

Finally, we collected new measures of religiosity from prior waves of the World Values Survey (Wave 2 and 3). This survey asked the necessary questions to construct new versions of *God Important* and *Religious Attendance*. Further, this survey ask respondents to place themselves on a scale with 1 indicating "In the long run, hard work usually brings a better life" and 10 indicating "Hard work doesn't generally bring success – it is more a matter of luck and connections". We could not control for this factor using the Wave 4 data and so the previous waves both allow us the opportunity to test the argument using independently collected religiosity measures and to control for this possible omitted variable. The coefficient estimates for the *God Important* variable are remarkably similar, with or without the "luck important" variable, to the estimates with the Wave 4 data. The coefficient estimates for the variable *Religious Attendance* are somewhat smaller and

less precisely estimated. The coefficient estimates for the "luck important" variable are not statistically significant.[28]

EVIDENCE FROM INTERNATIONAL INDIVIDUAL-LEVEL DATA

Overall, the country-level evidence suggests that countries that are more religious on average have lower levels of social insurance and welfare spending and that this relationship is not spurious. The key argument of this paper is that this relationship is a consequence of religion and welfare state spending being substitute mechanisms for insuring individuals against adverse life events. A key prediction of this explanation is that, within countries, individuals who are religious prefer lower levels of social insurance provision than individuals who are secular. In this section we examine this prediction using international individual-level survey data.

Theoretically, the dependent variable for this analysis is preferences over the tax level and social insurance benefit. Ideally, we want to distinguish between individuals who prefer relatively higher taxes and benefits and those who prefer less of both. It is essential then that any survey-based measure of benefit or spending policy opinions also includes explicit recognition that increases in expenditures involve higher taxes.

Given that the country-level evidence discussed in the previous section employed measures of religiosity from the World Values Survey this is obviously a natural starting point for our individual-level analysis. Unfortunately, the World Values Survey does not include concrete spending questions and certainly none that make explicit the tax price of expenditure increases. Consequently, while we briefly discuss some individual-level results from this survey, our primary individual-level evidence is based on the analysis the 1996 International Social Survey Program (ISSP) Role of Government III module for which nearly ideal expenditure questions were asked. We focus our attention on data from the 11 advanced industrial democracies represented in this survey.[29]

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[28] The evidence in this section suggests that there is a fairly strong negative correlation between religiosity and levels of social insurance spending across OECD countries and that the correlation is not spurious. That said, there are some obvious limitations to evidence based on small-*n*, cross-sectional analyses. As a result, the individual-level analysis in the following section is central to our empirical strategy. We also refer readers to Scheve and Stasavage (2006) for further evidence on the link between religiosity and policy outcomes. This paper presents evidence of a negative correlation between religiosity and the adoption of (and generosity of) workers' compensation programs in the United States from 1910 to 1930. The availability of quantitative historical data allows us to consider the correlation between religiosity and social insurance in the United States during an initial period before many of the hypothesized sources of policy feedback could begin to operate (including arguably the influence of the welfare state on religiosity). Moreover, the possibility of investigating developments in individual U.S. states allows us to conduct a comparative investigation of the determinants of policy outcomes that is subject to less unobserved heterogeneity than in the cross-country analyses in this section.

[29] Our cases are Canada, France, Germany, Ireland, Italy, Japan, New Zealand, Norway, Sweden, UK, and the United States. Australia and Spain are omitted from all the analyses presented in this section because the religiosity or denominational measures that we use were not asked.

The dependent variable for this analysis is *Social Spending Support* which is based on responses to three questions asking individuals whether they would like to see more or less government spending on unemployment benefits, health care, and pensions. Critically, immediately prior to asking respondents these questions, they are informed that more spending may require higher taxes.[30] We combine the measures using factor analysis. This analysis yields a single factor which is our dependent variable *Social Spending Support* (see Iversen and Soskice 2001 for a similar use of these questions to construct a measure of social insurance preferences).[31]

Ideally, the survey would have measures of religiosity analogous to the two measures from the World Values Survey used in the country-level analysis. Although the ISSP survey does not ask the question about the importance of God in the respondent's life, it does ask respondents to report their religious activity on a scale similar to the question in the World Values data. For the ISSP individual-level analysis, our key measure of religiosity is *Religious Attendance–ISSP*. This variable is based on responses to the question "Apart from such special occasions as weddings, funerals, and baptisms, how often nowadays do you attend services or meetings connected with your religion?". The variable is coded on a scale from 1 "never" to 6 "once a week or more". Huber (2005) demonstrates that there is a weaker correlation in low-income countries between measures of religious belief and church activity, with one potential reason being the greater material benefits received by churchgoers in this group of countries. In order to best test our argument that focuses on the psychological benefits of religion we focus on the high-income OECD countries, while reporting broader country results in the online appendix.

