

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 will prefer lower levels of social insurance provision than will individuals who are secular, and countries that are more religious on average will 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. In one equilibrium high religiosity will coexist with low levels of social insurance, while in a second equilibrium there will be low religiosity and high 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.

1 Introduction

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 pre-conditions 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 suggest that existing work has paid insufficient attention to the role of religiosity in influencing social insurance provision.³ We argue that religious involvement and social spending can both serve to insure individuals against the effects of adverse life events. As a consequence, religious individuals on average will prefer lower levels of social insurance provision than will those who are secular. This hypothesis is consistent with important stylized facts, like the large difference in both social insurance provision and religiosity between the US and many European countries. We show that our predictions are also supported by a variety of statistical tests using both cross-country evidence and individual-level data on religiosity and attitudes towards social spending.

¹Iversen and Soskice (2001), Moene and Wallerstein (2001), Boix (2003), Shayo (2005), Esping-Anderson (1990), Garrett (1998), Huber, Ragin, and Stephens (1993), Clayton and Pontusson (1998), Swank and Steinmo (2002), Franzese (2002), Swenson (2002), Mares (2004), Huber and Stephens (2001), Hacker (2002), Roemer (1998, 2001), and Hicks and Swank (1992). See also the contributions in Pierson (2001).

²See Benabou (2000), Piketty (1995), Benabou and Tirole (2002), Alesina and Angeletos (2003), and Shayo (2005).

³Clark and Lelkes (2004) is an important exception to the existing literature in arguing that religion can serve as a form of insurance.

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 more relevant cleavage in advanced industrial countries today may be between the religious and the non-religious. Our predictions regarding religion and social insurance depend upon three core assumptions.

First, adverse life events involving unemployment, illness, or retirement income do not only generate monetary costs for individuals, they also generate psychic costs. This point is emphasized by Blanchard and Tirole (2003) in their recent discussion of institutions for employment protection.

Second, though conventional social insurance (unemployment benefits, government health spending, retirement benefits) is restricted to a monetary transfer, this benefit helps in part to alleviate the psychic costs of adverse life events. In technical terms, the monetary benefits and the psychic benefits one enjoys from a situation like having a job are not additively separable.

Finally, we suggest that religious involvement can serve as an alternative mechanism through which individuals in effect insure themselves against adverse events. 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. Below we discuss how recent theoretical work by psychologists has emphasized that religious individuals may "appraise" stressful events as being less threatening to their overall self-image or beliefs 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 earlier work by psychologists, and in particular Freud’s classic work on the psychology of religion, *The Future of an Illusion* (1927), takes a decidedly more negative view of religiosity, it shares a commonality with recent work in emphasizing how religion can function as a buffer against uncontrollable external forces.⁶ 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 will derive greater pleasure from being religious when others around them are also religious. In contrast, when a parish or congregation dwindles in size it may reduce the benefits for those who remain. This fits with Durkheim’s description of religion as something that is “eminently social” (1912, p.14). The presence of a network externality of this sort can lead to the existence of multiple equilibria in our model. Take a country with a certain set of initial conditions in terms of levels of economic insecurity and individual preferences regarding devoting leisure time to religion versus non-religious activities. On the one hand, a self-fulfilling expectation can result in an equilibrium of high religiosity and consequently low levels

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

⁵Park, Cohen and Herb (1990), Smith, McCullough, and Poll (2003), James and Wells (2003), Ellison, Gay, and Gals (1989), Pargament (1997).

⁶See also the more neutral portrayal of religion in James (1902) for a similar emphasis on religion as a buffer.

of social insurance. On the other hand, self-fulfilling expectations may also produce an equilibrium with low levels of religiosity and a high level of 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 or parameters may nonetheless wind up with very different levels of redistribution and/or social insurance provision in equilibrium.

We test our predictions empirically using both cross-country and individual-level data. Our data on religiosity is drawn from both the World Values and ISSP surveys and involves 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 beliefs about the importance of effort vs. exogenous factors in determining individual economic success. Our results also remain robust when instrumenting for religiosity to control for the fact that it may itself be endogenous to social spending. We use several legal system variables as instruments, suggesting that these may be good predictors of whether a country winds up in a high religiosity or a low religiosity equilibrium.

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 tradeoff with higher social spending implying higher taxation. Using this 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. 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 (based on a five point scale).

In the remainder of the paper we proceed as follows. Section 2 presents preliminary evidence on the negative correlation between religiosity and the welfare state in advanced industrial countries, and it then considers several theoretical arguments that might explain this correlation. We first consider existing arguments and then lay out our own argument about religiosity, together with the core assumptions upon which it depends. In Section 3 we present our argument formally. This involves extending an existing model of social insurance provision developed by Wright (1986) which makes similar core assumptions to those used in Iversen and Soskice (2001) and Moene and Wallerstein (2001). Our model extends existing work by considering the possibility that religious involvement and social spending act as alternative insurance mechanisms. We also consider the possibility of multiple equilibria in the model. Section 4 then conducts initial empirical tests of our predictions using cross-country data. Section 5 considers the same predictions using individual level data on religiosity and social spending preferences. Finally, Section 6 concludes.

2 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. There is far less certainty 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 towards social insurance provision, as well as for the sizeable cross-country differences we observe in actual levels of social spending.

