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**Irrationality in Decision Making –
an Experimental Economics Based Approach**

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Abstract

Economic decisions based on individual choices and individual behaviour can nowadays be assessed considering a change of paradigm. Economists learn and teach the basic principles of rational behaviour based on the homo economicus concept. But when assessing real life situations from our economy and related decisions, one can find out that irrationality is an important element determining our decisions. This triggers a change in re-evaluating the theory and the principles which are the basis for decisions in an economic context. The present paper deals with the subject of irrationality in decision making, presented based on an experimental economics approach. The selfishness axiom, which is a theoretical model explaining human behaviour in an economic context, is analysed, trying to raise questions about the fact that according to this theory, individuals try to maximize their own material gain. The present paper analyses to which extent such a behaviour can be induced by society, by ethics, principles and values, by the economic, social and cultural environment. The paper brings in question to what extent decision making is really based on rational models such as the rational consumer model or rather on irrationality as a key-factor influencing decisions in the economic environment. As a research method, strategic interaction based on behavioural game theory is used in the present paper, such as the prisoner's dilemma, analysing the issue of cooperation and coordination. The findings of behavioural economics are assessed using an interdisciplinary approach, as experimental economics brings together assumptions from economics, sociology, psychology, anthropology as well as legal and cultural aspects.

Keywords: irrationality, experimental economics, homo economicus, behavioural game theory, the prisoner's dilemma.

JEL Classification: A11, A13, C90, C91, C92, D01, D11, D12, D90, D91, F61, I25, J01, J08, M14, M21.

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1. Introduction

Experimental economics is a challenging field dealing with complex issues of human behaviour. The scientific basis for studying human behaviour is multidisciplinary, bringing together economics, psychology, sociology, and even neuroscience and legal aspects. The common element of all these disciplines is the model of individual human behaviour (Gintis, 2007).

The factors influencing individual human behaviour are researched by the field of Experimental Economics, trying to find out to what extent predictions of economic theory can be validated. Especially in this context, it is interesting to find out to what extent pecuniary incentives play a role in economic decision-making. According to research findings, it is actually the influence of non-pecuniary incentives which determines economic decision-making of individuals. Trust and reciprocity play a more important role than money as an incentive. This is a hypothesis to be validated by Experimental Economics, and it is also subject of the present paper. Ultimatum games highlight the above-mentioned aspects, by emphasizing the role of psychological factors in the context of social interaction. Economic decision-making is, in fact, a situation of social interaction with all related components of learning and communicating (Morgan, 2005). The importance of trust in this situation of social interaction is very high. In order to analyse the importance of trust, it is relevant to research how trust can be built and what determines trust, which is a research objective of the present paper. The formulated research hypothesis underlines the fact that economic decision-making deviates from the classical economic models based on rational decision making. There are also other factors, mainly irrational factors that influence economic decision-making, which are difficult to quantify.

Cultural influences can also play a role in economic decision-making. This is also a research hypothesis to be examined in the present paper, in order to find out to what extent cultural values may determine a specific type of economic decision-making process. This research brings more clarity related to the question if cultural factors or values such as equity or altruism may influence economic decision making and if they may explain some deviations from classical economic prediction models (Henrich et al., 2005).

Cultural factors are not necessarily rational decision-making factors. Again, there is more than rational thinking that influences economic decision-making. Values like equity, fairness, and altruism are important factors influencing economic decision-making, and they deviate from the classical rational model focused on pecuniary aspects and on profit maximization. This development is obvious in the current business environment, in the producers' behaviour. Today, producers do not only focus on the main objective of profit maximization, but also consider as well other factors such as corporate social responsibility. This is as well a field of decision making showing that not only rational factors determine economic decisions. There are values and moral criteria playing as well an important role in economic decision making.

The present paper analyses the research hypothesis of irrationality in economic decision making by reviewing the specific literature, leaving as well open space for new experiments in order to validate the formulated research hypothesis. The present paper is a theoretical article, a review article presenting important theoretical aspect of Experimental Economics related to the subject of irrationality in decision making. The main objective of the article is thus to summarize some aspects that are important in the field of Experimental Economics, which is a new research field especially in the Romanian academic context. A next step would be to organise based on the studied theoretical background presented in the present article, an own experiment, to design it and to perform an in-depth analysis of the elements that are presented in this paper. The novelty and originality of the present article is represented by the fact that for the moment there are no experiments performed in laboratories in the field of Experimental Economics in Romania. The present paper also proposes a cross-cultural perspective, which is also something new for the Romanian academic research in this specific field.