In evaluating whether more religious individuals are less supportive of social spending, we need to control for the other factors likely to affect support for social insurance spending. These include:

- *Income Quartile* ranges between 1 and 4 indicating the quartile of the respondent's family income based on his or her country's income distribution. To the extent that higher-income individuals are less likely to suffer an adverse event requiring state support (such as job loss) we can expect them to be less favorable to social spending.
- *Female* is a dichotomous indicator variable equal to 1 for female respondents and 0 for males. This is a standard control variable included in individual analyses, because there have been consistent differences observed between males and females for certain policy preferences.
- *Age* is equal to the respondent's age in years. Older individuals should be more likely to favor social spending to the extent that they are more likely to draw upon state-provided health or retirement benefits.

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[30] The specific wording is "Listed below are various areas of government spending. Please show whether you would like to see more or less government spending in each area. Remember that if you say 'much more', it might require a tax increase to pay for it." The response categories for each spending item were "spend much less", "spend less", "spend the same as now", "spend more", and "spend much more". The spending items for social insurance are "unemployment benefits", "old age pensions", and "health".

[31] The factor loadings for the latent variable are: 0.49 for unemployment benefits, 0.84 for old age pensions, and 0.54 for health.

- *Education Years* is equal to the respondent's years in school. For individuals still in school the variable is set equal to *Age* minus five. Education is often used as a measure of human capital and thus captures an individual's long-run earning potential. Thus, we expect it to have a similar effect on support for social spending as income, with more educated respondents less favorable of spending.
- *Unemployed* is a dichotomous indicator variable set equal to 1 for unemployed respondents and 0 otherwise. Our theoretical model suggests that those who are currently unemployed should have a clear preference for higher social insurance than those who are not employed.
- *Union* is a dichotomous indicator variable set equal to 1 for union members and 0 otherwise. Previous research suggests that union members prefer higher levels of social insurance.
- *Catholic* and *Protestant* are dichotomous indicator variables set equal to 1 if the respondent is of the respective denomination and 0 otherwise. As discussed above there are a number of reasons why doctrinal differences might lead individuals of different denominations to have different levels of support for welfare state spending.
- *Left–Right Party Support* ranges between 1 indicating the respondent supports a political party on the far left to 5 indicating the respondent supports a party on the far right. To the extent that we think left vs. right party support is above all determined by attitudes towards redistribution, then it would not make sense to enter this variable in the regression, because it would suggest that our dependent variable is essentially identical to one of our independent variables. However, we nonetheless include this last variable in our second regression to control for several possibilities that may affect our inferences. For example, if religious individuals tend to vote on the right for social policy reasons, once they decide to vote on the right they may also tend to "adopt" the attitudes of the political right with regard to social insurance, regardless of their prior economic views.

Furthermore, a full set of country fixed effects is included. The fixed effects account for any characteristics, observable or not, that may influence average support for social spending in each country. Inclusion of the fixed effects is essential given that the question requires respondents to indicate whether they want to spend more or less which is, of course, affected by status quo levels of spending.

Table 2 reports OLS coefficient estimates for the regression of *Social Spending Support* on religiosity and these control variables. As can be seen in column (1), even after the inclusion of a number of controls, including country fixed effects, we observe a negative and highly significant correlation between *Religious Attendance–ISSP* and *Social Spending Support*.

