

# Investment decisions in the economic theory finance essay

[Finance](#)



**ASSIGN  
BUSTER**

**Abstract:** The aim of the paper is to present how investment decisions are made and what investment risk is, what role it has in the investment decision. The decision itself is a subjective act, but it is based on both subjective and objective factors. Risk is an important component of every investment, thus it is necessary to analyse it as both, the objective component of the investment, and as the subjective factor of the investment decision making. Key words: risk, decision making, investment, behaviour economics, neuroeconomicsJEL classification: D81, G11, D87, D03

## **Introduction**

Avram et al. (2009) define the universal investment as expenditure made now to make gains in future. A company has to invest to be able to develop and stay in the competitive market. Today's investment decision issue is discussed and dealt with by international institutions like World Bank, European Commission, European Bank for Reconstruction and Development and others. They are the ones who formulate some specific methodologies to manage investment decisions. (Avram et al., 2009)The investment expenditures are made to gain profits and they can be done in two ways. Investments can be fix investments like buildings, machinery or plants; or monetary investments such as stocks, bonds etc. Both forms of investment can make an enterprise grow. From another point of view, investments can be replacement investments, when a physical asset is replaced; or investments can be net investments when, to the existing assets, new ones are added. The decision, whether to make an investment or not, depends upon the investor's profit expectation, the cost of the asset and availability to finance the investment, and how to finance that. (Harcourt et al.,

1967)The field of economics analyses risk from the perspective of the decision maker, how they make their decisions in the absence of perfect information. In understanding and studying risk, the theory and the empirical analysis have to be combined. Pure theory may have some deficiencies and the empirical analysis by itself might be constrained and might stay primitive. Combining theory with practice helps define the strengths and limitations of the theory. In this way, theories can be refined and can help in a better understanding of risks. (Chavas, 2004)The paper presents how investment decision is approached by the economic theory, what role has the risk and uncertainty in the decision making process. The role and presence of risk and uncertainty in decision making have been studied by neuroeconomists as well, bringing evidences to the economic literature about the subjective perception of risk in the decision making process.

### **Investment decisions in the economic theory**

The demand to plan an investment is influenced by the investor's past profit experience and his guesses about future profit opportunities. Businessmen are willing to invest in stocks as well, where their decision depends on their past experience and the expected rate of sales. " In making his plans a businessman takes account on the one hand of the expected rates of profit and the riskiness of the various potential investment opportunities to him; and, on the other hand, of the cost of finance. If the expected rate of profit exceeds the cost of finance by the margin required to cover the risk element, the businessman would wish to undertake the project." (Harcourt et al., 1967, p. 151)The decision of the investor to invest is subjective. His decision depends on the expected costs, his knowledge of the improved techniques

<https://assignbuster.com/investment-decisions-in-the-economic-theory-finance-essay/>

and his risk perception, which is entirely a subjective factor. Businessmen want to know the investment project's pay-off period to decide whether they actually will make the investment expenditure or not. (Harcourt et al., 1967) For a good investment decision, the investor needs to understand completely and correctly the possible opportunities and these decisions should not be made in a rush. A wrong investment decision can lead companies even to bankruptcy. It is necessary to understand the basic ideas of the investment decisions to obtain the maximum value from the appraisal process. In investment evaluation, the indicators should be chosen regarding the specific nature of the project and the information held by the decision maker. (Avram et al., 2009) Investment is an allocation of resources for medium or long term and the expected effect is to recover the investment costs and have a high profit. Besides financial resources, material and human resources are used as well. The economic and financial environments influence investments, so expected results are uncertain. (Avram et al., 2009) Investment decisions are made after a complete analysis of the investment project. One of the basic factors that influence the decision is the risk factor of the investment. This risk exists because it is uncertain that the cost of the investment will be recovered and a profit will be gained. Investment, investment decisions and investment behaviour can be studied from two points of view. Investment can be analysed and studied empirically and theoretically. The empirical and theoretical approaches of investment behaviour do not have much in common. The historical and institutional considerations are essential in understanding the investment behaviour. Jorgenson notes that it is an incomplete view that the empirical and

