

THE RISK PHENOMENON AND ITS CONNECTIONS IN CONTEMPORARY ECONOMIC AND SOCIAL CONDITIONS


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***Abstract:** The article attempts to present various approaches to the problem of defining risk individually perceived in relation to various economic and social conditions. The discussion is closely related to the research carried out by Nobel laureates D. Kahneman and M. Tversky. It also points to the need to distinguish between the concepts of risk and uncertainty, as suggested by many scientists. A separate part of the considerations concerns financial risk and the results of experimental research obtained in this area.*

***Key words:** risk, risk aversion, behavioral economy,*

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1. Introduction

Research by Kahneman and Tversky on risk has shown that individual decisions about risk aversion are primarily influenced by the way the problem is presented. The theory of decision-making processes assumes the decision-maker's individual attitude to risk. The question then arises how to define this ratio and whether it can actually be achieved. There is disagreement over the body's assessment of risk taking using different techniques. There is also another question related to the attitude to risk in the same person. Is it the same or different in different spheres of life. The studies presented in the literature show that the attitude to risk is varied.

The article (Zielonka, 2017) describes three types of framing: the risky choice framing effect, the attribute framing effect and the goal framing effect. The strong aversion to losses,

which is commonly found in people, is responsible for the formulation effect, as stated by Kahneman and Tversky. Examples of the significance of the framing phenomenon in various economic areas, such as: price formation, tax policy and negotiation, were discussed (Levin at all 1998).

There is extensive literature showing that actual decision-making processes do not always follow normative guidelines. Even a slight change in the wording of the problem may lead to a different behavior of the decision-maker. This phenomenon, known as the framing effect, is an emphasis on a specific piece of information, with the result that the recipient focuses on this very aspect of the problem (Teigen, 2015).

At the same time, it turns out that the propensity to risk, depending on the field, distinguishes socio-demographic groups such as: income groups, national groups or groups taking into account the gender of the individual. It can be shown that this concept has a broad explanatory power in relation to various concepts of organizational behavior and proves that framing experimental materials influences the formation of organizational behavior paradigms. Moreover, it is argued that many acceptable "findings" may exist more because of the way the researchers framed the problem than because of the supposed influence of the construct on individual behavior. The specific application is in the areas of escalation of engagement, negotiator behavior and "risky change".

Therefore, in relation to the issues that can be explained by the model relating to the risk taken by the entities affecting it, it is important to check what part of them will behave in accordance with the paradigm of avoiding high-loss risk and what will behave differently. It depends, first of all, on the organization of a research experiment allowing to learn about the preferences of individuals. In such a situation, experimental studies refer to the segregation of individuals operating under risk conditions. The community should be divided into sequentially formed groups in order to verify the paradigm formulated by Kahnemen and Tverski or to obtain layered data limited by statistically verified hypotheses. It is characterized by the highest expected utility value, i.e. it follows the principle of maximizing the expected utility.

2. Risk vs uncertainty - changes in interpretation generated by the process of learning the essence of the financial investment market and behavioral processes

Until recently, decision-making research allowed to assume the position that it is not necessary to distinguish between risk and uncertainty in order to formulate different concepts relating to the choices consistent with the maximum expected value rule (Zinn, 2008). This was already the case when the credible theories of Morgerstrn and Neumann and their reports on the utility function were known. The starting point in the experimental analyzes is the reference to two currently different concepts of risk and uncertainty and once inseparable. Although as early as 1901 A.H. Willet argued that risk is something objective, related to subjective uncertainty. This stage of the development of the idea of risk, mainly financial, begins in 1921. It was then that F. Knight, in his work "Risk, Uncertainty and Profit", distinguished between two types of uncertainty. He defined risk in this way, because uncertainty is a situation in which we do not know what will happen, but we know or assume the probabilities of different accident scenarios. The second is uncertainty where not only do we not know what will happen, but also the probabilities of possible scenarios. In this way, Knight not only defined risk (as one of the first), but also made risk think in conjunction with uncertainty. He also believed that risk situations were rare and included a small group of events against which one could insure themselves; the world is dominated by situations of uncertainty.

Historically speaking, the previously unnoticed notions of risk and the always obvious uncertainty show that Knight's observations from 1922 had a significant impact on the further development of mathematical statistics based on the modern theory of probability. Although the development of the theory of probability made it possible to see the need to consider the concept of expected-utility value (Bernoulli Daniell, 1738) as an expansion of the expected value, it took over a hundred years for the scientific position of expected utility to consolidate thanks to the research of Morgenstern (1944).