One important potential objection to the specification reported in column (1) is the omission of a measure of an individual's left–right ideology. Left–right ideologies are not, or at least were not, primarily about the economy in some countries but rather are (or were) about religious and social policy issues. This raises the possibility that religious individuals are less supportive of social spending because they are influenced by the political right with which they identify for religious reasons, regardless of their prior

Table 2. Support for social spending in 11 advanced democracies, 1996

Regressor	OLS Estimates	
Religious Attendance–ISSP	−0.035	−0.036
	(0.009)	(0.009)
	0.003	0.003
Income Quartile	−0.126	−0.138
	(0.017)	(0.019)
	0.000	0.000
Female	0.153	0.126
	(0.024)	(0.028)
	0.000	0.001
Age	0.004	0.004
	(0.001)	(0.002)
	0.020	0.070
Education Years	−0.021	−0.019
	(0.009)	(0.010)
	0.043	0.080
Unemployed	0.192	0.162
	(0.026)	(0.047)
	0.000	0.008
Union	0.102	0.110
	(0.039)	(0.031)
	0.026	0.006
Catholic	0.005	0.025
	(0.042)	(0.045)
	0.908	0.596
Protestant	0.003	0.029
	(0.059)	(0.056)
	0.962	0.618
Left–Right Party Support		−0.111
		(0.032)
		0.007
Country fixed effects	Yes	Yes
Standard error of regression	0.784	0.764
R^2	0.147	0.176
Observations	11,506	7,312

For each estimate, its country-clustered robust standard error is reported in parentheses followed by the *p*-value.

economic views. Given this possibility, but keeping in mind the potential problems with including this variable as discussed above, it may be necessary to address the question of whether more religious individuals are less supportive of welfare spending controlling for their political ideologies. Importantly, column (2) provides evidence for an affirmative answer to this question. The main finding of a negative correlation between religious attendance and support for social insurance spending continues to hold when we introduce a person's left–right party identification as a control variable.

The results for the control variables in both specifications are generally consistent with expectations. Richer and more educated respondents prefer less spending while females, older respondents, union members, and the unemployed prefer more. Individuals supporting parties on the right are less supportive of spending on social insurance. One sees no evidence in this data that Catholics or Protestants are more or less likely to support welfare spending than other respondents.

Recall that our measure of support for social insurance spending is based on the latent variable from a factor analysis on spending questions for unemployment, pensions, and health. Consequently, one simple and useful way to get a sense of the substantive size of the coefficient estimate for religiosity is to compare it to other individual characteristics known to affect social policy preferences (we consider the estimates in column (1) only as the size of the effects are nearly identical in column (2)). The estimate for religious attendance implies that moving from an individual who never goes to church to one who attends once a week or more decreases support for social spending by 0.21 (about 25% of the dependent variable's standard deviation). This effect is comparable to the effect of being unemployed as unemployment increases support for spending by 0.192. The magnitude of the effect is also larger than the well-documented difference between men and women in support for welfare spending. Alternatively, consider the variable *Income Quartile*. A one standard deviation change in *Religious Attendance–ISSP* has nearly one-half the effect on support for spending as a one standard deviation change in *Income Quartile*.

In addition to adding the left–right partisanship measure, we estimated several alternative specifications. First, we estimated the models in Table 2 separately for each of the 11 countries in the sample. The pooled analyses include a fixed effect for each country to allow for different mean levels of support for increased social insurance spending due to any number of national characteristics including the status quo level of spending. However, this does not allow the effects of the other independent variables to vary across countries as is possible by estimating separate coefficients for each case. Table 3 reports the coefficient estimates for *Religious Attendance–ISSP* for each country. For the specification excluding *Left–right Party Support*, eight of the 11 coefficient estimates are negative and statistically significant. For the specification including *Left–right Party Support*, seven of the 10 coefficient estimates are negative and statistically significant. These results suggest the pooled estimates are not driven by a couple of outlier countries.

Second, we extended our sample to include developing countries in the ISSP data. Again, keeping in mind our preference for testing the argument on advanced democracies, we find that the magnitude and statistical significance of the coefficient estimates for *Religious Attendance–ISSP* are substantially the same as those reported in Table 2.

