FEAA
FACULTATEA DE ECONOMIE
ŞI ADMINISTRAREA AFACERILOR
ŞCOALA DOCTORALĂ DE ECONOMIE
UNIVERSITATEA "AL. I. CUZA" IAŞI

A behavioral analysis of the economic and financial crisis

PhD THESIS SUMMARY

SCIENTIFIC COORDINATOR
Prof. Univ. Dr. Ion Ignat

PhD student,
Gavriluţă married Grădinaru Andreea

Iaşi
2015

University „Al. I. Cuza" Iași
Doctoral School of Economics and Business Administration

Mrs/Mr ____

We inform you that on **09.24.2015**, **09:00 am**, in room **B417**, Mrs **GAVRILUȚĂ married GRĂDINARU ANDREEA** will hold, in public session, the PhD thesis titled **A BEHAVIORAL ANALYSIS OF THE ECONOMIC AND FINANCIAL CRISIS**, in order to obtain the scientific title of doctor in the field of **ECONOMICS.**

PhD Committee is formed of:
President:
Prof. univ. dr. **Mihaela Onofrei**, University „Al. I. Cuza" from Iași

Scientific coordinator:
Prof. univ. dr. **Ion Ignat**, University „Al. I. Cuza" from Iași

Reviewers:
Prof.univ.dr. **Mihaela Luțaș,** University Babeș Bolyai from Cluj
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We send you the summary and invite you to attend to the thesis presentation meeting. The thesis can be found at the Library of the Faculty of Economics and Business Administration.

Rector, *Secretary of Doctoral Studies Services,*

Prof. univ. dr. Vasile Ișan **Gabriela Costin**

TABLE OF CONTENTS

Introduction

Theme research title and some explanatory elements

Theme title: *"A behavioral analysis of the economic and financial crisis"* has led the discussion toward an area of knowledge less explored: behavioral economics, and highlighted the central topic of interest i.e. 2007 economic and financial crisis approach from the perspective of this new branch of economical science.

The concern for the research field under consideration has been anchored in the present existing reality. The dynamic development of the society showed that throughout history, the economies of the states were faced with periods of boom and crisis, which were repeated at short, medium and long intervals, argued in the exhaustive study on the financial crisis: *This Time is Different,* by Reinhard and Rogoff.

Although it was believed that we learned the lesson of the crisis and that economists like John Maynard Keynes or Milton Friedman showed us from different doctrinal positions how to avoid falling prey to the economic tides, the facts showed otherwise, so that, since 2007, nearly the entire world has been confronted with the most deep and long recession in the history of postwar. In such a context, the economic science is increasingly tested, and reconsidering its status as more intense than ever. Therefore, one of the major challenges of the current period is to find ways that the economic science may increase it's explanatory and practical bases. In order to achieve this endeavor we attempted to demonstrate that, multidisciplinary study may represent a viable alternative method of studying economic crises and that behavioral economics can increase the power of the economic science explanation, by providing a more realistic psychological bases.

Thematic area of the thesis and the issue investigated

Because, by its nature, the economic segment is more prone to failure and because a science is measured by its ability to explain, predict and prescribe the financial crisis that began in 2007, has revived the interdisciplinary study of economic science and has sent to a reconsideration of its fundamental bases as social science which has as object and subject of analysis the human , whose personality and behavior are complex and quite often contradictory. The economists, leaving the traditional sphere drawn by neoclassical, focused towards understanding the economic decisions and behaviours, resorting more and more to psychology and thus developing a field which in the literature is known as behavioral economics. In this respect, it is considered that behavioral economics has become a research direction in economic science due to the paradoxes that rational choice theory has generated, to the extent that psychology has always been a companion of the economy.

Therefore, the research field approached is the economic field and the thematic area was the behavioral economics, as a subdomain of economic science and an important explanatory core of the economic crisis.

