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Deliver us from evil: Religion as insurance

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# **DELIVER US FROM EVIL: RELIGION AS INSURANCE**

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## **Abstract**

This paper focusses on the insurance role of religion in buffering the well-being impact of stressful life events, and the ensuing economic and social implications. Using two large-scale European data sets, we show that the religious enjoy higher levels of life satisfaction, and that religion does insure against some adverse life events. All denominations suffer less psychological harm from unemployment than do the non-religious; equally both Catholics and Protestants are less hurt by marital separation. However, while Protestants are protected against divorce, Catholics are punished for it. These results do not seem to come about from the endogeneity of religion. These patterns in subjective well-being correspond to data on both attitudes (the religious are both anti-divorce and anti-job creation for the unemployed) and behaviour (the religious unemployed are less likely to be actively looking for work). In panel data, as implied by insurance, the religious have less variation in life satisfaction. Last, we suggest that religion's insurance role might be reflected in support for different economic and social systems: consistent with this, unemployment replacement rates across Europe are lower in more religious countries.

**JEL Codes:** D02, I31, J12, J65, Z12.

**Keywords:** Life Satisfaction, Religion, Unemployment, Marriage, Divorce, Insurance.

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## **Deliver Us From Evil: Religion as Insurance**

Andrew Clark and Orsolya Lelkes

“In my distress I called to Yahweh,  
He heard me and brought me relief.  
With Yahweh on my side I fear nothing” (Psalm 118)

“Everyone who listens to these words of mine and acts on them will be like a sensible man who built his house on rock. Rain came down, floods rose, gales blew and hurled themselves against that house, and it did not fall: it was founded on rock.” (Matthew 7, 24-25)

### **1 Introduction**

The analysis of economic and social outcomes has often emphasised the central role of institutions. Examples include the legal system, the role of trade unions, the educational system, and Central Bank independence. A key underlying question is then why economic and social institutions differ so much between countries, and to some extent within countries. Partly in parallel, another literature has considered individuals’ attitudes towards income redistribution (Alesina and La Ferrara, 2005, Corneo and Grüner, 2002, and Ravallion and Lokshin, 2000), sometimes emphasising how these attitudes relate to individuals’ beliefs about how just the world is (Alesina and Angeletos, 2005, Bénabou and Tirole, 2005, and Linos and West, 2003), to what extent individuals are responsible for what happens to them (Clément and Sofer, 2005), and to social mobility (Bénabou and Ok, 2001, and Fong, 2003).

Here we attempt to bring these two literatures together, underlining the potential role of religion in determining economic and social institutions. Existing literature on religion has been concerned with who is religious (for example, Brañas-Gaza and Neuman, 2004), and the correlation between religiosity and individual behaviour (the former affecting the costs and benefits of the latter). In this vein, religion has been related to labour supply (Lehrer, 2004) and education (Gruber, 2005); Barro and McCleary (2002) use macro data to consider the interlinkage between religion and economic growth. Here we do not emphasise individuals’ choices as such, but rather whether religion tempers or exacerbates the impact of adverse life events, and in particular unemployment and marital breakdown.

Unemployment benefits are often described in terms of social insurance, with a payout in times of misfortune resulting from premium payments while employed (see Table 2.2 in OECD, 2002). Here we think of religion as an alternative insurance mechanism, as it softens

the impact of negative shocks. The key idea we then develop is that the two sources of insurance – governmental and religious - may be substitutes. The religious who are “insured” against the negative psychological effects of unemployment may then support less generous unemployment benefits (despite the reputation of the religious as altruists). Cross-country data on replacement rates are consistent with this claim. We thus go a step further than positing that religion may affect the costs and benefits of individual actions: the potential insurance role of religion may explain differences in economic and social institutions.

Although religious belief in God as a stronghold, or ‘fortress’ in times of danger and misfortune is well known in the scriptures, this issue of insurance has surprisingly received only limited attention, especially in economics. There is some psychological evidence suggesting that religion can mediate the impact of traumatic life events. The bulk of this research, however, comes from small, non-representative samples and has focussed on the psychological aspects of these issues. In this paper we consider the specific role of various measures of religion as insurance against separation, divorce, widowhood, and unemployment using a large, nationally-representative dataset covering 21 European countries. We do so by seeing whether the life satisfaction of the religious is more or less affected by adverse life events than is the life satisfaction of the non-religious.

Our results show that the religious do fare better in the face of some adverse events. However, the extent of religious insurance against hard knocks depends on the combination of religious denomination and type of life event. Both Protestants and Roman Catholics are protected against unemployment, but while the former are also protected against marital break-up, Roman Catholics are actually punished for divorce (in the sense that their life satisfaction drops more sharply than does that of the non-religious). Our interpretation depends critically on religion being exogenous to the life events in question. We use British panel data to show that there is only limited evidence of selection into religion in this sense.

These results have implications for understanding the substance of religion, and provide new insights into the economic implications of religious behaviour. Our last section shows that the life satisfaction insurance results are reflected in the relationship between religion and values; they are also consistent with the cross-country distribution of unemployment benefits, which are lower in more religious countries. Further, in panel data, the religious have more stable levels of life satisfaction than do the non-religious. Last, we provide some suggestive evidence at the individual level that religious insurance feeds through to behaviour.

Specifically, more religious individuals are less likely to actively search for a job when unemployed than are the non-religious.

The paper is organised as follows. Section 2 reviews research on religion and subjective well-being in social science, and Section 3 presents our cross-section and panel data. Section 4 shows that religion tempers the impact of unemployment or marital break-up, and Section 5 introduces the panel results. Last, section 6 examines the implications for values, institutions, life-satisfaction smoothing and behaviour, and section 7 concludes.

## **2 Subjective Well-Being and Religion**

The primary economic explanation for religious behaviour in the by-now classic model of Azzi and Ehrenberg (1975) is the utility from expected afterlife rewards that individuals derive from participation in church-based activities. Two alternative explanations, which are not discussed in detail, are also mentioned: utility from (1) the “consumption of religion”, either related to inherent religious beliefs or for social reasons; or (2) the benefits stemming from increased business success. This latter argument originates from Adam Smith, who appears to be not only the first economist, but also the first economist to use rational choice theory to explain religious behaviour (Anderson, 1998). Smith believed that religious participation could be explained by its positive effect on human capital: religion increases the capital value of reputation by providing moral information about individuals. A recent extension of Azzi and Ehrenberg’s model with ‘religious human capital’ uses a somewhat different definition of human capital as religion-specific experience derived from one’s past religious activities. These include familiarity with church ritual and doctrine, and friendships in the religious community (Iannaccone, 1990).

Empirical tests of these models have explored the correlation between individual characteristics (such as sex, age, education and income) and measures of church attendance and religious contributions. Although empirical support for Azzi and Ehrenberg’s model is mixed, the emerging consensus opinion seems to be that the opportunity cost of time does affect religious behaviour (Iannaccone, 1998, p.1480).

There is considerable evidence that religion makes a difference to people’s lives: it provides social networks, favourably affects physical and mental health, school attendance and reduces deviant activity (see e.g. the recent summary in Lehrer, 2004). Gruber (2005) uses a clever instrumentation strategy applied to frequency of religious attendance using General Social Survey data from 1984-2000; predicted (or instrumented) religious attendance

is then shown to be linked to a number of positive economic and social outcomes using 1990 census data, where the latter include income, welfare receipt, marriage and divorce.

### *Religion and well-being*

A separate strand of the empirical literature has asked whether people derive utility from religion. Utility here is proxied by measures of subjective well-being, such as life satisfaction and happiness, that are increasingly available in large-scale surveys. These measures have good psychometric properties, and have been validated using statistical, physiological and behavioural techniques.<sup>1</sup> It is typically found that religious activities (church attendance, personal prayer) and beliefs (religious certainty, strength of one's relationship with the divine) are positively correlated with subjective well-being, controlling for demographic variables, such as age, income and marital status (a recent example is Luttmer, 2005; see also the reviews in Argyle, 1999; and Diener *et al.*, 1999). Ellison (1991) concludes that a variety of religiosity variables altogether explain 5-7% of the variance in life satisfaction.<sup>2</sup>

Why should the religious report higher levels of life satisfaction? One interpretation is that religious institutions provide social capital in the guise of friendship and strong social networks.<sup>3</sup> These social rewards may be especially important for extrinsically-oriented individuals for whom religion is a means to other non-religious goals (Diener *et al.*, 1999, p.289, referring to Allport and Ross, 1967). There is also some evidence that religious institutions contribute to better health, by helping individuals to control adverse health behaviours, such as drinking, smoking or drug use (e.g. Freeman, 1986).<sup>4</sup>

### *Religion and adverse life events*

There is an increasing consensus on the relationship between certain life events and subjective well-being in the extensive literature in psychology, sociology and economics.

