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TRANSFORMATION OF BELIEFS: AN EVALUATION OF ECONOMIC RISK UNDER UNCERTAINTY

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A b s t r a c t

This paper presents the results of a study of the risk-taking behavior of investors in some Eastern European countries in the post-soviet period. A unique transformation processes in society at the transition from the 20th to the 21st century caused the value of this point of view. Individual risk philosophy was on the way to being built under the factors of a changing society from command (full regulation of the environment) to a free market relationship. We investigate the influence of heuristics on the awareness of subjective risk evaluation in the case of a "sollective" investment activity in a trust company, MMM in 1994. The study confirms the bias in human behavior in the case of a high–risk situation. Some results, such as the influence of educational level on risk and reduced income values in terms of absolute growth, contradict the previous findings.

TRANSFORMACJA WARTOŚCI – OCENA RYZYKA EKONOMICZNEGO W WARUNKACH NIEPEWNOŚCI

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S ł o w a k l u c z o w e: decyzja o ryzyku, niepewność, inwestowanie, spółka powiernicza, post-komunizm.

Abstrakt

W artykule przedstawiono wyniki badań nad zachowaniem inwestorów w warunkach ryzyka w okresie poradzieckim. Unikatowe procesy transformacji w społeczeństwie zachodzące na początku lat 90. XX wieku powodują, że poruszony temat jest ciekawy i wart podjęcia. Filozofia ryzyka jest formowana pod wpływem czynników zmieniającego się społeczeństwa ze stosunków scentralizowanych (pełnej regulacji środowiska) do rynkowych. W analizowanym okresie obserwowano wpływ heurystyki osądów na subiektywną ocenę ryzyka w przypadku kolektywnej działalności inwestycyjnej w analizowanej spółce powierniczej. Badanie potwierdza pewne schematy w zachowaniu ludzi w przypadku wystąpienia sytuacji o wysokim stopniu ryzyka. Jednocześnie niektóre wyniki, jak wpływ poziomu wykształcenia na skłonność do ryzyka lub zmniejszenie wartości przychodu w miarę jego wzrostu absolutnego, są sprzeczne z wnioskami płynącymi z innych, wcześniej publikowanych badań.

Introduction

One of the most important values of modern society at the same level as freedom of speech and religion is financial stability and the economic freedom of individuals. To achieve this state of personal budget, people use different methods aimed at increasing income. It is important that such earnings must be permanent. Therefore, in today's money relations, financial tools that allow us to create additional income have become widely used. Mutual funds, bonds, bank deposits, life insurance policies (e.g. unit linked), and others may be attributed to these tools. Each of these instruments is characterized by a certain degree of risk. Moreover, the risk of the same instrument may vary depending on the level of development of the country and society. The more developed the financial market infrastructure is, the more opportunities for capital formation individuals have. However, there is another side: with the growth of the connections between these instruments, the risk of losses increases and often, when practiced, manifests in a "domino effect".

There is a widespread view that one of the reasons of smaller losses in Eastern Europe during the global financial crisis in 2008–2009 was significantly weaker involvement in the global financial system. Moreover, the current economic problems are not considered as a liquidity crisis but a crisis of confidence. The authors of the book "Animal Spirits: How Human Psychology Drives the Economy, and Why It Matters for Global Capitalism" offer to explore the confidence multiplier: a cascading growth of confidence that in the determined period of time leads to an increasing of financial flows (AKERLOF, SHILLER 2009, p. 17).

Economic phenomena are increasingly explained by using research findings from psychology, sociology and other humanities. As the conclusions of SMITH (1790), SLOVIC (1987), KANEMANN, TVERSKY (1979), KINDLEBERGER, ALIBER (2005), AKERLOF, SHILLER (2009), NASSIM (2012), GIGERENZER (2015) confirm,

when making a decision people are guided not only by rational calculation but also by subjective feelings. This especially appears during risk assessment under uncertainty where a priori prevents accurate prediction.