Analysis of economic and financial crisis in terms of behavior was necessary, in particular, due to the increasingly importance that behavioral economics currently has, its study being animated by the advance of technological progress of the last few decades that has printed to humanity. The discoveries, mainly in the field of neurosciences, made possible a better understanding of the human brain and the foundations that certain behaviors are built on. In addition, the turning point that economic science has now come, marked mainly by the onset of the biggest crisis since the Great Depression of '29-'33, brought into question the necessity of returning to origins, attempting to rediscover the fact that beyond any abstract, formal and mathematized model, the economy is a living science, having in its center the human.

In Romanian literature, at this time, there is no unitary approach to behavioral economics, but only the premises and the starting points of this discipline, namely the economic behaviour and the hypothesis of rationality.

To be mentioned is the fact that the subject was an intellectual challenge that has sparked curiosity and desire for research through literature analysis, the reports and studies developed by the authorized institutions. Also, the subject incited to meditation on human in terms of his economic life, which is an integral part of his existence as a social being.

In this context was born a fundamental question*: Can behavioral economic contribute to a better understanding of some key aspects of the financial crisis from 2007 by providing a more realistic psychological bases, given that human behavior is not only the subject of the economy, but also of the psychology and social sciences as a whole?*

Hypothesis, purpose and objectives of the research

Major economic crises have always invited to reflection and sometimes to introspection: everyone gets to wonder where was wrong, who wrong, why it was wrong and last but not least what should be done to ensure that these mistakes should not be repeated. And the economic crisis that affected the financial markets and the global economy since 2007 has led to a series of debates regarding the ability of economic theories to find answers to the new problems.

In this study, I have started from the ***hypothesis*** that *behavioral economics can lead to a greater understanding, explaining, and last but not least in finding solutions to the economic and financial crisis from 2007 by providing a more realistic psychological bases*. It was made an attempt to demonstrate that conventional economics can explain the financial turbulences the world is facing today, but up to a certain point, beyond which it finds its limits, and that the appeal to behavioral economics and hence the multidisciplinary study may represent a viable alternative method of studying economic crises in general and the 2007 crisis in particular.

The main ***purpose*** of this work was the theoretical and empirical study of the economic and financial crisis from 2007 from behavioral perspective in order to identify, analyse and describe how it could provide a better explanatory base, in addition to the conventional one. To achieve this aim it has been explored in depth the financial crisis phenomenon both from the perspective of conventional economics but particularly from the perspective of behavioral economics that was the key element of the research.

The objectives that resulted from the research purpose, were represented by:

1. The capturing of the main theoretical elements that behavioral economics is structured and their impact on the dynamics of real economy;
2. Identifying how the field of behavioral economics is a new school of economic thought, including reporting it to the historical progress of economic science as a whole, respectively using concepts derived from the psychology area by other schools and other renowned economists;

3. Comparison of classical theory of rational choice with limited rationality theory to understand which of these better reflects the contemporary reality;
4. Conducting a review of the economic and financial crisis from the conventional perspective;
5. Analyzing the behavioral factors that are explaining the financial crisis;
6. Examination of the contributions of behavioral economics in explaining the investment process.
7. Finding some answers on how behavioral economics can enrich the explanatory basis of emergence, manifestation and handling the financial crisis;
8. Elaboration of empirical studies in order to quantify the influence of behavioural factors in studying the economic and financial crisis from 2007.

Methodology

The research strategy, by the nature of approached reality, was a deductive one (from general to particular) based on theoretical exploratory reflections of the reference range. Deduction has been linked with induction, valorisation of utterances and theories provided by the literature in economic practice with the purpose to support the working hypotheses.

The method of research was the qualitative method combined with quantitative method. This included the data collected from the literature regarding existing theories in the field. Data collection was done by consulting various types of documents: books, articles, encyclopedias, studies, etc., that have allowed the construction of a unitary and systematic network of information and gathering an empirical material for theoretical explanations obtained through generalization based on deduction. Among the research techniques used were the mediated techniques of content analysis and comparative analysis of data, of empirical studies existing in the literature.