Taking into account the existence of various uncertain dilemmas throughout the development of the decision theory, about which the almost philosophically conducted discourse had to interfere in order to lead it to the path of rationality and not to reduce the final arguments to absurdity. It is worth recalling some less mentioned facts.

In 1921, F. Kinght noted in his doctoral dissertation that entrepreneurs forecast future events based on information from the past and usually fail to recognize the moment when

conditions begin to deteriorate or improve. The fact that similar events occurred in the past does not mean that they will repeat themselves in the future. In 1921, J. M. Keynes published a book entitled *A Treatise on Probability*, paying attention to the dependence of economic events on the law of large numbers. In 1952, H. Markowitz (Nobel Prize winner in 1990) proved using mathematical tools that placing eggs in one basket is an excessively risky strategy. The implications spilled over to a low-risk engagement.

On the other hand, returning to the contemporary, short-term, rapid development of theories explaining what in the old days was only signaled by weaving interesting hypotheses on topics close to probability, we find that at the turn of the 1920s and 1930s new interpretations of probability appeared and a universal definition of Kolmogorov was defined (1933). There are also new statistical and econometric tools by Fisher, which allowed for the formulation and application of the first risk measures. These are also known definitions complementary to and compatible with Kolmogorov's definition of F. Ramsey and B. de Finetti (frequency), referring to human beliefs, and more specifically to the extent to which they believe in the truth of different sentences (e.g. that something will happen). The concept of Ramsey and Finetti in one way or another was transferred to the ground close to many practical concepts that approximate the assessment of definition-making on the basis of intuition. Regardless of the pragmatism of these definitions, both are close to the mathematical definition of Kolmogorov and have become the basis for the development of statistical tools (frequency and Bayesian, respectively).

Both also prompted the redefinition of the knight's distinction between risk and uncertainty. It was not the probability or the lack thereof that was decisive, but the kind of probability. Risk has started to be defined as situations in which objective probabilities (empirical frequencies) are known. Uncertainty, on the other hand, began to be referred to situations in which only subjective estimates of probability are known.

The development of the risk concept was the work of, among others, L. Savage (1954). In his concept, the behavior of individuals in a situation of risk and uncertainty should be identical and regulated only by the maximization of their expected utility. In the case of risk, they should use objective probabilities, and in the case of uncertainty - subjective probabilities. Such a concept certainly influences a radical different approach to the issue of risk response and de facto leads to a reduction of uncertainty. Since, according to this perception of the problem, the methods of dealing with risk and uncertainty are the same, it is obvious that there is then a greater possibility of focusing on the easier-to-analyze idea of risk.

Such a development of events was dictated by the existence, since the time of Savage (1954), of a model focused on the perception of risk and uncertainty as the guards of estimated strategies of rational decisions, the theory of decisions (games) was undoubtedly used to analyze the situation of uncertainty in which the decision-maker does not know the objective the probabilities of different decision-making scenarios. In his groundbreaking work, *The Foundations of Statistics* (1954), Savage showed that in such situations the decision-maker should subjectively estimate the probabilities of different scenarios and then choose the decision that will maximize its expected utility, i.e. apply the same strategy that is optimal in the situation. risk. The departure from objective choice towards subjective choice was a tribute to the observation known from practice when the player and his objective environment become hostile to each other.

The development of the concepts of risk and uncertainty discussed in previous studies was not enough to significantly emphasize the role of risk in decision-making, all the more so because appropriate tools for its analysis were created. Therefore, the pragmatic idea of embedding risk in the world of finance and formulating its quantitative measures was taken up.

An unquestionable innovator on this path was H. Markowitz (1952), who in *Portfolio Selection* proposed that financial assets should be assessed according to changes in the value of the stochastic process, assuming these changes assessed by probabilistic variance as a measure of financial risk. Harry Markowitz thus initiated the development of a modern portfolio analysis in which financial risk was given a central importance. It was undoubtedly a revealing pragmatic-theoretical theory for decision-making. It explained a lot, but was nevertheless unreliable in the investment markets due to its obvious flaws over the years of its practical verification.

