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## Risk culture and the factors of its formation

*Idea of risk culture is increasingly used among professionals, especially after the financial crisis in 2008, to describe the process of risk perception and the ability to manage it. With this background, formation of the concept of risk culture is the result of the accumulation of experience about the negative effects of risks. There are numerous studies that show differences in the perception of risk in different environments (young people, intelligence, nation etc.). Using this basis, we can assume that there are differences in the risk cultures either. Our aim is to identify factors that have a sustainable impact on creating a risk culture at the level of individuals or particular groups. This interdisciplinary research is difficult because there is no methodological framework that would comprehensively cover effective methods of empirical research. Therefore, in our study we make theoretical generalizations of the existing mind-set, in order to identify factors of risk culture. In the next step we will use extracted factors to provide more empirical study.*

**Keywords:** risk culture, risk management, decision making, uncertainty, danger.

### Introduction

In the late twentieth century scientific and practical works began to introduce the concept of “risk culture”. Most studies look at risk culture together with corporate risk management or as the decision-making by heads of companies and authorities. Less attention is given to the question of risk culture on the level of an individual. The ability to review the relationship between risk and individuals is limited by the research of the process of decision-making under uncertainty (or risk however the term has a different meaning) and the analysis of factors that influence such decisions. Considerable attention of scholars and practitioners is given to the question of individual's risk perception, risk attitude, risk behavior, risk decision making matter for eliciting of risk culture factors. The relevance of the research of risk culture on the level of noncommercial subjects (for instance, personal or national) is increased by the fact that in practice, it influences the decision regarding consensual distribution of losses from realization of risk (for instance, health, pension,

migration expenses]. The process of formation of risk culture is important for the development of the insurance industry and insurance risks solidarity funding in the State. As noted, everyday life risks become understood as issues of personal failure and responsibility rather than social problems to be addressed through collective action<sup>1</sup>. This leads to a question of how factors underlie the culture of risk in society: on the personal and national level. In our opinion, this question is more important than the framework of corporate risk culture, which has got a higher attention in science.

Research objects are risk and factors that influence the development of risk culture.

The main purpose of the article is to analyze the process of formation of risk culture in society and attempt to explain the reasons for the difference between risk attitudes by extracting set of factors that determine the phenomena

Research tasks:

- to analyze scientific views on the relationship of culture and risk in society;
- to show the phases of formation of protection risk behavior (on the example of fires in Portugal) as the foundations of risk culture;
- to analyze the theoretical basis of subjective perception of uncertainty, danger and risk;
- to describe subjective factors influencing the risk culture at the individual and national level.

## 1. Literature review

Distinguishing risk culture as an independent concept is the result of the accumulated experience and knowledge in the field of risk management. In risk management, risk culture is defined as values, beliefs, knowledge and understanding about risk, shared by a group of people with a common intended purpose, in particular the leadership and employees of an organization.<sup>2</sup> The concept of "risk management" is used mostly at the level of enterprises and companies (e.g., where the notion of "corporate risk management" is widely spread). In business, "culture of risk management" is often used to describe enhanced attention to risk in the institutions,<sup>3</sup> also "behavioral risk management" is used to emphasize aspect of biases.<sup>4</sup> The emphasizing of influence of innovative risks on society Bonß calls the "new culture of uncertainty".<sup>5</sup> Risk culture, in our opinion, is a broader concept and can be considered at the level of an individual, a group of people united by certain common attitude to risk (e.g., enterprise), a generation [X, Y, Z], and a nation. We have to admit that the risk culture on the national level also depends on the ethnicity of the country. If a country historically consists of different ethnic groups, each one of these group could have its own traditions of risk perception. There are many studies that confirm the differences in the perception of the same risk: Kanemann

1. P. Taylor-Gooby, *Does risk society erode welfare state solidarity?*, "The Policy Press", vol 39, no 2, p. 147.
2. J. A. Firm, *Risk culture Under the Microscope Guidance for Boards*. Institute of risk management, 2012 // [https://www.theirm.org/media/885907/Risk\\_Culture\\_A5\\_WEB15\\_Oct\\_2012.pdf](https://www.theirm.org/media/885907/Risk_Culture_A5_WEB15_Oct_2012.pdf), p. 7 (referred on 07/10/2016)
3. T. Bozaykut-Bük, *Culture and Leadership in Risk Management* [in:] *Risk Management, Strategic Thinking and Leadership in the Financial Services Industry: A Proactive Approach to Strategic Thinking*, Dincer, H., Hacioglu, Ü. (eds.), Springer 2017; Power M., Ashby S., Palermo T., *Risk Culture in Financial Organizations: A research report*. LSE, CIMA, CARR, CII, ESRC, and etc., 2013 // <https://www.lse.ac.uk/accounting/CARR/pdf/final-risk-culture-report.pdf> (referred on 07/10/2016)
4. S. Goto, *The bonds of classical Risk Management and the Importance of a behavioral approach*, "Risk Management and Insurance Review", 2007 vol. 10, no 2.
5. W. Bonß, *Risk. Dealing with Uncertainty in Modern Times*, "Social Change Review", 2013 vol 11 (1), p. 5.

and Tversky,<sup>6</sup> Hsee and Weber,<sup>7</sup> Sowinski,<sup>8</sup> Cullis,<sup>9</sup> Kaptan et al<sup>10</sup>. The question of generational risk culture is not fully researched in literature, by rather in accordance to age, and has to be the focus of further studies. Olofsson and Öhman<sup>11</sup> described the difference in risk perception between young and old people. The older are more timid to dread risks, and are less likely to enter the risky behavior. The young feel known risks as being the greater. The risk perception is changing over age.