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<sup>1</sup> Clark, Frijters and Shields (2005) provide a review of this literature; see also Diener (2005).

<sup>2</sup> Ellison uses a summary measure of satisfaction over five domain measures, rather than overall life satisfaction, which is the measure we use here.

<sup>3</sup> Cohen and Wills (1985) in their review of the psychological literature, find that social support has an overall beneficial effect on well-being (main effect), and a special effect alleviating the adverse effects of stressful events (buffering effect). It is this potential buffering effect of religion that we investigate.

<sup>4</sup> The vast majority of this literature has looked at the impact of one's own religious behaviour on one's own outcomes. Some recent work in the vein of externalities has found evidence of spillover effects from religion. For example, not only the religious but also the non-religious report higher life satisfaction scores in more religious regions (Clark and Lelkes, 2004; see also Scheve and Stasavage, 2005).

Some, such as unemployment and marital break-up, affect people negatively, while marriage is often found to have a positive impact (Clark and Oswald, 1994; Stutzer and Frey, 2003). A smaller body of research has studied the question of adaptation to these situations (Clark *et al.*, 2003; Lucas *et al.*, 2003, 2004). Much less attention has been paid to whether certain groups are more or less affected psychologically by life events.

The social stigma literature suggests that an event has a larger effect the less it is shared amongst the individual's reference group, i.e. the further the individual is away from the norm. The recurring problem in the empirical application of this literature has been that of identification: how to find an external source of rules which measure stigma or show how life should be lived. Here, we argue that religion may provide a useful context for identifying exogenous rules of behaviour. In addition, these rules may well differ between religions.

While much of the empirical research in this field has uncovered a general positive relationship between religion and subjective well-being, there is psychological evidence that religion can be particularly helpful for those facing stressful life events. Smith, McCullough and Poll (2003) carry out a meta-analysis of 147 studies (N=98975) and find that greater religiosity is mildly associated with fewer depressive symptoms. In an extensive literature review Pargament (2002) concludes that 75% of the studies reviewed find at least a partial positive effect of religion on well-being. He adds that this effect is particularly prevalent in high-loss situations, such as bereavement, and weaker in low-loss situations, such as job loss or marital problems. Jang and Johnson (2004) reach similar conclusions in a nationally representative survey of African-American adults.

Religion may be associated with better levels of well-being during stressful events for two reasons; these may be called the *main* and *stress-buffering* effects (from Ellison, 1991, adapting the concept of Cohen *et al.*, 1985, to religion). The first, main, effect suggests that religion leads to higher well-being irrespective of stress levels, so that it is not surprising that the unemployed religious (say) do better psychologically than the unemployed non-religious. Empirically, religion is introduced as a simple right-hand side variable like any other. In the alternative stress-buffering model, greater buffering from religion occurs at times of higher stress. In regression models, this implies an interaction term between religion and stress.

Ellison does not provide a thorough empirical test of these two effects. Although his research is outstanding in the literature, applying multivariate data methods to a large, representative sample (the 1988 General Social Survey), some questions remain unanswered. He uses only one of the four available measures of religiosity, "existential certainty" (which

measures doubts about the respondent's religious faith), to test for interactions between religiosity and adverse life events; he does not test for such interactions with respect to church attendance or personal prayer. In addition, the analysis is based on an index of fairly heterogeneous life events (including divorce, unemployment, bereavement and hospitalisation/disability) reported by respondents during the year preceding the interview. The use of this index supposes that all of the life events have the same relationship with well-being, and are buffered by religion in the same way, which is arguably a strong assumption.

It is further unclear that different aspects of religion relate to well-being in the same way. There is some evidence that *social* religious dimensions (such as being a member of a religious kibbutz) have stress-buffering effects, whereas *personal* religious dimensions, such as private prayer, do not (Pargament, 2002). However, Smith *et al.* (2003) cite various pieces of evidence that not only public religious involvement, *i.e.* church attendance, but also intrinsic religiousness are associated with fewer symptoms of depression. In addition, intrinsic religious motivation was found to be strongly associated with the speed of overcoming depressive episodes.

Religious denomination is also important. A study on a student sample found that religion helped Roman Catholics to deal with controllable life stressors, and Protestants to cope with uncontrollable events (see Pargament, 2002). However, religion may *exacerbate* the effects of certain life stressors. A specific study of middle-aged and older adults from Alameda County (cited by Pargament, 2002) found that organizational religiosity worsened the effects of family (e.g. marital) problems. Many of these studies, however, use small, non-representative samples, and often measure correlations at only one point in time.

The most developed theory of why the relationship between religion and well-being might vary by measure of religiosity comes from sociology. The classic works of Weber and Durkheim extensively discussed this issue, primarily referring to Christian denominations. From the point of view of our analysis, two key points are made.

The first is that institutional religions differ by their degree of social solidarity, with different roles for the religious community relative to the individual. Durkheim (1952), analysing 26000 suicide records, showed that suicide rates are higher in Protestant than in Catholic countries. This finding has subsequently been tested and contested by many authors (e.g. Pescosolido and Gerogianna, 1989; Simpson, 1998). Durkheim suggested that this difference results from the greater "critical inquiry" of Protestants, via a critical evaluation of religious dogma. This leads to excessive self-reflection, a smaller role for rituals, and,



ultimately, less social integration. As a result, Protestant and Catholic religions differ in terms of religious solidarity. Weber (1930), in a similar vein, talks about the “feeling of unprecedented inner loneliness” of ascetic Protestants<sup>5</sup> (p.104). He attributes this to Calvin’s doctrine of salvation, which is based on the principle of *sola fide*, “faith alone”.<sup>6</sup> This stands in sharp contrast to the role of community in the Catholic Church, including the common rituals, based on the concept of *consilia evangelica*, the “church council”.

Religions also differ in terms of their relationship to the secular world. Protestant “innerworldly asceticism” provides an intense focus on transforming the world through labour and self-discipline. According to Weber, the novelty of the Protestant concept of “calling” was to provide religious justification for worldly economic pursuits. Protestant religious doctrine thus affects individual values, which then impact on economic behaviour. This argument may hold even if the central thesis of Weber’s study, that there is a causal link between Protestantism and Capitalism has been refuted by a number of authors, pointing out that Capitalist institutions preceded the Reformation (e.g. Kuran, 1998), or that Weber fails to provide an adequate link from the micro to the macro levels; in other words, to show how individual attitudes combined to produce capitalism (Coleman, 1986, p.1323).

#### *The aim of this paper*

We apply regression techniques to large-scale multi-country data to bring the above research domains together. Specifically, we ask whether a number of important (negative) correlates of life satisfaction “matter” less to the religious.<sup>7</sup> These life events are separation, divorce, widowhood, and unemployment. We are thus firmly in the domain of considering the positive returns of religion on life as it is **currently** experienced, rather than payoffs in the afterlife (as in Azzi and Ehrenberg, 1975).

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<sup>5</sup> Weber discusses a specific form of ‘ascetic Protestantism’. This refers to (1) Calvinism, especially in its original Seventeenth Century form, (2) Pietism, (3) Methodism, and (4) the sects that have developed out of the Baptist movement (Weber, 1930, p.95).

<sup>6</sup> Believers had an absolute duty to believe, but at the same time, according to the Calvinist doctrine of predestination, they neither knew for certain that they were among the elect, nor had any means whatever to attain the grace of God. According to Weber, intense work was the only avenue of action to combat anxiety and loneliness.

<sup>7</sup> Lelkes (2005), appeals to the same idea of different effects across exogenous groups, showing in Hungarian data that income had a smaller effect on life satisfaction for the religious over the transition period. Smith *et al.* (2004) show that income can buffer individuals against the negative well-being effect of disability. Hout and Greeley (2003) use GSS data from 1973 to 2000 to show that the fall in average happiness is concentrated amongst those who attend church infrequently: “frequent attendance at religious services offset the factors that made most Americans less happy over time” (p.13).