The final stage of the development of financial risk, as it seems so far, started at the end of the 20th century in the 1990s. This development was triggered by the crash on the global stock exchanges caused by catastrophic losses in the sale of assets, despite the already implemented risk management. One of the participants of this crash was the hedging fund Long-Term Capital Management, which suffered losses on the so-called derivatives. The founders of this fund were famous financial theorists, including Nobel laureates Robert Merton and Myron Scholes. Their name equation exists as a basis in the theory of finance. These events have undermined confidence in modern financial risk theory. The outbreak of the global financial crisis in 2008 culminated the doubts of economists and statisticians about them. The criticism presented by Nassim Taleb in *The Black Swan* was particularly popular at that time. He

popularized the concept of a black swan, i.e. events with a high impact, the probability of which is impossible to estimate. It became something innovative for the very concept of uncertainty, and indirectly it was a significant nod to the very concept of uncertainty, the significance of which fell in favor of the risk estimated measurably from the times of F. Knight. Such a course over a hundred years was followed by the discourse on the genetic differentiation of risk and uncertainty as a marginally perceived dilemma troubling the development of new probabilistic theories and decision-making theories in the 20th century.

3. Aspects of risk aversion in the process of experimental verification of behavior and attitudes towards risk

In the practice of verifying the assumptions of the risk behavior paradigm, the psychological process that generates numerous paradoxes based on risk appetite or risk avoidance is of course important. However, what draws attention here is the marginally treated inaccuracy of the (cumulative) perspective theory and the biased side of the organized experiments to verify the formed dilemmas and the constructed theoretical paradigms in the field of behavior of individuals and group entities.

In the literature, the tendency to take financial risk has strong and numerous determinants. Taking it up depends not only on psychological motives but also on objective factors, such as the dependence of the individual on his environment and the perception of the changes taking place. In the empirical study, gender had the strongest influence on risking in cash games (men play more often). Wealth and its changes - although it was an important determinant of risk taking when profit was predicted - did not have such an effect when players considered a possible loss. The data from the Social Diagnosis conducted as part of numerous surveys prove inconsistent rebound effects and certainty in the case of the average lottery probability values, which is contrary to the hypothesis of Kahneman and Tversky. The rebound effect is a premise for identifying determinants of propensity to financial risk separately in the area of profit and loss, which was done by estimating two-dimensional econometric models. Regardless of the model adopted and the selected measurement variables, the level of education and wealth of an individual, as well as the amount of payment, had a different impact on the propensity to risk in terms of profit and loss.

3.1. The rebound and confidence effect

D. Kahneman and A. Tversky (1979) are the authors of the theory of perspective that includes real human behavior. It assumes that people in decision-making take a specific position about the riskiness of a decision with specific consequences in terms of profit or loss. Perspective theory explains people making decisions under risky conditions. Perspective theory runs counter to the predominant theory of expected utility in mainstream economics. They take this position as a specific point of reference against which the results are assessed as profits or losses.

This position assumes, in line with the perspective theory, that people are more willing to take a risk when they judge the outcome as a loss against a set benchmark. If, on the other hand, the result is perceived as profit, they will be risk averse and will choose a small but certain reward, rather than profit, which is uncertain. This theory shows a relationship between the probability of making uncertain choices by people and the context of these decisions. (R. Makarowski, A. Lesz)

Kahneman and Tversky (1979), in their critique of the expected utility theory, proposed an alternative behavioral theory, including certainty and reflection effects. The rebound effect is risk aversion in earnings and risk-aversion in loss. On the other hand, the certainty effect is a subjective reevaluation of certain events against probable ones. In the opinion of these authors, the rebound and certainty effects are mutually consistent, in the field of non-negative payouts an entity should prefer certain events over probable ones, despite the same expected value; in the field of non-positive payouts, vice versa. Therefore, it seems advisable to undertake research on the inconsistency of rebound effects and certainty in the field of losses, and thus to demonstrate the imprecision of the theory of Kahneman and Tversky (1979), and also of Machina (1987). The second signaled assumption concerns the differentiation of the determinants of the propensity to risk in the field of profits and losses - since the existence of the rebound effect is proven, the psychological motives (conditions) of the propensity to risk, depending on the payout sign, should be different, if not contradictory. In confirming the verification of the research hypotheses, the following analyzes were by (Makarowski, 2008) data from Social Diagnosis and survey results.

Returning to the perspective theory proposed by Kahneman and Tversky, based on a survey conducted in Israel, covering 14 decision problems (some of them are presented in Table 1). The results of these studies were essentially the same as those obtained at the universities of Stockholm and Michigan (Kahneman, Tversky, 1979).

