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Emotions in Economic Decision Making: A Multidisciplinary Approach

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Abstract

According to classical and neoclassical economics, decisions are made based on information and cost-benefit analysis. In reality, the decision making process is much more complex than previously thought, because it also involves psychological factors. Decision making is interdisciplinary, researched by psychologists, sociologists, economists, philosophers, neuroscientists and others. These fields have distinctive and common concepts about decision making. The aim of this paper is to identify what role emotions play in the economic decision making process. The paper focuses on describing and explaining the interconnection of sciences, such as economics, psychology and neuroscience, by researching the effect of emotions on the economic decision making process. Behavioural economics researches the psychological foundations of economic behaviour, and neuroeconomics researches brain activities related to economic behaviour. Evidences from behavioural economics, psychology and neuroeconomics show the importance and necessity of emotions in the economic decision making process. The findings of the paper reveal that economics, by incorporating the research results of other sciences, in the economic theory of the decision making process, may gain a more accurate and realistic understanding of this complex field of research.

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1. Introduction

The classical and neoclassical economic literature approaches the choice behaviour and decision making by mathematizing and simplifying the subjects. In the last decades, economics started to focus more and more on subjectivity and on the presence of psychological factors in human behaviour. Also, psychology focused on human behaviour in an economic context. A new field, behavioural economics, was born, which investigates the psychological foundations of people’s economic behaviour. Both, psychologists and economists, are interested in incorporating psychological ideas and evidences into the theory of economic behaviour. Another subfield of economics is the experimental economics, which incorporates psychological methods into economic experiments. Recently behavioural economists, psychologists and neuroscientists started to use neuroscientific techniques researching brain activities in order to better understand economic behaviour, such as making choices or making decisions. It is the interaction of these sciences that produced neuroeconomics.

The aim of this paper is to present and explain the role of psychological factors and emotions in economic decision making, using evidences from behavioural economics and neuroeconomics based on literature review.

The finding of the paper is that emotions do not only play a role in the decision making process, but they also can be informative for the decision maker.

2. Behavioural economics and decision making

As it has been stated by Rabin (1998), the study of human behaviour has to be integrated into economics, and the tractable and parsimonious psychological findings should not be ignored by the economic research. Kahneman (2003) says that incorporating psychological aspects of the intuitive agent into economic theory might be challenging, but this challenge seems to be quite successful. According to Peterson (2009), behavioural economics studies judgements and decision making focusing on psychological aspects. Elster (1998) claims that economic theory is mostly interested in the interaction between emotions and other motivations, like self-interest.

2.1. Biases in decision making

The following psychological factors may be present in economic behaviour and in decision making:

- **Beliefs** are important to specify, how agents form their expectations in the market. (Barberis and Thaler, 2003)
- **Belief perseverance** shows that people, when they form strong hypotheses, they are likely to be less attentive to information, which contradicts their hypotheses. (Barberis and Thaler, 2003; Rabin, 1998)
- **Confirmatory bias** is when people are influenced by initial judgements. When they perceive new information, they tend to use those to affirm their initial hypotheses. (Rabin, 1998)
- **Overconfidence** may be present in people’s behaviour, when they have to estimate quantities or probabilities. (Barberis and Thaler, 2003)
- **Optimism** is mostly people’s unrealistic positive view about themselves. (Barberis and Thaler, 2003)
- **Representativeness** is when people tend to determine something by the characteristics of the group or class to which it belongs. (Barberis and Thaler, 2003; Kahneman, 2003)
- **The prototype heuristics** is a broader view of the representativeness heuristic. (Kahneman, 2003)
- **The law of small numbers** is a bias, which refers to people’s exaggerating the behaviour of small samples, thinking that they act similarly to the large sample from which they are drawn. (Rabin, 1998)
- **Conservatism** is over-emphasized base rate, relative to sample evidence. (Barberis and Thaler, 2003)
- **The anchoring and adjustment bias**: people tend to estimate similar values to the initial values of uncertain quantities, close to starting points. (Barberis and Thaler, 2003; Kahneman, 2003; Rabin, 1998)
- **The availability biases** are, when people have to judge the probability of an event and they use their own memories and personal experiences for more information. (Barberis and Thaler, 2003; Kahneman, 2003)
Kahneman (2003) specifies that there are two ways of deciding: by reasoning and by intuition. “Reasoning is done deliberately and effortfully, but intuitive thoughts seem to come spontaneously to mind, without conscious search or computation, and without effort.” (Kahneman, 2003, p. 1450)

Economists claim that people will learn through repetition by removing their biases and thus making fewer errors. It is believed, however, that biases cannot be completely bypassed, and the effects of psychological factors will not disappear totally by any kind of learning. (Barberis and Thaler, 2003) Rabin (1998) says that people act intelligently and with purpose in their decision makings, but they are not perfectly rational; and accordingly they have biases in their judgements, which separate them from perfect rationality.

2.2. Preferences in decision making

People are more sensitive to changes in their current situation compared to some reference level, rather than to the general situation. (Rabin, 1998) According to Kahneman and Tversky (1979), in the prospect theory, the reference point is one’s current asset level, but sometimes it can be an expectation, from where the gains and losses are coded, which may differ from the current asset level. (Kahneman and Tversky, 1979)

Rabin (1998) mentions three reference level effects:

- **The endowment effect** is related to the loss aversion, and it means that a person, by possessing a certain item, values it more than before possessing it.
- **The status quo bias** refers to a multiple-goods choice problem.
- **The diminishing sensitivity** means that “the marginal effects in perceived well-being are greater for changes close to one’s reference level than for changes further away.” (Rabin, 1998, p. 15)

According to Barberis and Thaler (2003), in normative theory, rational choices are independent from the problem description. “Framing refers to the way a problem is posed for the decision maker. In many actual choice contexts the decision maker also has flexibility in how to think about the problem.” (Barberis and Thaler, 2003, p. 1073) People’s views of decisions and outcomes, according to Kahneman (2003), are normally characterized by narrow framing (for example the gain/loss framing of outcomes), mental accounting and decision bracketing.

