

THE IMPORTANCE OF BEHAVIORAL ECONOMICS IN THE STUDY OF THE INVESTMENT PROCESS

Ion Ignat, Prof., PhD and Andreea Grădinaru, PhD Candidate, "Al. Ioan Cuza"
University of Iași

Abstract: We live in a time when, in conditions of globalization and financial crisis, the issue of the investment process has become a major topic that is part of economic theories key discussions category. Traditional economic literature offers multiple models and theories concerning the behavior of investors, but the classical analysis starts from the premise of strict rationality and optimization of financial-monetary decisions. Theoretical and empirical studies have shown that in reality, individuals deviate from the rational model, don't always take the best decisions, they repeat the same mistakes over and over again, don't know how to calculate risks and they make business emotionally motivated. On this basis, it appears that the simple and intangible rules of the classical economics cannot always explain economic behavior, apparently non-rational of investors, which has led to the emergence of a new trend of economic thinking: behavioral economics. The aim of this work is focused precisely on highlighting the contributions that the economical branch has in explaining the investment process. Thus, in addition to the classical approach, the behavioral economics takes into account the human factor influence, through elements of perception, emotion and self-evaluation, elements that are involved in making and assuming the investment decision. By treating the present subject we are trying to demonstrate that a modern, comprehensive approach of the investor behavior that takes into account psychological factors specific to behavioral economics, can assist and improve the investment decision.

Keywords: investment process, behavioral economics, risk aversion, loss aversion, psychological factors.

1. Introduction

The central element of the research is highlighted in the title, the study represents an attempt to capture the theoretical elements that underlie the investment process in the new branch of economic science, behavioral economics.

In the present work I started from the assumption that the theories and principles of traditional economy cannot fully capture the aspects of the investment process, they are not sufficient for a full analysis of the phenomena registered in the last years and cannot generate new solutions because they do not take into account the psychological factors that interfere in the behavior of investors. Furthermore, specialized literature in the field shows that anywhere the human acts and exists, the human psyche is also present; there is no social phenomenon- and hence no economic - without psychological aspects or implications.

It is for this reason that I considered a real necessity to study psychological, social, affective and emotional aspects that influence the investment process, familiar with behavioral economics.

2. Literature review

Specialized literature presents the behavioral economics as a branch of economy which is based on the assumptions of human behavior, assumption which reflects the results of psychological studies and conclusions from other social and biology sciences. It aims to provide fair descriptive hypotheses about cognitive abilities and the emotional responses of individuals in economical decision-making, integrating in analysis both institutions that

prescribe organizational rules and norms of social interaction, as well as the context of specific circumstances (Schwartz, 2007, p.4).

Although the term behavioral economics is relatively new, the field of interest of this discipline has its origins in the work of the great classics, when microeconomics was closely linked to psychology. For example, the father of Economics, Adam Smith ([1759], 2006), in his book *The Theory of Moral Sentiments*, has proposed psychological explanations of individual behavior, and Jeremy Bentham described in detail the psychological bases of utility (Spiegel, 1991, p. 341-343).

One of the main pillars that behavioral economics lifted is the concept of limited rationality of humans in general and markets in particular, which is diametrically opposite to the main assumption of traditional economics, the theory of rational choice (unlimited). This concept supports the idea that the individual rationality is priori limited of certain factors, such as: access to information, reduced available amount of time and the cognitive limitations of human judgment.

Another basic concept that behavioral economics operate is the choice in terms of risk and/or uncertainty. Decision-making in risky and uncertainty situations are not just cognitive activities, because people react in situations of risk on two different levels: at the level of cognitive assessment and the level of emotional reaction. Risk perception and attitude toward risk are related to emotions. Empirical studies of Amos Tversky questioned the assumption that investors are rational. In 1995, Tversky demonstrated that the tendency of investors is to make risk-averse choices in gains, and risk-seeking choices in losses. Investors have seemed very risk-averse for small losses but indifferent for a small chance of a very large loss. This violates economic rationality, as it is commonly understood.

Daniel Kahneman, along with Amos Tversky showed that when potential earnings are released, most people have a behavior that indicates risk aversion (risk-averse), and when they are faced with potential losses, the same people become seekers of risk (risk-seeking), having the conduct of a gambler who raises the stakes in the hope of eliminating losses. This observation has been demonstrated empirically through numerous investigations and led to rejection of the conclusions of the classical theory of anticipated utility developed by mathematician Daniel Bernoulli.