The respondents were 60-100 students or university staff. The order of questions in the survey questionnaire was rotated. There were no more than 12 questions on one page of the questionnaire. Respondents to the Kahneman and Tversky study were asked to imagine individual decision problems.

The probability for these problems was determined by a number such as "50 percent the probability of winning 1000 zlotys ", and not in a descriptive way, such as " winning 1000 zlotys in the event of hitting heads in a coin toss ". Contrary to the belief appearing in the literature, lottery payouts were given not in US dollars, but in Israeli lire (£ I). The median monthly household income in Israel in 1979 was approximately £ 3,000.

Lottery notation was treated for certain reasons as random variables - after Eeckhoudt and Gollier (1995) - according to which the probability values and the corresponding payouts are given sequentially. For example, a certain payout of PLN 200 (a) and a lottery with a win of PLN 400 (b) with a probability of 50% (b) can be written using vectors a (1.0; PLN 200) and b (0.5, 0 , 5; 400 PLN, 0 PLN).

3.2 Measurement of propensity to take financial risk

The tendency to take financial risk shows a strong situational conditioning and to a low degree it is determined by attitudes (Tyszka, Domurat, 2004). The Kuder-Richardson coefficient (KR-20) 1 calculated for the ten risk variables from the Social Diagnosis study in 2005 was 0.287, and for the five financial risk variables - 0.435. 0.600 was used as the reference value for scale reliability. Due to the high situational conditioning, it should be assumed that the measurement of the variable risk propensity was difficult due to the effect of the sequence of questions.

For the purpose of this study, declarations of participation in lotteries with defined payout values and the probability of receiving them were found useful in assessing the relation to financial risk. These declarations make it possible to obtain samples close to the balanced (with a similar share of units in individual categories) as opposed to, for example, declarations of playing in a casino, buying shares, real estate, units of investment funds or using non-eligible fiscal incentives (results of the Social Diagnosis 2005). Declarations of participation make it possible to learn about preferences regarding decision problems about underspending payouts, which is not possible by experiment.

As a rule, we obtain similar results from experimental and survey research on participation in lotteries. In the case of experiments, however, risk aversion is higher, especially in the case of very high payouts. The aforementioned empirical studies by Kahneman and

Tversky were not experiments, which the authors justified with the assumption that people are often able to imagine how they would behave in a situation of choice.

Most of the empirical research to date on participation in lotteries has been conducted on non-probabilistic trials, usually composed of students and university staff. In order to verify the hypothesis about the inconsistency of the rebound effects and certainty, surveys were conducted using the paper-and-pencil self-administered questionnaire (PSAQ) on several samples of 100 students of most departments of the University of Warsaw and a sample of 250 students of all departments of the University of Warsaw. Oslo. Bearing in mind that gender is the most important factor influencing the propensity to risk, the aim was to obtain a balanced sample, i.e. with a similar proportion of men and women. An assumption was made, analogous to that proposed in the subsequent studies by Tversky and Kahneman (1992), that the respondents should not participate in lectures on the theory of decision making during the studies.

Two of the questionnaires were carried out in two series (each of 100 respondents) with a different order of questions, verifying the situational dependence of the attitude of propensity to risk. In the first series, the questions were ordered by non-decreasing absolute payout values, in the second series - by non-increasing ones. In both cases, the questionnaire first included a non-negative payout decision problem, before a non-negative payout decision problem.

The results refer to the structure of preferences of the problems with certain and symmetrical payouts. According to the information contained in this article, asking questions about the highest amounts of money at the beginning of the questionnaire increases and in subsequent decision-making problems reveal the propensity to risk. The influence of the order of questions on the declarations of the respondents is much smaller when the order from the lowest to the highest absolute value of the payment is used. It was found that the reference values were the data from the Social Diagnosis of 2005, in which approximately 26% of the respondents ($n = 8,720$) decided to take a risk and play in non-negative and non-positive payouts (with parameters identical to the two questions in The article also presents the preferences of problems with unsymmetrical payouts.

It turned out that the effect of the order of questions is insignificant in the case of compiling questions from a different scenario in the questionnaire. In the next questionnaire, questions regarding the determination of preferences between lotteries described by vectors $(0.50, 0.50; 200 \text{ PLN}, 0 \text{ PLN})$ and $(0.25, 0.75; 400 \text{ PLN}, 0 \text{ PLN})$ and analogous lotteries with non-positive payouts $(0.50, 0.50; -200 \text{ PLN}, 0 \text{ PLN})$ and $(0.25, 0.75; -400 \text{ PLN}, 0 \text{ PLN})$ were

included in two questionnaires, and the probability for both alternatives was illustrated in a descriptive manner (drawing specific cards to game). In the first case, both questions were placed at the beginning of the questionnaire.

