European Research Studies Journal
Volume XXIV, Issue 3, 2021

pp. 699-715

Influence of Religious Faith on Economic Growth and the Environment

Submitted 14/06/21, 1st revision 12/07/21, 2nd revision 28/07/21, accepted 25/08/21

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Abstract:

Purpose: *Religious faith, which is expressed both by beliefs concerning the so-called supernatural sphere and by participation in religious services, has a significant influence on all forms of human activity, including economic activity and attitudes towards the environment. It is essential to investigate this influence, as ecology is essential for sustainable economic development, i.e., a development that harms the natural environment. The article aims to develop a theoretical model of causal relationships between religious faith, economic growth, and environmental degradation.*
Design/Methodology/Approach: *According to the proposed model, an increase in belief in heaven and hell fosters to care for the environment, while the higher intensity of formal religious acts involving attendance at religious services, with the belief in heaven and hell remaining at the same level, reduces pro-environmental behaviors.*
Findings: *The results are based on the models that use the environmental Kuznets curve and the studies concerning the relation between religiosity and economic growth.*
Practical Implications: *The resulting model can describe the interactions between religion, economy, and the environment, with the possibility that these interactions may be modified by economic, religious, and political leaders.*
Originality/Value: *This paper includes a new theoretical model of causal relationships between religious faith, economic growth, and environmental degradation.*

Keywords: *Environmental Kuznets curve, religion, economic growth, environmental degradation, environment.*
JEL classification: *C13, N044, N30, Z12.*
Paper Type: *Research study.*
Acknowledgement: *The project is funded by the Minister of Science and Higher Education within the program under the name "Regional Initiative of Excellence" in 2019-2022, project number: 028/RID/2018/19, the amount of funding: 11 742 500 PLN.*

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1. Introduction

In recent decades, many studies have been undertaken that examines the impact of economic growth (measured mainly by per capita GDP) on ecosystems, on the one hand, and the relation between religiosity and economic prosperity, on the other hand. This interest has been connected with the rapid economic growth, cultural and social changes, and the increasing devastation of the natural environment.

The first research trend may be seen, among others, in numerous articles - both theoretical and empirical - devoted to the so-called environmental Kuznets curve hypothesis, which describes the relationship between per capita GDP and emission levels (or levels of toxic substances, for example, CO_2 or NO_x in the atmosphere). Grossman and Krueger (1991) first described the environmental Kuznets curve, which referred to S. Kuznets' idea of the relationship between economic growth and social inequalities that he formulated in the mid-1990s. Over the last thirty years, the Kuznets curve hypothesis has spurred many multidimensional studies (Masaaki and Kijima, 2010; Shahbaz, 2018; Gruszecki and Jóźwik, 2019). These are discussed in more detail in Section 2.

The other research trend examines the interactions between religion and the values it advocates, such as thriftiness or hard work, and the society's wealth (measured by per capita GDP, a country's urbanization, life expectancy, education level, etc.). This trend refers to Max Weber's thought, which can be found in his seminal book The Protestant Ethic and the Spirit of Capitalism (1904-5). The concept of secularization (focused on demand-side factors), which dates back to the 18th century, was replaced with the approach inspired by Gary Becker's ideas (1976) in which religious activity and its social manifestations are treated as a type of market with the supply, demand, balance, and optimization. Barro's article (1991) opened a new chapter in the research into the cultural determinants of economic growth. Important concepts supported by empirical studies were introduced in Barro and McCleary's ground-breaking publication Religion and Economic Growth (2003), where they proved the thesis that religion affected economic growth. Other works by these authors also fit in a similar context (Barro, 2005; 2016; Mc Cleary, 2007; McCleary and van der Kujip, 2010). Worthy of particular mention here is The Wealth of Religions. The Political Economy of Believing and Belonging (2019), a book that summarises the results of studies concerning the interactions between religion and economic growth.

The relations between religious faith and economic growth, and society's welfare have attracted much scholarly interest. One of the first theories concerning this issue was the theory of secularization, which was initially formulated by the 18th-century thinker John Wesley, and later discussed by Berger (1967), Martin (1978), and Chaves and Canna (1994), among others. The theory that a country's economic growth, as a result of which people can satisfy their material needs, inevitably reduces their interest in religious practices is not very much favoured nowadays. As already mentioned, contemporary research draws on the ideas of Max Weber developed in his seminal

book The Protestant Ethic and the Spirit of Capitalism (1904-1905). Weber pointed out that the Protestant ethic fostered virtues such as frugality, honesty, and hard work, contributing to economic growth. His ideas were then taken up by Tawney (1936) and in recent years by Boppart *et al.* (2013), and (2014), who stressed the influence of Protestantism on the growth of human capital.