Also, together with Amos Tversky and others, Daniel Kahneman established a cognitive basis of common human errors using heuristics and prejudices (Kahneman and Tversky 1972, Kahneman, Slovic and Tversky 1974).

Researches have shown that individuals tend to mimic the gestures and decisions of others. There is so-called "social pressure" to conform to the crowd, even among professionals and financial market analysts. Effect of herd tends to reduce regret, because imitating other behavior induces a sense of comfort among individuals, as well as rejuvenation of assuming responsibilities (Muradoglu, 2010, p. 8). Gregarious behavior also amplifies the effects of the economic and credit cycle as decisions are becoming more uniform (Rizzi, 2009, p. 89). Furthermore, individuals tend to focus on the present and to undervalue the future. The effect of this kind of behavior lies in making decisions by individuals that they will later regret.

In 1988 Shefrin and Thaler have developed a pattern of saving "the behavioral life cycle". According to this model, people don't calculate the savings and expenditure rates so as to maintain a constant level of consumption throughout their lives. Instead, they discover that people prefer immediate satisfactions and not consumption and expenditure balanced long-term (Urse, 2009, p. 400).

The role of emotions and attitudes that define the investment process are beginning to be taken more into account in the context of behavioral economics, with an emphasis on the concept of emotional intelligence and the possibility to induce the investment behaviour

through emotions or affective states that lie, more often than not, at the cognitive dissonance basis.

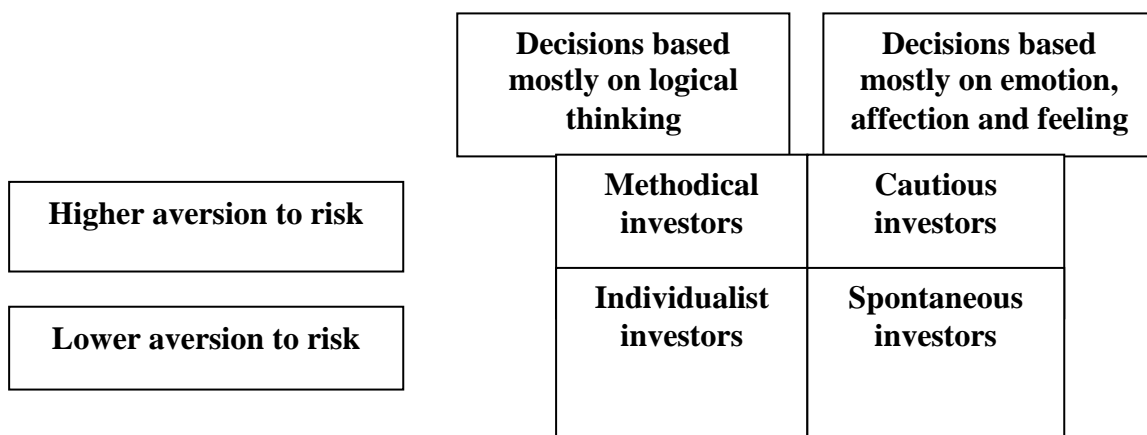
3. Investors aversion to risk

Uncertainty and risk are two coordinates of the economic environment in which economic agents operate. Study and determination of the influence which they induce over investment process remains a permanent issue to debate. Making a raid upon the history of economic theory, it can be seen that the concepts of risk and uncertainty have a relatively short history. In this respect, Daniel Bernoulli was the first that in 1738 showed the link between risk and expected utility, but without placing the two concepts in economic theory. Bernoulli was followed later in 1921 by Frank Knight, who in his work *Risk, Uncertainty and Profit*, has hunched the importance that those two notions could have in economic analysis. But, for the first time, these terms have been formally used in economic theory by John von Neumann and Oskar Morgenstern in 1944, when they published the *Theory of Games and Economic Behavior*. They have developed an objective approach to the adoption of decisions in terms of risk, posing the anticipated utility hypothesis.