Having a certain freedom of choice in the area of income generation, the individual decides to participate in financial transactions with a high risk of loss. In such circumstances, the individual estimates the probability of the desired result based on his own consciousness of the problems, beliefs, values, points of references, and risk attitudes. This causes the appearance of biases in risk estimation and an unconscious kink (fracture) of the reference point. Such displays are particularly characteristic for a period of significant socio-economic transformation when the structure of values and the mechanisms of their assessment are being changed. Based on this, the main hypothesis about the specifics of a collective evaluation of economic risks under uncertainty during the transition from a communist regime to a democratic system based on market principles is formed. The aim of the paper is to demonstrate the instability of risk perception and prove the need for a personal approach to investment behavior under the conditions of risk.

The theoretical approach of individual behavior in making financial decisions under risk and uncertainty

Modern economic theory and practice occupy a large variety of both dogmatic and dialectic interdisciplinary explanations of risk. Both risk and uncertainty have fundamental random events which can be repeated concerning an individual object. However, in situations of risk the frequency of random events is known. In the financial market, it can be historical data concerning the timing of the loss or a decline in prices. Under uncertainty, the individual has no information about frequency, timing and/or the placement of the random occurrences. The first researcher who distinguished risk and uncertainty was KNIGHT (1921, p. 233). In his book, he concluded that uncertainty is rather a state of mind and risk is a state of the surrounding world. Risk is measurable while uncertainty is not. According to GIGERENZER (2015, p. 51), the best solution in terms of risk is not always the best decision under uncertainty. In practice, it complicates the decision-making process, since the possibility of economic and mathematical models are limited or not effective at all. In this situation, people tend to use their own subjective approach to assess the factors, assign them weight, and determine the value and risk. As SAVAGE (1961, p. 578) wrote: "...once the data is at hand and the moment for final action (or analysis) has come, theory leaves room for a great deal of subjective choice".

In the late 20th and the beginning of the 21st centuries, ideas of the theory of behaviorism acquired a significant value. With the help of these ideas, scientists have attempted to explain the behavior deviation of individuals from the optimal maximizing strategy as accepted in orthodox theory. One can say that illogical and irrational actions are "theorized" and they are allocated a place in the models of economic processes. It enables a better explanation of the connection between confined conditions of the decision–making process (e.g. uncertainty), the actual decision and the financial results (e.g. crisis, losses, winnings). Although it should be noted that as early as the 3rd century, ideas about mistakes in the human perception of items that came from subjective judgments were being brought forth (LAERTIOS 2006, p. 554–558).

The fundamental position in analyzing the behavior of individuals is the *theory of expected utility* by Von Neumann and Morgenstern. The hypothesis of rational expectations assumes that in predicting future indicators, individuals do not make systematic errors. Meaning the predictive indicator values, on average, will be close to the actual values. It is also assumed that in order to form their decisions regarding perspectives of changes in indicators, the individual will use all available information. If there is no uncertainty in the market and all the information is available, the hypothesis of rational expectations will lead to a complete prediction. Mathematically, the function model of expected utility is (SCHOEMAKER 1982, p. 538):

$$\sum_{i=1}^{n} p_i \cdot u(x_i), \qquad i = \overline{1, n},$$

note:

x_i – outcome vectors,
$u(x)$ – denotes one constructed via lotteries,
p_i – n associated probabilities,
n – various.

In 1790, even Smith presented a comprehensive study for that time concerning the behavior of the individual (regardless of the economy) on the basis of entirely different kinds of motivations – the principles of morality and ethics rather than strict adherence to self-interest (SMITH 2006). As a result of supplementing the theory of expected utility, the theory of subjective expected utility arose by Savage. The model was expanded to include choice under uncertainty (SAVAGE 1961):

$$\sum_{i=1}^{n} f(p_i) \cdot u([x])_i, \qquad i = \overline{1, n},$$

note:
x_i – outcome vectors,
$u(x)$ – denotes one constructed via lotteries,
p_i – n associated probabilities,
n – various.

In terms of this expanded version of expected utility theory, the subjects are divided into three categories: risk seeking, risk averse, and risk-neutral. Depending on the subject's objective, their utility function can be relatively concave, convex, or straight (please refer to Figure 1 below).

