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Does Economic Insecurity Predict Religiosity? Evidence from the European Social Survey 2002–2014

Ingrid Storm*
University of Manchester

Economic development and increases in material security have been suggested as primary causes of secularization in the West. However, the relationship between economic insecurity and religion is both under-theorized and under-explored. The recent economic recession, and the financial insecurity faced by many households in Europe, both increase the relevance of such questions, and the availability of data to address them. The European Social Survey (ESS) has data on religiosity from 31 countries over seven waves, covering the period from 2002 to 2014. Using a multilevel model, we find that lower income, GDP, and social welfare availability are associated with more religiosity, and increases in social security through government welfare expenditure reduces country levels of religiosity over the 12 year period. Further we find that religious people are more likely to feel economically secure regardless of their income levels, which lends support to the hypothesized mechanism of religious stress buffering.

Key words: religious change; economic security; welfare; stress buffering; Europe.

INTRODUCTION

A central puzzle in the sociology of religion is why religion declines primarily in economically developed countries while it persists and even increases in poorer countries (Norris and Inglehart 2004). One explanation that has gained currency is that religion increases in situations of conflict and unpredictability, and declines when people feel secure about their continued survival and prosperity. A large and interdisciplinary body of literature have found a positive relationship between religion and various forms of insecurity, including uncertainty about survival (Norris and Inglehart 2004), lack of social support (Gill and Lundsgaarde 2004) and stress (Manglos 2013). Financial troubles could increase all these forms of insecurity for

Direct correspondence to Ingrid Storm, Cathie Marsh Institute for Social Research, 2.13W Humanities Bridgeford Street, University of Manchester, Manchester M13 9PL, UK. Tel: +44 (0)161 27 50797; E-mail: ingrid.storm@manchester.ac.uk.

individuals, both at the household level, and at the national macro-economic level.

The global financial crisis in 2008 provides a rare opportunity to test this theory in a relatively prosperous and secular part of the world. Lack of income growth and increased probability of unemployment were common experiences for households in Europe. At the national level, countries also experienced a slowing of or reversal of economic growth, providing a unique natural experiment for researching on the effect of GDP on religiosity. Moreover, austerity measures were introduced in many countries leading to less public expenditure and increasing inequality.

Insecurity and Religion

Norris and Inglehart (2004) and Inglehart and Welzel (2005) used the World Values Survey (WVS) to examine global trends in attitudes and value orientations. They argue that under conditions of existential insecurity, defined as the feeling that survival is not "secure enough to be taken for granted", humans have a need for authority and predictability, which makes them more likely to hold religious beliefs and participate in ritual (Norris and Inglehart 2004:18–19). Immerzeel and van Tubergen (2011)'s and Ruiter and van Tubergen's (2009) analyses of data from the European Social Survey (ESS) and WVS respectively supports this theory, showing individual and country level associations between economic insecurity and religion in the period before the financial crisis in 2007–2008. The current study extends the analysis of ESS data to six years after the financial crisis.

While the relationship between economic conditions and religion seems relatively robust at the aggregate level, it is much less clear what mechanisms would cause this relationship *within* each society. One possibility is that religiosity reduces the negative effects of insecurity and stress. In other words, people in insecure conditions may adopt religious beliefs and practices because they provide a buffer against adversity. There are two lines of research which support the "religious buffering hypothesis" (Sibley and Bulbulia 2012). First, religious participation in a community could provide social insurance through networks and access to funds and services, particularly when other options for insurance are not available. Gill and Lundsgaarde (2004) for example, argue that an important reason for the religious decline in Europe is that the state has taken on its former function as social service and welfare provider. Second, several studies have documented the health benefits of religion for stress related illness such as high blood pressure (Tartaro et al. 2005) and depression (Krause 2009). Religious stress buffering could operate either through social support mechanisms (Lim and Putnam 2010), cognitive coping mechanisms (Krause 2009), or both (Bradshaw and Ellison 2010).

In addition to lacking research on causal mechanisms, some of the existing empirical support for the insecurity hypothesis may be based on false assumptions. In a longitudinal analysis of a pooled dataset of church attendance in 51 primarily western countries spanning 40 years from 1970 to 2009, van Ingen and Moor

(2015) found that while economic development was negatively related to changes in church attendance, other measures of economic insecurity were more ambiguous. Using Eurobarometer data from the 1980s and 1990s, Te Grotenhuis et al. (2015) find that some of the relationships found in cross-national analysis are not replicated within all countries, and may be due to unobserved country characteristics. It is also not clear over how long periods of time we should expect religious change to follow a result of economic change, or even that the causal relationship goes from material security to secularity, rather than the other way around (Barro and MacCleary 2003; Lipford and Tollison 2003).

We know from previous literature that most religious change can be best characterized as a generational (Voas and Crockett 2005; Voas and Chaves 2016) and long term process rather than a response to specific events (Bruce and Voas 2016), but there are also fluctuations in the religiosity of individuals and populations that are largely unaccounted for. A question that deserves more attention is whether economic change can predict religious change over short periods of time, such as the financial changes in Europe in the 2000s. In the following we present five hypothesized relationships between economic variables and religiosity, before testing these in a multilevel model and longitudinal fixed effects model. Finally we discuss the results and their implications for future directions of research.

Is Individual and National Economic Prosperity Associated with Religiosity?

The main theories in both sociology and economics support the proposition that economic prosperity reduces religiosity. People with higher income should experience less insecurity and stress, and consequently have less need for both the social support that participation in religious communities can provide, and the possible psychological benefits of religious beliefs. From an economic perspective, a higher income both reduces the social insurance returns on religious investment (Chen 2010), and increases the costliness of religious practice (Lipford and Tollison 2003). Household income has previously been found to be negatively associated with religiosity at the individual level in postindustrial societies (Norris and Inglehart 2004).

> Hypothesis 1: *The lower the household income is, the higher the average religiosity of the individual will be.*

A number of studies (Hayward and Krause 2015; Immerzeel and van Tubergen 2011; Rees 2009; Ruiter and van Tubergen 2010; van Ingen and Moor 2015) have also found country level associations between the state of the national economy and levels of religiosity in the population. The state of the national economy can be indicative of the individual's opportunity for economic security within that economy. Additionally, insecurity at the collective level could increase identification with the social, cultural or religious group, and respect for its traditional norms (Altemeyer 1981; Inglehart and Welzel 2005; Jost et al. 2003). If this is the reason why religion

increases under situations of stress, we should expect the effect to be visible in the face of sociotropic threats to the whole community such as an economic recession.

Hypothesis 2: *The poorer a country's national economy is, the more religious its individual residents will be.*

Is Religion an Alternative to Secular Social Insurance?