We test for stress-buffering effects of religion via interaction terms in regressions. We believe that we are amongst the first to document these in large-scale representative multi-country data. Table 1 (p.618) in Smith *et al.* (2003) describes the 147 datasets used in their meta-analysis. Of these, only 20% were representative surveys, and only 14% had a sample size of over 1000. Further, our analysis will use multivariate regressions, whereas the psychological literature has often concentrated on bivariate correlations.

In the spirit of Durkheim and Weber, we test whether Roman Catholicism has a stronger stress-buffering effect than Protestantism: such differences may be expected from the greater social integration of Catholics and their greater tolerance of personal failure. Based on Weber, we may expect a difference between Protestants and Catholics in attitudes towards work (and the failure to work): if labour is more integral to Protestant values, then Protestants may be less protected against (or more punished for) unemployment. We also ask whether there are significant differences between the role of institutional/social and personal aspects of religion when people undergo difficult life events. Numerous models of economics of religion emphasise the community aspect of religion, and in this case we may expect a stronger insurance role for churchgoing than for personal prayer.

These distinctions turn out to be important, as we will show that there is a stress-buffering role for religion, but that this varies by life event, and by measure of religious activity (and particularly by denomination).

### 3 Data

Our first dataset is multi-country and cross-section, the European Social Survey 2002/2003 (ESS: <http://www.europeansocialsurvey.org>), consisting of nationally representative samples of individuals in 22 countries. The survey contains information on a wide range of attitudinal and socio-demographic characteristics.<sup>8</sup> The total sample size is 38106, excluding Israel<sup>9</sup> and those under 16 or over 80. This figure falls to 29375 in the regression sample, due to missing values for a number of key variables.<sup>10</sup>

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<sup>8</sup> The survey design includes strict quality controls, such as random probability sampling, a minimum target response rate of 70% and rigorous translation protocols. See Jowell *et al.* (2003) for more details.

<sup>9</sup> The Israeli sample is 82% Jewish and 13% Muslim. The role of religion may be somewhat different in Israel than in other ESS countries. Practically, its inclusion does not change our main qualitative results.

<sup>10</sup> This particularly applies to household income. We check that our key results are qualitatively unchanged in the larger sample that results when income is excluded as an explanatory variable.

The ESS includes three distinct measures of religiosity: (1) denomination; (2) church attendance; and (3) personal prayer. The distribution of these three variables in the regression sample is shown in Table 1.

### **1) Denomination**

All respondents are asked, “*Do you consider yourself as belonging to any particular religion or denomination*”?, where it is made clear that belonging to means identifying with, rather than official membership. The most prevalent denominations in Europe are Roman Catholic and Protestant, covering 40% and 16% of respondents respectively (Table 1). A number of other religions were mentioned, which we have grouped together as “Other religion”, making up 6% of the total sample (this group is predominantly Eastern Orthodox, 62%, Other Christians, 20%, and Muslim, 12%). Last, almost forty per cent of respondents say that they do not belong to any particular religion.

### **2) Religious Attendance**

Respondents are then asked: “*Apart from special occasions such as weddings and funerals, about how often do you attend religious services nowadays*”?, with the possible replies:

- Every day
- More than once a week
- Once a week
- At least once a month
- Only on special holy days
- Less often
- Never

We create a binary regular churchgoing variable for attending religious services at least *once a month*. This captures attendance which is more frequent than special holy days only; it is also not *a priori* biased between denominations (more frequent weekly attendance is proportionately lower among Protestants than Roman Catholics, due to stricter attendance requirements for the latter). Overall 28% of individuals are classified as regular churchgoers, and a further 40% go on special holy days or less often. Around one-third of Europeans say that they never go to church.

### **3) Prayer**

Last, individuals in the ESS are asked:

*“Apart from when you are at religious services, how often, if at all, do you pray”?*

with answers on the same scale as for 2) above. Just under a quarter of respondents pray every day, 10% more than once a week, and 6% once a week, altogether making up 37% who pray at least once a week (our prayer variable). In contrast, 35% of the sample never pray.

Religion plays a role in the life of the majority of Europeans in one way or another. Over 60 per cent of respondents currently belong to a religious denomination, and one-third are actively involved in religious activities (28% attending religious services at least once a month, and 37% praying at least once a week). Appendix Table 1 shows that there is considerable variation between countries. In particular, the Greeks, Polish and Irish are the most religious, and the Czechs and the Swedish the least religious, on all three counts. Women are more religious than men. Women’s activity rate in churchgoing and prayer is around 50 per cent higher than men’s. Religiosity also rises with age, with those over the age of 65 being the most religious. These findings are standard in the empirical literature (e.g. de Vaus and McAllister, 1987; Iannaccone, 1998).

Religiosity is far from being mono-faceted, however, as the cross-tabulations between our three measures in Appendix Tables 2 and 3 show. Only just over one-third of those who consider themselves as belonging to a particular religion are regular prayers or churchgoers. A non-negligible proportion (9%) of those who do not belong to any denomination pray at least once a week. Table 1 showed that regular prayer is a more prevalent form of religious activity than regular churchgoing. This holds for all of the denominations examined in the survey. Last, the religious activities of Roman Catholics and Protestants differ. The former are more active in both churchgoing (50% vs. 24%) and prayer (58% vs. 42%).

### ***Subjective Well-Being***

There are two subjective well-being variables in the ESS: life satisfaction and happiness. We use life satisfaction, which is often considered to reflect less ephemeral feelings than happiness. This is measured as follows:

*“All things considered, how satisfied are you with your life as a whole nowadays”?*  
Answers are on a 0 to 10 scale, where 0 means extremely dissatisfied and 10 means extremely

satisfied. In the regressions, scores of 0 to 2 were combined due to small cell sizes. Table 2 shows the distribution of life satisfaction in the regression sample. As is often the case, there is positive skew in this distribution: respondents tend to report satisfaction towards the top end of the scale.

### *Life Events*

The distribution of adverse life events appears in Table 3. 5.8% of the sample are unemployed; these are predominantly people who are actively looking for a job (4.0%). Marital break-up affects 7.8% of the sample, made up of divorce (6.1%) and separation (1.7%). Last, 6% of the sample are widowed. Table 3 shows that average life satisfaction is significantly lower for all of these groups than for the total population. We also see that religious activity is lowest amongst those whose marriage has broken-up, and highest among the widowed. The latter event is likely positively correlated with age, which is also a predictor of religious involvement.

The second dataset we use is the British Household Panel Survey (BHPS), which is single country and panel. This will be described in more detail in Section 5, which explicitly considers changes over time in religious activity.

## **4 Religion and Life Satisfaction: Main and Stress-Buffering Effects**

Table 3 showed that those who have experienced adverse events have lower life satisfaction. However, the relationship between these events and religious behaviour is not homogeneous. The divorced, separated and unemployed are less religious than average<sup>11</sup>, while the widowed are more religious than average. Such bivariate correlations are likely influenced by a number of omitted variables – age would seem a strong candidate, for one, with respect to widowhood – and we now turn to multivariate analysis.

Our basic regression for the main effect of religion on subjective well-being is as follows:

$$\text{LIFE SATISFACTION}_i = f(\text{RELIGIOUS ACTIVITY}_i, \text{DENOMINATION}_i, X_i) \quad (1)$$

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<sup>11</sup> We cannot discern whether it is broken marriage which keeps people away from the institutions of the church (for fear of being judged for their failure), or rather that those who have weaker institutional affiliations, and as a result weaker socialisation to the norms of the church, tend to divorce more frequently.

where RELIGIOUS ACTIVITY<sub>i</sub> is a dummy variable for either regular churchgoing or regular personal prayer, and DENOMINATION<sub>i</sub> is a set of dummies indicating whether individual *i* is Roman Catholic, Protestant, or belongs to/identifies with another religion. The other control variables in X<sub>i</sub> include the main effect of the adverse life events, via labour market status and marital status dummies. We also control for income quartile (based on annual household income corrected for household size within each country)<sup>12</sup>, sex, age, education, number of children, and country. Our measures of life satisfaction is ordinal: as such we estimate ordered logit regressions.