On the other hand, Basten and Betz (2013), considered Protestantism's influence on work ethics once again. It should be added that the urge to read the Holy Gospel contributed significantly to the advancement of literacy. This issue was examined in an article by Becker and Woesman (2008). However, it has to be remembered that some religiously motivated concepts, such as the concept of a fair price or aversion to the so-called usury, did not foster the growth of the capitalist economy.

Other examples of the relations between religiosity and economic growth can be found in the now prevailing approach that treats religious beliefs and behaviors as elements of the religious market. As in any other market, there is a supply and demand concerning religious "offer." Also, beliefs and actions resulting from those beliefs involve some costs and profits. As its followers have repeatedly noted, this approach has been inspired by the analyses of the human activity described by Adam Smith (1791). Azzi and Ehrenberg (1975) drew attention to the economic value of time devoted to religious practices, noting that the amount of time spent praying and participating in religious services decreased when people were in the labor force and increased when they were in the labor force retired. Becker (1976) suggested that we should apply Marshall's concept of market equilibrium to religion and that religious choices made by an individual should be treated as behaviors that maximize the expected profits in this area. On the other hand, Stigler (1982) noted that religious activity was like market activity in that it was voluntary, rational, and repeated. Iannaccone (1992) emphasized demand in religious behaviors and the rationality in choosing a specific denomination. Market models of religion have also been applied to more specific issues. For example, Kuran (2004) compared how Christianity and Islam responded to the industrial revolution. Gruber and Hungerman (2008) examined the so-called "blue laws,"; i.e., laws in some US states that restricted trade on public holidays. Mironova (2017), on the other hand, looked at the economic and religious determinants involved in recruiting fighters to radical Islamic groups.

The concept of a religious market is often connected with various ways in which it is regulated. This issue was raised by Chaves and Cann (1992) when they considered the measures of regulating the religious market, and in particular, whether the authorities appointed religious leaders. The article by Davie (1994), on the other hand, examined the situation of the Anglican Church after the Second World War. The state religion was studied by Barro and McCleary (2005). Gellner (1995), Froese (2008), and Johnson (2017) explored the situation of religious denominations facing persecution by the Communist authorities. Worth mentioning are also publications by Botticini and Eckstein (2012), Grosfeld *et al* (2013), and Johnson and Koyama (2017). They wrote about the influence of Judaism on economic development by increasing social

literacy, inducing proactive attitudes, and emphasizing Judaism's importance for Jewish literacy and cultural development. Kuran's works (1995), and (2004) are devoted to Islam. He explains the causes of the economic stagnation in Islamic countries, the insufficient rule of law, the system of absolute central authority, and the inability to build complex networks of social connections. The problems of the development of the Islamic world are also dealt with by, among others, Israel (2006), Chaney (2013), and (2016), and Bergren (2016), whereas Hinduism and Buddhism are considered by Iyer (2018), among others. Hout and Fisher's article (2017) is concerned with a new phenomenon of the so-called "nones", i.e., religiously unaffiliated people and agnostics.

In the context of the scientific research outlined above, it should be noted that so far, there have been no studies that would present the relationship between religious faith and the state of the natural environment using theoretical and then empirically verifiable models. The article aims to fill this gap, especially as prior research described above suggests a causal relationship between religiosity and the environmental pollution level. The purpose of the article is to present a hypothesis, supported by appropriate theoretical models in Section 4, that there is a causal relationship between the three variables that are used to describe religiosity (namely: belief in heaven, belief in hell, and participation in religious services) and the level of environmental degradation. We argue that an increase in the first two variables improves the state of the environment, while an increasing attendance at religious services - with beliefs in heaven and hell staying at the same level - lowers the quality of the environment. Detailed empirical studies regarding various religions need to be carried out to confirm (or reject) our theoretical models. We plan to conduct such studies in the future.