theoretical researches are carried out separately. The economic theory is used in possible explanations for the investment behaviour. This fact separates the econometric work from empirical generalization, which hasn't been econometrically tested. It is important that econometric models of investment behaviour are tested in order to find out whether they perform satisfactorily in the econometric work or not. (Jorgenson, 1967) To understand investment behaviour and investment decision, it is necessary to study the theory of these and to analyse investment processes in practice. The results of empirical analyses may help complete or correct the theories regarding the investments, or simply understand them better. From the other point of view, the correct and effective empirical analysis and research of investments can be made based on the theories of investment behaviour. Jorgenson shows that, in the investment behaviour study, progresses can be made through "comparing econometric models of such behaviour within a theoretical framework" (Jorgenson, 1967, p. 131). He suggests that the theory of investment has to be reconstructed and then, the theoretical and empirical work can be combined. To provide a framework for the theory of investment behaviour, Jorgenson (1967) says that, for the theory, appropriate bases have to be chosen. One basis could be the neoclassical theory of optimal capital accumulation, and another would be the assumption that business firms maximize utility. The theory of the firm moved from the profit maximization orientation to the utility maximization. (Jorgenson 1967) Jorgenson (1967) concludes that Simon ignores the econometric theory, which is based on the neoclassical theory of firm. The neoclassical theory of investment has an assumption that agents can make

numerical probabilities and probability distribution of the expected returns. According to the Crotty (1992) paper, this can be characterized as "the triumph of ideology over theory and fact". The neoclassical investment models assume that the long-lived capital assets have a good resale market, and this makes the decisions riskless. There is a small difference in a firm between owning and renting their capital. In both cases, if the investments' effect is not convenient, the firm can always resell the capital goods and then reinvest the liquid capital. (Crotty, 1992) In the neoclassical investment models, the firm is considered risk-neutral, and the risk comes just from the cost of capital. From the view of the reversible investment or of the liquid physical capital, the firm is risk-averse, which means that, if the company makes any investment mistakes, those would be relatively cost free. From the view of the illiquid capital though, the investment would be irreversible and the mistakes would be costly. In this case, the risk-aversion management is indicated. (Crotty, 1992) In the formulation of the theory of investment behaviour, it is needed that the capital accumulation is based on the objective of maximizing the utility of a stream of consumption. Utility maximization of a consumption stream and getting capital services through acquisition of investment goods are some of the essentials of the optimal capital accumulation theory. Jorgenson notes that there are a few points of view and versions of the neoclassical theory of the firm on capital theory. There are a few alternatives for what the entrepreneur should maximize, but these can't be derived from maximization of the utility of a stream of consumption under the defined conditions, except the maximization of the present value of the firm, which is consistent. The Fisherian analysis

demonstrates that none of the formulas are universally valid in the theory of investment decision.

## **Investments and risk**

Risk is a complex issue, and it is essential that it is studied, understood and identified in investment processes. Investment decision without risk analysis should not be made. In my view, the theoretical and empirical analyses and understanding are equally important. This is true for the study of risks of investments. The theory of risk is a great starting point in collecting information and starting to analyse investments' risks. Without existent theory there would be no effective practical analysis. Empirical evidence collected from empirical researches can support the theoretical assumptions, but sometimes it differs from theory. In the latter cases, the analyst can study these derivations and use these results to update the risk theories regarding that subject. The economic analysis of investment is necessary to design and select the investment projects that will result in the investor's welfare. The economic analysis helps determine the project's impact on the entity undertaking the project (on the environment, on society) and helps identify the investment project's risks and sustainability. The economic analysis of the risk of the investment project is important because of the future's uncertainty. The economic analysis of risk identifies different variables, based on the costs and the benefits of the project and this analysis can identify the factors that are creating the biggest risks for the investment project. Uncertainty and risk is always present in an investment, if that has more than one possible outcome. (Belli, 1996) This uncertainty and risk should be identified and analysed. An investor can decide what to do