Hsee and Weber find that Chinese students are significantly more risk seeking than American students, when choosing between risky or safe lottery options.<sup>12</sup> This is explained by the fact that, in China, collectivism is widespread and in the USA, it's individualism. Sowinski et al find that, while most American students prefer to choose a payment of \$5.000 with 0.1% probability rather than have \$5 with certainty, most German students prefer the sure gain. However, when this case is framed as a loss, most US students prefer to take a \$5 loss certainty, while most German students prefer to leave loss: -\$5,000 with a probability of 0.1% and \$0 with a probability of 99.9%.<sup>13</sup> Cullis showed the difference in attitude to tax evasion in Italy and Britain that was based on cultural criteria.<sup>14</sup> And in Italy this tax evasion was higher than in Great Britain.

German psychologists assumed that West Germans are more risky than East Germans and that readers of the business magazine are more risky than the non-readers.<sup>15</sup> These results were based on the differences between "capitalistic" and "socialistic" values.

Another difference is that the algorithm of corporate risk management can be transferred from one country to another within a group of companies since it is relatively objective and artificially developed. For example, within the European Union there are regulations governing a system of risk management in insurance companies or banks.

Risk culture is a subjective and historically emerging concept, which has a strong connection and interdependence with the environment of its existence. The subjective character of risk culture is confirmed by axionormative character: culture can be defined as an underlying system of peculiar collective values that distinguishes the members of one group from another<sup>16</sup>. In addition, cul-

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- 6. A. Tversky, D. Kahneman, *Availability: A heuristic for judging frequency and probability*, "Cognitive Psychology", 1973 no 5.
  - 7. C. Hsee, E. Weber, *Cross-national differences in risk preference and lay predictions*, "Behavioral Decision Making", 1999 vol 12, iss 2.
  - 8. M. Sowinski, O. Schnusenberg, S. Materne, "Sprechen Sie Bias?" An investigation of cultural differences in behavioral finance biases between Germany and the United States, "Journal of Behavioral Studies in Business", 2011 vol. 3.
  - 9. J. Cullis, P. Jones, A. Savoia, *Social norms and tax compliance: framing the decision to pay tax*, „Journal of Socio-Economics”, 2012 vol 41 [2].
  - 10. G. Kaptan, S. Shiloh, D. Onkal, *Values and risk perceptions: a cross-cultural examination*, "Risk Analysis", 2013 vol. 33, iss 2.
  - 11. A. Olofsson, S. Öhman, *Vulnerability, values and heterogeneity: One step further to understand risk perception and behavior*, "Journal of Risk Research", 2015 vol 18 [1], p. 12.
  - 12. C. Hsee, E. Weber, *Cross ... , op.cit.*
  - 13. M. Sowinski, O. Schnusenberg, S. Materne, *Sprechen ... , op.cit.*, p. 10.
  - 14. J. Cullis, P. Jones, A. Savoia, *Social ... , op. cit.*
  - 15. P. Tigges, A. Riegert, L. Jonitz, J. Brengelmann, R. Engel, *Risk Behavior of East and West Germans in Handling Personal Finances*, "The Journal of Psychology and Financial Markets", 2000 vol 1, no 2.
  - 16. S. Mueller, A. Thomas, *Culture and entrepreneurial potential: A nine country study of locus of control and innovativeness*, "Journal of Business Venturing", 2001 vol 16 (1), p. 52.

ture is interpreted as an environment, a petri dish in which certain behaviors and characteristics are allowed to flourish or not.<sup>17</sup> Culture is a combination of material and spiritual values created by a humanity throughout its history, acquired set of rules in society for its conservation and harmonization. The concept of culture in Latin means «to till» as to till the ground.<sup>18</sup> That is, culture does not arise and is not formed in a moment. It is a sequential process of buildup during the algorithm of perception and behavior in certain circumstances. Arnoldi described the connection between risks and culture as “decode information” meaning that the risks which are transferred by culture in society.<sup>19</sup>

The study of risk culture covers its ontology and epistemology. This feature is due to the influence of the historical past of how people's attitude formed about risk and the proportion of stability and uncertainty in the life of a country. How is it shown in practice? This approach, in our opinion, may explain the widespread problem of “absence or low insurance awareness” and the reason of its difference across countries. Low insurance awareness of the population is one of the reasons the demand for voluntary insurance protection among individuals and businesses is weak, with appropriate consequences for the population and the State. Moreover, the level of insurance fraud is also partly dependent on insurance culture and consciousness. Slovic *et al*<sup>20</sup> and Goto, Hayakawa and Hamano<sup>21</sup> surveyed insurance purchasing behavior in the United States and in Japan to test how people recognize risks. The results show the diversity in perception of risk in these countries. Therefore, the level of insurance fraud is different across countries. The importance of forming a culture confirms that European commission has admitted the absence of a healthy risk management culture as a reason of financial crisis in 2008–2009.<sup>22</sup>

**Table 1. The researches of the relations between culture and risk [illustration]**

Author	Title	Description	Dimension
Slovic, P, Lichtenstein, S. and Fischhoff, B. (1985)	Characterizing Perceived Risk	Influence of psychological, social, institutional and cultural factors on risk behavior	Prospect theory
Wildavsky, A. and Dake, K. (1990)	Theories of Risk Perception: Who Fears What and Why?	Emphasize 4 types of connection between culture and risk behavior: individualism, fatalism, hierachism, egalitarianism	Cultural theory
Beck, U. (1992)	Risk Society: Towards a New Modernity	Society of risk as a new stage and aftereffect of modernization	Social and economy
Luhmann, N. (1993)	Risk: A Sociological Theory	Risk culture as a result of social complexity and increasing choice (with risk syndrome)	Decision theoretical concept

