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**Stephan Bartke • Reimund Schwarze**

**Risk-Averse by Nation or by Religion? Some Insights  
on the Determinants of Individual Risk Attitudes**

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## **Risk-Averse by Nation or by Religion?**

### **Some Insights on the Determinants of Individual Risk Attitudes**

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**Abstract:**

Research findings have proven that the willingness to take risks is distributed heterogeneously among individuals. In the general public, there is a widely held notion that individuals of certain nationalities tend to hold certain typical risk preferences. Furthermore, religious beliefs are thought to explain differences in risk-preparedness on the individual level. We analyze these two possible determinants of individual risk attitudes: nationality and religion. First addressing the study of risk attitudes in a literature review, we then test our hypotheses empirically using the large, representative German Socio-Economic Panel (SOEP). To understand the importance of nationality, we focus on emigrants to Germany. The key findings are: (1) Nationality is not a valid determinant of risk attitudes. It can be broken down into several constituent factors including religion. (2) Religiousness is a significant determinant of risk attitudes. Religious persons are less risk-tolerant than atheists. Moreover, religious affiliation matters: Muslims are less risk-tolerant than Christians.

**JEL:**

D10, D80, D81, J15, Z12

**Keywords:**

Risk Aversion, Nationality, Immigrants, Religion, Germany

## 1. Introduction

Risky choices are a part of life: driving, smoking, making investments, and even meeting for an after-work beer all involve some risks. Observation of everyday life shows that people act and understand risk differently in equally risky situations. In other words: individuals are heterogeneous with regard to their willingness to take risks. In this article, we follow on the studies by Barsky et al. (1995), Helek and Eisenhauer (2001), and Dohmen et al. (2005), revealing some of the determinants of the willingness to take risks (risk propensity).

It is a widely held popular view that people of different nationalities hold different risk attitudes. Germans, for example, are considered to be generally risk-averse (Cohen 1999), and in fact, empirical social research has found a low risk propensity among Germans (Werwatz et al. 2005, 116). Our paper calls this understanding of nationality into question as a determinant of risk-taking behaviour. Our finding is that individual risk propensity is an amalgam of several factors, including body height, sex, education, and religion. These *factors of risk attitudes* can be separated in a multivariate socio-economic approach. Religious faith in particular shows a strong influence on risk propensity. It frames our perceptions of risk, and restricts our set of behavioural responses towards risk—much more than our citizenship does.

This article is structured as follows: first, we focus on religion in Section 2 and on nationality in Section 3 as possible determinants of individual risk propensity in order to derive a set of hypotheses for empirical analysis. In Section 4, we test these hypotheses empirically with data from the German Socio-Economic Panel (SOEP). Section 5 concludes.

## **2. Religion and Risk Attitudes**

Iannaccone (1998) defines religion as “any shared set of beliefs, activities, and institutions premised upon faith in supernatural forces” (ibid, 1466). The analysis of religion’s role in economics started with Adam Smith (1776), who was the first to notice that religious communities are subject to market laws and that religious individuals pursue their self-interests to serve the greater wealth of the world as a whole. Max Weber (1904/1905) took up this line of reasoning in his famous “Protestant Ethic and the Spirit of Capitalism”, in which he claimed that Protestant values fuelled the development of capitalism (more than Catholic belief) due to the conviction that all the areas of life are sacred when dedicated to God. Weber’s theory was influential among sociologists and economic historians of the early twentieth century. In the last decade, the role of religion in economic and social behaviour have become a renewed focus of neo-classical economic research developing models of religious demand and supply, and the impacts of being religious on certain behaviour, e.g. fertility (cf. Lehrer 2008 for a topical literature review). While these models do not specifically consider risk attitudes as determinants of religiosity or, conversely, religiousness as a parameter of risk preparedness, they still allow us to develop some initial hypotheses on this interrelationship.

Azzi and Ehrenberg’s (1975) micro-economic model of religious demand states that believers invest while alive to benefit from religious goods after death. Hence, we may expect religiosity to be an expression of risk propensity—even when, as Iannaccone (1998) points out, “The promised rewards may never materialize, the beliefs may prove false, the sacrifices may be for naught“ (ibid. 1491). On the other hand, the individual affiliation with a (religious) community reduces the risks of fraud and cheating on the part of other members and may, thus, actually be an expression of risk aversion.