Gill and Lundsgaarde (2004), argue that traditionally, religion's main function has been to provide direct and tangible social, health and educational services, and that religion becomes increasingly obsolete when state takes over these tasks through provision of social welfare. This theory has also been used to account for the exceptionally high levels of religiosity in the US relative to its economic development (Solt et al. 2011). Scheve and Stasavage (2006) further argue that religion could be a substitute for social insurance, and that this may explain religious people in the US' generally low support for social welfare spending. A prominent example of religion as social insurance, comes from a study of Indonesian financial crisis in 1997. Chen (2010) found a prominent resurgence in participation in Qur'an study groups and Islamic schools in Indonesia among individuals who were negatively affected by the financial crisis in 1997–1999. He also found that religious participants recovered more quickly from the crisis due to mutual assistance and lending within religious communities. However, credit availability reduced the benefit of religious mutual assurance, as did lack of social sanctions for nonparticipation. The secular market account of secularization postulates that religion declines in economically developed countries due to an increased availability of secular alternatives to religious goods and services, institutions and activities (Hirschle 2013; Stolz 2009). This theory is sometimes contrasted with Inglehart's insecurity hypothesis (Hirschle 2013). However, it can also be regarded as a compatible, or even integral mechanism by which material security and prosperity renders religion less useful, and less appealing to people (Chen 2010; Stolz 2009:357). Government welfare is an example of a secular source of social and financial support which would reduce the secular utility of religion.

Hypothesis 3: *The more a country spends on social welfare the less its individual residents will attend religious services (when accounting for other economic variables).*

Can Religion be a Buffer against Financial Stress?

Some of the hypothesized relationships between religion and economic insecurity could potentially be explained by the social support, protection and mutual trust offered by many religious communities (Graham and Haidt 2010:145) or the cognitive reduction of stress associated with religious beliefs (Krause 2009). In order to understand how religion relates to subjective insecurity we distinguish between two different dimensions of religiosity, which we expect to have different relationships to the proposed mechanisms: Social participation in ritual could act as social insurance (Chen 2010) whereas individual identification with and

subscription to a religious worldview may be more effective as cognitive buffering (Krause 2009).

A large literature on religion and health indicates that religion reduces physical and psychological symptoms of stress (Krause 2009; Tartaro et al. 2005). Some longitudinal studies also show that religious people who maintain their religiosity recover more quickly from crises and adversity (Chen 2010; Clark and Lelkes 2005; Lechner and Leopold 2015; Sibley and Bulbulia 2012). A possible implication of this theory is that religiosity reduces the chance of expressed, or even *experienced* financial stress regardless of what the situation looks like in strictly monetary terms.

However, there is continued uncertainty about which specific aspect of religion contributes to well-being. A religious stress buffering mechanism could be either *social* through social ties from the faith community, such as friends or religious leaders, offering comfort and support (Ellison and George 1994; Lim and Putnam 2010); or it could be *cognitive* through religious beliefs and worldviews acting as coping mechanism. The former would require religious participation with other people, whereas the latter could operate purely in an individual's mind. Bradshaw and Ellison (2010) found that both religious attendance and the belief in an afterlife moderate the negative effects of both objective and subjective financial hardship. Manglos (2013) found that intense personal religious experiences are both more likely among people who have experienced traumatic events, and positively correlated with overall life satisfaction. There is also evidence that the strength and certainty of one's religious beliefs has an independent effect on wellbeing (Ellison et al. 1989). However, other studies of religious "buffering" find that the relationship can be explained almost entirely by the social effects of religious collective participation (Lim and Putnam 2010).

In general, we would expect that in a similar financial situation, religious people would evaluate it less negatively than nonreligious people. More specifically, if religious participation is primarily a social buffer we expect there to be a positive association between economic satisfaction and *religious service attendance*. However, if religious beliefs are a cognitive corrective to insecurity and stress we would also expect a positive association between expressed economic satisfaction and *subjective religiosity* when holding economic variables constant.

Hypothesis 4a: *There is a positive association between expressed economic satisfaction and religious service attendance when holding economic variables constant.*

Hypothesis 4b: *There is a positive association between expressed economic satisfaction and self-rated religiosity when holding economic variables constant.*

Change over Time and Direction of Causality

A prominent theory of secularization is that religious value change happens as a result of material change and modernization of economies (Hayward and Krause 2015; Inglehart and Welzel 2005:20; te Grothenhuis et al. 2015:4). However,

there have also been suggestions that religious values can be an important *cause* for economic change (Barro and MacCleary 2003; Bettendorf and Dijkgraaf 2010; Lipford and Tollison 2003). Max Weber (1958[1905]) suggested such a causal relationship in *The Protestant ethic and the spirit of capitalism*, arguing that the Calvinist emphasis on frugality and productivity could encourage entrepeneurship and economic growth. Esping-Andersen (1990) attributed differences between his three types of welfare states in Europe in part to differences in religious social norms, and especially the role of Catholic social doctrine in shaping the "corporatist" welfare states. In a recent study of the World Value survey, Barro and McCleary (2003) find that increases in church attendance tend to reduce economic growth whereas increases in belief in the afterlife tend to increase economic growth (Barro and McCleary 2003:779). Lipford and Tollison (2003) found that in US states, income per capita was slightly reduced by religious membership, while religious membership in turn was slightly reduced by per capita income.

Previous analyses of the insecurity hypothesis (see for example Immerzeel and van Tubergen 2011) have largely been cross-sectional, and not adequately accounted for the time dimension available in longitudinal cross-national surveys (Fairbrother 2014:121). To control for endogeneity at the aggregate level, we use "country panels" of the repeated survey and include lagged economic variables in the model.

Hypothesis 5*: Over time a country's economic growth predicts decline in the average religiosity of its population*.

DATA AND METHOD

The European Social Survey (ESS 2014) has seven available biennial waves from 2002 to 2014, and covers more than 280,000 individuals in 31 countries.[1] The survey is conducted for academic purposes, and is administered by a Core Scientific Team of academics and social research professionals in seven institutions, in collaboration with partners in all the participating countries. It is funded through a combination of research grants from the European Commission and contributions from each participating country. The samples are representative of each country's adult population (aged 15 and over) resident within private households, and the typical response rates are between 50 and 70% in each country and wave. The questionnaire is designed in English and translated by each national team.

The analytical strategy employed here has two steps. The first step is to analyze the determinants of two measures of individual religiosity. We employ a

[1]The data from European Social Survey used for this study can be obtained free of charge at http://www.europeansocialsurvey.org/data/. The macro-economic variables imported into the dataset can be obtained from Eurostat's database: http://ec.europa.eu/eurostat/data/database

hierarchical linear model with individuals nested within country-years within countries (Fairbrother 2014:123).[2] As the interest is in the impact of both micro- and macroeconomic insecurity, the multilevel model includes both household and country-level economic variables.