17. The Institute of Risk Management, *Risk culture. Resources for Practitioners*, 2012, p. 82 // [https://www.iiia.org.uk/media/.../irm\\_risk\\_culture\\_-resources\\_for\\_practitioners.pdf](https://www.iiia.org.uk/media/.../irm_risk_culture_-resources_for_practitioners.pdf) [referred on 07/10/2016]
18. A. Berger, *Culture: Its Many Meanings*, “A journal of the media and culture”, 2016 vol 3, no 2, <http://www.apinetwork.com/mc/0005/meaning.php> [referred on 07/10/2016]
19. J. Arnoldi, *Risk. An introduction*, Polity Press, Cambridge 2000, p. 108.
20. P. Slovic, B. Fischhoff, S. Lichtenstein, B. Corrigan, B. Combs, *Preference for Insuring Against Probable Small Losses: Insurance Implications*, “Journal of Risk and Insurance”, 1977 vol 44.
21. S. Goto, H. Hayakawa, M. Hamano, *Insurance-Purchasing Behaviors in Japan: Findings from Simple Survey with the Urn Games*, “Risk and Management (Japan Risk Management Society)”, 2002 vol. 33.
22. European Commission, Green paper *Corporate governance in financial institutions and remuneration policies*, 2010, p. 7 // [http://ec.europa.eu/internal\\_market/company/docs/modern/com2010\\_284\\_en.pdf](http://ec.europa.eu/internal_market/company/docs/modern/com2010_284_en.pdf) [referred on 07/10/2016]

Author	Title	Description	Dimension
Brenot, J., -Bonnefous, S., Marris, C. (1998)	Testing the Cultural Theory of Risk in France	Weak correlation between risk perception and cultural biases	Cultural theory
Lash, S. (2000)	Risk culture	Economic change (post-industrial innovations) is a basis for the growth of a risk culture	Post - industrial
Rippl, S. (2002)	Cultural theory and risk perception: a proposal for a better measurement	Individual risk perception has a low connection with cultural values	Cultural theory
Morel, B. and Linkov, I. (2007)	Environmental Security and Environmental Management: The Role of risk Assessment	Risk culture is a combination of the patterns of risk relating thinking, value systems and beliefs that humans hold which culminate into their risk related behavior (p. 202)	Socio-psychological
Daase, C. (2011)	Sicherheitskultur – Ein Konzept zur interdisziplinären Erforschung politischen und sozialen Wandels	In practice key relevance between culture and risk consists in the formation of safety consciousness in society (p. 61)	Historical and jurisprudential
Lupton, D. (2013)	Risk	Identify 7 types of the risk according to sociocultural, historical, political and economic context	Sociocultural
Bonß, W. (2013)	Risk. Dealing with Uncertainty in Modern Times	“New culture of the uncertainty” with ‘risk responsible actors’, who can make the difference between ‘risk types’, create ‘situative certainty’ in time and who build not only on control, but also on trust	Modern risk production
Fischer, S. (2016)	Risiko und Risikokultur – Konzepte für die Beschreibung und Analyse des gesellschaftlichen Umgangs mit Unsicherheit	Risk culture as core of security system and reason of international conflicts	International relations

After analyzing the presented studies (Tabl. 1), it can be concluded that the majority considers the influence of culture as a factor of risk attitude or decision making under uncertainty. The research of risk culture from the point of view of the cultural theory is widespread, but we think that this is just a partial view. Among the factors that influence the development of risk culture are: psychological safety,<sup>23</sup> gender,<sup>24</sup> psychological biases of individuals,<sup>25</sup> communication,<sup>26</sup> class society.<sup>27</sup>

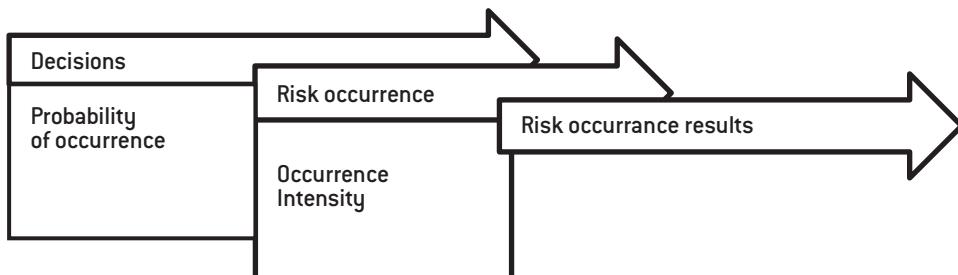
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23. K. Leung, H. Deng, J. Wang, F. Zhou, *Beyond Risk-Taking: Effects of Psychological Safety on Cooperative Goal Interdependence and Prosocial Behavior*, “Group & Organization Management”, 2015 vol 40 (1).
  24. O. Stark, E. Zawojiska, *Gender differentiation in risk-taking behavior: On the relative risk aversion of single men and single women*, “Economics Letter”, 2015 vol 137.
  25. S. Goto, *The bonds of classical Risk Management and the Importance of a behavioral approach*, “Risk Management and Insurance Review”, 2007 vol. 10, no 2.
  26. D. Denney, *Risk and Society*. SAGE publication, London, Thousand Oaks, New Deli, 2005.
  27. D. Curran, *Risk society and the distribution of bads: theorizing class in the risk society*, “The British Journal of Sociology”, 2013 no 64 (1).