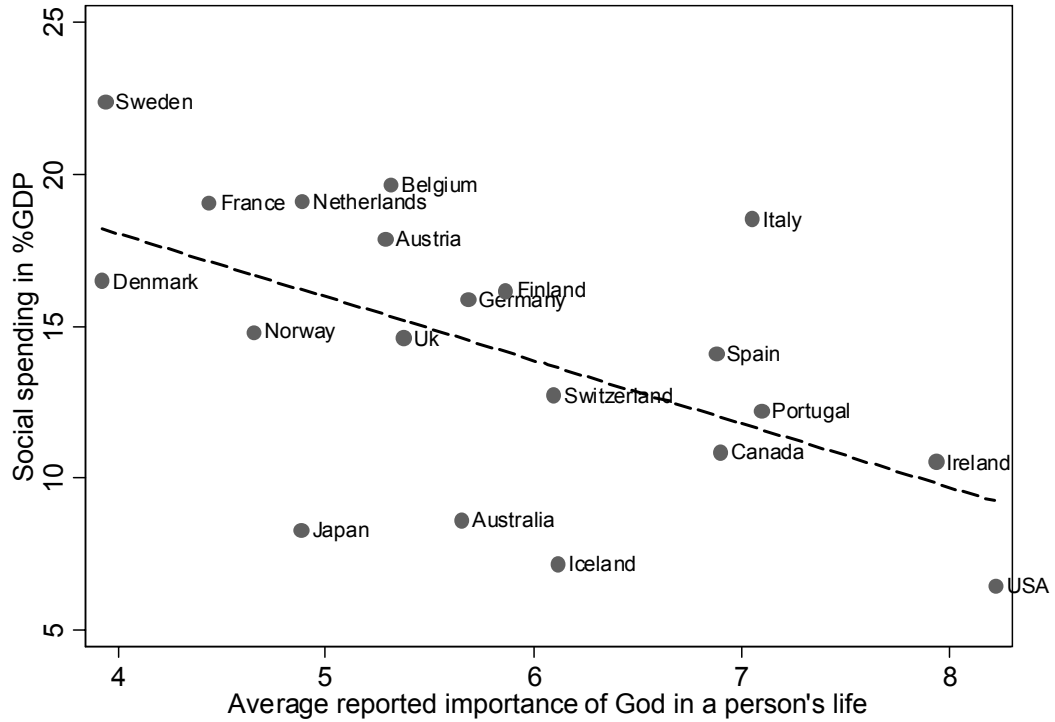
Figure 1 presents a simple scatterplot of the level of social spending in % of GDP for twenty OECD countries (average 1990-98), plotted against one measure of religiosity from the World Values Survey. Social spending here includes state provision of unemployment benefits, health spending, and retirement benefits. The horizontal axis here corresponds 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. While Figure 1 is visually striking, it of course does not tell us *why* we would expect to observe a negative correlation. In what follows we review existing arguments that may shed light on this question. We then outline our own argument.

2.1 Existing Arguments

There are a number of plausible reasons why religious beliefs and activity might influence individual attitudes towards social insurance. 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 also be relevant for understanding social insurance. So, for example, in cases where a religious tradition suggests that worldly success is attributable to individual effort or merit, one might find that believers prefer

Figure 1: Religiosity and Social Spending



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 the case of 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 the Social Democratic parties (Esping-Anderson, 1990). Huber, Ragin, and Stephens (1993) find evidence that social democratic governments are associated with a larger public sector though with fewer transfer payments than Christian Democratic governments. Our empirical

results in Sections 4 and 5 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 on social spending preferences. Finally, our core results regarding the negative correlation between religiosity and social insurance are unaffected by inclusion of controls for denomination.

Beyond the issue of denominational differences, there are several possible channels through which religiosity, irrespective of denomination, might have an influence on state provision of social insurance. One important possibility is if being religious prompts individuals to become more altruistic, advocating greater spending on the disadvantaged. There is of course a long tradition in different world religions emphasizing charitable works, and we can also observe that religious doctrines about fairness appear to have influenced support of certain groups for the welfare state, such as Christian Democratic parties. However, 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 in Sections 4 and 5 further support this view.⁷

Another possible influence of religion on social insurance involves the fact that it may lead individuals to draw particular inferences about how the economy functions.

⁷One might argue that the Figure 1 results are also influenced by a substitution effect - religious individuals prefer as much, or more social insurance, but they prefer to see it provided by churches rather than the state. It is true that churches have significant programs that care for the sick and elderly. While this may play some role in accounting for the negative relationship between a country's religiosity and *government* spending on social insurance, it is at best an incomplete answer because the magnitude of the differences in charity spending across countries is small relative to the differences in spending on social insurance. Based on dollar figures cited by Alesina and Glaeser (p.45) we estimate that charitable donations in the US amount to 2% of GDP in the US but only 0.3% of GDP in continental Europe. This difference is significant, but it is small compared to average differences in government social spending. In addition, these figures for charitable giving may include both donations that could be characterized as social insurance and those for other purposes.

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 will 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. His argument can also be applied to the case of social insurance. 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.⁸ While the model in Piketty (1995) emphasizes how past personal experience influences beliefs about the “importance of effort”, Benabou and Tirole (2002) have recently suggested that certain individuals may have a psychological need to believe that the world is just (in the sense that hard effort is well rewarded). One possible extension to their argument is to suggest that individuals with religious beliefs may have a particularly strong need to believe that the world is “just”. This does not imply that economic beliefs held by religious individuals will necessarily be inaccurate (it may be the case that non-religious individuals have more systematically biased beliefs about the economy), but it does suggest a further mechanism through which religion might influence attitudes towards social insurance provision.