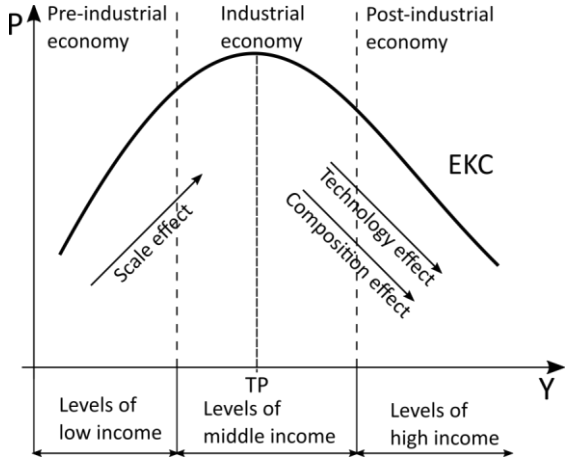
The article consists of five sections. The introductory section outlines the relations between religious faith, economic development, and the state of the natural environment. Section 2 presents the theory of the environmental Kuznets curve, which is one of the main tools for studying the relationship between economic growth and the devastation of the Earth's ecosystems. Section 3 discusses the influence of religious faith on the economic development of societies. The fourth section combines the issues discussed in sections 2 and 3 and presents the original concept of interactions between the intensity of religious beliefs and environmental degradation. The last section summarizes the article.

2. Literature Review

Since the article aims to present a causal relationship between religiosity and the state of the natural environment, it seems necessary to consider the relationship between religiosity and economic development, on the one hand, and the one between economic development and the state of the environment, on the other hand. The models concerning the former relationship (i.e., religiosity and economic development) will be presented in the next section. The critical theoretical tool for

capturing economic development and the environment is the environmental Kuznets curve. In its classic view, the environmental Kuznets curve (denoted as EKC) suggests that an increase in per capita GDP initially leads to an increase in environmental degradation until it reaches a specific value, referred to as the turning point (TP), after which it starts to decrease, thus taking an inverted U-shaped pattern.

Figure 1. *Environmental Kuznets curve*



Source: *Kaika and Zervas (2013).*

It is usually assumed that the course of the curve is determined by the following successive periods: a) the pre-industrial period with low economic development and low environmental degradation; b) the industrial period with rapid economic development and an increase in toxin emissions and environmental devastation; c) the post-industrial period when pollution levels start to decrease due to changing structure of the economy; i.e., a more significant share of the service sector, and new production technologies.

To expand on this description, the EKC's shape is influenced by three effects that occur with different strengths and in different proportions in each of these three periods. These are: 1) the scale effect (an increase in production causes an increase in pollution); 2) the composition effect (growing share of sectors such as services in the GDP - these sectors are not so harmful to the environment as, for example, heavy industry); 3) the technique effect as a result of which old production methods harmful to the Earth's ecosystems are replaced with the new ones that are more favorable to the environment. It should be noted that the coexistence of the above effects, their intensity, and impact on the overall pollution, are related to the national income levels marked in Figure 1 (Sarkodie and Strezov, 2018). The differences in terms of income may be related to the intensity of religious life in a given society, which needs to be confirmed by empirical research.

The last thirty years saw the publication of many articles which attempted to explain the shape of the environmental Kuznets curve with various theoretical models. The

religious factor, however, was very rarely taken into account in those models. The most famous studies concerned the role of income elasticity of demand for environmental quality. This issue was examined by McConnell (1997) and Andreoni and Levinson (2001), who put forward the theory that as the income increases and exceeds a certain point, the demand for environmental quality increases significantly.

Many authors point to the importance of international trade liberalization for the condition of the natural environment. The works that examine this variable and which we would like to mention here concern various parts of the world that differ in their socio-economic development and religion. These studies concern, for example, the Commonwealth of Independent States (Rasoulinezhad and Saboori, 2018), MERCOSUR countries (Koengkan *et al.*, 2018), a group of emerging economies (Zafar *et al.*, 2019; Saidi and Mbarek, 2017), OECD countries (Destek and Sinha, 2020), the BRICS group (Aydin and Turan, 2020), or the entire group of developing countries (Gavryshkiv, 2019). A detailed model that shows how trade openness affects the natural environment was presented by Gruszecki and Jóźwik (2020b). In the model, international trade contributes to the faster growth of a less developed country and consequently influences the degradation of its environment. As a result, the turning point is crossed faster.