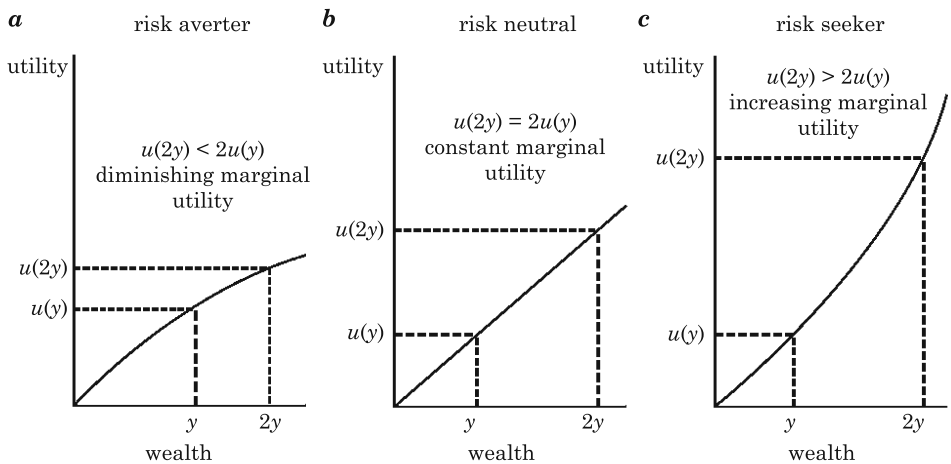

Fig. 1. Different risk attitudes: *a* - risk averter, *b* – risk neutral, *c* – risk seeker
Source: DĄBROWSKI, ŚLIWIŃSKI (2016, p. 18).

There are many economic paradoxes that show how the behavior of people is specific from the economic point of view. The St. Petersburg paradox by Bernoulli concerns an objective assessment of the value of winning under risk. It introduces the criterion of expected utility as a measure of the value of winning. The internal value of money increases with the amount of money, but not linearly. By offering such a hypothesis, Bernoulli concludes that the risk is perceived by everyone in their own way and cannot be valued equally (BERNOULLI 1954, p. 23–36). The Allais Paradox (ALLAIS, HAGEN 1979) led to the understanding that the perception of the probability by various investors

influences the choice of a lottery, that is, a particular investment option. It demonstrates the need to take into account the peculiarities of the perception of random events by the investor and uncertainties in general.

Kahneman and Tversky proposed a model of values function, which takes into account a subjective perception of probabilities:

$$V(a) = \sum_{i=1}^{n} \pi(p_i)\, v(x_i),$$

note:
$\pi(p_i)$ – probability outcome function,
the function value $v(x_i)$ – determined deviation from the reference point (initial wealth).

The value should be treated as a function because of the asset position, which serves as a reference point and the magnitude of the change (positive or negative) from that reference point (KANEMANN, TVERSKY 1979, p. 278). In decision making, an individual is guided not by abstract principles of maximizing pleasure and minimizing losses (hedonistic position), but by encoding in advance the possible consequences of his actions as a benefit or harm, depending on the selected reference point. However, it should be noted that any actions or decisions are relevant only in a certain system of values. Rational behavior in one system may be irrational from the perspective of another (WEBER 1978, p. 20).

Modification of an individual's investment behavior based on risk and uncertainty perception

In theoretical science, one of the most common approaches to assessing an individual's process of decision-making under conditions of risk is to create conditions of gambling – lotteries. A participant in gambling, unlike the investor, can determine the exact probability of the results. However, investment based on the pyramid principle is something larger than the profit from chaos. Each individual creates his own risk perception based on a particular set of factors.

Uncertainty, as a condition in decision-making, is particularly characteristic of mechanisms that are built on the principle of the pyramid. There is uncertainty with the occurrence of loss, because it depends on the rate of involvement and demand of people. From a theoretical point of view, such a pyramid can exist as long as humanity exists (in the case of a constant influx

of new participants). But in reality, the number of participants is always finite and the activity period of the pyramids is limited. So, the selecting task becomes more complicated due to the lack of information about the likelihood of an event. Back in the 18th century, Isaac Newton, physicist and well-known mathematician had lost 20,000 pounds, taking part in the financial game known as "The South Sea Company". Later he said, "I can measure the motions of bodies but I cannot measure human folly" (WERNIK 2016, p. 5).