To see whether religion insures individuals, via their subjective well-being, against adverse life events<sup>13</sup> we introduce a series of interactions between religiosity and EVENT<sub>ij</sub>, where EVENT<sub>ij</sub> denotes adverse event *j* experienced by individual *i*.

$$\text{LIFE SATISFACTION}_i = f(\text{RELIGIOUS ACTIVITY}_i, \text{DENOMINATION}_i, X_i, \text{EVENT}_{ij} * \text{RELIGIOUS ACTIVITY}_i, \text{EVENT}_{ij} * \text{DENOMINATION}_i) \quad (2)$$

Separate regressions are carried out for churchgoing and prayer as religious activities, to test whether the stress-buffering effect of religion results from its institutional aspect (churchgoing) or personal beliefs (prayer). Both of these regressions include interaction terms with religious denomination. Last, the interaction between religiosity and unemployment, is analysed on a sub-sample of the working-age population (those aged 60 or under).

### *Main Effects*

Table 4 shows the main effects of religion on life satisfaction in ESS data. There are two columns. The first controls for denomination and churchgoing, the second for denomination and prayer. The religious, by whatever measure, report higher levels of life satisfaction in Europe, even after controlling for age, income, education, labour market status, marital status, health and country. The estimated coefficients on Roman Catholic and Protestant are both

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<sup>12</sup> Household income was equivalised using a scale based on  $e=0.7$ . With equivalence we attach decreasing weight to each additional household member, e.g. 1 for the first, 0.6 for the second, and 0.5 for the third, and are thus able to account for economies of scale and children's lower consumption.

<sup>13</sup> In the tradition of establishing whether different groups suffer differently from adverse events, Clark (2003) uses British panel data to show that unemployment has a smaller impact on well-being in high unemployment regions, and when the individual's partner does not work; see also Powdthavee (2004), using South African data. Clark *et al.* (2003) find that the impact of negative life events is actually larger for

positive and significant at the one per cent level, and are similar in size. In addition, religious activity, over and above an individual's identification with a particular religion, is associated with higher life satisfaction: churchgoing in column one and prayer in column two both attract positive and significant estimated coefficients, although the size of the estimated coefficient on churchgoing is larger than that on prayer.<sup>14</sup>

The other coefficients show that low-income groups and the unemployed report significantly lower levels of life satisfaction, *ceteris paribus*, as expected (Clark and Oswald, 1994). The effect of education is positive, but monotonic only up to the post-secondary level. Women are more satisfied than men, and life-satisfaction is U-shaped in age, minimising in the mid-40s. Last, the married are more satisfied, while those who have separated, divorced or widowed have lower levels of well-being than those who have never married. Separation has a significantly greater negative impact on life satisfaction than does divorce.

The positive correlations between religion and well-being are already known in the psychological and sociological literatures, although often from unrepresentative small samples, or from bivariate correlations. Our results provide robust confirmation of these earlier findings.

#### *Interaction Effects (Stress-Buffering)*

Does religion mitigate the impact of adverse life events? We test for stress-buffering by including interaction terms between life events and religion. For simplicity, Table 5 shows only the estimated coefficients on the interaction terms and the life event in question, although all regressions include the main effects of religion and Table 4's other demographic controls. Table 5 has two panels. The top panel refers to the regression results when the measure of religious activity is institutional/social (churchgoing), and the bottom panel to the results when this measure is personal (prayer).

The main result of this paper is that religion does indeed soften the impact of some adverse life events, although the extent of this stress-buffering varies greatly by the particular life event, and by religious denomination. There is little qualitative difference between the top and

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individuals who were previously relatively satisfied with their life, while the impact of positive events is larger for those who were relatively dissatisfied. They call this phenomenon "hedonic smoothing".

<sup>14</sup> There is no significant difference in the beneficial impact of churchgoing and prayer between Roman Catholics and Protestants.

bottom panels of Table 5, showing respectively the stress-buffering from churchgoing and prayer; there are however sharp differences in stress-buffering by religious denomination.

Table 5 has four columns, one for each adverse life event. Within each column, the first four coefficients refer to the estimated interaction terms between the adverse life events and the religion variables. The main effect of the adverse event on life satisfaction appears in the last line. This is negative, so that a positive interaction coefficient corresponds to a buffering or insurance effect of religion. These are indicated in Table 5 by dark shading.

Stress-buffering effects from religion are found for unemployment, and to a lesser extent for separation and divorce. Being Roman Catholic or “Other Religion” is associated with a smaller negative impact of unemployment on life satisfaction than for the non-religious. The insurance effect for Protestants is mathematically very slightly smaller, and is also positive and significant. These are large effects. The main effect of unemployment in this regression is  $-1.00$ . The interactions thus show that the psychological effect of unemployment is only half as large for those who describe themselves as being Roman Catholic or Protestant.

This homogeneity across denominations disappears for marital breakdown: Protestants are insured against divorce, as shown by the positive interaction coefficient in column 3 (dark-shaded). On the contrary, Roman Catholics are actually punished for divorce, in the sense that their life satisfaction takes a larger negative hit than does the life satisfaction of the non-religious. A punishment effect is also found for churchgoing: frequent churchgoers suffer more from divorce than do those who attend less frequently, independently of religious denomination. This anti-buffering punishment effect of religion is denoted by light-shaded cells.<sup>15</sup> Note that Roman Catholics are not punished for marital breakdown *per se*, but rather for breaking the norms of their church by divorcing. This can be seen in the difference between the positive interaction effect for Roman Catholics in column 2 (insurance against separation), and their negative interaction effect in column 3 (punishment for divorce).<sup>16</sup>

The contrast with Protestants is stark. Protestants are not buffered against separation (the estimated coefficient is positive, but not significant), but they are insured against divorce. To

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<sup>15</sup> Roman Catholics are more hurt by widowhood than are the non-religious. One interpretation is that conservative values may leave widows (80% of the widowed in the regression sample are women) ill-equipped to face life alone. Consistent with this, there is no punishment effect for Roman Catholic widowers.

<sup>16</sup> One potential interpretation is that religion is proxying friendship. However, we find that both Catholics and Protestants are protected against unemployment, while Protestants are protected against divorce whereas Catholics are punished. As such, Protestants' friends would offer support for both negative events, whereas Catholics' friends would be supportive for unemployment but actually ostracise the individual for divorce. This brings us back to religious preferences.



illustrate, the total effect of separation for Roman Catholics (i.e. main plus interaction effects) is  $-0.921+0.359=-0.562$ ; and that of divorce is  $-0.619$ . In other words, the life satisfaction effects of separation and divorce are roughly the same for Roman Catholics. However, the life satisfaction impact of separation for Protestants ( $-0.921$ ) is over three-times larger than that of divorce ( $-0.256$ ).

The results in the bottom panel of Table 5 are qualitatively very similar. The two insurance effects in columns two and three become just insignificant at normal levels. The significant punishment effect of churchgoing on the divorced, becomes insignificant for prayer in the bottom panel. One interpretation of this difference is that it is not being a religious divorcee which is difficult in itself (i.e. through introspection), but rather showing oneself in a social setting where such a status may attract opprobrium.

In summary, Roman Catholics and Protestants are insured against unemployment (in the sense that, if it happens it hurts less), whereas Protestants (Catholics) are insured against (punished for) divorce. The Protestant work ethic seems to have faded, as Protestants are actually insured against joblessness (although our definition of Protestantism is much wider than that in Weber).<sup>17</sup> On the other hand, the greater institutional penalties attached to divorce in the Roman Catholic church<sup>18</sup> are reflected in the life satisfaction scores of 30 000 Europeans. Formal institutional norms do have an impact on individual quality of life.

The above results come from cross-section data. We are particularly interested in knowing whether unobserved individual heterogeneity plays a role. For the interactions, those who suspect that a painful divorce is on its way might go to church more regularly, explaining the negative interaction coefficient in the top panel of Table 5. The next section thus considers the relationship between life events, religion and subjective well-being in panel data.