Miller (2000) suggests religious belief to be a rationally chosen risk-averse behaviour driven by a society's belief that a specific religious faith and accompanying behaviour are required to ensure a rewarding afterlife. Atheists are said to be risk-prone, since they depart from this behaviour in favour of profits in this world (ibid). In his international comparison, Miller (2000) finds a relation between active participation in religious faith and risk aversion in monotheistic societies, but he cannot identify such a relation among Buddhists or Hinduists. According to Halek and Eisenhauer (2001, 13), who test for effects of religious affiliations on risk tolerance in a sample of elderlies (US Health and Retirement Survey HRS), religious belief has only minor effects on risk aversion.

Given these contradictory expectations (based on micro-economic models), we define an alternative hypothesis. We posit that God and religious community function as a *superior monitoring institution*. We assume that in contrast to atheists, people with a strong religious faith act and live in accordance with rules that generally limit their risky behaviour. For example, the Qur'an limits the riskiness of financial and health-related behaviour by prohibiting gambling and drinking (Qur'an 5:90, 5:91). Where religious thinking is primarily geared towards the afterlife, religious people tend to ensure that their earthly lives are pleasing to God. This means living in conformity with religious scriptures and directives as well as with broader social norms associated with the faith.<sup>1</sup> Atheists, however, are condemned—broadly formulated—to optimize their limited lives in this world. Although they live in accordance with moral values and social norms, they do not feel bound by additional religious rules limiting risky behaviour. Atheists tend to dare more to exhaust the possibilities of their restricted lifetime. Therefore, our hypothesis is: *Individuals who are practicing members of certain religions differ from*

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<sup>1</sup> Looking at fertility behaviour, McQuillan (2004) finds that religion is important if religious institutions define behavioural rules and have the means to achieve adherence, or if people feel firmly bound to their religious community.

*those without religious affiliations in their willingness to take risks. Atheists are less risk-averse than religious persons.*

Assuming that religion is a determinant of risk-taking behaviour, we may also want to compare the differences among specific religions in individual risk attitudes. According to our concept of *religion as a monitoring institution*, this will depend on the rules entailed by the different beliefs on risk-taking and their relative strictness in ‘enforcing’ these rules, either directly or through community social control. Just one example will illustrate our line of thought: if the Qur’an fully prohibited *ex ante* interest on financial investments and the Bible explicitly prohibited usury, while in yet other religions, say Judaism, there were no restriction on any of these activities, then we could expect a heterogeneity of financial risk attitudes driven by religious affiliation. Muslims would invest in a more risk-averse manner than Catholics. Atheists would invest in an even more risk-prone manner, since they would face no regulations at all of this type. Applying this same idea to other areas of behaviour does not seem absurd, and provides the hypothesis: *Differences exist among different religious communities with respect to the risk taking willingness of their adherents—risk aversion is highest among Muslims, lower among Christians, and lowest among atheists.*

### **3. Nationality and Risk Attitudes**

To discuss nationality, we need to clarify what constitutes it, and how it biases individual behaviours and perceptions. One essential aspect could be that nations form *communities of values*. Weber and Hsee (1999, 612) define cultural differences in attitudes towards risk as national differences that have resulted from national social structures formed by differences in geography, history, economics, politics, and ways of coping with them. The authors use these assumed cultural differences to explain the disparity in individual risk propensity between US American and Chinese students, with



the latter being found to be less risk-averse. As the underlying cause for this finding, the authors cite the *cushion hypothesis*, whereby the citizens of socialistic, collectivist nations receive social support more easily if they need help and therefore can afford to take larger risks since they are ‘collectively insured’ (ibid, 614f). Hence, differences in risk-taking result from different social organisations of risk sharing. This finding, however, only applies to financial risks and not to other areas such as health (say smoking), since the community cannot heal its members of disease by collective arrangement. Moreover, ‘cushioning’ itself is not necessarily a national feature but can be the result of social networking and individual investments in social capital.<sup>2</sup>

Halek and Eisenhauer (2001, 11), in their analyses of US elderlies, find that immigrants to the US “who had left their homeland in search of better opportunities” (ibid. 20) are more risk-prone than US citizens. However, the authors do not consider differences among the migrants’ countries of origin. Croson and Gneezy (2004) refer to several studies based on student experiments that show nationality to have no influence on the variation in risk-taking willingness.

There may be risk factors that are confined to national borders, but there is no clear-cut evidence of nationality being a factor in risk attitudes. With the countless influences that define each country—political, cultural, economic, social, and religious—nationality appears to be an amalgam of all of these constituents. Thus, borders are not convincing as factors to explain individual behaviour. There is no reason why an average Dane should differ from the average Dutch more than the average Bostoner from the average Houstoner, if we find similar differences in social and economic structure between states and between nations. Considering a rich set of socio-economic variables could hence show nationality to be insignificant as determinant of individual behaviour in general,

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<sup>2</sup> In fact, when Weber and Hsee controlled for individual social networks (i.e., the number of people from whom one can request financial help when in need), nationality as a variable became insignificant.

and of risk-taking willingness in particular. Our hypothesis is: *There are no significant differences in individual risk attitudes due to nationality when controlling for a set of socio-economic variables.*

#### **4. Database and Empirical Analysis**

Empirical international comparison of risk attitudes presents a methodological challenge. Although various approaches exist, none appears to be fully satisfying.