Mechanisms of solidarity distribution exist in the state system, which are characterized by uncertainty. For example, the solidarity pension system has the following features: the individual makes payments in exchange for future income. Today's funds are used for payments to previous participants. When the proportion of participants is violated and the number of former participants exceeds the number of active taxpayers, the financial mechanism fails. For example, according to statistical calculations in Ukraine, today it is required that one employed person must pay social security contributions sufficient for the monthly payments of two pensioners. Of course, the most stable guarantor – the State, assures such income. However, even under such guarantees, there are individuals who perceive the level of uncertainty of future earnings (and the risk of failure to receive anything at all) as one that negates the meaning of such investments.

In our opinion, it is interesting to investigate human risk perception under uncertainty in Eastern Europe, where a significant impact on the financial consciousness of people made a centrally planned economy that existed before 1991. Actually, its principles were the basis of some economic relations for a while. As a result, this was reflected in the creation of a risk culture in society, in the decision-making criteria and selection of financial instruments for investment.

The issues of risk culture in society should be explored separately for legal entities and individuals (households). Beginning in 1993–1995, the process of developed countries (Western Europe, USA) investing foreign capital into Eastern Europe began. Together with foreign capital, the models of corporate risk management were introduced, which is a decision-making system. Due to this, most companies were able to get readily developed action plans for circumstances under uncertainty or risk. In general, and until today, risk culture plays an important role in corporate management.

Far more difficult is analyzing the situation with risk culture at the level of ordinary individuals and households. The existence of a centrally planned economy a priori has not acknowledged the possible existence of risk or uncertainty. All spheres of life and fields of economy had formed centralized plans (usually five years). The redistribution of funds was held in accordance with a defined plan. Household incomes were clearly regulated by central

authorities; money circulation was under the supervision of the state. Tools to obtain additional income for individuals were also limited and defined by the state. In fact, individual life under those conditions corresponded to identified stereotypes in society. It created the appearance of a strong financial and social stability, which was provided not by a national wealth of the state but with central planning and regulation.

Such a system of relations formed a hierarchy of values in which the flow of financial resources was deprived of any risky nature. According to Gigerenzer, people tend to fear what the environment fears (GIGERENZER 2015, p. 81). In an example of post-Soviet countries, we can see how risk culture has evolved in terms of societal transformation. According to behavioral finance theory, there are always personal deviations in the process of assessing the actual condition, which leads to irrational decisions. Recent studies indicate that the evaluation process includes myths, illusions, aberrations, and cognitive inclinations (CZAPIŃSKI 2000, p. 202). The uncertainty of decision-making conditions causes changes in the border between the rational and irrational. The latest economic crisis in 2008–2009 clearly focuses on the psychological anomalism of investment decisions. Investors are said to be euphoric or frenzied during booms or panic-stricken during market crashes: "In both booms and crashes, investors are described as blindly following the herd like so many sheep, with no minds of their own" (SHILLER 2015, p. 94).

Empirical research in the form of a Russian trust company; the case of MMM

In 1994, in some post-Soviet countries, the activity of a trust company "MMM" was selected for an empirical evaluation at the level of the cognitive factor's influence on decision-making. Despite the fact that 20 years have passed, the effects that were found in the behavior of people are relevant today. The activities of "MMM" is an example of collective behavior of individuals under uncertainty. The only way to estimate the probability of losses was through personal subjective judgments based on limited information. Today it is recognized as one of the largest pyramid schemes in the history of Eastern Europe. Even the Federal Reserve System of the United States of America issued shares of "MMM" upon order (MAVRODI 2007, p. 68).

In 1992, in Russia (and later in other post-Soviet countries), the trust company "MMM" was founded. The main objective of the company was the trust management of shareholder contributions. Shares could be purchased at specific points of sale. The nominal value was 1000 rubles. Twice a week, the share prices were announced. It should be noted that the determination and

announcement of the value of shares was carried out under the direction of the company (self-quotes). The promised investment yield was 7000% in six months (CARVAYAL et al. 2009, p. 7). To clarify the situation, the interest rate on bank deposits in 1994 was 190% per annum and the inflation rate was 215%.