In our opinion, the work of Copeland and Taylor (2004) deserves special attention here. Treating environmental quality as a normal good, they present a classification of theories that aim to explain the course of the EKC curve as an inverted U-shaped letter. According to them, this shape can be explained by:

1. the theory in which economic growth is initially based on the accumulation of capital understood traditionally, and then it becomes increasingly more dependent on the human capital;
2. the theory about the increasing income elasticity of marginal environmental damage;
3. the concept of change which assumes that there is a shift in environmental policy at some point of economic development;
4. The claim that increasing welfare leads to increasing benefits following reducing pollution.

The concept of the EKC that we use in this article is in line with each of the theories mentioned above.

Many authors also point to other factors that may affect the EKC shape, indirectly related to social religiosity. One of these factors is population growth, which is described, among others, by OLG models (overlapping generations models). These models represent the succession of generations, with many of the economic decisions made by one generation concerning the next generation. The OLG model is used by Wang, Fu, and Zhang (2015), they assume that the EKC depends on the consumption of parents, consumption of their children, the environmental quality (which is the

result of previous decisions), and the so-called altruism coefficient, which measures how vital future environmental quality is for members of a given generation. The state of the environment and the shape of the EKC may also be affected by social inequalities. This issue was first addressed by Boyce (1994) and Boyce and Torras (1998), and more recently, by Kasuga and Takaya (2017) and Liu *et al.* (2018). They argue that income inequalities or social inequalities, in general, may weaken the position of local communities in their conflicts with businesses which cause the degradation of the natural environment. It should be noted that social inequalities, low economic status, and a country's urbanization rate, and the values (in particular religious values) passed down from generation to generation affect active participation in religious services, which is pointed out by Ruiter and Tubergen (2009). In turn, participation in religious services affects the state of the natural environment, which will be shown in section 4.

Many empirical studies examine models that take into account not only the relation between per capita GDP (y) and degradation level (P) but also the relation between per capita GDP and other variables, including those describing religiosity, which is justified by the results obtained by Barro and McCleary (2003). Thus, the relevant empirically verified models for the hypothesis that the function has the shape of an inverted U-letter take the following form:

$$P_{it} = a_{it} + b_1 y_{it} + b_2 y_{it}^2 + f_{it} + \varepsilon_{it} \,, \tag{1}$$

where $b_1 > 0$, $b_2 < 0$, while i and t are indexes connected with the data panel; ε_{it} is a random disorder. The dependence of P_{it} on religious factors is included in the variable f_{it}.

Since equation (1) includes the dependence on f_{it}, it in fact verifies a relationship that could be described as the generalised environmental Kuznets curve. It should be noted that some empirical studies do confirm the inverted U-shaped EKC curve hypothesis (cf. Shahbaz and Sinha, 2018), revealing other dependencies, namely the EKC is found to be: 1) an increasing function, 2) a decreasing function, 3) a U-shaped function, 4) an N-shaped curve, or 5) an inverted N-shaped curve.

All these cases, including equation (1), can be described with a more general relationship:

$$P_{it} = a_i + b_1 y_{it} + b_2 y_{it}^2 + b_3 y_{it}^3 + f_{it} + \varepsilon_{it} \tag{2}$$

where the coefficients b_1, b_2, b_3 can be negative, positive, or zero.

Undoubtedly, the concept of the environmental Kuznets curve is highly complex. The course of the EKC may also be influenced by local and temporary disruptions caused by complicated economic, political, and biochemical factors. For example, the research by Gruszecki and Jóźwik (2020a) shows how the destabilization of the

economy caused by the COVID-19 pandemic affects environmental degradation. Increasingly more countries and international organizations decide to reduce hydrocarbons for energy production, which should help achieve climate neutrality within the next few decades. We can only hope that these decisions if implemented, will result in reducing pollution, which could serve as an argument in favor of the thesis that in long time intervals, the environmental Kuznets curves have the shape of an (approximately) inverted letter U. In this context, it seems essential and advisable to study how various aspects of religious life affect the state of the environment. The following two sections are devoted to this issue.