One way is to compare observed risk propensity in diverse countries. For example, observing that people in country A invest less in risky financial assets, say shares, than those in country B, indicates different risk attitudes. However, observed asset choices are affected by transaction costs and features of national financial systems. Hence, a different level of risk propensity of people in a particular country is not necessarily reflected in national differences. We would need a rich cross-national dataset with financial system features and adequate risk measures to make any such judgement. Unfortunately, such an internationally complete and representative dataset on risk taking and financial system characteristics is still missing, despite efforts done at the Luxembourg Wealth Study (Bartke and Sierminka, 2007).

Another method is to employ questionnaires or field experiments on choices between lotteries in different countries, as was done by Binswanger and Sillers (1983). However, lotteries have the disadvantage of only measuring the willingness to assume financial risks. They do not tell us much about, for example, the willingness to assume health and safety risks. Moreover, these lotteries are often hypothetical and not backed by observed behaviour, while field experiments suffer from the multitude of factors that are difficult to control for (as in the case of international comparisons of asset choices). The key methodological problem is that of defining a comprehensive measure of risk attitude and observing it in a controlled environment.

For this study, we developed a new approach to compare the risk attitudes of peoples in a controlled environment. The database for empirical analysis is the German Socio-Economic Panel (SOEP).<sup>3</sup> We study immigrants within one country (Germany), and compare their attitudes to those of Germans. We use the 2004 questionnaire, in which respondents were asked to self-assess their risk propensity on an 11-point risk scale between ‘0 Risk-averse’ and ‘10 Fully prepared to take risks’—without making reference to any specific risk dimension.<sup>4</sup> In addition to this dependent variable of risk propensity, we include a number of independent variables in our socio-economic model (cf. Table 1).

We assume that immigrants and natives in one country act within a single institutional context. This is admittedly a strong assumption, since we know that immigrants often face discrimination in the financial, social, and legal system of any individual country including Germany. Nevertheless, this bias due to unobserved discrimination seems smaller than the bias caused by comparing risk attitudes against the background of diverse social settings in different countries. The study of immigrants as ‘representatives’ of their countries of origin can be justified based on the findings of Dohmen et al. (2006), who shows that children keep, to a large extent, the original risk attitudes of their parents. Unfortunately, there is a caveat to this approach: migrants, irrespective of their country of origin, have been shown to be more risk-prone than the non-migrant population (Jaeger et al. 2007). Yet, assuming that migrants to all countries share similar qualities that set them equally apart from their native countries’ non-migrant population, we can at least take the differences in risk-taking willingness among immigrant communities as proxies for the respective native populations.

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<sup>3</sup> SOEP is a representative, longitudinal panel of individuals and households living in Germany surveying a variety of socio-economic variables (see Wagner et al. 2007 for details).

<sup>4</sup> Dohmen et al. (2005, 14ff) tested the behavioural relevance of this risk measure successfully in conducting a complementary field experiment and checking the measure’s predictive power of actual behaviour, e.g. in driving, health, or financial investments.

The sample consists of 22,019 observations. Since migrant subgroups are to be examined, their number in the dataset is of crucial importance. To derive meaningful statements, we only look at nations with at least 50 respondents in the sample<sup>5</sup>. Only persons with a single citizenship are included, except for Anglo-Americans. The resulting dataset of immigrants consists of 1,642 non-Germans living in Germany. Turks are the majority group (TR n=528). Further groups of sufficient size are Italians (I n=265), Greeks (GR n=141), and Spaniards (SP n=60). Individuals from former Yugoslavia are merged into one group (EX-Yug n=298) as well as people from Australia, Canada, Great Britain, New Zealand, and the USA (US/UK n=66) on the basis of assumed similarity and to arrive at the minimum size of subgroups.

To reveal the relation between risk attitudes and a set of explanatory variables, we estimate different regression models (M1 to M12; see Table 1 for an overview) using the OLS method. Our basic model M1 includes age, sex, and height as explanatory variables. M2 introduces national subgroups; M3 to M9 sequentially add further variables, for instance marital status, religion, and professional status. M10 and M11 sum up with and without income (which we assume to be endogenous). In the final regression (M12), we add 21 further variables with possible significance for risk-taking willingness such as disability, current health status, satisfaction with household income, and smoking to control for the stability of our results.