## 2. The nature of the risk

Risk is one of the key factors of modern society and especially its future. As pointed out by Warkallo, the term "risk" earned the rank among scientific terms in the initial insurance theory, and only much later (in the late nineteenth early twentieth century) entered into the general economic theory.<sup>28</sup> Some authors believe that the etymological forerunner and source of risk is the state of danger. According to Renn the risk concepts could be classified using seven different approaches like: actuarial, toxicological, engineering, economic, psychological, social and cultural.<sup>29</sup> The famous insurance theoretician Ehrenberg defined risk as a degree of possibility of occurrence of dangerous events, but had not specified the instruments and methods for measuring this degree.<sup>30</sup> That is why, much later, Braess expressed confidence that a more precise and narrower definition of risk is possible only on the mathematical basis. He defined the concept of risk as close, or even equal to, "danger", appearance of adverse effects at an unknown time and in an undefined volume.<sup>31</sup>

One of the basic features of risk undisputed by a decisive majority of researchers is the fact that risk is an objective category.<sup>32</sup> When speaking about risk, we should take into account elements presented in Figure 1. The figure presents the process of risk with its composition elements.

Figure 1. Risk as a process



Source: A. Karmańska, T. Michalski, A. Śliwiński, *Insurance ...*, op. cit., p. S3–208.

In order to highlight the concept of risk, it is reflected on danger and reliability. Luhmann<sup>33</sup> states that the difference between danger and risk is that, risk is the result of an individual's decision and, in current conditions, could be up to chance. Meanwhile, danger comes externally.

- 28. W. Warkallo, *Ubezpieczenie majątkowe. Ochrona mienia społecznego*, Wydanie IV uzupełnione aneksem, PWE, Warszawa 1971, p. 34.
- 29. O. Renn, *Concepts of Risk: A Classification*. In: *Social theories of risk*, Krimsky S., Golding D. [eds.], Westport (CT): Praeger 1992, p. 56.
- 30. V. Ehrenberg, *Versicherungsrecht. Tom 1*, Leipzig 1893, p. 3.
- 31. P. Braess, *Versicherung und Risiko*. Bertriedswirtschaftlicher Verlag, Wiesbaden 1960, p. 11.
- 32. A. Karmanska, T. Michalski, A. Śliwiński, *Insurance product innovation based on management accounting*, Proceedings of 2014 TIIM conference, Seoul, South Korea 2014, p. 3/208.
- 33. N. Luhmann, *Risk: A Sociological Theory*, Translated by R. Barret, Walter de Gruyter, Berlin, New York 1993.

However, the main role is played by the observer, and since behavior free of risk does not exist, neither does absolute reliability.

According to Michalak risk is a threat of event that existence can cause a specific damage and destroy the own economic entity. Other words the risk is a threat for the economic entity, by means of random event, as a consequence of which the specific damage occur.<sup>34</sup> He also highlights the idea that term risk should be used and defined in connection to specify the cultural world.

When assessing the formation of risk in terms of qualifications (as a subjective or objective phenomenon) and quantitative parameters, scientists illustrated a "Synoptic cut of risk perception process" [Table 2], which shows the phases of its formation, species heterogeneity and multi-variant community response to its appearance.<sup>35</sup> We have used this approach to illustrate the process of creating a culture of risk.

Table 2. Synoptic cut of the risk perception process \*

Danger	Emergency	Real realization of emergency	Losses	Mental reaction	Emotional reaction	Protective reaction
Source of danger	Potential causes of risk	Materialization of the risk (random event)	Economic consequences of the risk	Awareness of the existence of the risk	Fear of risks	Making decision about risk aversion
Using fire	Conflagration	Fire	Losses which are caused by fire	Awareness about fire damage	Fear during using the fire	The conclusion of insurance contract in case of fire
Risk objective					Risk subjective	
Abstract risk as a potential opportunity		Materialized risk in a random event which took place		Risk is a psychological phenomenon		Public reaction to the risk
Measure of is a probability of "a priori"		Measure of is a statistical probability		Measure of is the degree of uncertainty of the subject		Measure of is the behavior of the subject

Source: own collaboration based on E. Kowalewski, *Rzyko ubezpieczeniowe – podstawowe pojęcia i terminologia*, „Prawo Asekuracyjne”, 1996 nr 2

\* Core of risk culture are the attitudes to safety and dangerous.

For example, consider the process of creating a risk culture on the example of the risk of fires in Portugal. Fire is the risk that is present in all countries, but among them there are areas of a higher fire threat. It is caused by the appropriate climate and location, meaning that objective risk is higher in certain areas. Thus, the first extensive fires in Portugal were in 1960s. A large influence on the frequency of fires was flammable forest types; Maritime pine (*lat. Pinus pinaster*) and Blue

34. J. Michalak, *Refleksje nad pojęciem ryzyka*, „Ruch Prawniczy, Ekonomiczny i Socjologiczny”, 2004, z. 1, p. 121–124.

35. E. Kowalewski, *Rzyko ubezpieczeniowe – podstawowe pojęcia i terminologia*, „Prawo Asekuracyjne”, 1996 nr 2, p. 19.

gum [*lat. Eucalyptus globulus*] accounted for 77% of all forests burned.<sup>36</sup> According to calculations, these fires cost the state 3,5 mld Euro during the years 2000–2012.<sup>37</sup> To minimize the risk of fire in Portugal, a large-scale program of countering fires was developed – fire management policies, the population has to pass an annual course of how to behave under this risk. As was admitted, people who live in similar social and environmental settings are more likely to have similar perceptions about wildfire risk.<sup>38</sup> In our view, therefore, the values are being established and standards of behavior and perception of risk among individuals are being generated. These components are accumulated in respective cultures regarding specific risk. It was approved by Thompson that there are several factors that determine individuals attitude to risk from wildfires and shape mitigating behaviors, such as social context, institutional, and psychological variables.<sup>39</sup> It is also key to distinguish risk and risk realization. In that approached proposed by some authors<sup>40</sup> realization is measurable however risk is seen like a state of the world. That is important from the perspective of insurance risk.<sup>41</sup>