2.1 Relations between Social Religiosity and Economic Development in Empirical Research

When examining the relationship between social religiosity and economic development, it should be remembered that religion can be understood in various ways. In religious studies, religion is defined by various indicators related to beliefs, values, behavior patterns, symbols, rites, myths (meta-narratives), relationships, or social and individual functions. An analysis of the history of religious studies over the years shows the importance of religion for economic development and the environment. However, the research into this issue has been undertaken only recently by Bowker (1992), King (2015), Morreall and Sonn (2012).

Until a few decades ago, reflections on interactions between religion and economy were only theoretical. This has changed in the last two decades, mainly due to the seminal article by Barro and McCleary (2003). Based on empirical data obtained from the World Bank, Heston, Summers and Aten, the World Values Survey, and the International Social Survey Program, as well as the Gallup Millennium Survey, the authors researched the causal influence of attendance at religious worship and religious beliefs (beliefs in universal truths such as belief in heaven or hell) on economic growth. Barro and McCleary considered several variables that described economic growth, namely per capita GDP, the urbanization rate, life expectancy at age one, and years of school attainment, and then examined their relationship to variables relating to religious activity, i.e., church attendance, belief in heaven, and belief in hell. Suppose we were to apply economic analysis to religion. In that case, religion could be described with a specific type of "production function" for which the independent variable (i.e., value at the "input") would be attendance at worship services and the means it involves. In contrast, religious beliefs (in particular, beliefs in God, angels, heaven, hell, and after-life) would be a kind of "product." Thus, the level of attendance at religious services (as measured by monthly or weekly attendance) indicates how "effective" a given religious group is.

In addition to the variables mentioned above, there are three more that play an essential role. These describe the extent to which the religion "market" in a given country is regulated by the Constitution and government decisions, i.e., the existence (or not) of a state religion, the degree of religious pluralism, and to what extent

religious behavior is regulated. The first variable can take two values: zero or one, the second one is equal to the probability that two randomly selected individuals belong to different denominations, and the last variable is related to such regulations as, for example, appointing religious leaders by the government. These three variables are used to determine the causal effect of religion on economic development. The research shows that religious pluralism and the presence of a state religion are positively correlated with religiosity, while government regulation of the religion market (and especially the religious oppression used by the Communist government) is negatively associated with religiosity.

The main results of Barro and McCleary (2003) can be summarised as follows: 1) for given church attendance, an increase in belief in heaven contributes to increasing economic growth; 2) for given church attendance, an increase in belief in hell, also increases economic growth to a slightly greater degree than belief in heaven, 3) for given religious beliefs in heaven and hell, increases in church attendance contribute to reducing economic growth. How can these conclusions be interpreted? It seems that stronger beliefs in heaven and hell make individuals more engaged in work, more active in the labor force, and thriftier. On the other hand, higher church attendance - with belief in religious dogmas at the constant level - signifies more resources used by religious groups, which the economy cannot use.

It should be added that attendance at religious services is influenced by several social, cultural, and economic factors, as shown by Ruiter and Tubergen. They point out that more state regulations relating to religious life and more enormous social inequalities, higher education level, and a higher urbanization rate reduce religious attendance. On the other hand, religious activity is positively influenced by religious parents, low economic position, and growing up in times of war.

Barro and McCleary (2006) broaden the perspective of viewing the relationship between religion and economy by considering two-way interactions between them, i.e., when religion is viewed as a dependent variable and viewed as an independent variable. An interesting article concerning the interactions between religion and economy, mainly in Latin America, was written by Grier (1997). Blum and Dudley (2001) espoused Weber's concept of Protestant ethics on economic development after analyzing workers' wages in Catholic and Protestant countries in the years 1500-1750.

The importance of culture, including religious values, for economic growth was examined by Granato, Inglehart, and Leblang (1996), who pointed to the fact that specific cultural values that encouraged thrift and striving for success were beneficial for the economy. In contrast, those values that were conductive to human alienation played a negative role. The duality of cultural values was also noted by Guiso, Sapienza, and Zingales (2003). The influence of broadly understood culture, and thus also of religion, on the economy was discussed by Tabellini (2010), who suggested that such indicators should measure culture as trust, respect for others, and determination of individuals to achieve their goals. Moreover, Tabellini pointed to the

importance of institutions and literacy. This last thesis is essential in research on the role of religion in the development of prosperous societies because reading the Bible significantly increased the literacy rate.

