



Religious belief and intelligence: Worldwide evidence



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ABSTRACT

Is there a positive impact of intelligence on religious disbelief after we account for the fact that both average intelligence and religious disbelief tend to be higher in more developed countries? We carry out four beta regression analyses and conclude that the answer is yes. We also compute impact curves that show how the effect of intelligence on atheism changes with average intelligence quotients. The impact is stronger at lower intelligence levels, peaks somewhere between 100 and 110, and then weakens. Bootstrap standard errors for our point estimates and bootstrap confidence intervals are also computed.

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1. Introduction

Is there a statistically significant relationship between the lack of religious belief and intelligence? Howells (1928) showed that there is a negative correlation between intelligence and religious belief among college students using different measures of religious belief. Argyle (1958) concluded that intelligent students are less inclined to hold religious beliefs. Lynn, Harvey, and Neyborg (2009) used data on 137 countries and showed that the correlation between intelligence

and religious disbelief is positive and statistically significant: 0.60. There is thus evidence of a positive relationship between atheism and intelligence. Additionally, Reeve (2009) examined the degree to which IQ, belief rate and health form a meaningful nexus of relations. He showed that IQ is positively associated with health and negatively related to the nation belief rate (i.e., the percentage of population that believe in a god).

It has also been established that religious disbelief tends to increase with economic development. That is, religious beliefs loose strength, on average, as a country becomes richer; see, for instance, Barber (2011, 2013). The prevalence of atheists is typically higher in economically developed countries in contrast to what is observed in low income economies. For instance, in most African countries the

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percentage of nonbelievers does not exceed 1% (Zuckerman, 2007) whereas in Sweden it reaches 64%. In other developed countries the percentage of population that does not hold religious beliefs is also high: 48% in Denmark, 44% in France and 42% in Germany. It is true that proportion of the population in the United States that are religious is large, but it is also true that it has been decreasing over time. For example, polls have shown that 95.5% of the U.S. population believed in God in 1948 (Argyle, 1958) and that such a figure dropped to 89.5% in 2004 (Zuckerman, 2007).

Pesta, McDaniel, and Bertsch (2010), using data on the fifty U.S. states, created a well-being index and showed that it tends to be higher for states located on the East Coast, where people are more liberal, more educated, wealthier, and more intelligent than average and at the same time are less religious than average. Lynn (2010) claims that regional differences in intelligence are the major factor for regional discrepancies in Italy when it comes to per capita income and also to stature, infant mortality, and education. One of the hypotheses presented by Lynn (2010) is that the North–South gradient of IQs in Italy may explain much of the economic development discrepancy between the North and the South of the country. The correlation coefficient between regional IQ and per capita income is 0.94. The substantial regional IQ variations in Italy can, to a large extent, explain the large differences in regional per capita income. The author claims that the strong positive correlation between population IQ and per capita income follows from a feedback loop in which higher population IQ leads to higher per capita income, and higher per capita income in turn leads to higher IQs. Thus, higher population IQ is both a cause and a result of higher per capita income. Higher IQ leads to higher per capita income because high IQ individuals are able to work more efficiently and consequently to command higher incomes. On the other hand, higher income is associated with better nutrition, health care and education and thus leads to higher intelligence levels. Reeve and Basalik (2010), using data on the U.S., examined the degree to which differences in average IQ across the 50 states are related to differences in health indicators. Their results show that, even after controlling for differences in state wealth and health care expenditures, average IQ is positively associated with a wide range of positive health indicators and negatively associated with many state health problems.

Kanazawa (2009) carried out a macro level analysis that shows that nations with higher average intelligence tend to be more liberal (higher marginal individual tax rate and, as a result, lower income inequality), less religious and more monogamous. The author also modeled the proportions of religious people in different countries using control variables that include national IQ and per capita GDP. After estimating a linear regression, he concluded that, net of the controls, national IQ negatively impacts the proportion of the population who believes in God. In particular, “each point in national IQ decreases the proportion of the population who believes in God by more than a percentage point” (p. 548). As we shall explain in Section 4, however, the linear regression model is not the best tool to analyze data that assume values in (0,1) since it can yield predictions (fitted values) that go beyond the interval limits. The model also implies that the impact of a given covariate on the mean response is constant, i.e., it is the same regardless of the values of all covariates. Notice that the author concludes that each unit increase in national IQ is associated with a decrease of over 1% in

the proportion of religious people, the conclusion holding for all levels of national IQ and also for all values of all other covariates (including per capita GDP). Our empirical analysis is based on a model tailored for dealing with proportions and our estimated impacts are not constant. Indeed, we show that the impact of intelligence on religious disbelief is stronger in countries where national IQ lies between 100 and 110.

Nyborg (2009) examined whether IQ systematically relates to denomination and income within the g-nexus framework using representative data from the National Longitudinal Study of Youth. The g-nexus is a network of intercorrelated variables with general mental ability at the center; see Jensen (1998). It has both horizontal and vertical components. The horizontal component includes real world variables which co-vary and interact with general mental ability whereas the vertical component includes presumed causes of individual differences in g, with special focus on biological and neuropsychological variables. High IQ people are able to curb magical, supernatural thinking and tend to deal with the uncertainties of life on a more rational/critical/empirical basis whereas low IQ people tend to become trapped in religious/magical thinking.

There is thus evidence that religious disbelief is positively correlated with both intelligence and economic development. As a consequence, in order to determine whether there is a statistically significant positive relationship between intelligence and religious disbelief using a cross-country dataset it is important to account for the impact of economic development on atheism. In particular, the question we pose can be stated as follows: Is there a statistically significant relationship between intelligence and religious disbelief *after accounting for the impact of economic development on atheism*? If such a relationship does exist it is then important to measure it. This is our chief goal. In what follows, we shall use regression analysis to model the impact of intelligence on religious disbelief. In particular, we shall use the class beta regression models introduced by Ferrari and Cribari-Neto (2004) to model the prevalence of atheists in 124 countries. Our results suggest that the positive impact of intelligence on religious disbelief is statistically significant even when we account for the positive impact of economic growth on atheism. Similar results are found when we model the proportion of the population in 84 countries that do not consider religion important in their daily lives.

The paper unfolds as follows. Section 2 describes the data. In Section 3 we briefly present the class of beta regression models, which are useful for modeling data that assume values in the standard unit interval. Section 4 contains the empirical analyses. We model two different dependent variables, determine whether there is a positive relationship between intelligence and religious disbelief when the effect of economic development is accounted for and construct impact curves that describe how intelligence impacts religious disbelief. Bootstrap-based inference is also carried out. Section 5 offers some concluding remarks.

2. The data

Lynn et al. (2009) provide data on the percentages of atheists in 137 countries (which account for over 95% of world population) extracted from Zuckerman (2007). The data were collected from various published articles, mostly in 2004. They also present data on the average intelligence quotients for the

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