How individuals perceive risk (danger) is underlying part of risk culture. Cultural theory argues that risks are defined, perceived, and managed according to principles that inhere in particular forms of social organization.<sup>42</sup> To assess changes in the perception of risk in society, Taylor-Gooby compared the results of the surveys of populations in the United States, Italy, the UK and Australia from 1985 and 2006 concerning the need to increase public spending on social risks. These findings indicate a broadly stable pattern of attitudes across society to what might be seen as major everyday life risk issues.<sup>43</sup> The last is being developed due to the subjective factors with an increasing frequency in occurrence of adverse events the subjective perception of risk is being changed:

- awareness of the existence of threats and their sources is emerging. The threat and its consequences are being switched from the “lack of knowledge” stage to the “unsure” stage;
- the fear that is associated with the use of risk sources ceases to be spontaneous and uncontrollable;
- the entity decides the method of risk management. In a society with a high level of risk culture on the financial market, there are specific tools and management techniques. Moreover, such countries have a clear state policy in the field of risk management. Even further, poor people are likely to be insecure, because the range of positive options open to the poor is limited, and

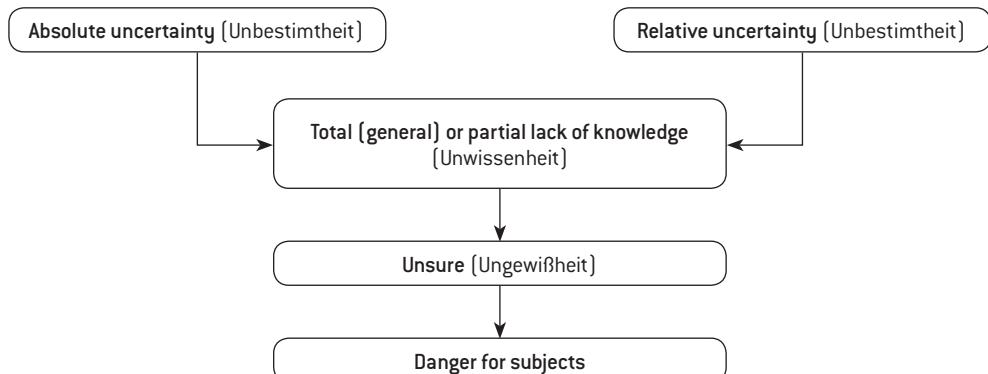
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36. P. Mateus, P. Fernandes, *Forest Fires in Portugal: Dynamics, Causes and Policies*. In: *Forest Context and Policies in Portugal, Present and Future Challenges*, „World Forests series. Springer”, 2014, p. 99.
  37. Ibidem, p. 105.
  38. V.S. Chakreegarat, *Cultural, Demographic, and Environmental Influences on Risk Perception and Mitigation in the Wildland-Urban Interface*, All Graduate Theses and Dissertations. 2015 no 4476, p. 11 // <http://digital-commons.usu.edu/etd/4476/> [referred on 07/10/2016]
  39. M. P. Thompson, *Social, Institutional, and Psychological Factors Affecting Wildfire Incident Decision Making*, “Society and Natural Resources”, 2014 vol 27 [6].
  40. T. Michalski, A. Karmońska, A. Śliwiński, *Ubezpieczenia gospodarcze. Ryzyko i metodologia oceny*, C.H. Beck, Warszawa 2004, p. 48
  41. A. Śliwiński, *Przestrzenne zróżnicowanie ryzyka śmierci a efektywność ubezpieczeń na życie*, Oficyna Wyd. SGH, Warszawa 2012, p. 30.
  42. S. Rayner, *Cultural theory and risk analysis*. In: *Social theories of risk*, Krimsky S., Golding D. [eds.], Westport (CT): Praeger 1992, p. 84.
  43. P. Taylor-Gooby, *Does... op. cit.*

the range of negative options is wide, and the potential to limit damage from negative outcomes is restricted.<sup>44</sup>

It is necessary to emphasize that in the individual perception there is a difference between "risk to self" and "risk to others": people do not make the same likelihood judgments when they rate the risk to themselves, to family, or to people in general.<sup>45</sup> Helten considered the danger of accidental situation not only as an etymological predecessor of risk, but as a final result that is achieved gradually during passing several stages: uncertainty, lack of knowledge and unsureness,<sup>46</sup> is shown in Figure 2 in a logical sequence. According to Janowicz – Lommot and Lyskawa, the concept of danger characterized by biased because of the destruction of a positive value. That is why the criteria of risk dimension depend on his accepted entity in the conception.<sup>47</sup>

As shown in Figure 2, the uncertainty is perceived absolutely and relatively. The case of absolute uncertainty implies a state of belief according to which nothing in the world is subject to definition and because it is doomed to remain unknown until the end. Thus, the existence of any slight regularities is not even assumed, nor is there any causal connection between the surrounding events. But if we assume that the surrounding world though it is stochastic, yet a natural manifestation of chance, then in such a situation there could only be a relative, partial uncertainty. If we follow the idea that in the real world, everything is defined and the case is complicated only by the limited access to the sources of information about the considered processes and by incomplete knowledge about them, reasons to affirm the existence of absolute and relative nescience are emerging. Giambattista Vico had admitted that a person has the ability to understand only that which he or she created.<sup>48</sup>

Figure 2. The scheme of coherence of appearance and perception of danger by the subject



Source: E. Helten, *Die Erfassung und Messung des Risikos*. In: *Gabler Versicherungseencyklopädie*, Band 2. Versicherungsbetriebslehre, Wiesbaden 1984, p. 130.