2.2 Influence of Religiosity on the Natural Environment

A broad overview of the relations between different religions and the environment and ecology, in general, can be found in Religions of the World and Ecology, a collection of ten books edited by Tucker and Grim and published by Harvard University Press in 1997 and 2004. The authors consider main religious traditions, among others: Christianity, Buddhism, Hinduism, and Islam (Hessel, Ruether, Tucker and Grim, 2000; Tucker, Williams, and Grim, 1997; Chapple, Tucker, and Grim, 2000; Foltz, Denny, Baharuddin, Tucker, and Grim, 2003). The Oxford Handbook of Religion and Ecology (2006) also offers an overview of this subject. However, these two publications provide a qualitative analysis, mainly concerning the interactions between religious ideas and social justice, ethics, and sustainable development (viewed in general rather than in economic terms). The few publications that quantitatively deal with this issue include articles by Murphy, Tembo, Phiri, Yerokun, and Grummel (2016), and Nunn, Mulgrew, Scott-Parker, Hine, Marks, *et al.* (2016), which point out that religion plays a vital role in shaping people's attitudes towards nature.

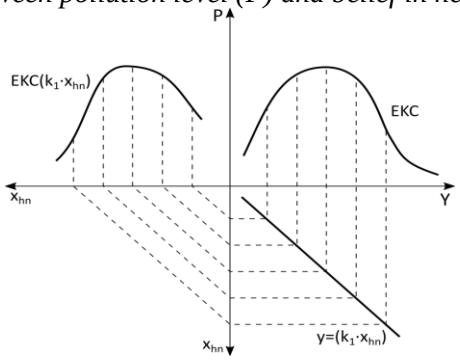
It should be noted that Pope Francis' activity is a representative example of how religion influences the environment and sustainable development. His encyclical letter Laudato si. On Care for our Common Home is an eloquent voice of the leader who believes that religion can remedy the devastated environment. In his latest encyclical, Fratelli tutti. On Fraternity and Social Friendship, he calls for building a fairer and more fraternal world in which the economy and the environment would play an important role. It is worth noting that Pope Francis' proposals combine three essential elements: description of the problem, evaluation of the problem from a scientific and religious perspective, and guidelines and actions.

In this section, we attempt to combine the conclusions from the considerations in the previous two sections and to propose theoretical models that would show the interactions between the variables that describe social religiosity (treated as independent variables) and variable P, which signifies the degree of environmental degradation and which will be treated as the dependent variable (it should be remembered that P may assume values related to various aspects of degradation, which means that we consider not just one, but several dependencies).

We assume that the relationships between y= per capita GDP and variables x_hn= belief in heaven, x_hl= belief in hell, and x_a= church attendance (monthly) are linear with positive or negative slopes, as suggested by the results obtained by Barro and McCleary (2003). Hence, given that P=EKC(y), we obtain the following diagrams (Figure 2, Figure 3, Figure 4). They show the relation between P and

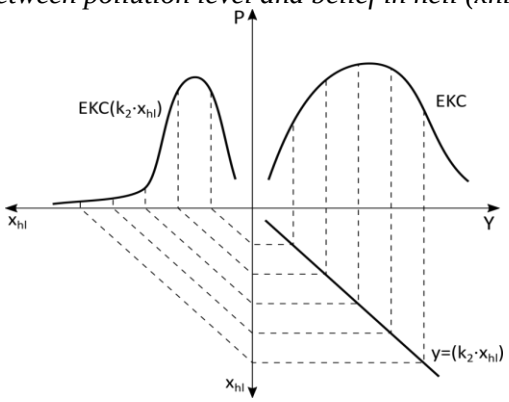
x_{hn}, x_{hl}, x_arespectively. This relation is obtained as a superposition of the relation between P and y and the relations between y and x_{hn}, x_{hl}, x_a

Figure 2. *Relation between pollution level (P) and belief in heaven (xhn)*



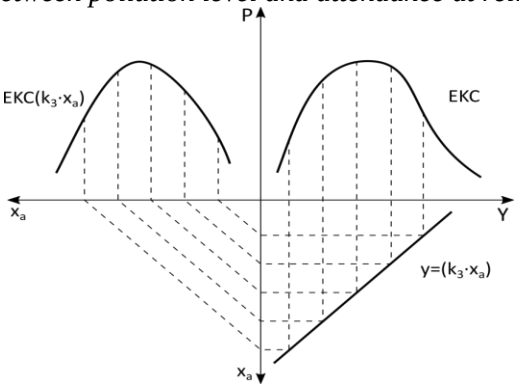
Source: *Own creation.*

Figure 3. *Relation between pollution level and belief in hell (xhl)*



Source: *Own creation.*

Figure 4. *Relation between pollution level and attendance at religious services (xa)*