Table 3. Support for social spending in 11 advanced democracies, 1996, individual country estimates

Country	Coefficent estimate of *Religious Attendance–ISSP* Table 2, col. (1) Specification	Coefficent estimate of *Religious Attendance–ISSP* Table 2, col. (2) Specification
Canada	0.010 (0.021) 0.641	0.010 (0.021) 0.621
France	−0.062 (0.019) 0.001	−0.045 (0.022) 0.047
Germany	−0.061 (0.012) 0.000	−0.066 (0.015) 0.000
Ireland	−0.035 (0.017) 0.044	−0.032 (0.029) 0.269
Italy	0.003 (0.016) 0.866	
Japan	−0.064 (0.035) 0.068	−0.079 (0.046) 0.089
New Zealand	−0.017 (0.014) 0.229	−0.030 (0.017) 0.079
Norway	−0.037 (0.017) 0.029	−0.037 (0.019) 0.048
Sweden	−0.067 (0.026) 0.009	−0.065 (0.031) 0.040
UK	−0.039 (0.020) 0.049	−0.029 (0.019) 0.139
United States	−0.033 (0.016) 0.046	−0.032 (0.016) 0.045

All regressions include the same set of control variables in Table 2, columns (1) and (2) respectively. For each coefficent estimate, its robust standard error is reported in parentheses followed by the *p*-value.

Third, several of the control variables may be more important for some of the components of the social insurance preference measure than others which could bias the estimates of the religiosity coefficient. We redefined the dependent variable to be equal to responses to the three component questions employed in the factor analysis. Using the same independent variables, we estimated a seemingly unrelated regression model, constraining the religiosity coefficients to be equal across all three equations but allowing all the other coefficients to vary. The estimated coefficient for religiosity was negative and statistically significant at less than the 1% level.

Fourth, our argument emphasizes that religion serves as a substitute mechanism of insurance against adverse life events and that this effect primarily depends on religion's role as a psychological buffer rather than due to the religious provision of material benefits or even the psychological benefits of having a strong network of friends separate from one's employment. One strategy for identifying a role for religion distinct from other social networks would be to control for the level of participation in other social organizations. Beyond union membership, the 1996 ISSP data do not record information about respondents' social memberships and activities. The one potentially relevant (and available) measure of the extent of an individual's social network is household size, particularly the number of adults living in the household. We added this measure to our specification and, although it was correlated with the dependent variable, the correlation was positive, which is not consistent with the hypothesis that extended adult family members provide additional social support reducing preferred levels of social spending. Moreover, inclusion of the number of adult household members had no effect on the coefficient estimate for religiosity.

Fifth, another possible omitted variable that might bias our estimates of the correlation between religiosity and social spending preferences is whether an individual lives in a rural area. These respondents may be both more likely to be religious and less likely to support generous social insurance policies. Inclusion of a dichotomous variable equal to 1 for rural respondents and 0 for urban and suburban respondents indicates that rural respondents are less supportive of increased spending. Adding this variable does somewhat attenuate the magnitude of the coefficient estimate for religiosity but it is still statistically and substantively significant.

Sixth, Iversen and Soskice (2001) provide evidence that individuals with more-specific skills prefer higher levels of social insurance. We added their specific skill measures to the specifications reported in Table 2. Skill specificity is positively correlated with *Social Spending Support* but its inclusion does not affect the magnitude of the coefficient estimates for religiosity.

Seventh, our argument emphasizes differences in policy opinions by levels of religiosity rather than by denominational affiliation. Although the specifications in Table 2 control for denomination, one potential problem is that we have not distinguished between denominational members who are active participants and those who are only nominal members. To identify these differences, we added interaction terms between religious attendance and the Catholic and Protestant dichotomous indicator variables. The estimates for these specifications are mixed. For the model, including the variable *Left–right Party Support*, the interaction terms are insignificant, suggesting no

differences between Catholics and Protestants in the effect of religiosity on spending preferences. However, the estimates for the specification excluding *Left–right Party Support* do indicate differences between Catholics and Protestants. For both denominations the marginal effect of religiosity on spending preferences is negative but the estimated effect is almost twice as large for Protestants compared to Catholics. The key point for purposes of evaluating our main argument is that the impact of religiosity is negative across denominations.