regarding this uncertainty based on the results of his analysis of risks, he can decide how to manage these risks and whether to invest or not. In the economic theory, there is a difference between risk and uncertainty; there are a few approaches regarding the distinction and the relationship between these two concepts. Certainty is when all information about the future outcome is known; in certainty, investment decision would be simple. In uncertainty however, the risk factor enters in the investment decision, which means that the return from an investment becomes a probability distribution of returns. (Forbes, 2009) The definition of uncertainty says that the future itself can be defined as uncertain, but still, many times, the outcome of a future event can be predicted. This can happen in a lower or higher degree, depending on how much information is collected about previous similar or same kind of events. To narrow the margins of uncertainty of a forecast, a deep understanding of the uncertainty of the variable in question is needed. This understanding is influenced by the quality and quantity of the information about the variable at that moment. (Savvides 1994) "Risk" was the first word to appear in European languages to address uncertainty. That was around 1200 in Venice (rischio). Other words, such as "uncertainty", only appeared much later." (Kast and Lapied, 2006, p. 2) Risk can be studied from an economic perspective, if some facts are well described and identified. These facts exist behind the risk; the risk taking investors are willing to avoid or reduce the risks and it is also a fact that the time period of the investment should be known. "When a risk is well defined, economic calculus can investigate money amounts to invest and expected payoffs from this investment to be compared with future losses if it were not done."



(Kast and Lapied, 2006, p. 3) The developed economic theories are able to suggest methods and instruments to analyse and manage risks. In the economic analysis of risks, there are two directions: the individual decision theory and the market study. Because there are uncertainties about the future, there is a possibility that risks will appear. " The economic meaning of risk: variability of an investment's future returns (losses and/or gains)." (Kast and Lapied, 2006, p. 90) Someone is willing to take a risk because expectedly there is something to gain. Risk is the possibility to be exposed to losses. The determination of risk is based on a long experience and information that allows the estimation of likelihood consequences. (Ionita, 2001) In risk theory, there is an interesting expression, used by Horwitz (2004); this expression is the risk culture. The risk culture is " the orientation of an organization to risk taking. Having a fundamental understanding of risk integrated into the investment process." (Horwitz, 2004, p. 265) Frank Knight's notion of risk and uncertainty brings the chaos theory into economics. Unpredictability or indeterminism in physics occurs in two forms. There are two statistical laws in physics, the quantum mechanics and chaos theory, which have captured the economists' attention. Chaos indeterminism corresponds to risk and quantum indeterminism to uncertainty. These two theories differ from each other. Knight separates the 'real' theory of probability from the 'ignorance' theory of probability. The real doctrine of probability expresses the uncertainty, which refers to the agent's ability of self-defining. This process is the basis of Simon's procedural rationality, the opposite of the neoclassical substantive rationality. (Khalil 1997) The ignorance theory signifies the risk, the humans' chance probability. Herbert

Simon's ignorance theory is named bounded rationality, which makes the rule-following behaviour more efficient. Keynes affirms that the future can't be presented as a measurable risk. In his view, the uncertainty of people comes from the fact that one's expectation is based on the others' expectation, so the individual behaviour aims to be alike with the average opinion. With Leonard Savage's subjective probability theory, Knight's subjective risk can be transformed into an objective risk. In the certainty situations, there is perfect certainty and imperfect certainty. In the latter case, the incomplete information is the subjective risk, and the complete information is the objective risk. (Khalil, 1997)J. P. Chavas (2004) defines risk as the representation of any situation, where some events are not known with certainty ahead of time. This suggests that time is a fundamental characteristic of risk, but, through learning some information that is not known now, it can be known in the future; therefore risk has a temporal dimension. (Chavas 2004) Risks have different characteristics at every point of the time period. In defining risk, it is essential to consider the time-factor. In Markowitz's view, investment risk is the variability of the expected returns. Du Troit (2004) presents risk as conceptually complex, because risk can't be defined in only a single way. Risk is the "adverse subset of the set of outcomes of a particular action or process" (duToit 2004, 21). To get a useful definition, some factors should be added to it, which will start to increase this definition's complexity. In the case of investment risk, one component is the horizon of the investment. This horizon can't have a clear specification without knowing exactly how long the term is or without describing the outcome of the investment. This outcome can be a gain or a loss of money,