2. Problem Statement (Literature Review)

2.1 Change of Paradigm in the Specific Literature

Studying the specific literature which is relevant for the present paper, a shift of paradigm can be noticed. This shift of paradigm shows how the research field developed and how perceptions related to the factors influencing economic decision-making changed over time. The literature was selected considering the criteria of reflecting the change of paradigm over time related to the research topic and of underlining this development. Older literature as well as current literature was chosen for reflecting the change of paradigm.

The “rational actor model” presented by Gintis is based on the fact that individuals make decisions based on the information they have access to. The “rational actor model” was developed by John von Neumann, Leonard Savage and assumes that individuals can determine the logical and mathematical consequences of their actions and choices. The principle of expected utility guides individuals in their behaviour according to this model. The author refers to this model as the “beliefs, preferences and constraints model” (“BPC”). The brain as a decision-making organ has the most important role in the decision-making process, according to this author. The author also speaks about the internalization of norms and values, which happens in time based on cultural development and which influences the decision-making process. The author uses as well the term “gene-culture evolution” to explain the changes in decisions induced by cultural development of humans. When a norm is internalized, it becomes a value that is observed. Such a value is, for example, fairness, being honest. If the norm is internalized, an individual will be honest or will try to be fair even if this is not in their own advantage, if they have no payoffs. This kind of interaction is important in a social environment, where the strategic interaction with other individuals and the response to actions of other

individuals are mentioned by the author under game theory (Gintis, 2007). More detailed considerations about game theory will be analysed further in this paper.

The shift of paradigm is obvious in the literature, as former authors mentioned competition situations as relying on rational decisions (McAfee et al., 1996). More recent authors mention the importance of psychological factors, of beliefs and values in decision-making (Gintis, 2007). Former authors mention rather Cournot-Nash-equilibrium situations based on non-cooperative behaviour and on quantity as a parameter in competition when describing economic issues on the market (Nash, 1950; Nash, 1951), while more recent authors, create models based on a Bertrand-equilibrium, with competition in prices and quality (Nagurney, Wolf, 2013).

Human behaviour is explained in the literature by means of the “selfishness axiom” (Henrich et al., 2005). The authors explain the concept of “selfishness axiom”, meaning the fact that human behaviour is self-regarding (Henrich et al., 2005). In recent years this theory has been reconsidered (Gintis, 2007), which is an evidence of the shift of paradigm in this field. The literature states that the violations of the selfishness axiom occur and that they are proven in conducted experiments (Henrich et al., 2005). In recent years this theory has been reconsidered (Gintis, 2007), which is an evidence of the shift of paradigm in this field.

2.2 Game Theory in Experimental Economics

In Game Theory, there are players who are multiple decision makers. They have information about the rules of the game, and they build their own strategies according to the provided information and according to their beliefs and constraints. For each strategy choice, the decision makers have to consider a certain payoff to the players. Each player intends to maximize his preference function according to the information he has, as well as to the beliefs he has, and to the constraints he faces (Kreps, 1990; Gintis, 2005).

Behavioural game theorists explained in the specific literature that individuals are not self-regarding in their actions and in their economic decision-making. They care about the payoff of other players as well. They care about honesty and decency and guide their decisions after these values (Fehr, Gächter, 2002; Gintis et al., 2005; Gneezy, 2005; Wood, 2003). The authors specify also that individuals care about power, self-esteem, and behaving morally and consider these parameters in their economic decisions (Bowles, Gintis 2005; Gintis 2003; Wood 2003).