The quantitative section focused on data collection necessary for empirical studies. Here among the research techniques used were the systematization and statistical analysis. The data were systematized and presented in the form of tables and graphs, following to be analysed. Quantitative analysis enabled the measurement, quantification and the digit expression of the approach.

The two segments, qualitative and quantitative have allowed the construction of a unitary and systematic network of information and structuring them in an empirical material which gives theoretical explanations.

Limits

Like all scientific work this work is susceptible to changes as well and can be improved through future research that can continue the research of analysis process on how behavioral economics can provide pertinent explanations of the occurrence of crises, or can complement the results obtained, approaching from different angles the issues circumscribed to this research.

A first limitation but also a challenge at the same time for our study represented a large number of works, thus the analysis cannot be by no means exhaustive. A second limitation was represented by numerous psychological concepts hard to define. Other difficulties of this research focussed on the information found in the documents that are subject to investigation during the empirical research, because they have not always corresponded to the requirements of the study, with the needs regarding the quality and quantity of information. Also, the lack of statistical data for certain periods, or the disparity between the retrieved data from various sources about the same phenomenon, or even within the same source, represented the limits of this research.

I. From conventional economics to behavioral economics

In this chapter we aimed to accomplish a foray through the discipline known today in a pleonastic way as behavioral economics to be able to answer to the following question: *"What is and through what differentiates itself from conventional economic analysis this new direction of research?"*.

In order to achieve this approach we reviewed the definitions, specific elements, basic notions, as well as the studies and researches in the field related to behavioral economics. So it could be seen that it is a branch of economics that studies how people actually make choices every day, putting into question the conventional economy postulates. Behavioral economics proposes a multidisciplinary study, borrowing elements from psychology, sociology, cognitive sciences, political sciences, anthropology or philosophy to be able to analyze in a complex way the empirical phenomena in the economy. In its approach, behavioral economics is based on the hypotheses of human behavior.

The original economic science as the classic founders conceive it, predominantly appeared as a normative discipline that prescribed the canons which man must follow in its economic behavior, by acquiring and applying fundamental psychological concepts and principles. In time, however, the dominant trend of the neoclassics was of alienation in relation to this aspect and shifting more and more towards the status of a natural, positive science, by formulating some descriptive hypotheses that explain some foctor regularities of investors and consumers behavior, which is, however, only the visible and shallow part of reality. In this respect the behavioral economists consider that there is a growing need to include the psychological factors in the economic analysis and, thus, the return of economic science to origins, to a more human, more emotional economic person, the human representing the starting and the end point of economic science.

Conventional economic analysis assumes that people are rational and are seeking to maximize their usefulness, the standard economic model of human behavior thus including three traits considered unrealistic: perfect rationality, unlimited will and selfishness, features that behavioral economics modifies. The economists inability to determine whether the individual is rational or not, resulted in antithetic approaches and conclusions, even though, since antiquity, Aristotel offered a fertile ground for such approaches. The homo economicus model was long criticized throughout history, being accused that its alleged rationality is never met in reality. Despite the elegance of decision models that has resulted, the model is considered to be only an abstraction which lacks feelings that humanizes behaviors such as pride, lust, envy, wrath, sloth, greed, altruism or devotion.

While conventional theory held that the decision-making process is strictly rational, the followers of behavioral economics recognize the role of emotions, the fact that the individuals act in conditions of risk and uncertainty, that time and space are defining elements of human action.

Also, the entire theory of rational choice is considered necessary by some authors, because of the two major approaches that proposes : internal coherence and the pursuit of self-interest, but not sufficient. Seeking to improve the ability of economic science to deal with the real economic life, behavioral economics tries a "humanization" of homo economicus and an approximation of the economic theory with reality, through equitable descriptions, better predictions and concludent formulations. In this sense, behavioral economics comes up with an alternative to rational choice theory, called limited rationality, considered to be the base hypothesis of this new research area. It is based on the fact that individuals are limited by the level of information to which they have access, by the cognitive limits of their minds and the limited time they have to make a decision.