After World War II, the concept of "risk aversion" was analyzed by Milton Friedman and Leonard Savage (1948), as well as Harry Markowitz (1952). Harry Markowitz elaborated the fundamental notion of future expectations, when the element of risk must be getting into the game, capitalizing the theory of expected utility. He formulated the theory of optimal portfolio selection in the context of compensation between risk and income, focusing on the idea of diversifying the portfolio as a method for reducing the risk. The principle was simple, exposed in an elegant mathematical form: the higher the risk of securities, the greater the flow demanded by investors. In other words, investors are willing to accept the risk in the market, only in exchange for compensatory risk premiums.

Therefore the aversion to risk is defined as the desire to avoid uncertainty, mathematical quantified through an anticipated value, which the investor wants to minimize or eliminate in order to obtain a higher certainty. Depending on the risk aversion and cognitive decision process, investors are divided into four categories: methodical investors who take decisions based on logical thinking, the second category is represented by cautious investors whose decisions are based on emotion, affection and have risk phobia, the third category is specific for individualists investors with reduced aversion to risk, and the last category is represented by spontaneous investors whose decisions are taken on the basis of feelings and presenting a reduced aversion to risk. (Figure1).

Figure 1 - The type of personality and its impact on the cognitive process of investment decision



The fact that investors have aversion to risk is a very strong and very hard to fought assumption, with a lot of sense economically speaking. But economic reality, however, raise a question: *how much this hypothesis can be confirmed? Individual investors really have aversion to risk? And if not, what cause them to behave irrational?*

4. Prospect Theory

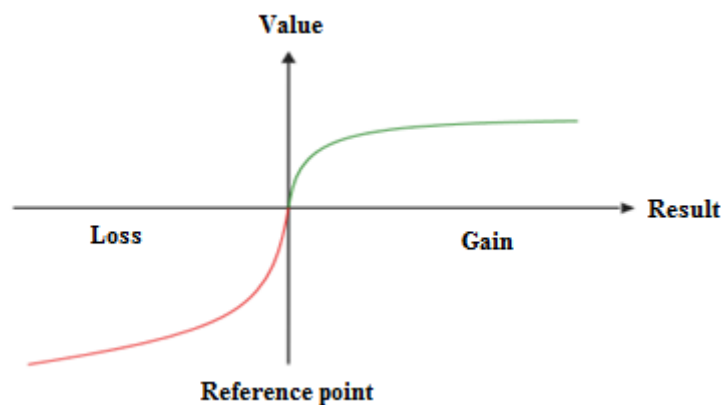
As I showed above, traditional economy by modern portfolio theory assumes that investors always have aversion to risk and that they will try to avoid, as much as possible, a large degree of uncertainty of personal finances. In other words, the investor is willing to assume and believe that it can successfully face uncertainty associated with the process and investment decision.

In contrast comes behavioral economics who believe that the assumption of risk aversion of the investor is oversimplified and ignores the actual behavior. Furthermore behavioral economists sustain the idea that investors have aversion to loss rather than aversion to risk. The distinction between risk aversion and aversion to loss can be extremely fine but practically the investors will always seek to avoid even the smallest probabilities of losing capital. For this they will be willing to take even more risks.

In response to modern portfolio theory specific to traditional economy, behavioral economists Daniel Kahneman and Amos Tversky (1979) published in *Econometrica Magazine* an article called *Prospect Theory: an Analysis of Decision under Risk*.

The theory represents a response to rational decision model of economics and has as theme the study of the behavior (i.e. decisions) toward risk taking in terms of gain or loss; it is one of the demonstrations of irrationality of decisions, due to the fact that emotion plays an important role in the decision process.

Figure 2 - Graphical representation of the value function



The theory is based on two experimental findings: on the one hand people attach less importance to the probable outcomes compared to those considered safe, and on the other hand people hate to lose more than they like to win. As a result, take birth two phenomena: the phenomenon of risk aversion in the decisions in which the subject is designing a certain gain (or this idea is induced) and the phenomenon of risk assumption at the time when the subject is designing a certain loss.

By analyzing the figure above it can be seen that in the positive zone, the curve respects the principle of marginal utility, breaking relatively quickly, while in the negative zone it accelerates more powerful, having a tendency to touch the reference point. Basically, the feeling that a person has, being in the position of loss is much more intense than the one

that has the same person, being in the equivalent winning position, this causing the emergence of an asymmetrical behavior. In other words, the attitude toward risk is, in most cases, a result of the situation in which it is a participant in the market. Mainly due to this factor, we can observe dramatic differences of liquidity in the real estate market between periods of increase and decrease of prices.