Based on existing economic and sociological observations, which were performed in 1994, it is possible to qualitatively describe the connection between an individuals' response to the changing situation with the trust company "MMM" and the effects that occurred (ZOTOVA 1994, p. 32–40).

The first phase of "MMM" was that the market value of the shares was, 1,600 rubles, yield – 100% per month; during the first stage, the demand was growing rapidly. The risk of non-receipt of funds for investors at this stage was subjectively assessed as minimal. A constant increase of customers provided the stability for payouts. From the standpoint of rational judgment, a decision must have been based on Hawley's principle, in which the higher the potential reward is expected to bring from a particular investment, the higher must be the risks associated with it, and therefore the higher likelihood that the investment can bring a loss.

The second phase was that the Ministry of Finance announced that such a high yield on shares of "MMM" had no economic basis; this caused panic among investors and a rapid sale of shares. Consequently, the price of shares on the secondary market was 2/3 of the officially announced price. Investors had overestimated the risk, which led to a significant increase in those wishing to quit the game at this stage, with a defined amount of money. The weight of subjective risk had increased.

The third phase was to correct the unfavorable situation. The company "MMM" decided to increase the stock's yield by 2,000 rubles every week. This caused changes in the weight of risk and profitability; the number of participants in the game grew rapidly.

The fourth phase included government information about high-risk investments and problems in the company. Shares of "MMM" caused panic on the stock market, and this reduced stock prices by 100-fold. Nevertheless, private investors had not sold shares in the hope of a change and due to high trust in the company. At this point, a number of effects were released: loss aversion, excessive self-confidence, trust, and uneven situation assessment. People gave more weight to their own aspirations and information on risk than the information on the risk of bankruptcy. This confirms the thesis of SLOVIC (1987, p. 280–285), that people do not necessarily follow the rational economic theory of decision making, thus suggesting that other variables play important roles in determining the willingness to take risks. The nature of risk and how it is perceived makes it the main component in how people make decisions, and it affects the courses of action they choose.

The fifth phase was that the company stopped pay outs and declared bankruptcy. According to expert observations, the consequences of the market activities of MMM were financial losses of $110 million for 15 million people.

Representation is the first criterion for analysis of subjective risk assessment. In our opinion, the principle of representativeness appeared at the macro level: individuals perceived the emergence of financial instruments in free circulation as changes in economic regimes. It is known that the early 1990s was a difficult period of transition from a planned economy to a market economy. Changes have taken place both at the macroeconomic level and at the level of societal consciousness. There was a significant difference in the living standards of the Soviet Union and Western Europe and the USA. The ordinary inhabitant of the former Soviet Union had a preconceived notion of unlimited possibilities of a market economy, freedom of enterprise and rapid earnings. Therefore, the emergence of the trust company, which was associated with market principles, was accepted as a new norm of life. Such false judgments (based on representativeness) can be observed in every major change of the socio-economic model of society.

Based on the observation of the investment behavior of people under risk in 1994–1995, the research group "Circon" has introduced some specific effects of decision making under uncertainty (RADAEW 2002, p. 58):

– Judgment instability that is under the influence of public opinion becomes irrational; under complete uncertainty, individuals behave contrary to the model of "homo economicus", because they are looking for additional information in society to limit uncertainty. Kępinski calls this process "information metabolism" (MISZCZYŃSKI, TARNOPOLSKI 2005, p. 12).

– The addictive effect of the financial game; despite a change in the form of the game, the rules, and the length of the game cycle, induced individuals to invest again; even after having negative previous experiences.

Value function formation. In this situation, it was important to form individual risk perception thresholds, the point where the risk criterion was higher than the benefits of participation in the financial game. In practice, this point can quantitatively describe the moment of the stock price decline (it had reached a predetermined unacceptable price – for example 500 rubles, 1,000 rubles) or a point of suspension or completion of the game.