The concept of limited rationality was first used by H. Simon in 1955, when he said that people do not always behave as rational beings, in accordance with the neoclassical model of rational behavior. According to Simon, limited rationality the result of the existence of two kinds of reasoning. The first is intuitive, instinctive and draws conclusions faster; the second is rational, acts in accordance with the principles of logical thinking and works slower. The thought process, as a whole, integrates both types. These two kinds of thinking sometimes can complement each other, but sometimes the intuitive type changes the results of the second type.

To be able to observe the reliability of the idea of limited rationality, after I presented individually the two theories, I proceeded to analyze them in contrast to be able to see which best fits with contemporary reality.

II Economic and financial crisis between conventional economics theories and theories of behavioral economics

If the first chapter aimed to achieve a synthesis of various opinions of literature and shaping an overall view of behavioral economics field, in an attempt to understand the human behavior in the economic act, by appealing mainly to elements of psychology, in the second chapter we wanted to highlight the contribution that behavioral economics brought in explaining the phenomenon which collapsed the entire economic system, namely the economic and financial crisis started in 2007. In other words, at the end of this chapter we wanted to answer the questions: *"What brings new the behavioral economics in analysis of* *economic and financial crisis?"* and if *"This new approached field can provide plausible explanations to supplement those provided by conventional economics?".*

For this we tried to realize a foray through the economic crises history starting with tulip crisis from 1630 and finishing with a brief presentation of the crisis from 2007. Then we wanted to offer a complex view of the economic and financial crisis from 2007, analyzed from the perspective of conventional economics. To achieve this we have reviewed the theories of the main conventional economic thinking schools, where was brought into question the problem of the business cycle and the economic and financial crises. In this sense I started from the classical school representatives, I continued with the followers of the keynesist and monetarist school and ended up with the austrian school economists. As a result of this review I noticed that the followers of the visions mentioned above have omitted a major factor of the crisis: human behavior.

On the one hand the interventionism followers believe that the State should turn its efforts to save financial institutions that are too big to bankrupt, without considering the repercussions that these inflationary pressures can generate on the economy and without any serious concern regarding the fact that, in this situation, those who end up bearing the costs are the individuals.

On the other hand most followers of liberalism believe that the State should retract from any form of intervention in the economy leaving the ability of free market to operate by its own rules, ignoring the fact that the lack of a regulation was considered to be among the main causes of the occurrence of the crisis. Since neither of these visions was unable to establish itself as irrefutable dogma, I considered a real importance to bring into question as direction and possible solution to these deficiencies the subdiscipline of behavioral economics in order to understand what was the role of the individual in triggering the financial crises in general and the 2007 crisis in particular.

In the second part of the chapter we focused on the study of the crisis from the behavioral perspective, specifically on the study of the field literature. In this respect, the behavioral economics representatives stated that, this phenomenon is the result of an economic system built on a wrong premise that individuals are capable of accurate economic calculations and can make rational decisions.

The followers of this school are trying to explain the generalization of the non economic behavior of the period that preceded the crisis, that individuals have indulged in behaviors which do not fit in the homo economicus rules and that are not economically rational. The human factor, according to them, is analyzed in mechanistic terms, the human is regarded as a variable which has no psychological element, describing him in an abstract way as being selfish and perfectly rational. Reality has shown that things are not really so, people do not always take the best decisions, they are making the same mistakes over and over again and they make economic transactions emotionally motivated. In addition, the conventional theory of utility assumes that individuals are able to take individual decisions taking into account the context of the overall picture, however, psychologists have found that in reality they fragment the general framework, often out of superficial reasons, they are taking decisions in particular segments, without taking into account their implications in other plans.