The problem is the framing effect, i.e. framing in different ways an identical situation. In other words, a wrong decision emerges on the framing effect: people make divergent choices in identical situations because they frame them differently, the decision depending on the mode of framing, the interpretation frame. To evaluate disproportionate the loss in relation to the gain represents a different mental framing of an identical situations. It's an aversion to the risk of loss: decisions regarding the prevention of a loss are more aggressive than those regarding a gain.

Perspective theory has a more ordinary explanation: "if I give you a beautiful house and a Lamborghini, I transfer a million dollars in your account and I provide you a social network and if, after a few months, I take it all from you, in the end you'll be in a much worse situation than if nothing had happened in the meantime." (Taleb, p. 419).

Therefore, Kahneman and Tverski showed that decisions are heavily influenced by the way the problem is stated. The proposed theory shows that the way in which the classification of problem data has the potential to manipulate people's decisions, and their experiments have proved that people have asymmetric attitudes toward risk and that the losses are felt more intense than earnings.

They have managed to revolutionize the classical and neoclassical thinking based on "ideal" normative models of economic action, in which human agents seek to maximize the usefulness of possible results, choosing "rationally" between alternatives with known probabilities. The two have come to define and explain an entire series of "irrational" paradoxes observed in economic practice, such as the tendency to retain shares whose stock value fell, tend to sell shares whose value has increased, the ability of risking less after winnings and more after the loss, making decisions according to the described goals and potential outcomes, etc.

To illustrate even better the contribution of prospectus theory in decision-making process, I've resorted to a phenomenon of contemporary reality that about 75% of households in the United Kingdom and 50% of those in the United States do not have any portfolio of stocks. At the same time, an important segment of the population constantly invests in lotteries held by the State.

According to traditional economic thinking, this is irrational and contradictory. If on the one hand, an investor is averse to risk so he avoids shares, then he should not play the lottery; on the other hand, if the investor is quite tolerant in terms of risk to play the lottery, then he shouldn't avoid the shares.

This phenomenon finds its explanation in the theory of prospectus: what causes irrational behavior is a measure of aversion to disappointment – the way the people feel much pain from a certain loss than the pleasure of a gain equal with the same monetary value as the loss. Many individuals assume logically that the loss and gain are psychologically "symmetrical" - but in reality, studies have shown that the loss is three times more painful than the pleasure brought by a gain. So, the logical behavior, tending to avoid loss, would avoid those situations in which losses could be substantial — as is the case of stock exchanges.

5. Psychological factors and investment decision

In the study of the investment process, specifically in the decisions made by investors, besides the objective factors provided by the market, also interfere a series of psychological

factors which often lead to distortions of their attitudes relevant to the theory of the prospectus. On the one side are emotional reactions such as excessive confidence in their own predictive abilities, avarice are fear, regret and fear of regret, and on the other side are cognitive errors: the optical illusion, mental anchoring, auto-assigning, disposition effect, mental compartmentalization etc., that appear as a result of incorrect or wrong managed expectations. In the following we will try to detail some of the psychological factors considered relevant in the context of investments.

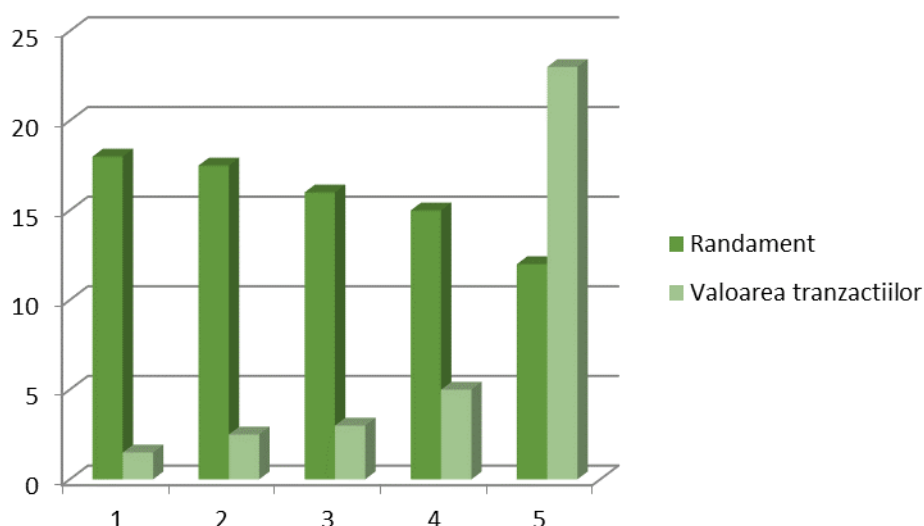
5.1 The exaggerated confidence in own predictive abilities (overconfidence bias)