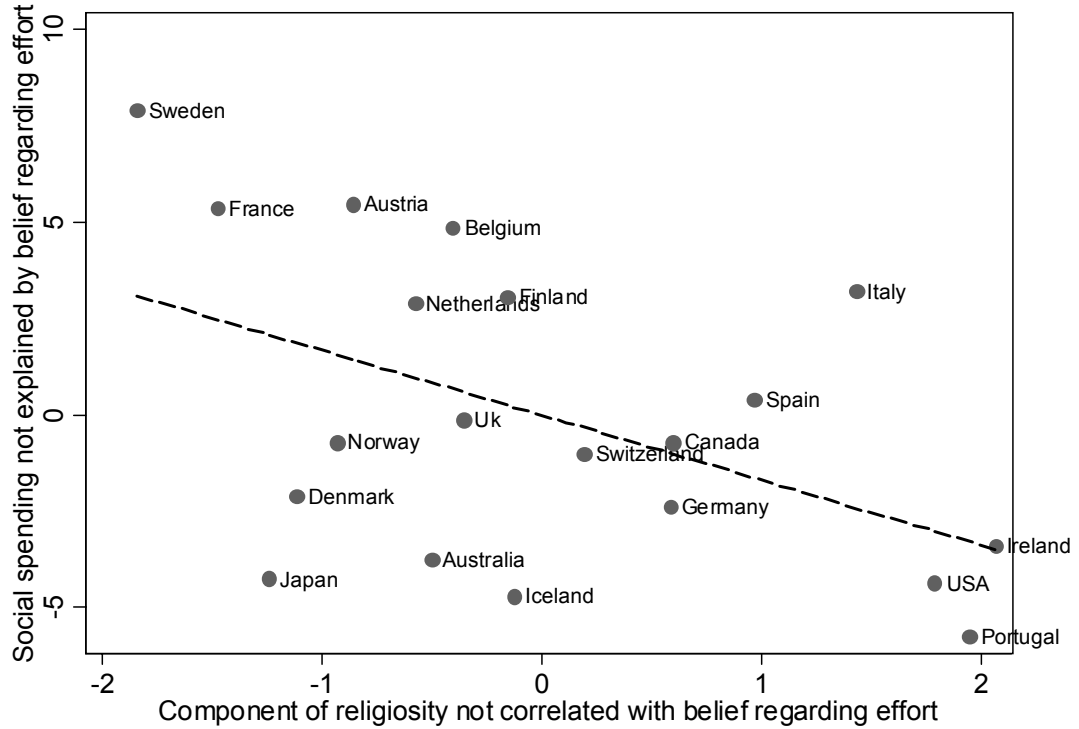
While there is strong empirical support for the proposition that beliefs about “effort” play an important role in determining redistributive preferences, the effect of religiosity on social spending does not appear to pass principally through this channel. If we return to the cross-country data used to produce Figure 1 we find that even

⁸Piketty (1996, 1998), Alesina, Sacerdote, and Glaeser (2001), Alesina and La Ferrara (2001), and Alesina and Glaeser (2004).

when controlling for beliefs about the importance of “effort” using a survey response variable involving the importance of “effort” versus “luck” in determining economic success, we continue to observe a strong negative correlation between religiosity and levels of social spending. Figure 2 illustrates this visually by plotting the residuals from a regression of social spending on our effort variable against the residuals from a regression of religiosity on this same effort variable. As can be seen the visual result in Figure 2 remains very similar to that in Figure 1. In our empirical tests in Sections 4 and 5 we control more systematically for the effect of beliefs about effort on social insurance provision. 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 will 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 could be legalized (to take two recent examples from the US context), 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

Figure 2: Partial correlation between religiosity and social spending



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. The fact that our empirical tests show a negative correlation of religiosity with both cross-country data on social spending and individual data on social spending preferences 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.

One final possibility regarding the link between religion and social insurance is that the relationship is spurious, and is due to the fact that 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 will grow 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, while this argument seems to go some way towards explaining the differences observed between OECD and non-OECD countries, 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.

2.2 Our Argument and Its Assumptions

Though we believe that religiosity undoubtedly influences welfare state spending through several channels, we place particular emphasis on an argument that has been largely ignored in the literature—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, it can be suggested that personal engagement in a religion can also dampen the extent to which people are affected by events like job loss, or ill health. The main cost of social insurance is that it needs to be financed by taxes, and some individuals will inevitably wind up financing collective insurance without needing to draw heavily on its benefits. One of the main costs of religious engagement involves the fact that it draws time 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 depends on 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, the loss of a network of friends, and other potential factors. In a recent contribution, Blanchard and Tirole (2003) have argued that the design of national unemployment insurance ought to take into account the fact that events like job loss involve both monetary and psychic costs. There is abundant empirical evidence to support this proposition. 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".⁹ 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 (2002) provide further evidence in this regard.

Our second assumption is that even if conventional social insurance is restricted to a monetary transfer, this transfer helps to offset the effect of both monetary and psychic costs of unemployment and illness. In technical terms this implies that individuals have utility functions where the monetary benefits and the psychic benefits of "good" states like being employed or healthy are not additively separable. In concrete terms this implies that if I suffer an adverse event that triggers a high amount of psychological distress, then the utility gain I enjoy from a monetary social insurance benefit will be larger than would otherwise be the case. Conversely, if for some reason an adverse life event does not trigger significant psychological distress, then I will derive a relatively

⁹See also Price (1992).

smaller utility gain from a monetary social insurance benefit.

Our third 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. There are several reasons why this may be the case. For one, people who are religious are likely to have a network of friends from their church, mosque, or synagogue, and such associations are likely to provide social support in the same way as would a social support group within the workplace. But such social support benefits 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” stressful 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.¹⁰ 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 rel-

¹⁰While the classic model on the economics of religion by Azzi and Ehrenberg (1975) focuses on the role of expected “afterlife benefits” for religious individuals, the current psychological literature does not place the same emphasis on the afterlife as an expected benefit.

evance 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 forces are also consistent with classic work in the field of psychology. So, although Freud (1927) took a negative view of religion, he too emphasized its role in providing individuals with a mental buffer against external forces. Likewise, the more balanced portrayal of religion by William James (1902) also emphasized its insurance aspects.