or a loss of an asset or others. " And then there is the matter of what makes an outcome count as " adverse", and how we develop some appropriate metric of adversity. This issue is often characterized as ascribing a utility to all the possible outcomes, but this is not easy" (duToit, 2004, p. 21). This whole process of defining risk is complex. In the operational definition of risk, the quantitative approach of the concept is used in a useful way. (duToit, 2004)Risk is multi-faceted. For example, at the terminal point of an investment risk, the possibility of a loss can be studied, but also the size of this loss when it does occur. Because risk is multi-faceted, this requires more ways of risk measurement and risk management. The theory of risk is deeply multi-disciplinary, including disciplines like economics, psychology, statistics, mathematics etc. (duToit, 2004)J. P. Chavas (2004) determines three main factors, which contribute to the existence of risky events. First, risk exists because some casual factors of events can't be controlled or measured precisely. Second, risk exists because people's ability to process information is limited. Bounded rationality is the analysis of decision rules under some limited ability to process information. For example, an investment's outcome is uncertain, because the investor has a limited ability to process information about the payoff of all available strategies. Risky events are very common, because no one is able to process all the information available. The third factor, which contributes to the existence of risk, is the cost of the information. Humans can process a lot of information, but they won't use them all, even though obtaining and processing useful information may be costly. This can be a monetary or a nonmonetary cost. Information is worth being obtained and processed, if its benefits are greater than its costs. This

means that costly information contributes to the prevalence of risky events. (Chavas, 2004) Risk theory is important and useful, but risk analysis is always specific to a particular case; within each case it has to be investigated, what risk means to the investor in that given context. Risk theory plays a guiding role in risk analysis. To choose the appropriate risk measurement tools, it is necessary to identify what counts as risk. The theory of risk analysis shows the way the risk measurements can be applied. This means that risk theory is more of a practical guide than a description. To be able to manage risk effectively, good risk measures are needed. The stages of risk analysis identified in this paper are: to define risk, measure and monitor risk and then manage risk. (duToit, 2004) Eeckhoudt et al. (2005) says that risk means to be sensitive to new information arrivals. New information may be useful for better decisions. Good information affects the decision maker's welfare and the optimal risk management. Information may arrive during the investment period and this can make the investor make some additional decisions regarding his investment. Information at some point of the period may be useful, but referring to the horizon of the investment, it may be negative information. (Eeckhoudt, 2005) An investment period has some determinate terms before the actual investment, during the investment process and after the process ends. Ex post means after the event, after the investment for example. This refers to whatever happened in a period in the past. Ex-ante means before event, before the investment, and refers to the beginning of the period of the investment. The ex-ante investment expenditure is the planned investment expenditure and the ex post one is the actual investment expenditure. In an equilibrium situation, these two, ex ante and

ex post, investment expenditures are equal. (Harcourt, 1967) Information is valuable. Information has a sensitiveness on the ex post decision to the signal. A good signal can make an investor make a better decision. The investor should decide regarding his investment risk based on the signal he receives. Information can be significant if some of the signals will reverse the decision, or information can be useless. The value of the information is coming from the way it is used by the decision maker regarding the investment. An informed decision maker can always act like a non-informed one by ignoring the arrived information. (Eeckhoudt 2005) " This shows once again that the value of information comes from the ability of the informed decision maker to adapt the decision to the circumstances in a more efficient way." (Eeckhoudt, 2005, p. 128) Good information, which helps in the better understanding of the investment's risks, and processing that information even, helps reduce the risks; sometimes this information can be worth a lot. The investor has to decide what kind of information he needs to make the best possible decision. My opinion is that in a risky investment, where the outcome of the project can be more than one, there is no perfect information, or enough information to make the investment riskless. The investor has to decide two things regarding the information collection. One is how much effort, time, money etc. he is willing to sacrifice for additional information, and the second thing is that the investor has to evaluate the situation whether those sacrifices are worth it or not to get more information. The value of the information should be bigger than the amount of the sacrifices to get that. The future can be viewed as a whole and represented in a static framework, or the reactions to the future events considering the