People sometimes have to make decisions today referring to an action in the future. Rick and Loewenstein (2008) say that in people’s decision, there are not only the emotions of the outcomes involved, but also the emotions experienced during the waiting time, until the outcome will occur. (Rick and Loewenstein, 2008)

According to DellaVigna and Malmendier (2004), an economic agent has quasi-hyperbolic preferences, meaning that also a short-run and a long-run discounting is involved in the future utility function.

3. The importance of emotions in economic decision making – evidences from neuroeconomics

According to Loewenstein (2000), economists were mostly interested in emotions, such as regrets and disappointments, which are expected emotions; psychologists, however, were focusing more on the immediate emotions, experienced at the time of the decision. The emotions experienced during the decision making process should be involved in the decision making theory, next to the expected emotions. (Loewenstein et al., 2001)

The decision makers, when they make their choices, are affected by their emotions and actually consult their emotions, even if they do this unconsciously. (Kahneman, 2011) According to P. Livet (2010), emotions are not pure and basic. Emotions are not only an affective state of the mind. He shows that the emotional state of a person can be mixed, also positive and also negative. Emotions show a multivariate bipolarity. The term emotions “is proposed to reflect the discrete response to an external or internal event that entails a range of synchronized features, including subjective experience, expression, bodily response, and action tendencies”. (Phelps, 2009, p. 234)
Sanfey et al. (2009) research the decision making process by examining twin processes in the brain. Neuroscientists pointed out that the deliberative and cognitive system related processes are located in the brain’s frontal areas, while the automatic and affective behaviour related processes unravel in the limbic reward areas. (Sanfey et al., 2009) Dual systems working in the brain during decision making according to Sanfey et al. (2009):

- **The emotional system and the cognitive system**: Emotions may guide automatically people’s behaviour and decisions. In this area of the brain negative and positive stimuli make the amygdala neurons very active, resulting in signals which may drive automatically the behaviour. These two systems are independent and they highly interact with each other.

- **The automatic, intuitive system and the controlled, explicit, evaluative system**: intuitive decisions are the result of subconscious evaluation of certain determinants, evaluation which would be too effortful and too costly to be done consciously. These two systems are complementing each other and not necessary overtake actions from one another.

Cognitive evaluation may give rise to emotional responses in decision making. Neuropsychological evidence shows that emotions have a strong effect on cognition, because the connections of the wiring in the brain are stronger from the emotional system to the cognitive system, than from the cognitive system to the emotional system. (Loewenstein et al., 2001)

The following systems are involved in the decision making process:

- **The habit system**: The habit based action-selection “forms arbitrary associations between situations and actions, which are learned from experience.” (Redish et al., 2012, p. 345)

- **The Pavlovian system**: involves unconditioned, psychological responses and also conditional responses. Purely Pavlovian decisions are involved only in a limited set of actions. (Redish et al., 2012)

- **The deliberative system**: The process of deliberation is the evaluation of the imagined outcome situations, according to their benefits and costs, which requires knowledge about the consequences of potential action outcomes. This process is known as the episodic future thinking, and it activates the hippocampus and the prefrontal cortex in the brain. This imagining is based on multiple concepts of past experiences, and people create one image at a time. (Redish et al., 2012)

According to Rustichini et al. (2005a), neuroeconomics can help understanding peoples’ estimations of probabilities of different events. Brain imaging studies in decision making experiments produced evidences, which show that the decision making process is driven by emotions. (Rustichini et al., 2005a) The decision maker, when he has to decide in a risky or ambiguous situation, is using several areas of his brain. The focus is to look at the emotional side of the decision making. (Rustichini et al., 2005b)

Bechara et al. (2006) explains that: “After the emotional/bodily states are elicited in the body during decision making, they are represented in the brain through a sensory process.” (Bechara et al., 2006, p. 261) The effect of the emotions on the decision making process, according to Bechara et al. (2006), can be consciously noticed or can be nonconsciously present. Bechara (2004) describes three neural routes through which the emotional signals from the body can reach the brain and influence cognition. These are the spinal cord, the vagus nerve and the endocrine route.

There are a large number of researches which studies economic behaviour and decision making using neuroscience. Miu and Crisan (2011) are testing the idea that different frames might evoke different emotions. They propose to test whether by emotional regulation the susceptibility can be reduced for the framing effect decision bias. Grecucci et al. (2013) study how people behave and how they decide while playing the Ultimatum Game, and how emotions are involved in the decision making.

### 4. Conclusion

Psychological components, and within them the emotions, play an important and influential role in the decision making process. For a better understanding of the overall decision making process, it is important to
observe and study these emotional effects along with the interconnections of emotional and cognitive decision making.

The paper presented an overview of psychological factors in economic behaviour and economic decision making, emphasizing the role and importance of emotions in the decision making process. This literature review, focusing on the role of emotions in decision making, presented studies and findings in an interdisciplinary fashion from behavioural economics, psychology and also neuroscience. There are still questions unanswered concerning the role of emotions in decision making, and further research is necessary on this subject. Sciences interested in researching decision making should complement each other’s work in order to have a more complete knowledge of this complex field.

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