Starting from these premises, we tried to point out the role of individuals in the outbreak of the financial crisis and to explain the causes which led to the formation of the real estate bubble, as behavioral economists showed.

III. The investment process and the economic and financial crisis. A behavioral perspective

The literature in this area shows that wherever people are existing and acting the human psyche is also present; there are no social phenomenon - and therefore no economical - without aspects or psychological implications. Studies undertaken by the behavioral economists, mainly by Daniel Kahneman and Amos Tversky have shown that, in general, individuals do not have all the necessary information to decide in a rationally economic manner, emotions can impair the ability to make decisions rationally, and people seem to feel aversion to loss, more than aversion to risk.

Based on these affirmations, in the third chapter we wanted to study in detail the psychological factors that influence the investment process, in terms of behavioral economics, so at the end of this chapter to be able to answer the question: *"What are the* *psychological factors that influence the behavior of investors and thus contribute to the onset of economic and financial crisis?".*

In this regard, we considered that for a deeper analysis of economic and financial crisis there must be taken into account the actions of participants in financial markets that led to this result, namely the economic behavior of investors. Thus, I started from the hypothesis according to which the theories and principles of conventional economics cannot fully capture the aspects of the investment process, they are not sufficient for a full analysis of the crisis of recent years and cannot generate new solutions because they are not taking into account the psychological factors involved in investors behavior.

Classical and neoclassical economics is based on a widely accepted theory between 1960-1990, namely the efficient market hypothesis, according to which a market which fully reflects the available information is efficient, and the rational attitude of the investors is assumed in all investment actions. This has generated significant debates regarding access and availability. From a theoretical point of view, all humans are able to have access to information, but in reality the things are different. The evolution of events in time, the globalization of markets, the investment types, etc. make people unable to keep up with the changes. The information is disseminated through many channels, but people are not only incapable of assimilation but the elaboration of available information as well. The investors form their beliefs and attitudes based on emotional involvment, they can be happy or sad, optimistic or pessimistic, which encourages or discourages them in the investment process. In this context, behavioral economics provides us a number of theories and models that come in counterbalance with efficient markets hypothesis, according to which, when the investors are making decisions they are taking into account not only the objective factors, but also the psychological and behavioral factors, which often generates distortions in their attitude. There are taken into account the emotional reactions as exaggerated confidence in own predictive abilities, avarice and fear, regret, loss aversion, the spirit of herd.

Therefore, for a better understanding of human behavior that led to the outbreak of the economic and financial crisis I analyzed a series of psychological factors that influence the investment process, specific to behavioral economics not taken into consideration by conventional economics, but which may contain long expected answers and the seeds of a new beginning in the contemporary economic thinking.

If in the first part of the chapter we outlined the theoretical part of the investment process from the perspective of behavioral economics, in the second part we conducted an experiment by which we wanted to see if the psychological implications, errors and cognitive distortions are validated in reality or they are valid only in theory. To achieve this I applied a questionnaire to a sample of 322 people. The participants were students from Romania and Moldova, young people who are about to become independent and to soon begin to make important investment decisions for their future and who were compared to investor from theories.

IV. Economic and financial crisis: a behavioral - quantitative approach

If in the first three chapters we outlined the theoretical guidelines and we conducted an experiment by which we wanted to confirm the hypotheses of behavioral economics, in this final chapter we set out to develop a model by which we can validate the presence of different types of behaviors in the typology of investors on the capital market both during the crisis as well as before and after crisis period. To do this, I started from the literature specific to behavioral economics which claims that markets are not efficient and that the investors are not making perfectly rational decisions. Furthermore, they are influenced by a number of psychological-cognitive factors which, as we could see in the previous chapter distorts the human judgment and often lead to suboptimal decisions.

In the attempt to supliment the behavioral economics from a theoretical point of view, we have tried to accomplish for the beginning an experiment to be able to solve somehow the existing controversies in the literature regarding the effects that dominates the investor behavior: the disposition effect or the house money effect?