Under the influence of an addictive effect, the individual risk perception threshold was being changed. After each sharp collapse in share prices, the limit for risk aversion was increasing but, over time, individuals psychologically acclimated to the given situation. Their own subjective value of the share price was growing even faster. Thus, with a slight increase in the share price of 3–3.5 times, individuals increased their own expected utility by more than 100 times. As shown in Figure 2, at the beginning of the financial game on January 21, 1994, the share price was set at 225 rubles. At the same time,

investors agreed on a maximum price threshold of 450 rubles. Later, the ratio was changing disproportionately: at an official rate of 300 rubles / maximum price threshold – 1,000 rubles; 330 rubles/9,000 rubles; 740 rubles/50,000 rubles. This demonstrates that individuals greatly overestimated the expectations from buying the shares. This situation had no economic basis, as the official price growth was slow. That was the subjective value of the accumulation of individual feelings, expectations, and collective action.

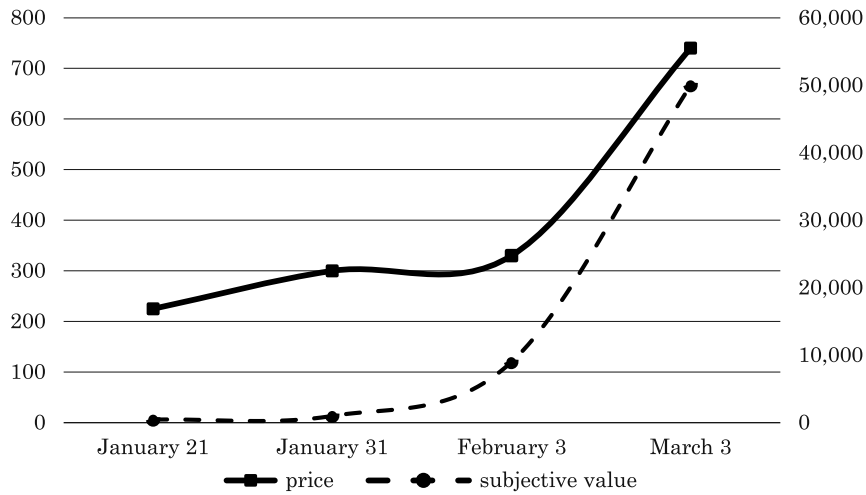

Fig. 2. Changes in price and the subjective value of MMM shares in 1994, thousands of rubles
Source: RADAEW (2002, p. 57).

Overconfidence. Overconfidence in judgments can at times influence people to believe that they know when a market move will take place, even if they generally believe as an intellectual matter that stock prices are not forecastable (SHILLER 2015, p. 172). According to a survey of the financial game participants, 70% were aware of the risk of investments. The mechanism of formation and distribution of financial resources was known (ZOTOVA 1994, p. 36). It can be concluded that the subjects took the high risk because they were confident in the possibility of obtaining high dividends. The role of excessive self-confidence of individuals in the process of risk assessment is seen in the work of Kindleberger and Aliber, "Manias, Panics and Crashes: A History of Financial Crises". The author describes the general model of the financial bubble, which is caused by widespread excitement among inexperienced investors which come into the market in the hope of a quick profit and then panic when it becomes clear that expectations were wrong (KINDLEBERGER, ALIBER 2005, p. 28–32). The mechanism of trust in "MMM" was similar to a story about a Thanksgiving turkey by Taleb (established by Bertrand

Russell). During its lifetime the turkey is constantly being fed, with each passing day, the likelihood of survival is increased. The turkey could conclude that it is in a winning situation. However, in spite of the existing theoretical reliability, the day of its death is already determined (TALEB 2012, p. 93). This is similar to the definition of risk in investing in a financial pyramid. Individuals within a certain period receive payments (dividends). On this basis, they have formed the view that the operation will always bring benefits. However, by its nature, a pyramid scheme is ultimately doomed to failure. Only the time of its occurrence is uncertain.