## 5 Religion and Life Satisfaction: Panel

Here we appeal to data from the British Household Panel Survey (BHPS), a general survey covering a random sample of approximately 10 000 individuals in 5 500 British households per year. Thirteen waves of data are currently available. There is both entry into and exit from

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<sup>17</sup> Weber actually lives on for the better-educated: re-estimating Table 5 for those with greater than upper-secondary education reveals a strong unemployment insurance effect of Roman Catholicism, but no insurance from Protestantism.

<sup>18</sup> Marriage is a sacrament and divorce (more precisely: the resulting new partnership) means the loss of right to participate fully in religious rituals

the panel, leading to unbalanced data. The wave 1 data were collected in late 1991 - early 1992, the wave 2 data were collected in late 1992 - early 1993, and so on.<sup>19</sup>

We do not use data from Northern Ireland (which is available from wave seven onwards), as the role that religion plays there is arguably different to that in mainland Great Britain. There are two key religion variables, in addition to denomination. The first measures church attendance: “*How often, if at all, do you attend religious services or meetings?*”, with possible replies of: Once a week or more; At least once a month; At least once a year; Practically never; and Only weddings etc. We create a dummy variable for attendance of once a month or more, as in the ESS. Great Britain is a less religious country than others in Europe, and only 17% of the regression sample report churchgoing to this extent.<sup>20</sup>

The second variable picks up the impact of religion (we do not have a prayer variable): “*How much difference would you say religious beliefs make to your life?*”, with possible answers: A little difference; Some difference; A great difference; and No difference. We create a variable “Belief” for those saying that their beliefs make at least some difference; this concerns just over a third of the regression sample.

The religion variables are not asked in every wave. Denomination and Belief appear in Waves 1, 7, 9 and 11; Church attendance is asked in Waves 1, 3, 4, 5, 7, 9 and 11. There is some movement in these variables for the same individual over time; consequently we do not “fill in” the years when the questions were not asked. Our dependent variable is life satisfaction, measured on a one to seven scale. This appears in Waves 7-10 and 12-13. The overlap between life satisfaction and religion information is thus confined to waves 7 and 9, which reduces the chances of finding significant results in the panel analysis. Our life events are the same as those in the ESS above.

### *Panel Results*

Table 6 below shows results by sex from both pooled and panel analysis of the relationship between religion, life events and life satisfaction. We present results for church attendance and belief. The denomination results with respect to interactions were less convincing, perhaps due to the relatively small percentage of Catholics in Britain. The regressions do include a main effect for religion.

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<sup>19</sup> More details are available at <http://www.iser.essex.ac.uk/bhps/>.

<sup>20</sup> Experiments with more lenient definitions of regular churchgoing produced similar results.

Each panel of Table 6 has two columns. The first shows religious interactions in ordered logits, as in the ESS data, and the second results from panel “within” regressions. It is theoretically better to treat life satisfaction ordinally. Conditional fixed effects logit requires the dependent variable to be binary, and identification is based on those who change satisfaction: with two response levels this produced unfeasibly small regression samples.<sup>21</sup>

The results here are qualitatively similar to those in the ESS. The interaction effects are stronger for women than for men. Belief insures against unemployment or separation for women. There is suggestive evidence in the pooled regressions that both belief and churchgoing buffer women against widowhood. On the contrary, churchgoing divorcees report lower levels of life satisfaction, significantly so for women in panel estimations. Equally, churchgoing widowers are punished. This result is based on a relatively small number of widowers (just over 300), and is concentrated in older respondents (over 65).

### *Endogenous Religion?*

Tables 5 and 6 provided some evidence that the religious, by a number of different measures, suffer less from certain adverse life events. In some cases, this conclusion is inverted, with the religious being punished, e.g. for divorce in Table 5. Our interpretation is of a stress-buffering (or intensifying) effect of religion. Alternatively, religion could be endogenous: for example, those undergoing a particularly painful divorce may go to church more regularly. We therefore ask whether those who become unemployed or who divorce turn towards the church or away from it. Reverse causality is unlikely here: individuals generally do not divorce or become unemployed because they have changed their religious behaviour.

We do not estimate econometric models of religious choice. Instead, we appeal to the panel nature of the BHPS to see if individuals change their religious behaviour over time, and if these changes are related to adverse life events. Table 7 summarises the results. We have three measures of increased religiosity: changed denomination (from none to a named denomination); increased church attendance; and increased belief. These will all be measured with noise, although there is no reason to suspect systematic bias. Due to the irregular appearance of the religion questions, these transitions do not always apply to the same elapsed period to time. Those for denomination compare wave 7 to wave 1, then wave 9 to wave 7, and so on. The life event transitions refer to the same periods as the religious transitions.

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<sup>21</sup> Ferrer-i-Carbonell and Frijters (2004) conclude that the difference between ordinal and cardinal panel

The first line in each panel shows the percentage increasing religion from one wave to the next in the BHPS: just over five per cent change from no denomination to some denomination; and just under twenty per cent increase their level of church attendance or belief. The belief and church attendance figures are significantly larger for women than for men (although only at the ten per cent level for the latter).

The most important finding in Table 7 is that changes in religious behaviour do not coincide with adverse life events. There is some evidence that denomination changes with separation or widowhood. For the latter, women (but not men) increase their church attendance, although their degree of religious belief actually falls. There are no significant correlations between changes in religion and becoming unemployed. This table therefore provides some *prima facie* evidence that religion can be considered as exogenous to the adverse life events we considered above.<sup>22</sup>

### *Shift Share?*

Table 5 may not show insurance, but rather a mechanical shift-share phenomenon: the religious may suffer from higher unemployment, so that relatively happier people are unemployed, raising the unemployed's average well-being. This explanation assumes that life satisfaction is negatively correlated with the likelihood of future adverse events.

To test for a possible shift-share phenomenon, we estimate the probability of unemployment as a function of religion and other personal characteristics in the ESS data. The religious actually have a significantly *lower* probability of being unemployed. Similarly, to fit in with Table 5, we would expect Protestants to divorce more than the non-religious (False), Roman Catholics to divorce less than non-religious (True) AND Roman Catholics to separate more than non-religious (False). In sum, we do not find convincing support for the shift-share hypothesis.

## **6 Implications of Insurance and Punishment**

We have shown that the religious suffer less from unemployment. With respect to marital break-up, the religious are sheltered somewhat from the negative effects of separation; however, Roman Catholics and frequent churchgoers are punished for divorce, while

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techniques is of second order compared to the difference between pooled and panel analysis.

<sup>22</sup> This conclusion also holds if we consider lagged or lead life events, and if we control for respondent's age.

Protestants are insured against its negative impact on well-being. Below we list four implications of these insurance/punishment findings, in terms of values, institutions, smoothing and behaviour.

### *Values*

Scheve and Stasavage (2005a) use data from the World Values Survey and the 1996 wave of the International Social Survey Programme to show that support for Social Spending is lower amongst frequent churchgoers in a regression framework. Guiso, Sapienza and Zingales (2003) are in the same spirit, investigating the link between different denominations and economic values. They conclude that attitudinal differences between Protestants and Catholics still prevail, although there is no simple ranking of religions in terms of how conducive they are to economic growth. Guiso *et al.* find that “Protestants trust others and the legal system more than Catholics and they are less willing to cheat on taxes and accept a bribe with respect to Catholics. By contrast, Catholics support private ownership twice as much as Protestants and are more in favour of competition than any other religious group” (p.35). Here we do not focus on economic growth, but ask whether the differential well-being impacts of life events are reflected in individuals’ values, both with respect to morality and to the welfare state.

With respect to marriage, respondents in the BHPS are asked to what extent they agree with the statement “*It is better to divorce than to continue an unhappy marriage*”: only 16% of regular churchgoers strongly agreed with this statement, compared to 29% of those who do not go to church regularly.

While this difference fits in with the differential psychological impact of divorce above, many may find it unsurprising. Perhaps more unexpected are attitudes towards unemployment. BHPS respondents are also asked to what extent they think that “*It is the government's responsibility to provide a job for everyone who wants one*”. Reinikka and Svensson (2004) note that the religious are altruists, caring about what happens to others. To this extent we may expect them to be in favour of government job provision. However, if the religious are insured against unemployment they may be less likely to agree with this statement. This is in fact what the data show: for males, 40% of non-churchgoers disagree with this statement, with the figure for churchgoers being 47%. For women, the difference is five percentage points. Both differences are significant at the 0.1% level. The well-being impact of adverse life events are hence reflected in Europeans’ economic and social values.