The results obtained were used to deepen the analysis on capital market in the period 2003-2015, and was the starting point for conceiving a quantitative model that can explain certain behaviors that led to the crisis, manifested during the crisis and that are present nowadays.

In this sense we wanted to achieve a quantitative model which will help us to support the basic hypothesis of the study through which behavioral economics complements the conventional economics and can provide through its call to psychology a contribution in explaining the economic and financial crisis. For this I appealed to induction, I narrowed the analysis from general to the particular and I considered that the best choice for achieving a quality quantitative study is the stock market is from United Kingdom due to its seniority in the field, and due to its financial culture particularly well educated. Thus I found that, the existence of behaviors not related to homo economicus rationality is less likely to be manifested among some investors that from father to son were present on the capital market. Another reason for this choice was represented by the close financial relations between the United Kingdom and the United States of America, which have led to high vulnerability of the capital of United Kingdom reported to the financial crisis that began in the USA in 2007, the bankruptcies of British companies such as Northen Rock and Bradford & Brigley being conclusive examples in this respect.

All these steps have converged towards a single goal, namely at the end of the chapter to be able to answer the question: *Were there certain psychological behaviors which may explain the lack of investors rationality both during the crisis as well as before and after crisis period?*

Conclusions

From this study I could find that the new branch of economic science, the behavioral economics, studies how people actually make choices every day, putting into question the conventional economics postulates. Behavioral economics seeks to explain why people do not always behave selfishly, why do not always act the most logical from the economic point of view or why they assign a greater value to some objects and less value to other objects that have the same real value.

Furthermore, behavioral economics is a hybrid research area that takes elements from psychology and other social sciences, which study the individual in its many forms of manifestation and whose main hypothesis is the human behavior.

One of the main pillars that behavioral economics built on is the concept of limited rationality of individuals in general and markets in particular, which is opposite to the main assumption of conventional economics, the theory of rational choice (unlimited).

From the individual analysis and then in antithesis of the two theories, I came to the conclusion that the classic model of rational choice has its merits in a theoretical analysis of the decision, and this has brought a significant benefit in economic science, through the development of key theories by the parents of this science. However, limited rationality corresponds much better with reality and with the manner in which decision-makers must consider several aspects than their own selfish interest in the decision-making process.

In addition, it is understandable, that the individual with limited rationality, specific to behavioral economics, is the only one who can find his representation in the real economy. An individual with limited rationality is dominated in different proportions both by knowledge and emotional impulses or feelings as well. He is not a variables calculation machine, as economists tend to describe him. His brain doesn't make continuous optimisations and calculations related to profit and loss. The individual is more a being of expectations, of the illusions that determine his economic actions and his behavior in general.

From our perspective, one of the great omissions of the economic discipline was the detachment that occurred between a social science by definition and its object, namely the study of interactions between people. We consider that, in the study of any human activity, should not be ignored under any circumstances the generating factor, i.e. the agents who make possible the economic interactions, the human beings.

As I mentioned in the introduction, the starting hypothesis for the elaboration of this study was that behavioral economics can lead to a greater understanding, explaining, and last but not least in finding solutions to the economic and financial crisis from 2007, in addition to the conventional economics by providing a more realistic psychological bases.

For the purpose of validating this hypothesis, first we made a summary of the various theories specific to conventional economics regarding economic and financial crisis. Hence we could see that the followers of the classical school, keynesian school, monetary school and the austrian school had a significant contribution in explaining this phenomenon, contributions which have been and will always remain milestones of particular importance.. However, they have omitted a major factor from their analysis: human behavior. It was for this reason that we have brought into question the need for a new area of research, behavioral economics in an attempt to understand the human behavior in the economic act by appealing to elements of psychology. Moreover, I considered that for a complex analysis of the economic and financial crisis it must be taken into account as well the subjective and psychological aspects of behavioral economics which moves the rational behavior from traditional terms presented by classical and neoclassical economic literature into new coordinates.