There are various studies that support the idea that investors generally have an exaggerated confidence in their own abilities. Usually the amount of time that investors allocate for their investment predictions is very low, a phenomenon called exaggerated confidence in prediction (prediction overconfidence). For example when a prevision is made relating a stock price, investors will have a tendency to include too few determinants factors in estimating the profits that they can acquire, anticipating for example an increase or decrease of about 10%, even in circumstances when the historical price trends demonstrated deviations higher than this level. Investors who are showing an exaggerate confidence in their own abilities can trade too much as a result of belief that they possess special knowledge that others don't have. Excessive trading has proven to lead to poor results over long term.

Investors are also often very sure of their judgments and analyses, phenomenon which is called exaggerated confidence in their own abilities of persuasion (certainty overconfidence). An example of this is the situation in which investors, having made the decision according to which a company is a good investment, they often become blind to the possibility of loss, being surprised and disappointed when the investment is evolving in a different direction than the one desired. In this situation many times investors trade far too much and keep less diversified portfolios.

Over the years various researchers have examined the negative effects that excessive self-confidence can bring to decision-making process and its output. Thus between 1991-1997, Brad Barber and Terrance Odean studied the transactions of 35.000 individual investors, all of them owning investment accounts at large brokerage firms and they published in 2001 the article "Boys will be boys: gender, overconfidence and common stock investment". The two authors were particularly concerned about the influence of excessive confidence on the behavior of male and female investors. Barber and Odean noticed that due to the fact that men have more confidence in their own powers than women, they will decrease the expected utility through an excess of trading, as you can see in the figure below.

Figure 3 - The ratio between the value of transactions and the net flow



Source: diagram created by authors after Barber and Odean *Boys will be boys: gender, overconfidence and common stock investment*

In the end the two concludes naming the excessive trust in own abilities as being risky for personal wealth.

5.2 Avarice and fear

The renowned investor Warren Buffett noticed in 1986 that: we are fearful when others are greedy and greedy when others are fearful (Heller, 2000). Greed and fear of individual investors play an important role in the process of decision-making. Their greed to win as much as possible in a very short time determine them to invest excessively; similarly, their fear, sometimes unfounded leads to instinctual decisions to sell or purchase. An example of this is the crisis triggered in 2008, when after the sudden drop of markets, some speculators, knowing the state of fear of investors, have manipulated the situation by spreading certain rumors about companies, which prompted the investors to sell blindly to not have substantial losses.

5.3 Regret and fear of regret

Regret is the frustration which arises as a consequence of a wrong choice (Statman, 1999). Regret inside of investment process refers to the emotional reaction of the investor when he commits a mistake. When investors realize that they had taken an incorrect decision, they have the tendency to avoid selling stocks that have plunged in value and often to sell stocks whose value grew prompt.

5.4 Anchoring and adjustment

Anchoring and adjustment represent other factors of influence for the investment process. When they are asked to assess the value of an unknown size, investors generally start from a point of reference, an "anchor", which then adapts it to reflect subsequent information or analyses. There are multiple studies that prove that no matter how well the anchor was initially selected, individuals are attracted to adjust it insufficiently, so finally reaching to misleading conclusions.

In 1987 Gregory Northcraft and Margaret Neale conducted a survey in this regard in which they quizzed a number of real estate experts about the price of a house, which was divided into two groups. They have been asked to offer a price at which the property should be put up for sale, a maximum price and minimum price the seller would have to accept. The house was presented in detail to each group separately then they receive a price offer. Both

groups received the same information, the only difference being that the first group of experts received a price offer bid lower than those in the second group. Results of the study revealed that those who have received a higher price offered an assessment at a higher price and those who have received a lower amount would have made an assessment that has led to lower values, as can be seen in the table below. Therefore, different anchor value led to different results, thus the hypothesis of anchoring and adjustment error being validated.