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 stressful 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. This is shown in the study by Ellison (1991), as well as in a second study by Ellison, Gay, and Glass (1989) which demonstrates that religiosity has a positive correlation with subjective life satisfaction even when controlling for levels of sociability. This suggests that the primary psychic benefits of religion involve mechanisms other than simple “social support”. It is also interesting to note that a number of recent careful experimental studies have demonstrated that there is a lower incidence of depression in individuals who describe themselves as being religious.¹¹ This applies in particular to what psychologists refer to as “intrinsic” measures of religiosity as opposed to “extrinsic” religiosity. Intrinsic religiosity refers to individuals who view religious belief as a goal and in and of itself, whereas extrinsic religiosity refers to individuals who may become religious in order to achieve other goals, such as making acquaintances. While we do not emphasize the difference between intrinsic and extrinsic religiosity in our own empirical work, our

¹¹See Park, Cohen, and Herb (1990), Smith, McCullough, and Poll (2003), and James and Wells (2003).

empirical measures of religiosity correspond more closely to the former category.¹² In addition to the above empirical evidence, it is also interesting 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 third assumption quite directly. Finally, it is also interesting to note that 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).

3 Formalizing the Argument

In this section we present our argument about religion and social insurance in formal terms. In order to do so, in Section 3.1 we first present a basic model of social insurance, in which religion does not figure. In Section 3.2 we then extend the model to allow for considering religion and its impact on preferences regarding social insurance. We do this first by considering that the benefit individuals derive from religion depends exclusively on their own personal investment of time. In Section 3.3 we relax this restriction by considering the more realistic possibility that there are network externalities in religious commitment; individuals derive more benefit from time devoted to a religion when a certain number of other individuals make the same investment. This leads to the possibility of multiple equilibria, though it does not change our underlying prediction of a negative correlation between religiosity and social insurance.

¹²Allport and Ross (1967) constructed the original Religious Orientation Scale which has been used in a variety of modified forms to measure intrinsic and extrinsic religiosity. Pargament (1997) pp.59-67 provides an interesting critique of the idea of dividing religiosity between an intrinsic and an extrinsic variant.

3.1 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, as suggested by Wright (1986) and in a subsequent extension by Persson and Tabellini (1996), this basic modeling assumption can actually apply to any situation where individuals risk being in a bad state that will have 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 for the fact that 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.¹³

¹³The same assumption is made in Moene and Wallerstein (2001) and Iversen and Soskice (2001).

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.

$$uf = \tau(1 - u) \tag{1}$$

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 will prefer a tax rate that maximizes expression (2) with respect to τ . In other words, they will face a simple tradeoff involving the fact that a higher tax rate will make it possible to obtain a higher income should they shift to the bad state, but in the case where they remain in the good state, higher taxation implies lower consumption.

$$(1 - \lambda)U(1 - \tau) + \lambda U\left(\tau \frac{1-\theta}{\lambda}\right) \tag{2}$$

Individuals who start off in the bad state will prefer a tax rate that maximizes the following expression, again with respect to τ

$$(1 - \theta)U(1 - \tau) + \theta U\left(\tau \frac{1-\theta}{\lambda}\right) \tag{3}$$

As long as $U()$ is a concave utility function with standard properties, then people who start off in the good state will prefer a lower level of social insurance f than will 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 will be determined by people that 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 $U(c_i) = \ln(c_i)$. A person in the good state at time 0 will now have preferences defined by the level of τ that maximizes the following expression.

$$(1 - \lambda) \ln(1 - \tau) + \lambda \ln(\tau \frac{1-\theta}{\lambda}) \tag{4}$$

The solution to this maximization problem is simply $\tau = \lambda$, implying that the tax rate preferred by individuals that start off in the good state will be directly proportional to λ the economic risk they face. A similar exercise shows that someone who starts off in the bad state will prefer to set the tax rate at $\tau = \theta$. Under the assumption that $\theta > \lambda$ then people who start off in the bad state will prefer a higher tax rate than people who start off in the good 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 will be $\tau = \lambda$, the equilibrium benefit rate will be $\tau \frac{1-\theta}{\lambda} = \lambda \frac{1-\theta}{\lambda} = 1 - \theta$, and equilibrium social spending will be $\lambda - \frac{\lambda^2}{1-\theta+\lambda}$.

3.2 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 $U(c_i, b_i, z_i)$ will now depend on three components: standard consumption, a psychic benefit b , and leisure z . The possibility of including a psychic benefit directly in a utility function of this sort is discussed by (Tirole, 2002), and has recently been applied by Koszegi (1999) in a model where individuals derive utility directly from having a positive self-image.¹⁴ Consumption for individuals in the good and the bad

¹⁴See also Akerlof and Dickens (1982) and Dickson and Scheve (2004).

state will remain $c_i = 1 - \tau$ and $c_i = f = \tau \frac{1-u}{u}$ respectively. The psychic benefit will be 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 Section 2's discussion of how religion allows individuals to "appraise" events in a more positive light.

$$\begin{aligned} b_i &= 1 + r_i && \text{if end up in the good state} \\ b_i &= r_i && \text{if end up in the bad state} \end{aligned} \tag{5}$$

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.

$$z_i + r_i = 1 \tag{6}$$

As mentioned above, our main prediction that the preferred tax rate will be 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 (7). Our core results are not affected by this simplifying assumption, but the assumption does make them much easier to present. In expression (7) α is an exogenously determined weight which captures the extent to which people for inherent reasons derive pleasure from time spent on non-religion oriented leisure activities. We assume for simplicity that all individuals share the same value of α ,

but our model can be readily extended to a situation where individuals have different values of α that are drawn from a uniform distribution.

$$U(c_i, b_i, z_i) = \ln(c_i + b_i) + \alpha z_i \quad (7)$$

A person who starts off in the good state will have preferences for taxation and religion that maximize expression (8) 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 $z_i + r_i = 1$). The preferences of someone who starts off in the bad state will follow the same form, except that the probabilities λ and $(1 - \lambda)$ will be substituted by θ and $(1 - \theta)$. In what follows we restrict ourselves to presenting the equilibrium preferences of individuals who start off in the good state.