Thus we have seen that the followers of behavioral school believe that in the conventional approach, the human factor is analyzed in mechanistic terms and is regarded as a variable which has no psychological element. In other words, traditional economic models are based on some abstract individuals: selfish and perfectly rational, on the one hand, and selfless, always ready to sacrifice for the welfare of society, on the other hand. Behavioral economists consider this a misguided approach because, they say, the individual is a complex person, whose actions are materialized into failures and whose behaviors are incomprehensible for the economy. They argue that in reality people do not always act the most logical from the economic point of view, but rather they make decisions under the influence of psychological factors. The individuals are repeating the same mistakes over and over again , they do not know how to calculate risks and they make economic operations emotionally motivated.

From behavioral approach of the crisis we have seen that behavioral economics by its emphasis on the human behavior, provides a number of plausible explanations for the noneconomic behavior from period which preceded the crisis, pointing out that people are by nature optimistic, confident, greedy and certainly they do not have limitless knowledge and information. Furthermore, it explains the causes that led the individuals to behaviors that do not fit into the rules of homo economicus and which are not economically rational. In this sense, the followers of this new direction of thought consider that the perfect rationality of homo economicus supported by conventional economists is limited by the presence of some cognitive distortions.

For a comprehensive study of the economic and financial crisis I considered it is necessary to deepen the analysis and to take into account the activities of participants in the financial markets, of which I chose the economic behaviour of investors.

From here we could see that the investors do not follow the conventional economic patterns in terms of their behavior. They do not take the most rational decisions, they do not maximize their utility and they act on a market which is not efficient. These behaviors can be explained by the presence of heuristics, errors, distortions and cognitive prejudicies of which we analyzed: overestimating the confidence, representativness, the herd behavior, gambler's fallacy, anchoring and adjustment, loss aversion, regret and fear of regret, the mental accounting, cognitive disonance and the disposition effect. To see if these psychological factors are applicable in reality or if they are strictly theoretical I have conducted an experiment using the questionnaire as a tool for survey.

Through this we managed to check on two different samples: students within UAIC - Romania and students within ASEM - Moldova, the presence of psychological factors, specific to behavioral economics that can influence the people the decision-making process, and which can provide explanations of the behavior of individuals that led to the economic and financial crisis. Moreover, we found that the presence of these factors can be influenced by the individual cognitive level, in other words by the manner in which individuals take decisions prudently (high cognitive level) or impulsively (low cognitive level), which is why it we can say that the study was successfully validated.

As a result of the qualitative analysis of the economic and financial crisis, we can say that, through the use of this behavioral thought structure, the crisis can be better understood, and directions for solving the crisis and, perhaps, to alleviate future recursions can be examined. However, for the accuracy of research we realized a quantitative analysis through which we wanted to validate the thesis basic hypothesis according to which the behavioral economics can bring new contributions in explaining the crisis, in addition to the conventional economics, by providing a more realistic psychological bases. Thus, in an attempt to bring a plus to behavioral economics from the economic point of view, we have tried to accomplish for the beginning an experiment that will help us solve to some extent the existing controversies in the literature on the effects that dominates the investor behavior: the disposition effect or the house money effect? The experiment conducted in September 2014 showed that investors are dominated mainly by the disposition effect than the house money effect.

The results achieved in the experiment mentioned above, were used to deepen the analysis on the British capital market between 2003 - 2015, and was the starting point for conveiving a quantitative model that can explain certain behaviors that led to the crisis, manifested during the crisis and that are still present.

The model revealed that on the British stock market have highlighted a number of behaviors generically called: offensive behavior, defensive, optimal offensive and optimal defensive behavior. These behaviors have succeeded randomly in the period before the crisis, during the crisis and after the crisis. However, we could see that one of the four behaviors was predominant prior and post crisis period i.e. the optimal offensive behavior. Basically when investors have noticed a negative efficiency (negative feedback) they risked more in the next period and the volume of transactions has increased. In other words, the ratio efficiency - volume of transactions was negative, investments being excessive and unproductive.