The second step is to analyze the impact of economic change over time. As the ESS does not follow the same individuals over time, we conduct a fixed effect estimator analysis on a constructed "country panel". This allows us to control for time-invariant effects, and thereby examine the effects of aggregate change in national economic measures on national levels of religiosity over the 12-year period from 2002 to 2014.

Dependent Variables

There are two main outcome variables: Frequency of religious attendance is measured on a scale from (1) never to (6) every day).[3] Degree of religiosity was rated by the respondent on a scale from (0) not at all religious to (10) very religious. It should be noted that what is considered "very religious" may vary according to national context as well as between individuals depending on their frame of reference. The measure of religious attendance is subject to similar constraints in that the expected frequency and meaning of religious service attendance vary between different traditions. As can be seen in figure 1, there is a great deal of variability by country on both these measures, but in all the countries more people rate themselves as being at least somewhat religious than attend services regularly.

To test hypotheses 4a and 4b, we also include models of the subjective experience of economic situation at both the household and national level. A four-category variable measures how the respondent feels about their current household income, and how difficult it is to get by on (from "Living comfortably" to "Very difficult"). Another 11-category variable indicates whether or not the respondent is satisfied with the country's economy (from 0 "extremely dissatisfied" to 10 "extremely satisfied"). Details of these and all other variables can be found in Appendix A.

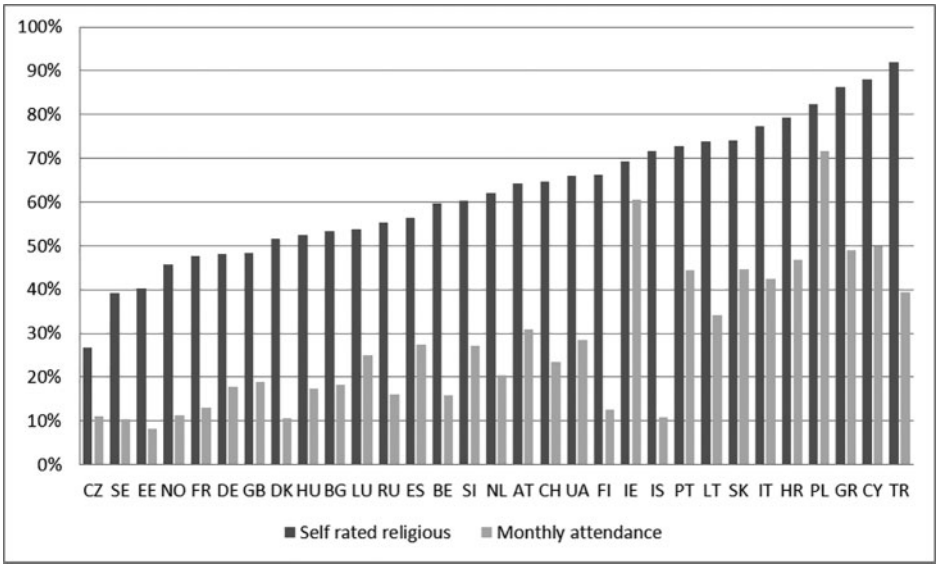
Independent Variables

Sociodemographic variables included in the models are age (multiplied by 100 in order to increase readability of the tables), which is known to determine economic activity as well as being positively associated with religiosity; sex (Female), as women are both more religious than men and less economically active on average; and four categories of education (based on the International Standard Classification of Education (ISCED)), all associated with both religious and

[2]Although see Supplementary tables S1 and S2 for alternative two-level fixed effects models.

[3]The original variable had 7 categories, but "5) Only on special holy days" and "6) Less often" were merged together due to the difficulty of deciding which of these represented the higher frequency. The order of the categories implies no clear category for people who attend less often than once a month but more than only on holidays. See Appendix A for details.

FIGURE 1. Percentage religiosity by country.



ESS 2002–2014: Self rated religiosity (5 or more on a scale from 0 to 10); Religious attendance (once a month or more often).

economic variables. In addition we include whether the respondent was born abroad, as immigrants in Europe are on average both more religious and more economically disadvantaged than natives (Kogan 2006; van Tubergen and Sindradottir 2011).

Household income is measured as deciles of the total net income.[4] The respondent answers this on a show card where they state their weekly, monthly, or annual income, whichever they find easiest, in their national currency (ESS 2012). By using income bands that are relative to income distribution in each country, rather than absolute income, we address the potential issue of two-way causality between religion and income per capita (Lipford and Tollison 2003).

We control for economic activity with a 10 categories employment variable which includes two categories of unemployment: actively looking for work, and

[4]In round 1–3 household income was measured using a uniform scale across countries. To be compatible with the later waves, values for 2002–2006 have been imputed using code generated by KJBrist and tnuf on the TalkStats forum http://www.talkstats.com/showthread.php/44664-European-Social-Survey-income-variable. Simply adding the income variables together, does not produce substantively different results. Thirty per cent of the sample did not answer the income question, hence their income deciles were imputed using multiple imputation (Gaussian regression) ($m = 25$). Results when not including the income variable (available on request) are similar, except for larger coefficients for subjective income, smaller coefficients for unemployment, and a smaller non-significant coefficient for social welfare spending.

not looking for work. While the main interest is in income, there is also an expectation that those not participating in the labor market due to retirement, illness or unemployment are more likely to be religious (Immerzeel and van Tubergen 2011).

Other sources of household income and expenditures could also affect financial security, hence we include dichotomous variables of whether the respondent is married or lives with their partner, whether their partner is unemployed, and whether there are children under 18 in the household. These variables could also account for possible life stage effects on religious participation (Hayward and Krause 2015). We also include voluntary organizational membership (of a trade union or other organization). Religious people are on average more likely to be members of voluntary organizations (Ruiter and De Graaf 2006), and such organizational involvement has been negatively associated with economic hardship (Son and Wilson 2015). Finally, we include two controls for subjective experience of the economic situation: A four-category question about the difficulty on getting by on one's household income, and a binary variable indicating whether or not the respondent is satisfied with the country's economy.[5]

At the country and year levels we include Gross Domestic Product (GDP) per capita in PPS (Purchasing Power Standard against the Euro), taken from Eurostat (2014). This accounts for the GDP relative to population size, currency value, and price levels. The log of the PPS GDP is used, as we are interested in change over time and GDP is more likely to change multiplicatively than additively. This variable is included for 158 country years in 29 countries (see table 1). There are numerous critiques of GDP as a measure of economic wealth, so it should be interpreted with caution. GDP does capture the economic activity in the country, but does not capture the distribution of wealth or the welfare of the population.