44. P. Spicker, *Social insecurity and social protection*, In: *Risk and citizenship: key issues in welfare*, eds. R. Edwards, J. Glover, Routledge 2001, p. 21.
45. S. Pahl, P. R. Harris, H. A. Todd, D. R. Rutter, *Comparative Optimism for Environmental Risks*, "Journal of Environmental Psychology", 2005 vol 25 (1).
46. E. Helten, *Die Erfassung und Messung des Risikos*. In: *Gabler Versicherungseencyklopädie*, Band 2. Versicherungsbetriebslehre, Wiesbaden 1984, p. 130.
47. K. Lyskawa, M. Janowicz-Lommot, *Catastrophic Risk in Local Government Units: Search for Optimal Risk Management. EU Crisis and the Role of the Periphery*, Springer Verlag 2015, p. 117
48. T. Bayer, D. P. Verene, *Giambattista Vico: Keys to the "New Science"*, Cornell University Press 2009, p. 162.

Therefore, “nescience” in various fields of human activity exists as a function of “uncertainty” which arises because of the lack of knowledge in phenomena and processes that occur. F. Knight used to state that uncertainty is a state of knowledge while risk is a state of the world. Risk is measurable whereas uncertainty not.<sup>49</sup> Also, nescience may occur independently without a connection to uncertainty. But uncertainty and nescience cause the display of objective uncertainty, which is subjectively perceived by separate entities as the state of danger. In this sense, Helten considers subjective insecurity as a risk.

### 3. Forming of the risk culture

Risk culture offers fluid and interchanging ways of viewing risk, drawing on habitual, embodied and effective judgments which are subjective rather than objective.<sup>50</sup> Formation of a risk culture is directly related to the stage of economic and industrial development of society and to the availability of information on the occurrence of events. As was mentioned by Hrunewicz, in today's post-industrial society the focus is increasingly on the transformation of knowledge about the danger in knowledge about risk.<sup>51</sup>

The meaning of risk culture depends on the level of its consideration (macro, micro), and the purpose of the study. Risk culture on a national level is reflected in social risk management (social protection). It includes the stage of public intervention in financing of risks: social insurance, targeted transfers, etc. And on the macro scale the general risk culture influence on the redistribution system of the country. It is assumed that there are two important assessments which characterize risk culture on the country (national) scale:<sup>52</sup>

- the poor are typically most exposed to diverse risks ranging from natural (such as earthquake and flooding) to man-made (such as war and inflation), from health (such as illness) to political risks (such as discrimination),
- the poor have the fewest instruments to deal with these risks (such as access to government provided income support and market-based instruments like insurance).

According to Pidgeon's social dimension, risk attitude involves people's beliefs, attitudes, judgments and feelings, as well as the wider cultural or social values and dispositions that people adopt towards hazards and their benefits.<sup>53</sup> In our opinion, as shown in Figure 3, historically the first factor, the basis of risk culture of the countries, is the tradition (historical experience). For example, in 1908, in Great Britain, the Old-Age Pensions Act laid the foundation for a modern social security system. The second factor is common values that are accepted by society. It may be the moral norms that were partially legitimized by the government policy. The aim to build a British welfare state, the nature of risks facing citizens were identified as: want, squalor, idleness, ignorance and

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49. F. Knight, *Risk, uncertainty and profit*, University of Boston Press, Boston 1921, p. 233.

50. D. Lupton D., *Risk*, London: Routledge 2013, p. 10.

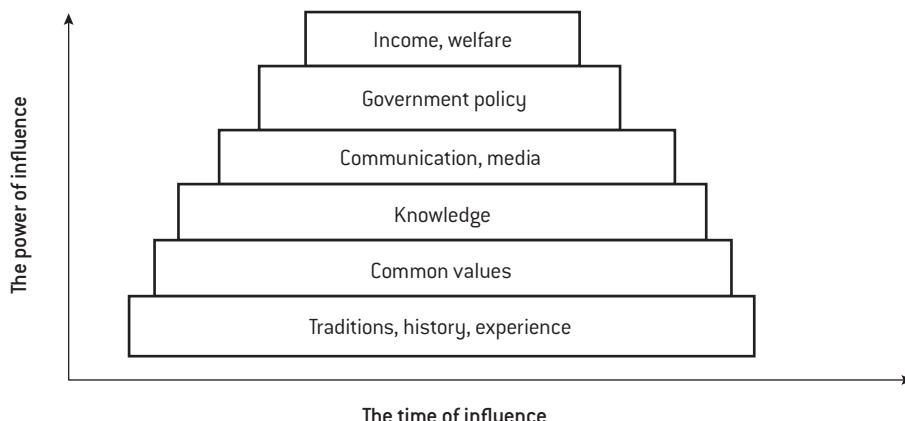
51. J. T. Hrynewicz, *Spoleczeństwo ryzyka. Teoria, model, analiza krytyczny*, „Przegląd Socjologiczny”, 2014 nr 63, p. 21.

52. R. Holzmann, L. Sherburne-Benz, E. Tesliuc, *Social Risk Management: The World Banks Approach to Social Protection in a Globalizing World*, Washington 2003, p. 5 // <http://siteresources.worldbank.org/SOCIALPROTECTION/Publications/20847129/SRMWBAApproachtoSP.pdf> (referred on 07/10/2016).