People tend to accept the risk in case of incurring losses. This can be partly explained by the fact that the financial game passed seven complete cycles. After each bankruptcy, contrary to the idea of rational behavior, people were again buying shares of "MMM" with the hope that it is possible to recover lost funds. The investment process in "MMM" passed all the classic stages that are defined in the theory of financial behavior for the game cycle (KINDLEBERGER, ALIBER 2005):

– Stage of rational investment (individuals were taking rational decisions and were forming a strategy for future behavior based on the initial conditions) – first phase of high benefits;

– Stage of euphoric participation of people (appears during the price increase) – this stage is illustrated in Figure 2: investors significantly increased their financial expectations of share price;

– Stage of panic – the second stage of the company "MMM";

– Stage of collapse and depression – the fifth stage of bankruptcy.

However, in the case of the "MMM" example, there was a deviation from the classical scheme of the game cycle as a stage of panic was replaced by the induced euphoria that pushed investors to the acceptance of the risk.

According to a survey conducted among 426 MMM shareholders in 1994, 60% confirmed that the promised interest could not be earned a priori (ZOTOVA 1994, p. 37). Therefore, the criterion of maximizing the utility from winning while individuals were making the decision to participate in the financial game was not singular. Beyond the promised high interest on deposits, a multi-constellation of socio-economic, political and cultural factors was held.

According to survey results, 45% of participants did not consider themselves deceived investors, and that they consciously accepted the terms of the game and the existing risk (ZOTOVA 1994, p. 37). One can say that the overall collective agreement allowed for a certain level of fraud. It is suggested that business people accept deception as part of most economic transactions and it is often justified by those engaged in it (CARR 1968). This means that the lack of financial literacy was not a major factor in the decision to participate in the financial game. Most investors have shown an increased propensity to risk. Each gain predetermined the increase in risk appetite.

The unevenness of information assessment. Individuals tend to give greater weight to the positive information that confirms their judgment than the information that denies it. For the most part, this is typical of inexperienced investors. Individuals need only emphasize the positive news and give less emphasis to the negative (SHILLER 2015, p. 67). It is considered that the information has a positive value to the individual if it causes a positive emotional condition (pleasure, luxury, curiosity) and is also expected. Negative information (negative emotion conditions) causes a fear of losses. Mechanisms of its estimation are different due to not only social and cultural factors but also to a biological structure. Recent studies show that there are independent centers for the evaluation of positive and negative information in the brain, which are called the centers of reward and punishment (KOZIELECKI 2000, p. 199). The Ministry of Finance's uneven information assessment of the danger of investments in shares of "MMM" (fourth stage) in 1994 caused most investors to not sell the shares and keep them with the hope of future earnings. Negative information about possible financial problems of "MMM" was not evaluated rationally. Moreover, the heuristic effect was reinforced by collective action because individualism was not characteristic of the post-Soviet society. Considering that the technological capabilities of the information transmission were very limited, interpersonal communication was very developed. The collective organization of society contributed to the unification of decisions on financial transactions with the shares of "MMM".

Availability heuristics. People may have a better understanding of financial concepts when they are confronted with them in their daily lives. The importance of experience is observed in countries that saw periods of hyperinflation. Thus, according to a survey by Standard and Poor's, perception and understanding of the mechanisms of inflation are higher in Argentina and Bosnia and Herzegovina compared to the average level in the world. This is because these countries had experienced hyperinflation in the late 1980's and early 1990's (KLAPPER et al. 2015, p. 11). In summary, this regularity can be extended to all significant economic recessions. That is, individuals having a previous negative experience with investment funds should in the future be guided by acquired associations. In the trust company situation, the availability principle appeared through the mass distribution of information about large payments. During 1992 to 1995 an extensive marketing campaign was performed (it attracted famous artists and prominent figures of the nation to advertise "MMM"). Moreover, in the first stage the dividends had actually been paid appropriately, so some participants who were at the higher levels of the pyramid were an example of probability. Thanks to the spread of positive information in society, the number of those wishing to become shareholders of "MMM" proportionally increased. Thus, the frequency of dividend payment assessment was distorted under the influence of the excessive subjective

weight of positive information. In our opinion, the error in assessing the probability of bankruptcy during the fourth stage of the "MMM" example was also caused by availability heuristics. Due to the proper manipulation of increasing stock prices in the third stage, the company actually nullified the risk assessment for investors, and eliminated previous negative emotions related to the loss. A significant decline in trust and in prices was artificially supported by increased self-quotation. This caused massive ignorance toward official warnings about the possibility of a "MMM" bankruptcy during the fourth stage, because people were comparing it to the previous stage. Greater weight was given to previous experience and associations about the revenue.