Eighth, we considered the possibility that our results for the negative correlation between religiosity and support for welfare spending were biased due to the omission of a variable measuring beliefs about the importance of luck in determining success. On the one hand this variable was not significantly correlated with social welfare spending in the country-level analysis in the previous section. On the other hand, as discussed above, a number of scholars have emphasized its importance in determining the demand for welfare spending. The primary source for cross-country individual-level evidence on this point is the World Values data. As we have already noted, this data set does not include concrete spending questions and certainly none that makes explicit the tax price of expenditure increases. Alesina, Glaeser, and Sacerdote (2001) and Alesina and Angeletos (2005) rely on an estimate of a positive and significant correlation between the *Luck Important* measure in the World Values Survey and a respondent's left–right ideology, controlling for other factors, to present evidence of a relationship between beliefs about the importance of luck and effort in determining success and preferences about welfare spending. Following this approach we added individual responses to the how important God is in your life question (or analogously responses to the religious attendance question) to a model, very close to theirs, of ideology as a function of demographic characteristics and beliefs about the importance of luck and work in determining success. Both the religiosity measures and the luck measures are significantly correlated with the left–right ideology measure in the expected directions. The problem with this analysis is, of course, that the ideology variable may be measuring not preferences over social insurance spending but differences in religious and social policies. To the extent that this is true, it is not surprising that religiosity is correlated with ideology. Moreover, it is not clear how to interpret the results in the existing literature. The important point for our purposes is that the *Luck Important* variable is not highly correlated with the religiosity measures and its inclusion does not have a significant impact on the coefficient estimates for religiosity in this analysis.

Finally, to further strengthen our interpretation of the correlation between religiosity and social insurance spending preferences, we regressed spending preferences regarding other issues on religiosity as well as the other regressors in column (1) of Table 2. The ISSP survey also asked individuals whether they would like to see more or less government spending on the environment, law enforcement, education, defense, and the cultural arts. None of these spending categories provides insurance against adverse life events and so we do not expect a negative correlation between religiosity and spending preferences in these areas. It is, of course, possible that religiosity is correlated with these spending preferences for other reasons, but a correlation is not predicted by our model. Table 4 reports the estimates for religiosity for all five regressions. In four of the five

Table 4. Support for non-insurance spending in 11 advanced democracies, 1996

Regressor	OLS estimates				
	Environment	Law enforce	Education	Defense	Arts
Religious Attendance–ISSP	−0.016	−0.012	−0.012	0.027	0.008
	(0.011)	(0.012)	(0.007)	(0.008)	(0.010)
	0.170	0.328	0.136	0.006	0.429
Control variables	Yes	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes
Standard error of Regression	0.835	0.828	0.817	0.951	0.962
R^2	0.077	0.143	0.062	0.125	0.133
Observations	11,784	11,772	11,907	11,748	11,663

For each estimate, its country-clustered robust standard error is reported in parentheses followed by the *p*–value.

regressions the coefficient estimate is not statistically significantly different from zero. In the one exception, defense spending, the dependent variable is positive, indicating that more religious individuals prefer more defense spending. Consequently, there is little evidence in the data that religiosity is generally negatively correlated with state spending preferences.

Overall, the results in this section provide robust evidence that more religious individuals are less supportive of spending on social insurance, which is consistent with the argument of this paper.[32]

CONCLUSION

We have argued that the literature on the political economy of redistribution should take greater consideration of religiosity as a factor determining welfare state spending outcomes. If social insurance and religious engagement are two alternative mechanisms that limit the psychic costs of adverse life events, then we can expect individuals who are religious to be less demanding of social insurance by the state. Our empirical results show that this prediction holds up both when considering variation in levels of religiosity and welfare state spending across countries, as well as when considering differences in individual attitudes within countries. Finally, we have also suggested that, because religiosity is likely to involve a network externality, two countries with similar initial economic conditions and individual preferences may nonetheless wind up with very different equilibria with regard to religiosity and social insurance. Our model clearly presents a highly stylized view of how choices regarding religion and social insurance are made, but we believe it may still shed light on the variations in religiosity and welfare state spending observed across advanced industrial countries.

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[32] The analysis here provides substantial evidence of a robust correlation between religiosity and support for social insurance spending, controlling for measured characteristics of respondents. It remains possible that there are unobserved characteristics omitted from the model that could generate biased estimates.

Although not available in the ISSP data, we used parental religiosity as a proxy variable for these unobservables in an analysis of US social insurance policy opinions using General Social Survey data and found religiosity remains negatively correlated with support for social insurance spending controlling for parent religiosity.

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