The research was comprehensive and is part of numerous other experiments conducted to assess the relationship to financial risk.

3.3. Cumulative perspective theory as a model for measuring economic rationality

Spheres of social life such as: finance, health protection, politics, public safety, environmental protection (climate risk), legal sciences, international relations, etc. have become one of the contemporary socio-economic debates covering the problems of risk. This happened along with the growing importance of the concepts of risk and risk management. In the past, until the mid-1970s, this was an area that was mainly related to gambling.

The popularity of debates about risk is so great that, in line with Beck's (1992) thesis, widely discussed in sociology, we can talk about the creation of risk society. This is undoubtedly related to the dissemination of the results of the Nobel Prize winners Kahneman and Tversky. At the same time, it has led to the development of the awareness that people are increasingly interested in the dangers around them. This determines the processes associated with increasing risk aversion. There is a widespread belief that public institutions and private corporations will actively seek and analyze important sources of risk and prevent possible threats. However, institutions are not always ready to meet such challenges, which raises various forms of opposition in society. Moreover, the state is more and more often perceived as the insurer of last resort, whose task is to protect citizens from serious threats. The research is signaled by an experiment on the influence of risk resolution time on investment behavior, with particular emphasis on the role of affect.

4. Behavioral characteristics

Decisions of any kind (economic, health or technological) are burdened with high risk, therefore the science devoted to making decisions under risk conditions has been a leading topic of discussion in economic sciences and, in the long term, also in psychological sciences for many decades.

A significant division in every field, including economics and psychology, is the prescriptive (e.g. in economics) or descriptive (in psychology) approach.

The term adopted in the broad sense of a scientific experiment derives from the derivation of the concept of behaviorism in the plane of economics. The term behavioral economics is a commonly used term resulting from the junction of the economic approach in the conditions of limiting its important foundations by risk conditions and the psychological perception of steps taken in economic research at the interface between economics and psychology of an experiment.

In the distinction between these approaches known from the literature on the subject, the emphasis is placed on a penetrating prescriptive (economic) and descriptive (psychology) approach. The first of them looks for an effective or optimal way of making decisions, and the second invariably suggests that the prescriptive approach does not accurately describe the model of decision-maker's behavior (Glimcher 2005). Most of the models of the first type are based on the Expected Utility Theory (EUT) (Neumann, Morgenstern, 1947), according to which the decision-maker first determines the decision alternatives, then estimates the consequences of these alternative choices (assigning probability weights) based on the existing conditions, in order to finally calculate the expected value of a given decision on the basis of the weighted sum of possible alternatives. In this approach, economic rationality is an activity that requires adequate knowledge to make decisions free of errors and mistakes. This knowledge is based on the use of two basic control points: the control of the interaction processes taking place between the decision-maker and the environment, and the control of constructive interaction processes carried out by the decision-maker himself. In both cases, these processes use the so-called learning from mistakes and interactions with the closer and more distant environment (Bickhard, 2002) going much further beyond the axioms of choice formulated in EUT.

The model itself was first published in 1944, but an extended version of it appeared in 1947. Most of the work on decision-making or rationality theory refers only to the second edition of 1947.

Additionally, it should be emphasized that the concept of economic rationality most often refers to decisions that involve choices, but are not mechanical. This is the case with a group of unconditional decisions and without a formal decision-making process. On the other hand, in the second case, economic rationality applies only to creative decisions, where apart from the decision-making process, the element of creating alternatives is important, which become an element of choice. So the more we create them, the greater are the chances of achieving decision-making success.

4.1 Fundamentals of the theory of perspectives

The focal point of the second approach is the Perspective Theory (PT) (Kahneman, Tversky, 1979) along with its normalization, that is, the Cumulative Perspective Theory (CPT) (Kahneman, Tversky, 1992). The Perspective Theory indicates that decision-makers are risk-averse, assign subjective weights to values and probability (a non-linear approach is introduced instead of a linear TOU approach), and define different weights depending on whether they make decisions in the face of losses or gains. TP also allows to explain a number of systematic deviations from the TOU, indicating, for example, the four-field relationship to risk (confirmed in a number of studies, including by Fishburn and Kochenberger (1979) or Fourcade, M and R. Khurama (2011), which leads to the following conclusions:

- Policy makers avoid the risk of unlikely losses and highly probable gains,
- Policy makers lean towards risk for highly probable losses and unlikely gains

Additionally, the value function within PT and CPT is shaped according to the reference point, and not according to the final level of wealth, as is the case in EUT. This argument is key, for example from the point of view of CPT axiomatization (Schmidt, 2003, p. 122). The consequence of the above discoveries is the replacement of utility functions with functions of value and probability weighting.