The multilevel model was run first on the individual level variables (excluding the subjective experience variables does not alter the other coefficients). Log GDP was added in the second model. In the third model we also include welfare expenditure, measured as the social benefits paid by the government as a percentage of GDP (Eurostat 2014). This variable is included in 156 country years in 28 countries.

RESULTS OF MULTILEVEL MODELS

Table 2 shows the analysis with religious service attendance as the outcome, and table 3 shows the same models for self-rated religiosity. The first model, where only individual level variables are included, shows a mixed association between

[5]This was recoded from a 11-category variable from 0 "extremely dissatisfied" to 10 "extremely satisfied" (0-5 = 0)(6–10 = 1), to reduce multicollinearity with Feelings about household income and Log GDP.

TABLE 1. Sample of Countries and Years

Code	Country	2002	2004	2006	2008	2010	2012	2014	Observations
AT	Austria	X	X	X				X	4
BE	Belgium	X	X	X	X	X	X	X	7
BG	Bulgaria			X	X	X	X		4
CH	Switzerland	X	X	X	X	X	X	X	7
CY	Cyprus			X	X	X	X		4
CZ	Czech Republic	X	X		X	X	X	X	6
DE	Germany	X	X	X	X	X	X	X	7
DK	Denmark	X	X	X	X	X	X	X	7
EE	Estonia		X	X	X	X	X	X	6
ES	Spain	X	X	X	X	X	X	X	7
FI	Finland	X		X	X	X	X	X	6
FR	France	X	X	X	X	X	X	X	7
GB	Great Britain	X	X	X	X	X	X	X	7
GR	Greece	X	X		X	X			4
HR	Croatia				X	X			2
HU	Hungary	X	X	X	X	X	X	X	7
IE	Ireland	X	X	X	X	X	X	X	7
IS	Iceland		X				X		2
IT	Italy	X	X				X		3
LT	Lithuania					X	X	X	3
LU	Luxembourg	X	X						2
NL	Netherlands	X	X	X	X	X	X	X	7
NO	Norway	X	X	X	X	X	X	X	7
PL	Poland	X	X	X	X	X	X	X	7
PT	Portugal	X	X	X	X	X	X	X	7
RU	Russia			I	I	I	I		4
SE	Sweden	X	X	X	X	X	X	X	7
SI	Slovenia	X	X	X	X	X	X	X	7
SK	Slovakia		X	X	X	X	X		5
TR	Turkey		Y		Y				2
UA	Ukraine		I	I	I	I	I		5
31	Total	21	25	23	26	26	26	20	167

ESS 2002-2014. X = data available for religiosity, GDP and benefits, Y = religiosity and GDP, I = religiosity, but not GDP or benefits. Excluding the countries with incomplete data from the analysis does not substantially affect the results (See Appendix for details).

household finance and religion. First, household income is negatively associated with both measures of religiosity. In other words hypothesis 1 is supported: people on lower income are on average more religious and attend religious services more frequently than people on higher incomes.

In model 2, log GDP is negatively associated with both measures of religiosity, supporting hypothesis 2, that the level of religiosity is higher in poorer

TABLE 2. Multilevel Model of Religious Service Attendance (1–6)

	Model 1		Model 2		Model 3	
	Coef.	SE	Coef.	SE	Coef.	SE
Individual level variables						
Age*100	0.042***	0.004	0.155***	0.025	0.152***	0.025
Female	0.214***	0.004	0.228***	0.004	0.225***	0.004
Education (ref: No qualification)						
Lower secondary	−0.176***	0.007	−0.189***	0.008	−0.188***	0.008
Upper secondary	−0.251***	0.007	−0.262***	0.007	−0.260***	0.007
Post secondary	−0.243***	0.011	−0.251***	0.012	−0.247***	0.012
Tertiary	−0.234***	0.008	−0.245***	0.008	−0.240***	0.008
Born abroad	0.118***	0.007	0.140***	0.007	0.139***	0.007
Household income	−0.016***	0.001	−0.016***	0.001	−0.016***	0.001
Employment (ref: Employed)						
Self-employed	0.104***	0.007	0.104***	0.007	0.104***	0.007
In education	0.017*	0.008	0.013	0.008	0.013	0.008
Unemployed looking	−0.038***	0.011	−0.067***	0.011	−0.067***	0.011
Unemployed not looking	−0.048**	0.016	−0.067***	0.016	−0.067***	0.016
Permanent illness/disability	0.011	0.014	0.013	0.014	0.011	0.014
Retired	0.286***	0.006	0.305***	0.006	0.303***	0.006
Military	0.144**	0.055	0.167**	0.057	0.169**	0.057
Housework	0.149***	0.008	0.217***	0.008	0.216***	0.008
Other	0.054**	0.020	0.049*	0.020	0.049*	0.020
Married	0.167***	0.004	0.172***	0.005	0.173***	0.005
Child in household	0.019***	0.005	0.011*	0.005	0.011*	0.005
Partner unemployed	−0.153***	0.014	−0.142***	0.014	−0.141***	0.014
Member of union	0.016**	0.006	0.019**	0.006	0.019**	0.006
Feelings about household income (ref: Living Comfortably)						
Coping	−0.003	0.005	−0.004	0.005	−0.006	0.005
Difficult	−0.017*	0.007	−0.022*	0.007	−0.022**	0.007
Very difficult	−0.081***	0.010	−0.072***	0.010	−0.067***	0.010
Satisfied with national economy	0.129***	0.005	0.127***	0.005	0.122***	0.005
Country-year level variables						
Log of GDP			−0.338***	0.049	−0.328***	0.048
Benefits (% of gdp)					−0.010*	0.004
Constant	2.107***	0.079	5.521***	0.505	5.542***	0.490
Random-effects						
Country	0.435***	0.056	0.416***	0.056	0.418***	0.056
(Country) Year	0.064***	0.005	0.060***	0.005	0.057***	0.005
Individual	1.015***	0.001	1.004***	0.001	1.004***	0.001
N individual (L1)	2,82,842		2,61,113		2,61,113	
N (country) year (L2)	162		151		151	
N country (L3)	31		28		28	

ESS 2002-2014. *$p \leq 0.05$; **$p \leq 0.01$; ***$p \leq 0.001$.