Our basic model (M1) confirms the finding cited in previous literature that age, sex, and height are important and significant factors in risk attitudes. Model 2 introduces nationalities as dichotomised variables with German citizenship (D) as the point of reference. Except Spanish and Anglo-American citizens, all other nationalities are significantly different from Germans and display higher risk aversion. This holds

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<sup>5</sup> We also checked for a reasonable distribution of basic socio-economic variables (age, sex, marital status) across our subgroups and found that immigrants are relatively similar in these variables to Germans.

especially true for Turks, followed by Greeks, ex-Yugoslavs and Italians. Anglo-Americans differ from Germans in risk attitudes only at the 10% level of significance: they generally exhibit greater risk propensity than Germans.

In models M3 to M9, various socio-economic variables are added separately to examine changes in sign and significance of the national parameters. Added variables are Abitur (M3)<sup>6</sup>, marital status (M4), social environment (M6), professional status (M7), self-management ability (M8)<sup>7</sup>, income (M9), and religious affiliation or atheism (M5). Except for M5, accounting for added socio-economic variables does not change the values of the national parameters substantially. Including the parameters for religious belief or atheism, in contrast, is highly significant (except in the case of Catholicism<sup>8</sup>) and reduces the explanatory power of national parameters considerably. As hypothesized, Islamic belief is linked with higher risk aversion, whereas non-religious people are relatively risk-prone. Considering belief decreases the influence of national parameters by almost half for ex-Yugoslavs and Turks along the lines of the expected correlations, i.e., with clear connections between Turkey and Islam, Italy and Catholicism. However, we also find that Islam, Catholicism, and other religions exhibit the same effect without being connected to a national subgroup. Including self-management (M8) also reduces the weight of risk attitudes notably, from one-eighth (for Turks) to one-third (for ex-Yugoslavs), but less than religious variables.

In M10 to M12, all aforementioned parameters are combined to study the effect of including income and additional variables, such as satisfaction with health and household income, to test the robustness and stability of the parameters of interest. Generally, the inclusion of income and other variables does not affect the significance of

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<sup>6</sup> Abitur, the German general qualification for university admission, proxies education.

<sup>7</sup> Self-management ability is measured by affirming the statement: What happens in life depends on me.

<sup>8</sup> Catholicism is significant only on a 10% level. The reason may be that in Germany, Catholics differ less from the Protestant reference group than elsewhere, e.g., in Northern Ireland, where differences are more pronounced.

the previously established parameters, except for the nationality variable. Nationality as a factor in risk attitudes is lost during this exercise. This confirms our hypothesis that nationality can be disentangled.<sup>9</sup>

## **5. Concluding remarks**

This paper analyzes the role of nationality and religion as possible determinants of self-assessed individual risk-taking willingness in the German Socio-Economic Panel. In this large, representative sample, we find that individuals with a religious affiliation are significantly less risk-tolerant than atheists. We also find that willingness to take risks decreases with the strictness and comprehensiveness of behavioural rules, i.e., higher risk aversion among Muslims than Protestants. Nationality as a factor of risk-taking willingness disintegrates into a rich set of socio-economic and individual characteristics—especially religious beliefs.

The results are of relevance for the future specification of socio-economic models of risk attitudes. They also indicate that national campaigns to increase risk propensity—often promoted in public debates—should carefully consider religious attitudes as potentially conflicting factors.

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<sup>9</sup> This and the aforementioned findings are robust using alternative regression methods that control for a non-cardinality or non-linearity of the risk measure (results are available from the authors upon request).

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Table 1: OLS-Regressions explaining general risk-taking willingness