53. N.F Pidgeon, C. Hood, D. Jones, B. Turner, R. Gibson, *Risk perception. Ch 5 of Risk Analysis, Perception and Management: Report of a Royal Society Study Group*, London, The Royal Society 1992.

disease.<sup>54</sup> The third factor is knowledge, which can be considered relatively objective and dynamic. The development of communication in the society is also important, especially today. The complexity and innovative nature of contemporary risks cannot be understood exclusively by means of its own knowledge. Most information about current risks we receive from researchers or experts. Therefore, communication provides the means to distribute information. Important to note that risk communication that is effective for one group of individuals may not work in a similar fashion for others and, at worst-case scenario, could even be detrimental to their decision making.<sup>55</sup> The state policy in the field of risk management (pensions, social insurance and benefits) sets limits, the rules under which the risk culture is being developed. For example, the social insurance system in the country is governed by Law. Thanks to public policy, risk culture changes its form. The sixth factor, income and welfare is a dynamic factor which has the quantitative nature. It has a significant impact on the risk culture, but in the short term.

**Figure 3. Factors of the national risk culture**



Source: Authors.

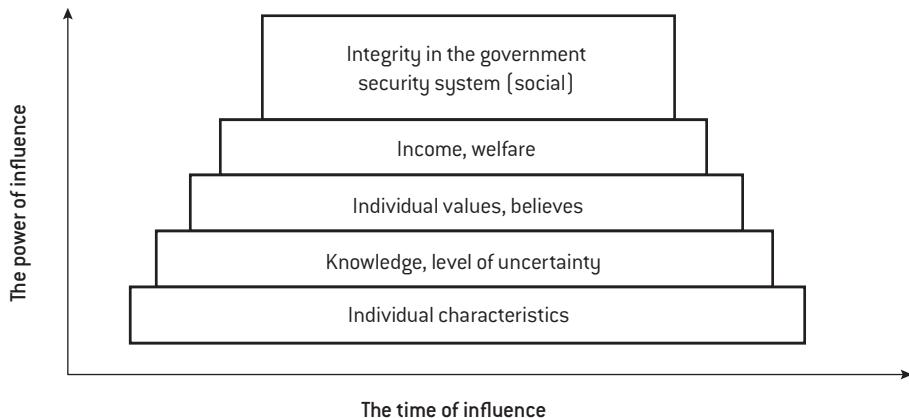
Douglas and Wildawskys describe three separate risk cultures: a hierarchical-institutional culture, which tends to select social risks; a culture of market individualism, which tends to select economic risks; a “sectarian border” culture, which tends to select natural risks.<sup>56</sup>

At the individual [micro] level, the process of decision making under uncertainty is considered more narrow. The Institute of Risk Management includes personal ethics and behavior in the individual risk culture personal predisposition to risk.<sup>57</sup> The first factor that has the greatest impact

- 54. R. Edwards, J. Glover, *Risk, citizenship and welfare: introduction* [in:] *Risk and citizenship: Key issues in welfare*, eds. R. Edwards, J. Glover, London: Routledge 2001, p. 3.
- 55. P. Fraser-Mackenzie, M. Sung, J. Johnson, *Toward an Understanding of the Influence of Cultural Background and Domain Experience on the Effects of Risk-Pricing Formats on Risk Perception*, „Risk Analysis”, 2014 vol 34, no 10, p. 1864.
- 56. S. Lash, *Risk Culture*. In: *The Risk Society and Beyond: Critical Issues for Social Theory*. SAGE Publications, London 2000, p. 50.
- 57. The Institute of Risk Management, *Risk culture. Resources for Practitioners*, 2012, p. 17 // [https://www.ii.org.uk/media/.../irm\\_risk\\_culture\\_-resources\\_for\\_practitioners.pdf](https://www.ii.org.uk/media/.../irm_risk_culture_-resources_for_practitioners.pdf) [referred on 07/10/2016].

is individual characteristics (Figure 3). It is determined by the natural characteristics of an individual. Depending on the level of the environment in which the individual lives, either the physical or mental and psychological capabilities can be dominating. Physical aspect is determined through family, society, and geography; psychological – through genetics, upbringing, and innate abilities.<sup>58</sup> It states that actions and behaviors are derived from judgments. Judgments themselves are determined by individual character, experiences and moral values.<sup>59</sup> Knowledge and individual's values, beliefs that are grounded in religion, education and history are key influencing factors. For M. Douglas the individual perception of risks as "bad" would be constructed through a process of reflexive judgment – the habitus of social groups.<sup>60</sup> Experience with a particular danger is one of the major predictor of perceived risk of the same danger, especially regarding situations that are less universal. It was found that flood experience has the greatest impact on perceived risk of a flood, followed by earthquake experience on perceived risk of an earthquake.<sup>61</sup>

**Figure 4. Factors of individuals risk culture**



Source: Authors.

The position of the factor "income, welfare" and "integrity in government security system" may vary for each individual. It depends on the individual status: e.g. a disabled person is more dependent on social protection from the government. For a person who has a job and high income, government policy in the social security is less relevant. More important is income, which will enable the individual to either buy an insurance policy to cover a particular risk or to finance the consequences of the risk on one's own. At the level of the subject the risk culture is manifested through indicators such as "risk appetite" – ability to take risks and "risk tolerance" – the maximum volume of risk

- 58. B. Morel, I. Linkov, *Environmental Security and Environmental Management: The Role of risk Assessment*, Springer Science and Business media 2007, p. 201.
- 59. The Institute of Risk Management, *Risk...*, op.cit., p. 34.
- 60. S. Lash, *Risk Culture*. In: *The Risk Society and Beyond: Critical Issues for Social Theory*, SAGE Publications, London 2000, p. 54.
- 61. D. Knuth, D. Kehl, L. Hulse, S. Schmidt, *Risk Perception, Experience, and Objective Risk: A Cross-National Study with European Emergency Survivors*, „Risk Analysis”, 2014 vol 34, no 7, p. 1294.

which a subject can accept.<sup>62</sup> People are generally loss averse, as was mentioned by Kahneman and Tversky, but some are more averse than others. The process of decision making under risk is affected by many common or personal heuristics and biases.