3. Research Questions / Aims of the Research

As the present paper is a theoretical review article, its main objective is to summarize some important general theoretical aspects of Experimental Economics which are relevant when trying to design an experiment on the topic of irrationality in decision making. The research field of Experimental Economics is a new one at international level and thus it is new as well for Romanian research. In a first step, some general aspects that are important for Experimental Economics are summarized in the present paper, in order to raise awareness regarding this

interesting research field. In the next step, an own experiment will be designed by the authors and will be implemented as soon as the needed infrastructure will be in place, meaning a laboratory permitting to perform experiments in this field. In order to be able to design the experiment, some general theoretical knowledge is needed. Starting with this theoretical, general basis, a specific experiment will be designed in order to analyse the presented aspects in the Romanian environment, in a detailed manner. This will permit some conclusions regarding the specific context of Romania. Such an approach has a high degree of novelty in the Romanian academic context.

4. Methodology

The present paper is a review article and therefore it considers important opinions of authors expressed in the specific literature related to the researched subject. Books on the research topic as well as scientific articles (Science Direct, Elsevier) have been consulted. The selection criteria for the review of the specific literature were to find experiments which are important for some general aspects of Experimental Economics on the topic of irrationality in decision making and that would help to design an own experiment of the authors, once the needed infrastructure will be provided. After studying relevant conclusions of experiments performed worldwide, an experiment in a Romanian laboratory could be designed in order to formulate own research results applied to the Romanian environment. This is why some general aspects of the attitude related to gains and losses have been selected when studying the relevant literature. The cross-cultural component was also an important selection criterion. Experiments from the United States of America, as well from Japan have been presented in the present paper. Values like trust and reciprocity have been analysed in these international experiments. They will also be analysed in a further research step in the Romanian environment, after designing an experiment in a Romanian laboratory, which would be a future research step of the authors of the present paper. For the literature review, those authors were selected, who have research results that could be interesting to study in the Romania environment. Some aspects to be studied, like the importance of trust and reciprocity in decision-making, were mentioned in the present research. They will be implemented in a future research step, and they will be included in an own experiment, with a practical application on the Romanian environment.

The use of qualitative research methods is encouraged in economics (Carlsson, 2018), an aspect that has been considered in the present paper. This is why a qualitative research approach was selected for the present paper.

The novelty of Experimental Economics is underlined, and the change of paradigm brought by the development of this new field of economics is pointed out in the present paper. The paper presents theoretical models that appear in the researched literature, such as the “rational actor model” and the selfishness axiom, which is a theoretical model explaining human behaviour in an economic context.

Furthermore, the paper analyses the importance of Game Theory related to the subject of irrationality in economic decision-making. Some specific examples and

case studies illustrating the application of Game Theory in competition situations are presented in the present paper. Metadata available in studies and research articles is also interpreted and evaluated.

Ultimatum Games are analysed in order to validate some research hypotheses of Experimental Economics, for example, the research hypothesis that individuals react differently to sharing gains than to sharing losses. Experiments concluded in the United States of America but as well at international level including countries like Japan are given as practical examples of experiments. The cross-cultural dimension is considered in this research paper.

The paper has a multidisciplinary approach, considering elements of economics (especially advanced microeconomics), psychology, sociology, and neuroscience as the field of Experimental Economics is one with interdisciplinary dimensions.

In the next phase, an own experiment will be designed in order to validate the expressed research hypothesis.

5. Findings – Results and Discussions

5.1 Perceptions of Gains and Losses – a Cross-cultural Perspective

The results of an experiment conducted in the United States of America show that people behave differently when they have to divide losses than when they have to divide gains (Nancy Buchan et al. in Morgan, 2005). This is a research finding based on an experiment conducted in the United States of America. People try to avoid losses, and therefore, as shown in the experiment, people act differently when they have to decide to divide losses than if they have to divide gains. In the conducted experiment, the amount demanded and the amount offered are higher under losses than under gains. A consequence of this research finding is that there are differences between bargaining over losses compared to bargaining over gains. Individuals demand and offer more in ultimatum bargaining in order to avoid losses as much as possible (Morgan, 2005). This is an important research finding for industries dealing with losses, such as the insurance industry, for example. The consulted experiment was performed in the United States of America, but the literature states that this type of behaviour may be generalized, as suggested by the work of Roth, Prasnikar, Okuna-Fujiwara and Zamir (1991) and later Henrich et al. (2001; Morgan, 2005, p. 19). Fairness matters, as well as an important factor related to bargaining over losses and over gains. The principle of profit maximization is thus applied differently, depending on the context of bargaining with losses or with gains (Morgan, 2005).