TABLE 3. Multilevel Model of Self-Rated Religiosity (0–10)

	Model 1		Model 2		Model 3	
	Coef.	SE	Coef.	SE	Coef.	SE
Individual level variables						
Age*100	0.115***	0.010	0.116***	0.010	0.116***	0.010
Female	0.929***	0.011	0.919***	0.011	0.919***	0.011
Education (ref: No qualification)						
Lower secondary	−0.506***	0.020	−0.507***	0.020	−0.507***	0.020
Upper secondary	−0.783***	0.019	−0.781***	0.020	−0.781***	0.020
Post-secondary	−0.703***	0.030	−0.699***	0.031	−0.698***	0.031
Tertiary	−0.772***	0.020	−0.772***	0.021	−0.772***	0.021
Born abroad	0.708***	0.019	0.785***	0.020	0.785***	0.020
Household income	−0.036***	0.003	−0.037***	0.003	−0.037***	0.003
Employment (ref: Employed)						
Self-employed	0.404***	0.018	0.412***	0.019	0.412***	0.019
In education	−0.220***	0.022	−0.232***	0.023	−0.232***	0.023
Unemployed looking	−0.100***	0.028	−0.129***	0.029	−0.128***	0.029
Unemployed not looking	−0.142**	0.042	−0.172***	0.044	−0.172***	0.044
Permanent illness/disability	0.330***	0.036	0.323***	0.037	0.323***	0.037
Retired	0.769***	0.015	0.806***	0.016	0.806***	0.016
Military	0.296*	0.146	0.243	0.153	0.243	0.153
Housework	0.417***	0.020	0.460***	0.021	0.460***	0.021
Other	0.106*	0.052	0.118*	0.053	0.118*	0.053
Married	0.367***	0.012	0.390***	0.012	0.390***	0.012
Child in household	0.044***	0.012	0.038**	0.013	0.038**	0.013
Partner unemployed	−0.257***	0.036	−0.280***	0.038	−0.279***	0.038
Member of union	0.087***	0.015	0.100***	0.016	0.100***	0.016
Feelings about household income (ref: Living Comfortably)						
Coping	0.030*	0.014	0.027	0.014	0.027	0.014
Difficult	0.092***	0.019	0.091***	0.019	0.091***	0.019
Very difficult	0.069**	0.025	0.111***	0.028	0.111***	0.028
Satisfied with national economy	0.459***	0.013	0.444***	0.013	0.443***	0.013
Country-year level variables						
Log of GDP			−0.936***	0.154	−0.930***	0.153
Benefits (% of gdp)					−0.018	0.014
Constant	4.480***	0.189	13.872***	1.571	14.067***	1.568
Random-effects						
Country	1.036***	0.133	1.006***	0.136	1.008***	0.136
(Country) Year	0.232***	0.016	0.207***	0.014	0.205***	0.014
Individual	2.682***	0.004	2.693***	0.004	2.693***	0.004
N individual (L1)	282227		260385		260385	
N (country) year (L2)	162		151		151	
N country (L3)	31		28		28	

ESS 2002–2014. *$p \leq 0.05$; **$p \leq 0.01$; ***$p \leq 0.001$.

countries.[6] Finally, model 3 includes how much the government spends of social benefits, and the coefficient is negative and significant for religious service attendance, but not self-rated religiosity. Hypothesis 3, that social welfare spending would be associated with lower levels of religious attendance, is supported.

In order to control for the incomplete data, and test that the longitudinal effects are not due to unobserved between-country variation (Te Grotenhuis et al. 2015), we re-analyzed these models including only the 16 countries that where data was complete for six survey waves, using a two-level fixed effects model with individuals clustered within country-years, and countries included as dummy variables. The results, available as online supplements, are not substantially different from those presented in the full models.

Of the control variables, most support the insecurity hypothesis. However, unemployed individuals, whether seeking employment or not, are not any more religious than employed people. If anything both unemployed people and people whose partners are unemployed, appear on average slightly less religious than the average employed person. In contrast to unemployment, other forms of economic inactivity (disability, retirement, and housework) were positively associated with religiosity, as was self-employment—an arguably less secure form of economic activity than being employed. Having no, or lower levels of, education is also a significant predictor of both religious participation and subjective religiosity.

The significant coefficient for social welfare spending indicates that religion may act as a socioeconomic buffer for economic insecurity, when governmental structures are not in place. The relationship only holds for religious service attendance and not for self-rated religiosity. The results replicate those found by Immerzeel and van Tubergen (2011), and tentatively supports the theory that a religious community and social network can act as social insurance which can be supplanted with other social mechanisms and institutions (Chen 2010; Gill and Lundsgarde 2004; Solt et al. 2011).[7]

The subjective experience of household income was associated with self-rated religiosity in the same direction as the objective measure of household income. However, we see opposite relationships between the experience of household income and religious attendance, such that those who say they struggle to get by are less likely to go to church services, but more likely to describe themselves as religious compared to those who live comfortably on their income. The association between religiosity and satisfaction with the national economy is positive for both

[6]In analysis not shown here an interaction effect between log GDP and household income was positive (0.004 [SE:0.002]) and significant ($p = 0.038$) meaning that the negative relationship between income and religiosity is more pronounced in poorer countries. The main effects were also strengthened for both GDP (-0.406 [SE:0.090]) and income (-0.051 [SE:0.018]). This interaction is not as strong, but is in the same direction as the interaction observed by Bettendorf and Dijkgraaf (2010).

[7]An alternative interpretation, that country denominational tradition could affect both religious attendance and economic variables (see for example Esping-Anderson 1990), was tested in an alternative model, where we tried controlling for whether a country was majority Catholic with a dichotomous control variable, and conducted separate analyses of both the multilevel and fixed effects models on the 11 Catholic and 17 other countries, but the

TABLE 4. Multilevel Models of Economic Satisfaction

	Difficult to get by on household income (1–4)							
	Model 1		**Model 2**		**Model 3**		**Model 4**	
	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE
Household income	−0.118***	0.001	−0.124***	0.001	−0.118***	0.001	−0.118***	0.001
Log of GDP	−0.160**	0.053	−0.160**	0.053	−0.159**	0.053	−0.159**	0.053
Attendance at religious services	−0.013***	0.001	−0.026***	0.003				
Attendance*Household income			0.003***	0.001				
Religiosity					0.000	0.000	0.000	0.001
Religiosity*Household income							0.000	0.000
Constant	4.320***	0.541	4.348***	0.543	4.282***	0.543	4.286***	0.543
Random-effects								
Country	0.336***	0.048	0.336***	0.048	0.335***	0.048	0.335***	0.048
Year	0.073***	0.005	0.073***	0.005	0.073***	0.005	0.073***	0.005
Individual	0.672***	0.001	0.672***	0.001	0.672***	0.001	0.672***	0.001
N individual (L1)	266890		266890		265999		265999	
N (country) year (L2)	151		151		151		151	
N country (L3)	28		28		28		28	
	Satisfied with county's economy (0–10)							
	Model 1		**Model 2**		**Model 3**		**Model 4**	
	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE
Household income	0.077***	0.002	0.098***	0.004	0.077***	0.002	0.099***	0.004
Log of GDP	2.311***	0.391	2.309***	0.392	2.305***	0.390	2.305***	0.390
Attendance at religious services	0.150***	0.004	0.196**	0.009				
Attendance*Household income			−0.010***	0.002				