## *Institutions*

The values described above may well be reflected via some political process in economic and social institutions. Using macro data, Scheve and Stasavage (2005a) show that the percentage of GDP represented by social spending is significantly lower in countries where *a*) God is reported to be more important in individuals' lives, and *b*) religious attendance is more frequent. They conclude that there is a trade-off between religiosity and social insurance. Along the same lines, Scheve and Stasavage (2005b) use historical data from US States to show that adoption of workers compensation laws came later in more religious states, and was associated with lower benefit levels. Hungerman (2005) uses a 1996 change in American welfare law as an instrument to show that church and government spending are substitutes.<sup>23</sup>

Here we have shown that the religious are to some extent inoculated against the adverse psychological effects of unemployment. We might then expect to find lower levels of State support for the unemployed in more religious countries. The first panel of Table 8 shows that this is the case: replacement ratios are lower in countries where a greater percentage belong to a religious denomination (especially when that denomination is Roman Catholicism), and where church attendance and prayer is more frequent. These results are robust to controlling for GDP per capita. Half of the cross-country variation in replacement rates can be explained by the percentage who go to church once a month or more<sup>25</sup>. Our interpretation of these findings, as in Scheve and Stasavage, is that there is potential substitution between different sources of support for the unemployed: redistribution by the State and religious capital which insures against the negative effects of unemployment.<sup>26</sup>

In this light, what are the implications of the accession of the ten new member states (NMS) to the fifteen existing European Union countries (EU15) on May 1<sup>st</sup> 2004? Weighted information from the 1999-2002 World Values Survey show that individuals in the NMS are about as likely as those in the EU15 to say that they belong to a religious denomination (around 70% in both cases). However, using the same definitions as in the ESS, there is a sharp difference in favour of NMS in regular churchgoing (30% in the EU15 vs. 49% in the

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<sup>23</sup> Algan and Cahuc (2004) are in the same vein, considering the role of religion in explaining the (wide) distribution of Employment Protection Legislation across OECD countries.

<sup>25</sup> Bringing together our unemployment and marriage results, the difference between replacement rates for the married and the single is also larger in countries with more frequent churchgoing.

<sup>26</sup> A third source of support is informal, via the (extended) family. Ekert-Jaffé and Terraz (2004) show that levels of family and State support for the unemployed are negatively correlated in European countries.

NMS), and in regular prayer (37% against 54%). From our results above, we would hence expect the EU25 to become less generous towards the unemployed than the EU15.

Although our empirical work using subjective well-being is based on European data, it is also of interest to consider the relationship between religion and replacement rates in the United States. To do so, we collected State-level data on the Average Weekly Benefit Amount as a percentage of Average Weekly Wage from the Department of Labor.<sup>27</sup> State-level religious denomination information was obtained from the American Religion Data Archive (<http://www.thearda.com>). Time-series information was available only for Judeo-Christian religions. Both series were obtained for 1990 and 2000.

The results are in the second panel of Table 8. In the first column the replacement ratio is significantly higher in States where the percentage of Mainstream Protestants is higher, and significantly lower in States where the percentage of Evangelical Protestants and Eastern Orthodox is higher. This is consistent with Evangelical Protestants and Eastern Orthodox being insured against the negative effects of unemployment (although many other explanations are possible). The second column of Table 8 uses information on percentage point changes between 1990 and 2000 in denominations and replacement rates. The signs on the (change in) Evangelical Protestants and Eastern Orthodox variables are the same as those in the cross-section analysis, although only the estimate on “Orthodox” is significant at conventional levels. As for the ESS above, these results are robust to controlling for State-level differences in per capita income.

### *Smoothing*

One implication of religious insurance is that variation in outcomes should be lower for the insured. This has recently been tested by Dehejia *et al.* (2005). They use data from the Consumer Expenditure Survey to show that the consumption of the religious (those who contribute to religious organisations) is less responsive to income shocks. They then find, in National Survey of Families and Households (NSFH) data, that the happiness of the religious responds less to income shocks. In both cases, there are sharp Black/White differences.

We might then expect the religious to have less variation in subjective well-being, as they are presumably insulated from shocks. However, if individuals become religious because they

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<sup>27</sup> For example, [http://atlas.doleta.gov/unemploy/content/data\\_stats/datasum00/1stqtr/benefits.asp](http://atlas.doleta.gov/unemploy/content/data_stats/datasum00/1stqtr/benefits.asp) provides 2000 1<sup>st</sup> quarter data.

are undergoing (or expect to undergo) turbulent times, then variation may be higher for the religious. As life satisfaction is ordinal, we appeal to the index of ordinal variation (Berry and Mielke, 1994), which provides a measure of variability for ordinal variables.

We need panel data to compute this individual-level variation. We create a fairly homogenous sample from the BHPS of individuals who gave the same answer to the religion questions in waves 7 and 9. We then calculate the index of ordinal variation for the life satisfaction of each individual over the waves 7-10 and 12-13 (the life satisfaction question was not asked in wave 11). We restrict our analysis to those individuals who provided valid life satisfaction information over all six waves. This gives around 5 800 individual life satisfaction variation scores.

The index of ordinal variation is zero when all answers are the same, and 1 in the case of extreme polarisation. The average index value for these 5800 individuals is 0.193.<sup>28</sup> We run regressions of the individual index of ordinal variation, including first denomination and churchgoing, and then denomination and religious belief as right-hand side variables. The regressions also include controls for age (measured at wave 7), sex and education.

The results show that life satisfaction is more stable for Protestants; but less stable for those belonging to other religions (not Roman Catholic or Protestant). Life satisfaction is also significantly more stable for those who go to church once a week than for those who do not. No such relationship is found with respect to how important religion is to individuals' lives, suggesting that it is the social aspect of religion (churchgoing) rather than personal values which are associated with smoothing of life satisfaction.

### ***Behaviour***

We last briefly consider some implications in terms of observable behaviour. Table 5 showed that Catholics and frequent churchgoers were punished for divorce. This is reflected in divorce frequency in the ESS: Catholics and frequent churchgoers divorce less, conditional on demographic variables and country dummies. Lehrer and Chiswick (1993) use panel NSFH data to show that religion protects against marital break-up, especially when partners share the same denomination.

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<sup>28</sup> This value refers to the average **intra**-individual variation in life satisfaction. Inter-individual differences are larger: the index of ordinal variation over all observations for all individuals in the sample is 0.414.



This concordance of well-being and behavioural data is also found in the labour market. Table 5 showed that in European cross-section data the impact of unemployment on well-being is lower for the religious; Table 6 reveals the same insurance effect of churchgoing and belief for women in the BHPS. If the effort that individuals expend to leave unemployment depends on the utility difference between employment and unemployment, then we might expect the religious unemployed to search less.

Table 9 shows some evidence that this is indeed the case, using probit equations for active job search. In the ESS, labour force status includes “unemployed and actively looking for a job” and “unemployed, wanting a job but not actively looking for a job”. Column 1 reports probit estimates of active search by the unemployed. Both Roman Catholic and Protestant unemployed are less likely to search actively than are the unemployed who do not belong to a religious denomination. The estimated coefficient on Roman Catholics is significant at fractionally over the ten per cent level, and that on Protestants at the five per cent level.

Columns two and three of Table 9 refer to women in the BHPS, where active unemployment is defined as having searched in the past four weeks. The cell sizes here are not large: typically the number of active unemployed reporting the different levels of religious behaviour is between 20 and 50. Table 6 suggested that both churchgoing and belief protected women psychologically against unemployment. In column two, those who are most likely to be engaged in active search are those for whom religion makes no difference to their life. Those for whom religion makes little difference are significantly less likely to search, as are those for whom religion makes great difference. In column 3, amongst churchgoers, more frequent attendance is associated with less intense job search.

## **7 Conclusion**

This paper has taken a new tack to answering the question of why different countries have different economic and social institutions. We suggest that social support and religious support may be substitutes for individuals who are faced with adverse life events.

We provide large-scale multi-country evidence of a stress-buffering effect from religion by asking whether adverse life events (separation, divorce, widowhood and unemployment) “matter” less for the religious, in terms of their reported life satisfaction. We introduce both main and interaction effects of religion in life satisfaction equations; and pay careful attention to different denominations and religiosity measures (church attendance and personal prayer).