$$(1 - \lambda) \ln((1 - \tau) + (1 + r_i)) + \lambda(\ln(\tau \frac{1-\theta}{\lambda} + r_i)) + \alpha(1 - r_i) \quad (8)$$

If we take the first order condition for the above expression with respect to τ we obtain

$$\frac{\lambda - \theta\lambda}{\tau + r_i\lambda - \theta\tau} + \frac{1 - \lambda}{\tau - r_i - 2} = 0 \quad (9)$$

This can be simplified in order to 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 will be 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 .

$$\tau = \lambda(2 + \frac{r_i(\lambda - \theta)}{(1 - \theta)}) \quad (10)$$

When we take the first order condition of (8) with respect to r we obtain the following expression

$$\frac{\lambda^2}{\tau(1-\theta) + r_i\lambda} + \frac{\lambda-1}{\tau - r_i - 2} - \alpha = 0 \quad (11)$$

After substituting for τ using (10) we obtain the following solution for the degree of religiosity that will maximize 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.

$$r_i = \frac{1}{\alpha} + \frac{2(1-\theta)}{\theta - \lambda - 1} \quad (12)$$

Based on the above we can substitute into (10) in order to obtain the equilibrium tax rate as a function of the underlying economic parameters.

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

The equilibrium prediction regarding social spending is presented in (13). We can observe from this expression that social spending will be higher in those cases where individuals place a relatively high weight on leisure relative to religion (α is high), and social spending will also be increasing in the degree of economic insecurity λ .

$$\lambda \left(2 + \frac{\lambda - \theta}{\alpha(1-\theta)} + \frac{\lambda - \theta}{\theta - \lambda - 1} \right) \left(\frac{1 - \theta}{1 - \theta + \lambda} \right) \quad (13)$$

Since we have assumed that all individuals who start off in the good state are identical, there will be 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 will choose the same level of religiosity r_i . If we extended the model

to allow individuals 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 slightly more complicated expression than (12).¹⁵

In sum, the above conclusions suggest that in equilibrium individuals who are highly religious will prefer low levels of social insurance provision. In empirical terms we can expect to observe this both with regard to variation in policy outcomes across countries and with regard to individual preferences.

3.3 Possibilities for 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 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 supposition is commonly made in the literature on the economics of religion (Iannacone, 1998). Our assumption also fits with Durkheim's (1912) classic 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 will be greater in those cases where there is broad religious participation within one's community. In this sub-section we expand our model to allow for this type of network

¹⁵This expression is:
$$\frac{\lambda^2}{(\lambda(2 + \frac{r_m(\lambda - \theta)}{1 - \theta})) + r_i \lambda} + \frac{\lambda - 1}{(\lambda(2 + \frac{r_m(\lambda - \theta)}{1 - \theta})) - r_i - 2} - \alpha = 0$$

externality, focusing on symmetric Nash equilibria. We conclude that it is possible, for certain ranges of parameters, to have two equilibria in the model. In one equilibrium individuals devote little time to religion, based on the expectation that others will also devote little time to religion, and as a consequence all individuals demand a relatively high rate of social insurance provision. In the second equilibrium individuals devote a significant amount of time to leisure, and as a consequence they prefer a lower level of social insurance provision. Our results here suggest that two societies with relatively similar underlying parameters in terms of economic risk (λ, θ) and preferences regarding leisure time α may actually wind up with very different equilibrium outcomes in terms of religiosity and social insurance. However, even with this result regarding multiple equilibria, our core prediction for empirical testing remains unchanged, we can expect there to be a negative correlation between religiosity and preferences for social insurance provision, regardless of which equilibrium a society winds up in.

We model the network externality v for individual i as a function of the choices regarding religiosity made by all other individuals (14).

$$v = f\left(\sum_{j=1}^n r_j\right) \quad (14)$$

There are a number of plausible functional forms that $f()$ might take. Expected utility for individual i can now be expressed as follows

$$(1 - \lambda) \ln((1 - \tau) + (1 + r_i v)) + \lambda \ln\left(\tau \frac{1 - \theta}{\lambda} + r_i v\right) + \alpha(1 - r_i) \quad (15)$$

We now obtain the following expressions for the equilibrium levels of religiosity and taxation.

$$r_i = \frac{1}{\alpha} + \frac{2(1 - \theta)}{v(\theta - \lambda - 1)} \quad (16)$$

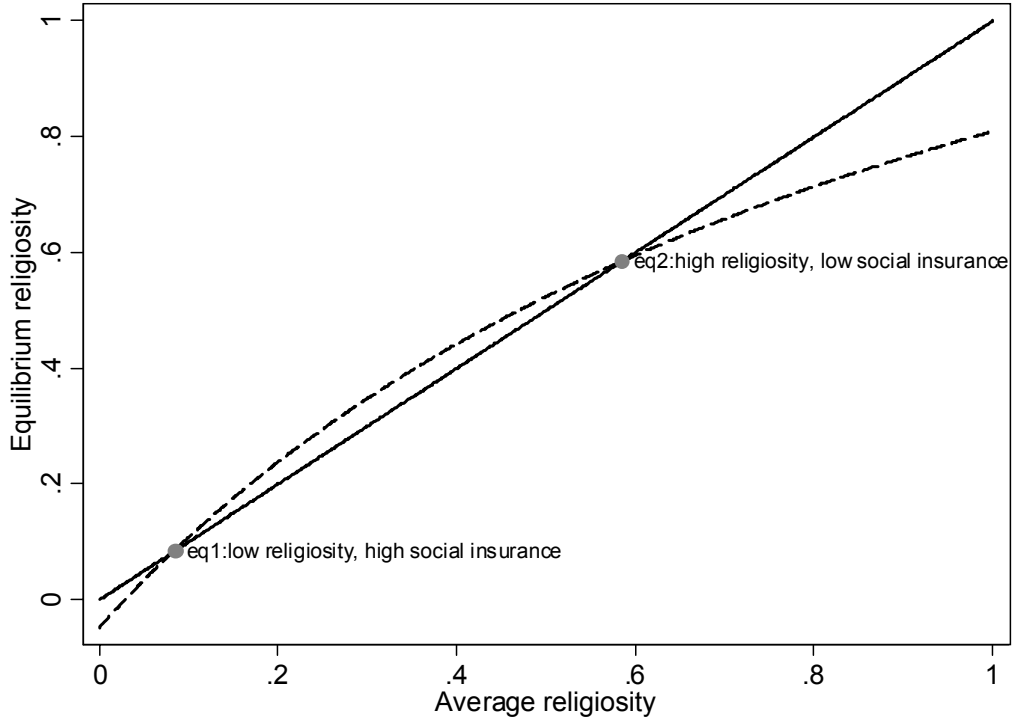
$$\tau = \lambda \left(2 + v \frac{\lambda - \theta}{\alpha(1 - \theta)} + \frac{2(\lambda - \theta)}{\theta - \lambda - 1} \right) \quad (17)$$