continued

TABLE 4. Continued

	Difficult to get by on household income (1–4)							
Religiosity					0.064***	0.002	0.087***	0.004
Religiosity*Household income							−0.005***	0.001
Constant	−18.452***	3.960	−18.543***	3.961	−18.371***	3.941	−18.494***	3.942
Random-effects								
Country	0.673***	0.097	0.790	0.139	0.784	0.138	0.784	0.138
Year	0.146***	0.010	0.903	0.058	0.900	0.058	0.900	0.058
Individual	1.344***	0.002	2.209	0.003	2.207	0.003	2.207	0.003
N individual (L1)	261546		261546		260795		260795	
N (country) year (L2)	151		151		151		151	
N country (L3)	28		28		28		28	

ESS 2002–2014. *$p \leq 0.05$; **$p \leq 0.01$; ***$p \leq 0.001$. All variables in tables 2–3 are included as controls. The coefficients of these have been omitted in table 4 to save space, but are available from author on request.

measures of religiosity when holding economic variables constant. This offers some support for hypothesis 4, that national and household economic situation would be more positively evaluated by religious people. To further test hypothesis 4a and 4b, we ran similar models with economic satisfaction measures as the outcome variables, shown in table 4. The results are the same: After controlling for household income and GDP, religious attendance predicts satisfaction with both household income and national economy, whereas religiosity only predicts satisfaction with the national economy. Religious participation appears to be a more effective buffer against personal financial hardship than subjective religiosity, lending support to hypothesis 4a, and the interpretation that community belonging and ritual are important mechanisms (Lim and Putnam 2010).[8] Hypothesis 4b is only partially supported, but it should be noted that as self-rated religiosity is not a very clearly defined variable, this does not preclude that more specific aspects of subjective religiosity such as belief in the afterlife (Bradshaw and Ellison 2010), could have a significant effect on the experience of financial stress.

To test whether religious attendance has a positive boost for everyone's economic experience, or is primarily a buffer for people with lower economic security, we also included an interaction term in the model. The interactions between religious attendance and (objective) household income are small but significant for subjective satisfaction with both household and national economy. Religious attendance has a stronger association with economic satisfaction for people on lower household incomes, supporting the religious buffering hypothesis. An alternative two-level fixed effects model including only countries with complete data is included in an online supplement (table S2), and the results are not substantially different.

ANALYSIS OF CHANGE OVER TIME

Even though the hierarchical model controls for year and country, it cannot answer how changes over time in the national economy, for example from the 2008 financial crisis, may affect religiosity. Differences in religiosity may also be related to unobserved differences between the countries that happen to be associated with economic measures (Te Grotenhuis et al. 2015), but which do not vary much over time, such as prior historical events, institutions, social values, and traditions (although see supplemental analysis). To address these two problems, we conduct a fixed effects model on a constructed panel data set of the countries. Mean values for self-rated religiosity, the proportion who attend religious services at least monthly, and the macro-economic variables, were measured by country and year

direction and significance of coefficients were the same for both subsamples. The tables were excluded for reasons of parsimony and space, but are available on request.

[8]We tried controlling for general life satisfaction (as this was associated with both economic satisfaction and religiosity) in alternative models, but the coefficients for religious attendance remained statistically significant.

to make a dataset of 158 country year points from the 29 countries with available data on both religiosity and GDP, shown in table 1.

The following specification is used: $y_{it} = \alpha_i + \delta_t + \beta X_{it} + \mu_{it}$. The dependent variable y_{it} measures the mean religious attendance for country i in period t. X_{it} contains variables that are country and period specific, such as log GDP. The term α_i is the period-invariant country unobserved effect; δ_t is a common unobservable period-specific effect and μ_{it} is the time-varying country specific idiosyncratic error. The fixed effects estimator removes all time invariant observed and unobserved effects by subtracting the wave means of each variable for every country in the model, allowing us to focus entirely on the question of whether religiosity is affected by economic change from one year to the next. To avoid simultaneity issues we use lagged variables from the year before the ESS data was collected for both GDP and social benefit spending.[9] The models also include year of the ESS to control for period effects.

The models, shown in table 5 are run with proportion monthly attendance and mean religiosity as the outcome variables. As with the previous model the log of the GDP is included in both models as a control, and welfare expenditure is added to the second model (Model 2A).

Despite the economic crisis in 2008, GDP has generally increased over the 10 years, whereas religiosity has generally been in decline in Europe. However, this could be partly due to unobserved variables and processes that are associated with time, such as generational replacement. To control for the effect of time, we include a continuous time variable of survey year in Model B.

In model 1A, the Log GDP coefficient is negative, meaning that each year of GDP growth is associated with religious decline in the country population. A graphical representation of this relationship is shown in the top half of figure 2, where GDP in the extreme years is plotted against religiosity in the extreme years (2002 and 2014). The negative relationship holds when including welfare expenditure in model 2A. As in the individual level cross sectional model, social benefit spending is negatively associated with religiosity.

Once time is controlled for in model 1B, however the results do not support hypothesis 5, that economic growth would be directly associated with religious decline. Each consecutive year has a negative coefficient, signifying a religious decline, which accounts for all the variance in the negative coefficient in model 1A. The remaining association between a change in GDP and mean religious service attendance is statistically insignificant. In contrast, model 2B shows that government spending on social benefits has an association with religious service attendance in the predicted (negative) direction even after controlling for time invariant relationships, adding further support for hypothesis 4, of religious service attendance as social insurance.

[9]In alternative models we tried using variables from the same year, and the direction and significance of the coefficients were the same. The tables were excluded for reasons of parsimony and space, but are available on request.