We find, as is typical, that the religious report higher life satisfaction. The estimated coefficients on the Roman Catholic and Protestant variables are both positive and significant, and are similar in size. Over and above denomination, churchgoing and prayer are also associated with greater satisfaction. Religion tempers the impact of adverse life events: it has current, as opposed to after-life rewards. All denominations mitigate the negative impact of unemployment. This homogeneity disappears for marital breakdown: while Protestants are protected against divorce, Catholics are punished for it. These effects are large: the effect of unemployment on the religious is half the size of its effect on the non-religious.

The panel data in the BHPS enables us to test explicitly for endogenous religion: does religious behaviour change as a function of life events? We find only little evidence that religiosity changes following unemployment or marital breakdown, thus providing some *prima facie* evidence that religion can be considered as exogenous in this context.

We last consider the implications of insurance against unemployment and insurance against/punishment for divorce. These patterns in subjective well-being fit well with data on both attitudes (the religious are anti-divorce and anti-job creation for the unemployed) and behaviour (the religious unemployed are less active in looking for work). The religious have less variation in life satisfaction in panel data, consistent with an insurance role for religion.

Perhaps our most important suggestion is that the buffering or punishment effects of religion might aggregate into support for certain kinds of economic and social systems, if social and religious support are substitutes. At the country level, across Europe, replacement rates for the unemployed are indeed lower in more religious countries.

These results have wide-ranging implications. That religion provides current benefits might be thought of as important in explaining why some become religious (essentially an adverse selection argument), although we find only little evidence of this in panel data. We certainly do find that exogenous religious norms have sharp impacts on individuals' quality of life. These psychological impacts may help explain why different institutions have arisen in different countries. A clean test of this hypothesis would consider the evolution of economic and social policy consequent to an exogenous change in religion. A number of such instances have occurred recently, although to our knowledge they have not been examined in this exact light: growing Roman Catholicism in the United States, due to both demography and immigration; and European Union expansion from 15 to 25 countries. Our hypothesis is that such evolutions in religiosity may lead to changing support for different types of social redistribution, and eventually lie behind the evolution of economic and social institutions.

## Appendix

*Appendix Table 1. Life satisfaction and religiosity by country*

	<i>Life satisfaction</i>	<i>Religious activity</i>		<i>Denomination</i>		
	<i>Mean score</i>	<i>% churchgoer</i>	<i>% prayer</i>	<i>% Roman Catholic</i>	<i>% Protestant</i>	<i>% Other religion</i>
Austria	7.7	34.4	39.1	59.7	3.6	4.9
Belgium	7.5	18.5	27.2	43.3	0.4	4.4
Switzerland	8.0	22.7	44.2	31.6	25.1	5.7
Czech Republic	6.5	13.5	15.2	26.5	3.1	1.1
Germany	7.0	18.9	29.7	22.7	30.5	6.1
Denmark	8.5	9.3	16.7	0.8	53.1	2.9
Spain	7.1	28.4	37.5	75.7	0.6	1.0
Finland	7.9	10.9	34.9	0.2	71.9	2.9
France	6.5	14.1	20.5	40.3	1.2	5.7
Great Britain	7.1	17.7	30.6	8.6	32.6	7.7
Greece	6.4	54.5	74.0	0.3	0.4	97.1
Hungary	5.6	18.5	32.3	45.9	17.4	1.6
Ireland	7.5	67.3	73.6	78.9	2.9	1.4
Italy	6.9	44.1	54.9	76.4	1.0	0.3
Luxembourg	7.8	23.9	27.7	53.2	0.8	21.0
Netherlands	7.7	20.9	34.4	19.6	15.8	7.1
Norway	7.8	10.7	21.1	0.7	44.8	4.6
Poland	5.9	76.1	73.0	91.4	0.3	1.2
Portugal	5.9	48.5	62.4	84.3	0.9	1.8
Sweden	7.8	9.8	15.5	1.0	23.6	3.5
Slovenia	6.5	28.9	30.2	46.5	0.4	3.2
<i>Total</i>	<i>6.8</i>	<i>27.9</i>	<i>37.1</i>	<i>39.7</i>	<i>15.6</i>	<i>6.4</i>

Source: ESS 2002/2003, N= 29,375, weighted frequencies.

*Appendix Table 2. Churchgoing or prayer by religious denomination*

	Churchgoer	Prays
Roman Catholic	50.1	57.7
Protestant	24.2	42.0
Other	45.4	66.5
<i>All religious denominations</i>	43.0	54.7
No Religion	3.5	8.9
<i>Total</i>	27.9	37.1

Source: ESS 2002/2003, N= 29,375, weighted frequencies.

*Appendix Table 3. Prayer and churchgoing*

		Churchgoing		
		Yes	No	Total
Prayer	Yes	81.6	19.9	37.1
	No	18.4	80.1	62.9
Total		100.0	100.0	100.0

Source: ESS 2002/2003, N=29,375, weighted frequencies.

Table 1. Measures of religiosity in 21 European countries, 2002/2003

	% of Total	N
1) <b>Churchgoer</b> (Attends religious service at least once a month)	27.9	8,180
2) <b>Prays</b> (Prays at least once a week)	37.1	10,896
3) <b>Denomination</b>		
Roman Catholic	39.7	11,626
Protestant	15.6	4,575
Other	6.4	1,868
No Religion	38.4	11,238

Source: ESS 2002/2003, weighted frequencies.

Table 2. The distribution of life satisfaction in European countries

	Frequency	Percent
Extremely dissatisfied	562	1.9
1	344	1.2
2	737	2.5
3	1,259	4.3
4	1,428	4.9
5	3,347	11.4
6	2,734	9.3
7	5,089	17.3
8	7,426	25.3
9	3,625	12.3
Extremely satisfied	2,822	9.6
Total	29,375	100.0
Mean	6.8	
Median	7.0	

Source: ESS 2002/2003, weighted frequencies

Table 3. Adverse life events, life satisfaction and religiosity. Descriptive statistics

	Frequency (%)	Life satisfaction	Churchgoer (%)	Pray (%)
Unemployed	5.8	5.5	26.8	35.0
Separated	1.7	6.1	20.3	35.8
Divorced	6.1	6.3	15.2	28.1
Widowed	6.0	6.3	41.8	59.7
<i>Total population</i>	<i>100.0</i>	<i>6.8</i>	<i>27.9</i>	<i>37.1</i>

Source: ESS 2002/2003, N=29,375, weighted frequencies

Note: 5.8% is the share of unemployed in the full sample. In contrast, the *unemployment rate* (calculated as a percentage of the economically active population: the employed plus the unemployed) is 10%.

*Table 4. Life satisfaction and religiosity: Main Effects. ESS. Ordered logit regressions*

Attends religious service at least once a month	0.179** (0.028)	
Prays at least once a week		0.119** (0.026)
Roman Catholic	0.120** (0.031)	0.139** (0.031)
Protestant	0.119** (0.033)	0.122** (0.033)
Other Religion	-0.040 (0.056)	-0.032 (0.056)
Second Income Quartile	0.247** (0.032)	0.244** (0.032)
Third Income Quartile	0.345** (0.032)	0.343** (0.032)
Highest Income Quartile	0.578** (0.034)	0.574** (0.034)
Inactive	0.104** (0.028)	0.106** (0.028)
Unemployed	-0.735** (0.054)	-0.740** (0.054)
Education: lower secondary	0.028 (0.038)	0.025 (0.038)
Education: upper secondary	0.049 (0.038)	0.045 (0.038)
Education: post secondary, non-tertiary	0.138** (0.051)	0.135** (0.051)
Education: tertiary	0.082* (0.041)	0.082* (0.041)
Health-Fair	-0.664** (0.029)	-0.664** (0.029)
Health-Bad	-1.384** (0.053)	-1.388** (0.053)
Health Hampers a Lot	-0.387** (0.057)	-0.397** (0.057)
Health Hampers a Little	-0.166** (0.031)	-0.170** (0.031)
Male	-0.159** (0.022)	-0.153** (0.022)
Age	-0.075** (0.005)	-0.075** (0.005)
Age-squared/1000	0.828** (0.049)	0.832** (0.049)

Separated	-0.815**	-0.820**
	(0.084)	(0.084)
Divorced	-0.502**	-0.511**
	(0.042)	(0.042)
Widowed	-0.546**	-0.548**
	(0.045)	(0.045)
Never married	-0.419**	-0.420**
	(0.034)	(0.034)
Children living at home	0.046+	0.048+
	(0.027)	(0.027)
Country fixed effects	Yes	Yes
Log likelihood	-55088	-55098

Source: ESS 2002/2003 + significant at 10%; \* significant at 5%; \*\* significant at 1% level. N=29375 in all four columns.