information arrivals can be forecasted in a dynamic approach. In the decision making process, the information arrivals make decisions change. (Kast and Laped, 2006) In an investment decision, the investor has to decide to make the investment at that moment, when he doesn't have enough knowledge about the future outcome, or to wait to get additional information regarding the unknown future. If the investor decides to wait for new information, that may be costly to him because of the lost revenues. The investment decision maker has to decide, whether to act immediately or wait without knowing whether the additional information will confirm the level of risk or not.

(Eeckhoudt, 2005) According to Eeckhoudt (2005), most of the investments are irreversible; for example, investments in a new factory or building can't be disinvested. Once something is introduced to an environment that usually can't be eliminated. There is a connection between information and irreversibility. Irreversible investments may cause a problem in a situation, when some new information will influence the decision maker and make him regret the investment decision. To prevent this kind of regret, the investment decision maker should be flexible and he should make his decisions flexible. Flexibility is essential to manage investment risks.

(Eeckhoudt, 2005) I present an example, where the flexible decision's importance is outlined. An investment is made to build a power plant, which can function with oil or gas. The investor has to decide, what type of power plant to invest in. The question is whether the gas or the oil will have better price in the future, and then a decision has to be made on which kind of power plant should be built. The other option is to build a power plant, which can function with both. This is more expensive to build, but it creates the

option of flexible decision-making. (Amram, Kulatilaka and Henderson, 1999)

This example shows that the investment's value comes from the flexibility to respond to uncertainty. In this case, additional information regarding the price of the gas and oil will be supporting the investment and will not be regretted. The real and financial options make it possible that the owner can benefit from the potential of an opportunity and in that time can control the risks. This way, investments are more dynamic, because the investment decisions today make follow-on investments possible in the future. The option thinking is valuable in the long term, because it makes investments flexible and this way, in a longer period of time, the investor has the possibility to change his mind several times; if losses happen, those are limited to the initial investments, so there is the possibility for follow-on investments. (Amram, Kulatilaka and Henderson, 1999) The risk of an investment is smaller, if that investment is made in the real options way, because even if the unpleasant outcome will happen, there is a possibility for follow-on investments. In this case, the loss is not as big as if it was a traditional investment decision. The flexible effect of the first investment decision makes the going on possible, because the investment can be continued by new investment decisions, depending on the additional information regarding the risks.

## **Decision making and risk – a behavioural and neuroeconomic approach**

Peterson (2009) explains that the risk and uncertainty cannot be neglected, when decision theory is discussed. The distinction among the decision making under risk, ignorance and uncertainty, according to Peterson, is that

the decision maker knows the probability of the possible outcomes in the case of risk, but in the case of ignorance there is an unknown probability or even no probability at all. The term uncertainty is used for ignorance or referring to both risk and ignorance. (Peterson, 2009) According to Loewenstein et al. (2001), decision making under risk and uncertainty is one of the biggest topics discussed by both psychologists and economist and, therefore, it is an active interdisciplinary research topic. This topic was studied from a consequentialist perspective, meaning that people make their decision based on assessing the consequences of the possible outcomes of the alternative choices. The expected utility type of studies do not look at feelings as an integral part of the decision making process. From this point of view, decision making theories say that risky decision makings are cognitive activities. But people's reaction to risk happens on two levels, a cognitive evaluation and an emotional reaction. These two levels of reaction are interrelated, but mostly are determined differently. (Loewenstein et al., 2001) Binmore (2009) presents that the difference between decision making under risk and decision making under uncertainty is that, in the first case, unambiguous probabilities are available in the decision problem, and in the second case, they are not. In decision making processes, people are focused on expected utilities, rather than expected values. Gilboa (2010) says that, if a person is maximizing the expected value under uncertainty then that person should not buy insurance for example, whenever the insurance premium is higher than the expected loss, which is true in the case of most insurance companies. This behaviour cannot be explained by the expected value maximization, but it can be explained with the expected utility