TABLE 5. Fixed Effects Estimates

	Mean degree of religiosity							
	M1A		**M1B**		**M2A**		**M2B**	
	Coef.	S. E.	Coef.	S. E.	Coef.	S. E.	Coef.	S. E.
Log GDP	−0.802***	0.161	0.192	0.270	−0.747***	0.156	0.086	0.330
Benefits					−0.048**	0.014	−0.011	0.019
Year			−0.077***	0.017			−0.067	0.024
Constant	12.830***	1.623	3.114	2.665	12.946***	1.562	4.303	3.397
R square	0.163		0.275		0.230		0.277	
	Proportion attend monthly							
	M1A		**M1B**		**M2A**		**M2B**	
	Coef.	S. E.	Coef.	S. E.	Coef.	S. E.	Coef.	S. E.
Log GDP	−0.065***	0.016	0.026	0.027	−0.057***	0.015	−0.021***	0.033
Benefits					−0.006***	0.001	−0.005*	0.002
Year			−0.007***	0.002			−0.003***	0.002
Constant	0.917***	0.162	0.025	0.270	0.932***	0.151	0.556***	0.336
R square	0.176		0.201***		0.120		0.117	
N (country) year (L1)	157		157		157		157	
N country (L2)	28		28		28		28	

ESS 2002–2014. *$p \leq 0.05$; **$p \leq 0.01$; ***$p \leq 0.001$, SE in parentheses.

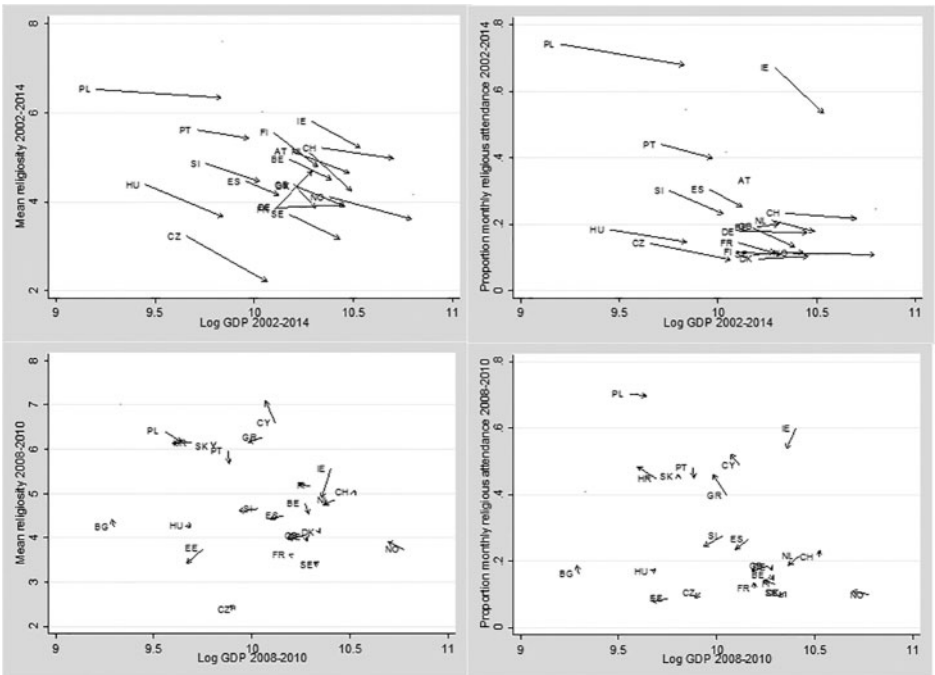
Neither GDP, nor government spending on social benefits (table 5), are significant predictors of change in mean self-rated religiosity when controlling for time. In other words, hypothesis 5 is not supported.

The financial crisis of 2008 also does not seem to have had any clear and consistent effect on national levels of religiosity in Europe. On average, levels of religiosity continued to decrease in 2008 and 2010. In the second half of figure 2, the GDP and religiosity of the period from 2008 and 2010 is plotted, showing an unusual reduction or stability of most countries' in log GDP, but no corresponding pattern in the increases and reductions in national levels of religiosity. This finding, in light of the overall association between financial insecurity and religiosity, could be seen as evidence of a more complex relationship between (non-) religiosity, wealth, and security, than that of a direct cause and effect.

DISCUSSION AND FURTHER DIRECTIONS FOR RESEARCH

Economic development and increase in material security have been suggested as primary causes of secularization in the West. So far, the empirical literature has largely supported the relationship (Norris and Inglehart 2004; Immerzeel and van

FIGURE 2. Religiosity and GDP over the 12-year Period (2002–2014), and after the financial crisis (2008–2010).



ESS 2002–2014.

Tubergen 2011), but it has been unclear when, where, and over what timescale we can confidently expect to find it.

The findings from this analysis of the ESS 2002–2014 indicate that measures of economic prosperity and security have negative associations with religiosity at both the individual level (household income) and national level (GDP). However, we find no clear evidence that changes in GDP predicts changes in levels of religiosity on a country level in Europe in the 12 years covered by the ESS. One possible explanation for this is that there was no effect at all of the recession and other changes to the economy. More likely however, the timespan in our data is either too short to observe the resulting change or the effect is overridden by generational change (Voas and Crockett 2005; Bruce and Voas 2016; Voas and Chaves 2016). From what we know about historical patterns of secularization in many Western economies, religiosity does not change as an abrupt response to events, but takes place over a longer period, primarily through socialization and cohort replacement. People who have not been socialized into religious practice when young are unlikely to "return to" or take up religion, no matter how much the economic situation changes (Voas and Chaves 2016:1531), whereas the opposite effect; economically secure individuals reducing their religious practice, is much more likely (Storm Forthcoming). Moreover, security and prosperity are not

solely functions of GDP, and are not likely to be perceived as such by individuals. Finally, there could also be contradictory mechanisms which obscure the relationship, for example that financial strain reduces social participation in general (Schwadel et al. 2009; Son and Wilson 2015; Wilcox et al. 2012).

As for the mechanisms of the relationship between economic insecurity and religion, we find support for the hypothesis that religion could act as social insurance as well as a cognitive stress buffer. First, religious service attendance is negatively associated with availability of government welfare, suggesting that communal religious participation and network-building is in part a substitute for other forms of social and material support. Like Immerzeel and van Tubergen (2011) we found the association for religious service attendance, but not self-rated religiosity. We also found a relationship at the national level between change over time in welfare spending and religious participation, supporting Gill and Lundsgarde's (2004) theory that secularization happens when the state increases social service provision. It is not clear why Te Grotenhuis et al. (2015), using very similar methods did not find this within-country effect of social welfare spending (see supplemental analysis). As they rightly point out, however, these findings could be sensitive to the countries and time periods examined and most likely the source of the discrepancy lies in differences either in the limited time periods (1980–1998 versus 2002–2014), the sample of countries (nine versus 28), or other more subtle differences in the variables and data used.