Reference categories: no religion, lowest income quartile group, paid work, primary education or below, health good, health problems (disability/illness/mental problems) do not hamper daily activities, married.

Table 5. Life satisfaction, adverse life events, and religiosity. Interaction effects. ESS. Ordered Logit Regressions.

*Religious Activity: Churchgoing*

	<i>Event</i>			
	<i>Unemployed</i>	<i>Separated</i>	<i>Divorced</i>	<i>Widowed</i>
Event*Roman Catholic	0.470** (0.134)	0.359+ (0.216)	-0.182+ (0.107)	-0.235* (0.111)
Event*Protestant	0.438* (0.173)	0.287 (0.263)	0.181+ (0.106)	0.098 (0.122)
Event*Other	0.660** (0.198)	-0.018 (0.311)	-0.283 (0.180)	-0.166 (0.150)
Event*Churchgoing	-0.046 (0.144)	-0.150 (0.225)	-0.325** (0.125)	0.111 (0.091)
Event Main Effect	-1.000** (0.082)	-0.921** (0.120)	-0.437** (0.057)	-0.490** (0.083)

*Religious Activity: Prayer*

	<i>Event</i>			
	<i>Unemployed</i>	<i>Separated</i>	<i>Divorced</i>	<i>Widowed</i>
Event*Roman Catholic	0.449** (0.133)	0.319 (0.214)	-0.249* (0.106)	-0.134 (0.111)
Event*Protestant	0.434* (0.174)	0.279 (0.263)	0.162 (0.107)	0.151 (0.125)
Event*Other	0.646** (0.203)	-0.052 (0.319)	-0.352+ (0.182)	-0.033 (0.151)
Event*Prayer	-0.014 (0.127)	-0.061 (0.199)	-0.116 (0.095)	-0.061 (0.093)
Event Main Effect	-1.001** (0.083)	-0.922** (0.122)	-0.434** (0.059)	-0.477** (0.085)

Source: ESS 2002/2003. + significant at the 10% level; \* significant at the 5% level; \*\* significant at the 1% level. Other controls as in Table 4. The regression estimates are based on (2):

$$\text{LIFE SATISFACTION}_i = f(\text{RELIGIOUS ACTIVITY}_i, \text{DENOMINATION}_i, X_i, \text{EVENT}_{ij} * \text{RELIGIOUS ACTIVITY}_i, \text{EVENT}_{ij} * \text{DENOMINATION}_i)$$

We estimate two sets of equations: one with “religious activity” being churchgoing, and the other where it is prayer (for both the main effect, which is included in  $X_i$ , and the interaction terms).  $\text{EVENT}_{ij}$  denotes adverse event  $j$  experienced by individual  $i$ . Cells are shaded dark for a positive (insurance) coefficient, and shaded light for a negative (punishment) coefficient.  $N=22627$  in column 1 (estimated on those aged 60 or under), and 29375 in all other columns.



Table 6. Life satisfaction, adverse life events, and religiosity. Interaction effects. BHPS. Ordered Logit and “Within” Regressions.

	<i>OL</i>	<i>Within</i>	<i>OL</i>	<i>Within</i>
<i>Church</i>	<i>Men</i>		<i>Women</i>	
Unemployment*Church	-0.261 (0.395)	-0.312 (0.399)	0.926** (0.336)	0.115 (0.288)
Separated*Church	0.118 (0.608)	-0.312 (0.557)	-0.076 (0.300)	0.527 (0.365)
Divorced*Church	-0.419 (0.367)	-0.221 (0.411)	-0.111 (0.181)	-0.852** (0.219)
Widowed*Church	-0.824* (0.364)	-0.203 (0.401)	0.254 (0.155)	-0.020 (0.189)
<i>Belief</i>				
Unemployment*Belief	-0.139 (0.273)	0.113 (0.203)	0.571+ (0.300)	0.285 (0.220)
Separated*Belief	-0.185 (0.345)	-0.095 (0.270)	0.112 (0.244)	0.455+ (0.233)
Divorced*Belief	-0.075 (0.198)	-0.163 (0.159)	-0.041 (0.128)	-0.068 (0.132)
Widowed*Belief	-0.229 (0.312)	0.161 (0.214)	0.202 (0.145)	-0.128 (0.134)

Source: BHPS Waves 7 and 9. + significant at 10% level; \* significant at 5% level; \*\* significant at 1% level.

Table 7. Life events and change of religious behaviour in Britain, 1991-2002.

	<i>From No to Some Denomination</i>	<i>Increased Church Attendance</i>	<i>Increased Importance of Belief</i>
<i>Men</i>			
<b>% Changing (N)</b>	<b>5.6% (14290)</b>	<b>16.9% (25374)</b>	<b>18.0% (7388)</b>
Employed to Unemployed	0	0	0
Married to Separated	+ (1.3%)	0	0
Married to Divorced	0	0	0
Married to Widowed	+ (2.3%)	0	0
<i>Women</i>			
<b>% Changing (N)</b>	<b>4.9% (17137)</b>	<b>17.5% (30374)</b>	<b>21.0% (9003)</b>
Employed to Unemployed	0	0	0
Married to Separated	+ (1.2%)	+ (8%)	0
Married to Divorced	0	0	0
Married to Widowed	0	+ (0.0%)	- (4.8%)

Source: BHPS 1991-2002.

*Table 8. Replacement Rates and Religion.*

<b>ESS Data. 2003. Replacement Rate (Couple with 2 children) Robust Regressions</b>			
Percentage Roman Catholic	-0.282+		
	(0.148)		
Percentage Protestant	-0.134		
	(0.212)		
Percentage Other	-0.385*		
	(0.159)		
Percentage Monthly Church Attendance		-0.477**	
		(0.113)	
Percentage Weekly Prayer			-0.450**
			(0.120)
Constant	87.587**	84.631**	88.570**
	(9.921)	(3.767)	(5.116)
Observations	20	20	20
R-squared	0.378	0.500	0.437

<b>US States 1990-2000</b>	<b>Replacement Rate (1990)</b>	<b>Percentage Point Change in the Replacement Rate</b>
Mainstream Protestant (%)	0.306*	
	(0.117)	
Evangelical Protestant (%)	-0.171*	
	(0.081)	
Eastern Orthodox (%)	-8.733+	
	(4.468)	
Top half of % point change in Mainstream Protestants		-0.605
		(1.072)
Top half of % point change in Evangelical Protestants		-1.500
		(1.072)
Top half of % point change in Eastern Orthodox		-2.394*
		(1.116)
Constant	39.876**	1.236
	(2.507)	(0.916)
Observations	49	50
R-squared	0.219	0.188

Note: Standard errors in parentheses;+ significant at the 10% level; \* significant at the 5% level; \*\* significant at the 1% level. The changes in column 2 refer to 1990-2000.

*Table 9. Active Search by the Unemployed. Probit estimation in the ESS and BHPS.*

	ESS	BHPS (Women)	
Roman Catholic	-0.122 (0.074)		
Protestant	-0.231* (0.115)		
Other Religion	0.097 (0.112)		
Religion makes a little difference		-0.307* (0.153)	
Religion makes some difference		-0.044 (0.183)	
Religion makes a great difference		-0.354+ (0.190)	
Churchgoing once a week or more			-0.189 (0.160)
Churchgoing at least once a month			-0.067 (0.167)
Churchgoing at least once a year			0.216+ (0.114)
Observations	1659	522	1157

**Note:** Standard errors in parentheses; + significant at the 10% level; \* significant at the 5% level; \*\* significant at the 1% level. Other right-hand side variables: age, age-squared, sex, education, health, and (in columns 2 and 3) wave dummies.

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