	(M1)	(M2)	(M3)	(M4)	(M5)	(M6)	(M7)	(M8)	(M9)	(M10)	(M11)	(M12)
const.	5.176 ***	5.641 ***	5.677 ***	5.564 ***	5.532 ***	6.022 ***	5.941 ***	4.105 ***	5.388 ***	4.676 ***	4.771 ***	5.652 ***
age	-0.253 ***	-0.261 ***	-0.258 ***	-0.245 ***	-0.259 ***	-0.253 ***	-0.228 ***	-0.241 ***	-0.250 ***	-0.168 ***	-0.177 ***	-0.133 ***
sex	-0.162 ***	-0.168 ***	-0.169 ***	-0.165 ***	-0.164 ***	-0.173 ***	-0.148 ***	-0.165 ***	-0.148 ***	-0.142 ***	-0.141 ***	-0.119 ***
height	0.073 ***	0.062 ***	0.057 ***	0.062 ***	0.061 ***	0.059 ***	0.058 ***	0.055 ***	0.052 ***	0.048 ***	0.044 ***	0.049 ***
D		ref	ref	ref	ref	ref	ref	ref	ref	ref	ref	ref
TR		-0.084 ***	-0.079 ***	-0.083 ***	-0.049 ***	-0.078 ***	-0.080 ***	-0.071 ***	-0.078 ***	-0.023 *	-0.022 *	-0.019
Ex-Yug		-0.034 ***	-0.030 ***	-0.034 ***	-0.019 ***	-0.034 ***	-0.033 ***	-0.023 ***	-0.031 ***	-0.003	-0.002	-0.001
GR		-0.051 ***	-0.049 ***	-0.051 ***	-0.039 ***	-0.052 ***	-0.051 ***	-0.044 ***	-0.050 ***	-0.028 ***	-0.028 ***	-0.027 ***
I		-0.025 ***	-0.021 ***	-0.024 ***	-0.019 ***	-0.024 ***	-0.026 ***	-0.021 ***	-0.023 ***	-0.014 *	-0.012 *	-0.005
SP		-0.001	-0.009	-0.010	-0.008	-0.012	-0.011	-0.011	-0.001	-0.010	-0.010	-0.010
US/UK		0.011 *	0.011 *	0.011 *	0.012 *	0.011 *	0.011 *	0.009	0.010	0.001	0.008	0.008
Abitur			0.073 ***							0.054 ***	0.038 ***	0.022 ***
single				ref						ref	ref	ref
married				-0.013						-0.027 ***	-0.033 ***	-0.021 ***
divorced				0.024 ***						0.012	0.011	0.004
widowed				-0.037 ***						-0.032 ***	-0.033 ***	-0.022 ***
Protestant					ref					ref	ref	ref
Catholic					-0.012 *					-0.011	-0.013 *	-0.002
other Chr. religion					-0.020 ***					-0.027 ***	-0.026 ***	-0.014 *
atheist					0.072 ***					0.068 ***	0.068 ***	0.036 ***
Muslim					-0.042 ***					-0.047 ***	-0.045 ***	-0.036 ***
persons in household						-0.015				0.007	-0.017	-0.015
children in household						-0.014				-0.012	-0.001	0.009
brothers						-0.001				0.008	0.010	0.014 **
sisters						-0.008				0.002	0.003	0.007
visits with friends						0.061 ***				0.059 ***	0.055 ***	0.028 ***
visits with relatives						-0.034 ***				-0.024 ***	-0.020 ***	-0.021 ***

Table 1 is continued on next page.

Continuation of Table 1 from previous page:

	(M1)	(M2)	(M3)	(M4)	(M5)	(M6)	(M7)	(M8)	(M9)	(M10)	(M11)	(M12)
full-time job							ref			ref	ref	ref
un-employed							-0.017 ***			-0.031 ***	-0.032 ***	-0.023 ***
part-time job							-0.031 ***			-0.027 ***	-0.017 **	-0.021 ***
apprentice							-0.002			-0.000	0.006	0.009
marginal part-timer							-0.007			-0.010	0.001	0.001
conscript							0.001			-0.001	0.002	0.001
social service							0.000			0.002	0.005	0.007
shop for the handicapped							-0.049 ***			-0.035 ***	-0.033 ***	-0.026 ***
not working							-0.102 ***			-0.086 ***	-0.053 ***	-0.042 ***
life satisfaction								0.075 ***		0.076 ***	0.067 ***	0.071 ***
consent: My life depends on me								0.098 ***		0.086 ***	0.091 ***	0.080 ***
household net-income									0.063 ***		0.065 ***	0.055 ***
last months personal net wage									0.010		-0.000	0.014
net earned income									0.067		0.034	0.016
21 additional controls												X
Adjusted R square	0.113	0.124	0.129	0.126	0.131	0.128	0.133	0.135	0.136	0.156	0.161	0.185
s.e.	2.270	2.256	2.249	2.253	2.247	2.246	2.244	2.225	2.240	2.196	2.190	2.157
n	22019	22019	22019	22019	22019	20890	22019	20120	22012	19214	19211	19211

Own calculations. OLS regression estimates. The dependent variable is the 11-point scale of the personal general willingness to take risks (up119). Detailed information on the variables' definition as well as the 21 additional control variables is available on request. Standardized regression parameters are significant at 1-, 5-, 10-percent level indicated by \*\*\*, \*\*, \* respectively.