Another factors of individual risk perception were mentioned by Renn: consequences for the individual; effects on welfare and society; social and technological progress or retrogression; socio-political values; direct personal advantages and disadvantages.<sup>63</sup>

In our opinion, risk culture primarily should be considered in the national framework. Every nation has passed its own historical way of forming ideals, values and behavior under uncertainty and risk. For example, the demand for insurance protection is different across countries. From our point of view it is also associated with risk culture, with modes of behavior of people in situations of uncertainty. For example, there is a clear distinction between classical European insurance and Takaful insurance, which is associated with religion. That is, a society based on its own history, formed the algorithm of risk perception and behavior under uncertainty. In health, it can manifest itself in a number of preventive medical examinations, such as oncology. If the country does not distribute information about risks of cancer, then there is no correct algorithm behavior regarding the threat. Conversely, the right informing and forming of the general public opinion regarding a particular risk in the long term provides a constant risk culture model. For example, the number of smokers demonstrates the level of awareness of the negative effects of smoking. Any decision under risk and uncertainty eventually brings a gain or a loss. In today's world, the loss of health or loss of time or assets can be counted in monetary terms. Thus, the risk culture has its own material form of expression.

## Conclusions

Risk culture is a new concept that emerged in the 20<sup>th</sup> century as a result of growth of risk scale and the evolution of its management. Risk culture is often considered only from the perspective of corporations and private institutions, but that view limits the use of the conclusions. In our opinion, to fill this gap, the concept of risk culture should be considered comprehensively: on the level of an individual, a separate group of people united by certain common attitude to risk (e.g., enterprise), a generation, and a nation. This approach has practical value because it characterizes the reason for different levels of insurance protection demand, insurance fraud, and behavior under risk. Due to the changes in risk culture in the society, the state and insurance companies have to adapt insurance coverage proposals.

Studies have shown that there is a few theoretical and empirical research papers on risk culture in society. Most existing contributions consider the risks in terms of the theory of culture (for instance, Douglas), but a cultural approach reveals only a small part of problem of risk. Other studies focus on an individual psychology of risk perception and are more interdisciplinary. Our aim is to identify risk culture as a condition that determines a positive, neutral, or negative attitude

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62. P. Łukasik, *Kultura organizacyjna a kryzys przedsiębiorstwa*, [in:] *Zarządzanie w kryzysie*, Stabryla A. (eds.), UEK, Kraków 2010, p. 93.
  63. O. Renn, *Man, Technology and Risk. A Study of Intuitive Risk Assessment and Attitudes Towards Nuclear Energy*, Julich. 1981, p. 156.

to solidarity and responsibility for consequences of risks realization (for instance: fire risk, social security system).

Forming of risk culture is shown by the example of the risk of fire in Portugal. The subjective basis of risk culture was based on the synoptic cut of the risk development process. With increasing frequency of fires, the subjective attitude to that perils was being changed and knowledge of fire risk management was accumulated. It became the basis for forming the standard model of the population's behavior in Portugal under risk of fire. Risk culture depends on the level of public awareness about the occurrence of events. The level of knowledge about risk goes through several stages of development: full or relative uncertainty, total or partial lack of knowledge, unsureness. Moreover, risk culture depends on the stage of economic and industrial development of a society.

Risk culture should be considered on individual and national levels. On the national level it is manifested in social risk management (social protection). The key factors of forming the risk culture on the national and individual levels are: traditions, history, experience, common values, knowledge, communication and media, income and welfare, and government policy. Individual culture is unique, because it is based on an individual characteristics. That is, individual risk culture is influenced by three aspects: physical, psychological, and ideal.

We will continue the research based on the theoretical conclusions about the main factors of risk culture. The next part of the study will cover an empirical research of risk culture in selected countries based on surveys. This will allow to gain more reliable empirical insight into factors and make their ranking based on various criteria (for instance, different generations, professional groups or age).

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## Kultura ryzyka i czynniki ją kształtujące

Pojęcie kultury ryzyka jest coraz częściej używane do opisu procesu postrzegania ryzyka i sposobów zarządzania w warunkach ryzyka. Pojęcie to stało się szczególnie popularne po kryzysie finansowym jaki miał miejsce w 2008 roku. Na tym tle można stwierdzić, że pojęcie kultury ryzyka wiąże się z akumulacją negatywnych doświadczeń związanych z realizacją ryzyka. W literaturze pojawia się wiele badań opisujących różnice w postrzeganiu ryzyka występujące na przykład w różnych grupach wiekowych, zawodowych, czy nawet pomiędzy poszczególnymi nacjami. Uwzględniając różnice w postrzeganiu ryzyka można przypuszczać, że różnice te występują także w procesie kształtowania kultury ryzyka. Celem niniejszego artykułu jest identyfikacja czynników, które mają wpływ na kształtowanie kultury ryzyka na poziomie jednostki oraz wybranych grup. Badania czynników kształtujących kulturę ryzyka są trudne oraz mają charakter interdyscyplinarny. Podstawowy problem wynika z braku podłożą metodycznego badań empirycznych. W artykule zawarto wyniki studiów literackich związane z identyfikacją czynników mających wpływ na kulturę ryzyka. W kolejnym kroku badania będą miały charakter empiryczny związany z próbą określenia wpływu wyodrębnionych czynników na kształtowanie kultury ryzyka na poziomie jednostki oraz wybranych grup (zawodowych, wiekowych, narodowych).

**Słowa kluczowe:** kultura ryzyka, risk management, niepewność, zagrożenie.

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