5.2 Psychological Factors in Decision-making

Assumptions in Economics are currently being reconsidered based on evidence from psychology and neuroscience. In this context, the field of Experimental Economics offers the opportunity to test a certain research hypothesis in a laboratory in order to validate it. A shift of paradigm from the classical model of rational behaviourism, based on the rational self-interest model, towards other models, based

on findings in psychology and neuroscience. A research question related to this subject is why people make irrational choices. In order to answer such a question, findings from economics, psychology, and neuroscience have to be considered. Market anomalies, which are deviations from classical rational models, may be explained by means of irrational choices of individuals (Hilton, D. in Lewis, 2008). Cultural beliefs and values, such as fairness and trust, also play an important role in decision-making. These may be learned values influenced by society and culture.

5.3 Irrationality and Game Theory

Game theory predictions are based on the assumption that agents decide based on rational thinking and that they try to achieve Nash equilibria. The evidence from experiments shows that this hypothesis is falsified. Game theory assumptions are based on the idea that agents decide on a self-regarding basis. Another aspect which is problematic in Game theory is the assumption that individuals have a symmetrical access to information, which is not true in real life situations (Gintis, 2005). In real life situations, individuals do not necessarily seek situations representing a Nash-equilibrium (Gintis, 2007).

The payoffs in game theory are monetary payoffs representing utilities. Players try to maximize their payoffs based on a rational behaviour, acting according to their knowledge and beliefs. In other words, they try to achieve the best possible result in the given circumstances (Gintis, 2007). What happens in reality and which falsifies the assumptions of game theory is the fact that individuals decide based on other criteria than the monetary payoffs, such as trust or fairness or other values they have been educated to apply or to comply with. Sometimes this type of behaviour does not represent the best monetary payoff obeying the profit maximization rule, but due to education and culture, it is considered to be the best way to act.

5.4 Prisoner's Dilemma and Other Dilemmas

An example related to Game Theory is the Prisoner's Dilemma, illustrating the behaviour of cooperation respectively non-cooperation of two rational individuals. The fact that in a situation in which it would be more advantageous to cooperate, the two individuals participating in a crime do not cooperate and decide to betray each other is not rational from the point of view of Game Theory. But it happens in real life, due to psychological, perhaps irrational factors. It happens as well on the market, especially in oligopolies.

Besides the Prisoner's Dilemma, the literature also mentions the Volunteer Dilemma. This dilemma refers to a person waiting for others to intervene and to bear the cost of this intervention. The person waiting for help has the role of a bystander. The bystander would in such a situation intervene only if he knew that nobody else would intervene (Gintis, 2007).

5.5 Possible Research Impact and Research Limitations

The future research impact of the present paper is important, as it represents the basis for future research. The authors intend to improve their research and to develop an own experiment in the laboratory based on this theoretical research. Such a practical research in Experimental Economics would have an important impact on future research, as it would contribute to the development of a new research area. Experimental Economics is a field of great interest and it would be very important to further develop this field in Romania, with the possibility to design own experiments and to study some general aspects applied in the Romanian environment. It would represent an important step in Romanian economic research. It would also place the Romanian research in the context of international research.

Possible limitations of the present research may appear as the field is so new that there were no laboratory experiments performed until now in the field of Experimental Economics, so that it is difficult to have the needed infrastructure and the expertise to organise such experiments. Other possible limitations of the present research paper may be represented by the fact that at the moment it is difficult to organize and design an own laboratory experiment, so that at the moment the paper is a review article. When designing and organizing an experiment will be possible, the present research will be the basis for such a practical research, with applied research findings from a laboratory experiment analysing aspects from the Romanian environment with relevance for Experimental Economics.

6. Conclusions

Irrationality in decision-making is a fact to be observed in the specific literature as well as in real-life situations. Individuals' behaviour is determined by factors that are beyond rational thinking, such as psychological factors, non-monetary incentives, values and beliefs, education, and culture. This shift of paradigm from rational behavioural models to new models, considering research findings of psychology and neuroscience, is studied by the field of Experimental Economics, which is a new, developing field of research with a high potential of development. The present paper studies research findings of the specific literature regarding irrationality in decision-making from an Experimental Economics-based approach. The research results of the present paper may be developed in further research that would for sure be very useful, given the dynamics of this field.

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