As can be quickly seen, these expressions are identical to the equilibrium values for τ and r_i presented in the previous section with the exception that equilibrium values now also depend on the magnitude of the network externality v . Depending on the functional form for $f()$, there will be a possibility of multiple equilibria. One particularly simple functional form for the network externality would be $v = \beta + (1 - \beta) \frac{1}{n} \sum_{j=1}^n r_j$. Here for each unit of time devoted to religion, individuals would derive a psychic benefit equal to an exogenous parameter β , irrespective of the actions of others. In addition, there would be a further benefit corresponding to the average level of religiosity in society, weighted by $(1 - \beta)$.

Figure 3 below illustrates the possibility of multiple equilibria based on the above functional form for $f()$ and on a specific set of parameter assumptions.¹⁶ The horizontal axis corresponds to the average degree of religiosity in society $\frac{1}{n} \sum_{j=1}^n r_j$. The curved dotted line plots the preferred level of religiosity for player i as a function of the average level of religiosity in society. Since in a symmetric Nash equilibrium $r_i = r_j$ there are two equilibrium points which correspond to the intersection of this reaction function with the diagonal. In the first equilibrium religiosity is low, implying that social insurance provision will be high, while in the second equilibrium religiosity is high, implying that social insurance provision will be low. It should be noted that despite the presence of multiple equilibria, our model still predicts that there will be a negative correlation between religiosity and policy outcomes in terms of social insurance. In addition, if we extended the model to allow for individual-specific values regarding the religion/leisure tradeoff α_i , we would continue to observe multiple equilibria, as well as a negative correlation between individual religiosity and individual preferences with regard to social spending.

¹⁶The assumptions are $\alpha = 0.6$, $\beta = 0.5$, $\lambda = 0.3$, $\theta = 0.7$.

Figure 3: Equilibria with a Network Externality



The assumptions we have provided here include the fact that player strategies and all parameters of the game are common knowledge. Several recent papers, beginning with Carlsson and Van Damme (1993) have argued that results regarding multiple equilibria in coordination games are often not robust to even small deviations from these assumptions. If one instead assumes that players each have private information about some parameter of the game which they observe imperfectly, then there will be a unique equilibrium which corresponds to the “risk dominant” equilibrium of the coordination game with common knowledge. However, Hellwig (2002) has shown that in the same “global games” framework considered by Carlsson and Van Damme, if players observe a relatively accurate public signal about some unknown variable, then

equilibria converge to those obtained in the coordination game with common knowledge. In the context of our social insurance game, thoroughly examining the robustness of our multiple equilibrium result would require further assumptions (and justifications of these assumptions) about the public and private sources of information about the underlying parameters of the game and about other players strategies. We leave this issue for future consideration. We should also acknowledge that the model we have presented here is obviously a very stylized portrayal of the way in which individual decisions about religiosity are taken. A more realistic (but less tractable) model would consider how decisions about religious beliefs are taken over time.

4 International Evidence

In Figures 1 and 2 above, 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 the analysis of 19 advanced industrial democracies.¹⁷

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

¹⁷Our cases include Sweden, Denmark, France, Norway, Netherlands, Belgium, Austria, UK, Germany, Finland, Australia, Switzerland, Spain, Canada, Portugal, Ireland, USA, Japan, and Italy.

social insurance spending.¹⁸

The key measures of religiosity are based on country averages of survey responses about religious beliefs and activities from the World Values Survey, Waves 2 and 3. 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 corresponding to “never” to 7 corresponding to “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. Given the small size of our cross-section and our interest in specifying the broad factors that affect the provision of social insurance, we limit the set of control variables to the country economic and institutional characteristics consistently identified in the literature as important.¹⁹ These include:

- *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 1990.²⁰ Counterintuitively, recent literature has found this index to be negatively correlated with redistributive outcomes. Though the theoretical mechanism driving this result is not fully understood (see Moene and Wallerstein 2001 for an interpretation), we can expect *Gini Coefficient* to be negatively correlated with *Social Welfare Spending*.

¹⁸Persson and Tabellini’s 1990s cross-sectional data is based on averages for the 1990-1998 period only.

¹⁹We do not, for example, control for political factors such as government partisanship because this is at least in part a consequence of the factors that we are trying to estimate the effect of.

²⁰This variable, as well as the other independent variable unless otherwise indicated, is from Persson and Tabellini (2003).