maximization and this behaviour suggest the risk-averse type of the decision maker. A risk-averse decision maker's expected utility function is concave, meaning that the decision maker has a decreasing marginal utility. The opposite behaviour is the risk-seeking type of decision maker, whose expected utility function is convex, with an increasing marginal utility. A mixed type of decision makers exists as well, who may buy insurance but are still gambling. This mixed behaviour might suggest that the decision maker is in neither of the two previous types, or they are just behaving differently in different situations and circumstances. The risk-neutral type is used, when a person is maximizing the expected value and the expected utility with a linear function. (Gilboa, 2010) Rick and Loewenstein (2008) say that there are many behavioural evidences, which are inconsistent with the expected utility model. People evaluate decision outcomes, based on whether those are gains or losses, rather than based on what changes they make in their final welfare. According to Rick and Loewenstein (2008), several researches show that the utility is not only defined over the realized outcomes, but people compare the actual outcome with the expected outcome for that decision as well. Loewenstein et al. (2001) propose a theoretical framework named the risk as feelings hypothesis. The risk as feelings hypothesis says that, in decision making, people respond to risky situations too highly influenced by emotions. Traditional economics says that decision making involving risks is made based on cognitive evaluation, but because the outcome involves feelings and emotional reactions, feelings are present in the moment of decision as well. The emotional reaction to risks can differ from the cognitive evaluation of the same risks. But these two can have complementary roles in

decision making processes. The emotional reaction can have an input in risky decision making, playing an informational role. But often emotions can lead to reactions and behaviours different from which the decision maker sees as being the best action. (Loewenstein et al., 2001) Barberies and Thaler (2003) present the behavioural approach to investment decision making, referring to people's beliefs. Investors might have some beliefs, which are wrong, like when they seem to believe that the mean dividend growth rate is more variable than it actually is and investors' exuberance pushes the prices up relative to the dividends. Here, the existence of the representativeness can be noticed, mostly for low numbers. For example, investors see many good periods on the stock market and they might believe that the earnings' growth will continue to be high, adding to the return volatility. These beliefs are based on public information. Investors might have some beliefs based on private information. They might become overconfident about the private information they gathered. The overconfident investor will push the price up to high, if his private information is positive, adding to return volatility. Representativeness in this case is present, when the investor is framing beliefs on his past returns. (Barberies and Thaler, 2003) According to Rustichini et al. (2005a), the behaviour of people in risky, uncertain and ambiguous situations has psychological components as well. They consider situations risky, when people are able to reasonably attach a numerical probability to each outcome or event. Uncertainty refers to situations when people cannot precisely and uniquely define a numerical probability of an outcome. According to Rustichini et al. (2005a), the Knightian distinction between risk and uncertainty is that in case of risks the probability

distribution over a possible outcome is known, due to calculation or frequency estimation, depending on the nature of the situation. And in the case of uncertainty there is no obvious list of equally likely alternatives or the possible outcomes are unique. This distinction disappears in the classical theory of choice under uncertainty, which is the Subjective Expected Utility (SEU). (Rustichini et al., 2005a) " In SEU theory, it is assumed that the subject is able to provide a subjective probabilistic estimate of the relative probability of each event. Once he has done that, the evaluation of a lottery (or, more generally, a state-contingent payoff function) is the same under risk or uncertainty: It is the expected value, computed with respect to this probability. Therefore, in terms of the Knightian distinction, according to SEU theory all uncertainty can be reduced to risk." (Rustichini et al., 2005a, p. 258) Rustichini et al. (2005a) say that this distinction might still have importance in the mental process of subjects, on how they make their estimations. Presenting the Ellsberg's paradox, they show that people are not behaving according to the SEU theory rather they are ambiguity averse or ambiguity lovers. The Ellsberg's experiment is a test, where subjects have to choose between lotteries. These lotteries are described as outcomes of a draw of balls from an urn. The composition of an urn is 90 balls, from which there are 30 red balls and 60 black and yellow balls, but their number are not specified. The subjects have to choose between two lotteries, and then between another two lotteries. According to the subjects' responses, this experiment shows that the SEU theory is violated, and that the subjects did not differentiate between risky and ambiguous situations according to a SEU decision maker. They formed their beliefs on some expectations showing