However, this pattern has exceptions. In 2011, an organization named "MMM" appeared once more in the market, which offered a yield of 20% to 60% monthly. In 2012, a return on investment was promised at the level of 30–75%. During 2011–2012, 35 mln people had funds invested. Pay outs stopped unexpectedly and the company announced their closure. In our opinion, the transfer of a negative experience into society has a limitation period: a change of generations updates the paradigm of risk and the concept of negativity. Here one can refer to Ulrich Beck who explained the change in the perception of risk influenced by the industrialization of society (BECK 1992). The range of accepted risks increases: the perceived uncontrollable risk of 100 years ago may currently be the norm. Some of the reasons that situations of irrational risk assessment appeared, particularly when making investment decisions, is the financial awareness and literacy of people. Research conducted by the rating agency Standard & Poor's shows the level of financial literacy in Eastern Europe: 38% of the Russian population can be considered as financially literate, in Ukraine – 40%, in Slovakia – 41%, in Poland – 42%, in Lithuania – 39%, in Latvia – 48%, in Hungary – 54%, in Estonia – 54%, in Belarus – 38%. By comparison – in Denmark, Norway and Sweden – 71%, in Canada and Israel – 68% (KLAPPER, LUSARDI 2015). This shows that most people take financial decisions with below average knowledge. This, in our opinion, is one of the factors that affect the proper assessment of risk under uncertainty[1]. Of course, there will always be a percentage of people, who tend to take high risk. It can be considered a natural tendency for risk taking (as well as the existence of natural unemployment), but most of the investors became participants of the pyramid scheme influenced by heuristics.

[1] It should be noted that the level of education affects the accuracy of risk assessment under uncertainty, however, according to the results of a social survey, the level of education is inversely affect the riskiness of individuals. Less risk appetite show people with education below average and those with higher education accept higher risks involved in investments (Issledovatelskaja gruppa Cirkon. 2011, p. 40).

Conclusions

The theory of analysis of the economic behavior of individuals under conditions of risk and uncertainty evolved from a purely objective approach to a modern subjective experience. The shift of attention to cognitive factors is due to the fact that the decision-making environment becomes more complicated, modernized, and informed. Classical approaches to risk assessment do not meet the needs of today's society because information volumes are increasing and require fast decisions. This reduces the value and completeness of conclusions drawn based on purely mathematical instruments.

As shown by this study, the mechanism of risk assessment and decision-making is not sustainable and is influenced by the environment. This is particularly illustrated by post-Soviet countries during the socio-economic transformations. Specifically, the problem of subjective risk assessment showed itself during the financial activity of the "MMM" trust company in 1994. A strengthening of behavioral effects when making investment decisions has been a compilation of cognitive, social, cultural, economic and political factors. There was a transition from collectivism to individualism in public relations; the economy was shifting from a planned system to a free-market system. Based on this, the specific risk perception was formed: underestimation of the high probability of bankruptcy and overstatement of income expectations. The study shows that the individual's financial behavior under the conditions of economic transformation has changed. That confirms the theory that behavior depends on different factors and is not stable in a transformation economy. The results could also be useful for financial lessons in countries that are facing transformation at the moment. Based on this conclusion, we can look from a new perspectives at investor behavior in post-soviet countries.

Further research should be focused on the identification of national cultures of risk. The level of accepted risk under uncertainty is the conditional limit, which is determined by society. This is confirmed by the re-establishment of the trust company "MMM" in the 21st century and great attention should be paid to it by the people. Considering the fact that the important preconditions for building an adequate risk culture are education, literacy, and human consciousness; it is important to take into account these factors in analyzing the decision-making process.

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