- *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, so this variable should be positively correlated with *Social Welfare Spending*.
- *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 argument are accurate, we would expect *Trade Openness* to be positively correlated with our dependent variable.
- *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) and others have presented some 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 in Section 2, 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 policymaking more generally.
- *Luck Important* is equal to the average responses to the World Values survey

question asking 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”. As discussed in Section 2, previous work has shown that political preferences with regard to redistribution and social insurance are correlated with this belief about the economy. The more that people believe economic success depends upon effort, the less favorable they should be to welfare spending. So we should observe a positive correlation between *Luck Important* and *Social Welfare Spending*.

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 Sweden and Canada) would be associated with a decrease in welfare spending by 5.5% 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 less precisely estimated (p-value is 0.102) but still marginally significant. It is worth noting that the coefficient for *Religious Attendance* is estimated as precisely as any other determinant of social welfare spending in this specification. Furthermore, the substantive effect is again significant, as the estimate implies that an increase in *Religious Attendance* by 2 points (a little less than the difference between Sweden and United States) would be associated with a decrease in welfare spending of 4.8% 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

Regressor	OLS Estimates		IV Estimates	
<i>God Important</i>	-1.817 (0.703)		-1.589 (0.944)	
	0.025		0.092	
<i>Religious Attendance</i>		-2.377 (1.332)		-4.597 (1.186)
		0.102		0.000
<i>Gini Coefficient</i>	-0.232 (0.156)	-0.175 (0.204)	-0.233 (0.121)	-0.117 (0.191)
	0.166	0.409	0.054	0.539
<i>Population Over 65</i>	0.935 (0.556)	1.156 (0.651)	1.026 (0.517)	0.687 (0.488)
	0.121	0.103	0.047	0.159
<i>Trade Openness</i>	0.021 (0.026)	0.046 (0.031)	0.025 (0.022)	0.046 (0.030)
	0.433	0.163	0.272	0.126
<i>Majoritarian</i>	-1.219 (1.655)	-1.025 (2.071)	-1.073 (1.205)	-1.929 (1.198)
	0.477	0.630	0.373	0.108
<i>Catholic</i>	3.694 (2.936)	3.319 (3.500)	3.192 (2.764)	6.712 (2.382)
	0.234	0.363	0.248	0.005
<i>Luck Important</i>	-0.291 (0.855)	-0.391 (1.050)	-0.249 (0.663)	-0.799 (0.767)
	0.740	0.716	0.707	0.297
<i>Constant</i>	17.974 (14.359)	9.296 (15.887)	15.107 (13.952)	22.533 (11.749)
	0.237	0.570	0.279	0.055
Standard Error of Regression	2.565	2.780	2.000	2.400
R-Squared	0.789	0.752		
Observations	19	19	19	19
F-statistic for test of excluded instruments:			5.81	2.85
<i>F</i> p-value			0.017	0.097
Hansen J-statistic:			4.782	0.778
$\chi^2(3)$ p-value:			0.189	0.855

Table 1: *Religiosity and Social Welfare Spending: 1990s Cross-Country Evidence*. 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 Religion, UK, French, and German Legal Origin*.

errors for these estimates are relatively large. For example, the estimate for *Trade Openness* is positive as hypothesized but not statistically significant at even the 0.15 level in either specification. The most important estimates for the control variables for the purposes of this paper are those for *Catholic* and *Luck Important*. The estimate for *Catholic* is positive but has a relatively large standard error. The coefficient for *Luck Important* is also imprecisely estimated and has the wrong sign. For advanced industrial countries, the first order positive correlation between beliefs about success and luck and welfare spending is not robust to the inclusion of additional control variables.

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 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. There are at least two important theories of the determinants of a country's level of religiosity useful for identifying possible instruments.

One is the secularization hypothesis that economic development decreases religious belief and participation (see e.g. discussion in Barro and McCleary 2003a). Following this theory would suggest using an instrument for religiosity based on a country's level of economic development. This is not a promising strategy for at least two reasons. First, all the country's in our sample are relatively rich and so there is limited variation in levels of economic development. Second, the level of economic development may have

a direct effect on how much countries spend on social insurance (we discuss results including real GDP per capita as an additional control variable below) and thus is not a useful instrument.

A second theory of religiosity is generally described as the religion-market model (again see e.g. discussion in 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 being 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 two sets of measures. First, a number of authors have suggested that state sponsorship of religion may affect the overall degree of religiosity in a country. While state religions may indicate monopoly provision of religion decreasing religiosity, it may also indicate state subsidies that increase activity. Barro and McCleary's (2003a) recent results suggest that the subsidy effect is most important. In our analysis, *State Religion* is a dichotomous variable equal to 1 if the country had a state religion and 0 otherwise.²¹ Similarly, features of a country's legal system may have important effects on the way religious activities are regulated, and thus on degrees of religiosity. In our analysis, we record each country's legal origins and include a set of dummy variables as instruments (the omitted category is countries with Scandinavian legal origins). *UK Legal Origin* is a dichotomous variable equal to 1 if the country's legal origin is from the UK,

²¹This variable is from Barro and McCleary (2003b).

classifying the legal system as Anglo-Saxon Common Law, and 0 otherwise. *French Legal Origin* is a dichotomous variable equal to 1 if the country's legal origin is from France, classifying the legal system as French Civil Law, and 0 otherwise. *German Legal Origin* is a dichotomous variable equal to 1 if the country's legal origin is from Germany, classifying the legal system as German Civil Law, and 0 otherwise.