ambiguity aversion or love. (Rustichini et al., 2005a) According to Rustichini et al. (2005b), the decision maker, when he has to decide in a risky or ambiguous situation, is using several areas of his brain. They focus on ambiguous cases, when the decision maker does not know the exact value of the probability of certain outcomes, as in risky situations. The focus is to look at the emotional side of the decision making. " Moreover, patients with large lesions that incorporate one of these areas (the orbitofrontal cortex) treat ambiguous and risky choices differently from normal subjects. [...] However, a large number of these areas (located in the temporal, parietal, and prefrontal lobes of the brain) deal with the estimation of the values of the options, which suggests that the decision process integrates emotional and computational components." (Rustichini et al., 2005b, p. 1625)," Decision making often occurs in the face of uncertainty about whether one's choices will lead to benefit or harm. The somatic-marker hypothesis is a neurobiological theory of how decisions are made in the face of uncertain outcome. This theory holds that such decisions are aided by emotions, in the form of bodily states, that are elicited during the deliberation of future consequences and that mark different options for behavior as being advantageous or disadvantageous." (Bechara et al., 2006, p. 260) Bechara et al. (2006) present an experiment testing the somatic-marker hypothesis with the Iowa Gambling Task, developed by Antoine Bechara. In the experiment the subjects have to choose between four decks of cards, which provide different levels of rewards and punishments. Two of the desks provide low rewards and low punishments and the other two provide high rewards and high punishments. The subjects by consistently choosing from the low

reward and low punishment decks (designed to be " advantageous" decks) are lead to a net gain of money; and subjects by consistently choosing from the high reward and high punishment decks (designed to be " disadvantaged" decks) are lead to a net loss of money. In the experiment, normal individuals chose the advantageous and disadvantageous decks equally, and later they switched to the advantageous ones, because of the high punishments. But subjects with the vmPFC damage tended to continuously choose from the disadvantageous decks, being insensitive to negative consequences. (Bechara et al., 2006) During the experiment, subjects were tested for emotional reaction with " the measurement of skin-conductance response (SCR), an automatic index of emotions." (Bechara et al., 2006, p. 261) According to Bechara (2004), " the key idea of the somatic marker hypothesis is that decision-making is a process that is influenced by marker signals that arise in bioregulatory processes, including those that express themselves in emotions and feelings." (Bechara, 2004, p. 33) The key fact in the somatic marker hypothesis is that the decision making process in risky and uncertain situation is guided by emotions. Miu and Crisan (2011) test emotion regulation in an experiment, where the subjects are using the cognitive reappraisal or the expressive suppression against the framing effect during gambling tasks. They find that via emotional regulation the framing effect was successfully modulated, and the cognitive reappraisal reduced significantly more the framing effect, than the expressive suppression. The research also shows that subjects using reappraisal had higher rationality scores than subjects using expressive suppression. (Miu and Crisan, 2011)

## **Conclusion**

Decision analysis in the economic theory shows that the decision making process is based on: (i) an objective, punctual analysis of the investment and its possible outcomes and its calculated payoff; but also (ii) on the subjective perspective of the investor. Investments, in most cases, have smaller or bigger risks. Risk and uncertainty is subjectively perceived and it involves psychological and emotional factors. Neuroeconomic evidences show that the psychological and emotional influence on the decision making, involving risk and uncertainty, may have an informative and helpful role in the decision making process. It is important to analyse investment risks from the point of view of behaviour economics, and not only as an objective component. There is need for further research on investment decisions risks, and on the perception of risk in the decision making process, since it is the risk perception which will actually influence the decision.