Source: *Own creation.*

The graphs presented in Figures 2, 3 and 4 correspond respectively to the following equations in analytical form:

$$P = EKC(k_1 \cdot x_{hn}), \quad P = EKC(k_2 \cdot x_{hl}), \quad P = EKC(k_3 \cdot x_a), \tag{3}$$

where $k_1, k_2 > 0$, $k_3 < 0$ are given and country-specific coefficients.

Obviously, the first two of the above relationships are increasing functions, while the third one is a decreasing function. As can be seen, the equations in (3) are represented by inverted U-shaped curves, i.e., curves which are similar in their shapes to the standard environmental Kuznets curve. It should be noted that the curve that shows the relation between P and x_{hn} is more similar to the EKC than the curve showing the relation between P and x_{hl}. In the latter case, the pollution level decreases faster with an increase in the independent variable which follows from $k_2 < k_3$, as demonstrated by Barro and McCleary. Thus, belief in hell is more effective in reducing environmental degradation than belief in heaven, although both of them are positively related to the state of the environment. The last result, i.e., the relation between P and $x_a$is more ambivalent. In this case, with increasing x_a, P tends to the initial state. In Figure 2, this state is described by low values of P and this seems to be a good depiction of the described phenomenon. The cases where P has a high initial value seem quite abstract.

Let us note that as the research by Ruiter and Turbergen suggests, it is possible to transform the model with an independent variable x_a to obtain models with independent variables that would show: the level of social inequalities x_{GINI}, urbanization rate x_{URB}, education level x_{EDU}, or religious education at home $x_{PARENTS}$. In this way, we can obtain the following relationships which are analogous to (3):

$$P = EKC(k_4 \cdot x_{GINI}), \quad P = EKC(k_5 \cdot x_{URB}), \quad P = EKC(k_6 \cdot x_{EDU}),$$
$$P = EKC(k_7 \cdot x_{PARENTS}), \tag{4}$$

where $k_4, k_7 < 0$, while $k_5, k_6 > 0$.

The signs of coefficients $k_i, i = 4,5,6,7$ indicate whether the relations in 4) are increasing or decreasing functions.

3. Conclusions

The article deals with the relations between religiosity, the economy, and the natural environment. Our goal was to construct a model that would describe the causal interactions between the intensity of beliefs in heaven and hell and attendance at church services and the level of environmental degradation. The model described above was developed based on extensive literature studies on the relation between religious faith and economic development and the relation between the economy and

the environment. The model uses the environmental Kuznets curve, which is one of the essential tools for presenting interactions between economic growth and environmental degradation.

The most important result that emerges from this article is included in equations (3) and (4), which follow from the research on the environmental Kuznets curve and the results obtained by Barro and McCleary, and Ruiter and Turbergen. It should be noted that each of the dependencies in (3) holds under certain assumptions. Namely, it is assumed that - when considering the variables describing the intensity of belief in heaven (x_{hn}) and in hell (x_{hl}) - the value that determines participation in religious services (x_a) is constant; the variables describing the levels of inequality, urbanization, education and the influence of parents on the religious education of their children are also constant (x_{GINI}, x_{URB}, x_{EDU}, $x_{PARENTS}$); likewise, it is assumed that when testing x_a, the variables x_hn and x_hl are given. This makes it challenging to attempt to "sum up" the results of individual equations.

The theoretical models presented here lead to empirical models, which require further econometric and statistical research. Therefore, we recommend that research should be undertaken to test models analogous to the ones expressed by equations (1) and (2), assuming that x_{hn}, x_{hl}, and x_a (possibly (x_{GINI}, x_{URB}, x_{EDU}, $x_{PARENTS}$) are the independent variables. These studies should confirm (or reject) the theses that belief in heaven and belief in hell have a positive influence on the state of the ecosystems and that more excellent attendance at religious services (with the level of religious beliefs remaining the same) has a negative influence on these ecosystems. It is recommended that the models presented above should be tested in the context of different religious traditions and civilizations.

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