Group 1	Group 2
The offer price = \$ 117.745	The offer price = \$ 130.981
Estimated appraised value = \$ 128.752	Estimated appraised value = \$ 144.202
Purchase price = \$ 111.454	Purchase price = \$ 127.316
The lowest acceptable bid = \$ 111.136	The lowest acceptable bid = \$ 111.136

Conclusions

As a result of the study conducted it could be observed that traditional economy, although it includes designs and developments of perfectly logical theories cannot fully capture the investment process hypostases, especially those elements of behavioral-psychological nature. This has led to the emergence of a new approach, the behavioral economics that takes into consideration the independent variable corresponding to psychological, social, affective and emotional aspects.

Studies undertaken by behaviorists, mainly by Daniel Kahneman and Amos Tversky showed that: in general, individuals do not have all the information they need to decide on a rational economic way, emotions can affect the ability to make decisions rationally, and people seem to feel aversion to loss, more than aversion to risk.

Therefore, what I have outlined in this research is the fact that for a correct analysis of the investment process must be also taken into account the subjective and psychological aspects presented by behavioral economics that moves the rational behavior from traditional terms presented by the classical and neoclassical economic literature in new coordinates.

Therefore, we believe that a exhaustive approach of the investment process is the one that can improve the financial decision. It is true that this complex approach to this phenomenon may hinder the economic models development, but taking into consideration all the factors involved in the way in which individuals invest would enable a better explanation of the investment processes and would lead to a more accurate management of transactions.

References

- Barber, B. M., Odean, T. (2001), *Boys will be boys: gender, overconfidence, and common stock investment*, The Quarterly Journal of Economics.
- Bernoulli, D. (1738), *Evolution and economics under risk*, University of Basel, Switzerland.
- Friedman, M., Savage, L. (1948), *The utility analysis of choices involving risk*, Journal of Political Economy, 56.
- Kahneman, D., Slovic, P., Tversky, A. (editors). (1982). *Judgment under uncertainty: Heuristics and biases*, Cambridge, England: Cambridge University Press.
- Kahneman, D., Tversky, A. (1979). *Prospect theory: An analysis of decision under risk*. *Econometrica*, 47(2), p. 263-292.

- Kahneman, D., Tversky, A. (1984). *Choices, values, and frames*. *American Psychologist*, 39(4), p. 341-350.
- Kahneman D., Slovic P., Tversky A., *Judgment under uncertainty: Heuristics and biases*, Cambridge University Press, p, 306-334.
- Katona, G. (1951), *Psychological analysis of economic behavior*, Editura McGraw-Hill, New York.
- Knight, F. H. (1921), *Risk, Uncertainty and Profit*, MA: Hart, Schaffner & Marx; Houghton Mifflin Co, Boston
- Markowitz, H. (1952), *Portfolio selection*. *Journal of Finance*, 7(1), pp. 77-91.
- Muradoglu, Y.G. (2010), *The banking and financial crisis in the UK: What is real and what is behavioural?*, *Qualitative Research in Financial Markets*, Emerald Group Publishing, 2(1), p 6-15.
- Rizzi, J. (2009), *Behavioral Basis of the Financial Crisis*, Senior Investment Strategist, CapGen Financial.
- Schwartz, H.H. (2007), *A Introduction to Behavioral Economics: The complicating But Sometimes Critical Considerations*, Social Science Research Network. Available at [http://papers.ssrn.com/sol3/papers.cfm?abstract_id=960222].
- Smith, A. (2006), *The Theory of Moral Sentiments*, Editura Metz Libri, SaoPaulo, [http://www.ibiblio.org/ml/libri/s/SmithA_MoralSentiments_p.pdf].
- Spiegel, H.W. (1991), *The growth of Economic Thought*, Editura Duke University, Carolina
- Taleb, N.N. (2010), *The Black Swan - The Impact of the Highly Improbable*, Editura Curtea Veche, București.
- Thaler, R. H., Mullainathan, S. (2008), *How Behavioral Economics Differs from Traditional Economics*, în *Library of Economics and Liberty*, [<http://www.econlib.org/library/Enc/BehavioralEconomics.html>].
- Urse, L. (2009), *Lecturi și reflecții pe marginea unei probleme și a unei dezbatere*, *Calitatea vieții*, XX(3-4), p.399-403.
- Von Neumann, J., Morgenstern, O. (1944), *Theory of Games and economic Behavior*, Princeton University Press.