4.2 Empirical confirmation of the conclusions of the cumulative perspective theory

The results of the research presented in the article are confirmed by the discoveries carried out in parallel with the research by Kahnemen and Tverski. Two scholars Schoemaker and Kunreuther (1979) found that more people prefer hedging to greater losses than less. This may suggest the aforementioned risk aversion in the event of losses, but on the other hand, along with the Perspective Theory, they found that 72% of insurance agency clients were not willing to take out insurance even if the premium price was lower than the expected loss value. Thus, the existence of personal attitudes based on risk avoidance in the case of probable losses as well as those where, at least under certain conditions, there is satisfaction with the risk in the same case, is not excluded. Hence the question - is one person who is risk averse or copes well with loss risk aversion to be equally risk averse and positive about profit risk situation.

According to the EUT, an increase in the probability of an outcome from e.g. 0.01 to 0.02 should have the same effect as an increase from 0.88 to 0.89, but as Allais (1953) showed, people's choice is more influenced by a change in probability from 0.99 to 1 than 0.1 to 0.11.

Some scientists argue that a person's evaluation of gambling is often influenced by a misperception of the likelihood of possible outcomes. It has been noticed that people underestimate the high probabilities and overestimate the low. When they expect something to happen with a probability of 80%, they consider it almost certain, but when the probability of an outcome is 20%, it seems impossible (Fischhoff et al., 1977). Moreover, it seems that people are more sensitive to changes in probability at the ends of the probability scale and less sensitive to changes in probability in the middle of the scale (Gonzalez, Wu, 1999), which can be associated with the nonlinear weighted probability. Individual differences in the weighting of probabilities have also been found, which may influence risk-choice behavior (Gilboa 2009)

Taking risky decisions can therefore be based on trying to determine what is influenced by the minimum result to be achieved. This concept can be related to the concepts of satisfaction and optimizers. This was confirmed, for example, by Rutkowska D. Przybyszewski K. (2015). Their research has shown that changes in the aspiration level affect the preference for a lottery in which the participant is willing to participate, while the aspiration level has no effect on the risk assessment. While Hoffmann et al. (2013) conclude that individuals' aspiration levels are their main point of reference in the early stages of decision making, while their baseline state (affluence level at the beginning of the experiment) becomes the focal point of reference in the later stages of their periodic decision-making process.

Shapira (1995) found that decision-makers behave differently when their goals are secured and differently when their situation is unfavorable (in the latter case, more risky). When the situation is catastrophic, phenomena of "brave play" can arise when people are willing to take great risks to avoid damaging losses. Similar opinions are presented in the works of P. J. H. Schoemaker (2013) and R. Rebonato (2010). Despite some slight differences in the responses, no significant difference was found in the results between the results of the student sample group and the group more experienced in money management, i.e. the clients of the insurance agency. Druckman and Kam (2009) "argue that student subjects are not an inherent problem of experimental research." Therefore, when conducting our research, we decided to assume that the behavior of students in a risky situation may be representative of the general population.

4. Conclusions

The article tries to emphasize the behavior, which is practically always important for every investor and for an ordinary person, in situations that are important to him and involve huge losses, sometimes enormous, of an extremely large material resource.

The discussed topic is analyzed by a large group of authors, and it is especially worth settling in in the fields of social and health protection, where it is so difficult to assess the loss.

For the sake of scientific reliability, it should be stated that each research in the field of behavioral economics is burdened with numerous borrowings due to the valuable results obtained by numerous authors of research in this subject area.

The particularity of this subject is due to, inter alia, from the fact that aversion to risky decisions generating potentially catastrophic material or social losses is related to the inclination or not to hedge risk, which is associated with a small profit, but dominant in the investor's portfolio. It is also important to conduct and see the possibility of verifying the assumptions of the Kahneman and Tverski perspective theory not through a dubious experiment on a student group, but through a survey based on a survey sample using logit and probit models.

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