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. In our IV estimates the coefficient on *God Important* is somewhat smaller in size and it has a larger standard error, though it remains significant at the 10% level. The coefficient on our religious attendance variable now actually becomes 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 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* at the 0.017 level and with *Religious Attendance* at the 0.097 level. There is thus some concern, particularly for the *Religious Attendance* specification, that the IV estimates may be biased due to weak instruments—specifically any bias due to even a weak correlation between the instruments and the error term will be magnified if the instruments are weakly correlated with the endogenous regressor. That said, 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 0.189 and 0.855) which is, of course, consistent with there being no correlation between

the instruments and the error term. 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 OLS and IV results further, we estimated several alternative specifications. First, following Moene and Wallerstein (2001), we omitted a measure of a country's wealth because our cases only include 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. Second, 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. Finally, we collected new measures of religiosity from a new wave of the World Values Survey (Wave 4) conducted between 1999-2002. This survey again asked the necessary question to construct new versions of *God Important* and *Religious Attendance* with the further advantage of including three additional advanced democracies. We did not use this data for our main analysis because this wave did not ask the *Luck Important* question and our measures of social spending were averages for the 1990s which made the timing of this wave somewhat late. That said, estimating the same OLS specifications in table 1 except for the omission of *Luck Important* generates even stronger estimates of a negative relationship between religiosity and social insurance spending. The IV specifications also indicate a significant negative relationship but the correlation between the instruments and religiosity is somewhat attenuated, making the validity of

those estimates questionable.

5 Evidence from International Individual-Level Data

Overall, the country-level evidence strongly indicates that countries that are more religious on average have lower levels of social insurance and welfare spending. 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 will 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. Specifically, we present evidence that individuals engaged in more religious activities are significantly less likely to support increased spending on social insurance.

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 will 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 12 advanced industrial democracies represented in this survey.²²

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.²³ We combine the measures using principal 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).²⁴

Ideally, the survey would have measures of religiosity analogous to the two measures from the World Value 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 corresponding to "never" to 6 corresponding to "once a week or more".

In evaluating whether more religious individuals are less supportive of social spend-

²²Our cases are Sweden, France, Norway, UK, Germany, Australia, Canada, Ireland, USA, Japan, New Zealand, and Italy. Spain is omitted from all the analyses presented in this section because the religiosity measure that we use was not asked.

²³The 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".

²⁴The factor loadings for the latent variable are: 0.52 for unemployment benefits, 0.66 for old age pensions, and 0.55 for health.

ing, 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, based on the fact that there have been consistent differences observed between males and females for certain policy preferences. This could occur either if males and females are socialized to have different preferences, or if the variable *Female* here actually proxies for an economic condition, such as greater average job insecurity.
- *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.
- *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. It also may be the case that more educated respondents may be able to adjust more quickly to adverse shocks such as job loss (by finding a new job more quickly) reinforcing the income effect.

- *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.
- *Catholic* and *Protestant* are dichotomous indicator variables set equal to 1 if the respondent is of the respective denomination and 0 otherwise. As discussed in section 2 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 in each specification estimated. 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.

Regressor	OLS Estimates	
<i>Religious Attendance-ISSP</i>	-0.024 (0.006)	-0.023 (0.007)
	0.003	0.006
<i>Income Quartile</i>	-0.107 (0.013)	-0.110 (0.012)
	0.000	0.000
<i>Female</i>	0.144 (0.021)	0.128 (0.023)
	0.000	0.000
<i>Age</i>	0.001 (0.001)	0.002 (0.001)
	0.108	0.122
<i>Education Years</i>	-0.020 (0.006)	-0.017 (0.007)
	0.010	0.032
<i>Unemployed</i>	0.197 (0.020)	0.179 (0.037)
	0.000	0.001
<i>Catholic</i>	0.022 (0.046)	0.045 (0.037)
	0.648	0.251
<i>Protestant</i>	0.007 (0.032)	0.024 (0.028)
	0.836	0.408
<i>Left-Right Party Support</i>		-0.145 (0.022)
		0.000
Country Fixed Effects	Yes	Yes
Standard Error of Regression	0.676	0.647
R-Squared	0.148	0.188
Observations	12,201	8,197

Table 2: *Support for Social Spending in Twelve Advanced Democracies, 1996*. For each estimate, its country-clustered robust standard error is reported in parentheses followed by the p-value.

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 economic views. Given this possibility, it is necessary to address the question of whether more religious individuals are less supportive of welfare spending controlling for their political ideologies.²⁵ 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, and the unemployed prefer more. Individuals supporting parties on the right are less supportive of spending on social insurance. There is 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 la-

²⁵As mentioned above, the potential problem with this specification is that measures of left-right ideology like *Left-Right Party Support* may primarily indicate opinions about the government's role in the economy including the extent of state-provided social insurance. To the extent that this is the case, the specification risks biasing all the coefficient estimates.

tent 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 will consider the estimates in col (1) only as the size of the effects are nearly identical in col (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 0.144 (about 20% of the dependent variable's standard deviation). This effect is comparable to the effect of being unemployed as unemployment increases support for spending by 0.197. The magnitude of the effect is also exactly the same as the well documented difference between men and women in support for welfare spending. Alternatively, consider the variable *Income Quartile* which has the largest effect. A one standard deviation change in *Religious Attendance-ISSP* has about one-third 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 a couple of alternative specifications. First, we added a variable indicating whether or not the respondent was a union member. The only reason it was excluded from our baseline specification is that it was not recorded for Australia and so its inclusion results in the loss of that country's respondents. Union membership is positively correlated with support for social insurance spending but its presence does not substantially change any of the coefficient estimates including the one for religious attendance.

Second, 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

in Section 2, 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 make explicit the tax price of expenditure increases. Alesina, Glaeser, and Sacerdote (2001) and Alesina and Angeletos (2003) 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 their specification. 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 not be measuring 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. There is little reason to think our individual-level analyses reported in table 2 are biased due to the omission of beliefs about the importance of luck in determining success.

Overall, the results in this section provide robust evidence that more religious individuals are less supportive of spending on social insurance programs which is consistent with the main argument of this paper that religion and welfare state spending are sub-

stitute mechanisms for insuring individuals against adverse life events.

6 Conclusion

We have argued that the literature on the political economy of redistribution has taken insufficient 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, irrespective of denomination, 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 nonetheless shed light on the large variations in religiosity and welfare state spending observed between different advanced industrial countries.

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