Second, we find that while "objective" measures of national economic prosperity are associated with less religiosity, people who express subjective satisfaction with the country's economy are more, not less, likely to be religious. Moreover, people who frequently attend religious services describe their household income in more positive terms than nonreligious people on a similar income level. In line with the literature on religion and health and wellbeing (Bradshaw and Ellison 2010; Krause 2009; Lechner and Leopold 2015), this suggests that religiosity could ameliorate some of the negative effects of economic hardship on mental wellbeing. In addition, our results indicate that the association between religious attendance and reduction of experienced financial stress is greater for people on lower household incomes. This indicates that religiosity may not only be less necessary, but also less effective for improving economic satisfaction among people whose financial situation is objectively more secure. Religion's function as a buffer against stress, could potentially account for why levels of religiosity would be higher in contexts of adversity and insecurity. Notably, religious participation appears more effective than religious self-identification for increasing economic satisfaction, which suggests that the stress-buffering is in large part a social process (Lim and Putnam 2010) rather than an individual one. It should be noted that this finding does not rule out a cognitive mechanism, such as stress relief through belief in God or the afterlife, but such a mechanism would likely depend to some extent on community ratification.

The relationship between unemployment and religiosity was negative rather than positive after controlling for income. Previous evidence for a relationship

between unemployment and religion is mixed. A number of studies find a positive relationship between religion and unemployment in Europe (Gautier 1997:295; Ruiter and van Tubergen 2010; van Tubergen 2006). However, Lambert (2004:38) found that religious decline in Europe is slightly more significant among the unemployed. Eisenberg and Lazarsfeld (1938:369) found several studies that suggested unemployment could reduce religiosity as the unemployed felt discouraged in their faith and unwelcome in the church. Research from the US similarly suggests that social isolation due to lack of stable employment is an important source of disengagement with religion (Schwadel et al. 2009). Wilcox et al. (2012) describe the institution of work as an important source of "social and normative integration that link Americans to religious institutions". Analyzing data from the British Household Panel Study, Clark and Lelkes (2005) found no significant correlations between changes in religion and becoming unemployed, although they did find that religious people suffered less psychologically from unemployment than the nonreligious did. A similar finding from a German panel study (Lechner and Leopold 2015) suggest weekly religious attendance could mitigate the negative effects of unemployment on life-satisfaction. These findings open the possibility of several alternative causal relationships other than a one way effect of economic insecurity on religion. First, economically insecure people may be less likely to join in all social and civic activity (Son and Wilson 2015), including religion. Conversely, religious people may have more economic opportunities due to their larger or more close knit social networks (Ellison and George, 1994; Lim and Putnam, 2010), and they may find it easier to gain or regain employment due to less severe psychological reactions to losing their job (Clark and Lelkes 2005; Lechner and Leopold 2015). These "religious buffering" processes may be obscured in cross-sectional analysis. Establishing the strength and causal direction of these relationships would require further analysis of individual level panel data.

The findings in this article call for two main avenues for further longitudinal research: First, the relationship between social welfare spending and service attendance supports an interpretation of religion as a social and economic buffer in times of adversity, but the particular individual level mechanisms of this association are so far both under-theorized and under-explored. Particularly, the positive relationship between religion and unemployment is puzzle where the research to date does not provide satisfactory answers. Second, more individual-level evidence is needed to establish whether there is indeed a causal link between macro-economic and religious change, or if these are instead incidental correlates of modernity that are not causally related. These limitations notwithstanding, the significant associations of household income, GDP and social welfare spending with religious participation, indicate that the relationship between economic insecurity and religiosity is still relevant in Europe. Despite large scale secularization, people with lower income in poorer countries are still more religious, and religious participation continues to ameliorate the experience of financial hardship.

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SUPPLEMENTARY MATERIAL

A supplementary section is located with the electronic version of this article at Sociology of Religion online (http://www.socrel.oxfordjournals.org).

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APPENDIX A.
List of variables from the European Social Survey (ESS) and Eurostat 2002–2014

Variable	Question wording	Recoded values				Summary statistics	
Original name		Min		Max		Mean	St Dev
Dependent variables from ESS							
Rlgatnd	Apart from special occasions such as weddings and funerals, about how often do you attend religious services nowadays?	1	Never	6	Every day	2.136	1.137
Rlgdgr	Regardless of whether you belong to a particular religion, how religious would you say you are?	0	Not at all religious	10	Very religious	4.736	2.993
Hincfel	Which of the descriptions on this card comes closest to how you feel about your household's income nowadays?	1	Very difficult on present income	4	Living comfortably on present income	2.089	0.892
Stfeco	On the whole how satisfied are you with the present state of the economy in [country]?	0	Extremely dissatisfied	10	Extremely satisfied	4.361	2.527
stfeco2	stfeco recoded as binary	0	(0-5)	1	(6-10)	0.342	0.474
Derived country–year variables from ESS							
Meanreldegcy	Mean self-rated religiosity by country/year	2.11		7.67		4.736	1.039
Meanmattcy	Proportion attend religious service monthly by country/year	0.08		0.74		0.261	0.168
Independent variables from ESS							

agea100	Age of respondent, calculated based on year of birth and year of interview (divided by 100)	0.13		9.99		0.520	0.648
Gndr	Gender	0	Male	1	Female	0.540	0.498
edulvla/eisced	What is the highest level of education you have successfully completed? Coding frame based on ISCED	1	Less than lower secondary	5	Tertiary		
Brncntr	Were you born in [country]?	0	Yes	1	No	0.083	0.277
hinctnt/ hinctnta	Using this card, if you add up the income from all sources, which letter describes your household's total net income? If you don't know the exact figure, please give an estimate. Use the part of the card that you know best: weekly, monthly or annual income.	1	J - 1st decile	9	D-9th decile	4.866	2.539
Mnactic	Using this card, which of these descriptions applies to what youhave been doing for the last 7 days?	1	Employed	10	Other		
marital/maritala/marsts	Could I ask about your current legal marital status? Which of the descriptions on this card applies to you?	0	Not married	1	Married	0.524	0.499
Childhm	Children living at home or not (from household grid)	0	No	1	Yes	0.380	0.485
Uemplap	Partner doing last 7 days: unemployed, actively looking for job	0	No	1	Yes	0.020	0.141

continued

Continued

Variable	Question wording	Recoded values				Summary statistics	
Original name		Min		Max		Mean	St Dev
Mbtru	Are you or have you ever been a member of a trade union or similar organisation?	0	No	1	Yes	0.185	0.388
Country-year variables from Eurostat							
Loggdp	Gross domestic product at market prices, PPS per capita	8.65		11.21		10.122	0.342
Benefits	Social benefits (other than social transfers in kind) paid by general government, % of GDP	5.70		20.10		14.522	2.729

Original variable names from the ESS are included in this table when possible, but note that some have changed between waves, and have been recoded to be comparable. Imported or derived variables are in italics.