All these contradict the conventional theories concerning utility maximization and the market efficiency, pointing out that British investors have not taken investment decisions purely rational and they have been affected to some extent by certain psychological factors and which have led to suboptimal investment. Among these factors I mentioned the overstatement of confidence as one of the most important deviations from perfect rationality, having a significant impact on the market, which in combination with optimism, causes individuals to overestimate their knowledge, to underestimate the risks and to exaggerate regarding their ability to control events.

Therefore, from the above, we can conclude that the conducted quantitative survey helped us to support the basic hypothesis according to which behavioral economics by appealing to psychology can provide a contribution in explaining the economic and financial crisis, in addition to conventional economics.

Even though the quantitative study only covered a small part of what global financial system means, we believe that the results from the United Kingdom have provided relevant information so that we can assert that the purpose of the present research has been achieved.

Unfortunately, being constrained by time, by the absence of quantitative variables and the increased difficulty of quantifying the qualitative variables, we were determined to limit ourselves to an analysis that provided us purely descriptive results, but hopefully in the future we will be able to extend the analysis on other countries, groups of countries or regional and global organizations.

We believe that if people have a significant role in the emergence and evolution of the crisis, then learning about our own psychic can be the most effective tool to fight against the crises. This means adding courses like finance, psychology and economic history in the curriculum of high schools and universities which may prove to be very helpful. Concerning those who have already graduated, receiving training in these areas should be a necessity, regardless of profession. At the end of the day, we need such knowledge in order to take into account potential economic risks. Hopefully, an increase in "knowledge" will help us understand that:

- the world economy is a complex, dynamic and unstable system. One day people are optimistic regarding the future and they are buying houses, cars and other durable goods, while consuming more luxury services, such as frequenting restaurants and going on holiday. And then the next day the confidence disappears for one reason or another. This may exert a downward pressure on asset prices sufficient to cause a financial crisis. Therefore, before taking economic risks, we should be aware that one or more factors may suddenly turn something that seemed profitable/durable today into something unprofitable/unsustainable tommorow. This is the reason why the most sophisticated banks, regulatory institutions and rating agencies have difficulties to predict the crises.

• history matters! Quite often the history repeats (even if not exactly in the same way), but we have the tendency to ignore it because we believe that it is useful only for historians. This is simply wrong. A better appreciation of our past makes us aware the fact that the paradigm shifts don't happen often. In this context, we should be aware of the fact that prices of assets cannot grow indefinitely, even though they have been growing for a long time.

• there is no gain without risk.

These lessons will help us perhaps with a bit of luck, to reduce the frequency and severity of the asset bubbles and financial crises. The key may come to terms such as limited rationality. In other words, we need to understand that some situations exceed our ability to judge the probabilities and to make good decisions. Isaac Newton, the famous physicist, learned this painful lesson after losing £ 20,000 (more than one million dollars in today's money). He later said: "I can calculate the motions of heavenly bodies, but not the madness of men".

Therefore, we consider that the answers provided by the economic psychology researches: the impact of emotions on the cognition , respectively of the psyche for decision, may be integrated into a theory designed to provide a better interpretation of the economic and financial crisis phenomenon. The study of economic phenomena which does not involve the consideration of those who through their thoughts, their decisions and actions, constantly creates these phenomena, is a deeply flawed option. In reality, as shown by the experience of the past few years, the economic and financial environment evolves following the rules that have not been fully understood, and the misunderstanding was transformed, in a first phase, into a decisive factor of spreading the crisis. Insufficient understanding of the behavioral mechanisms related to human psychology, at the individual level, on the one hand, and at the collective level, on the other hand, worsened the things to the point that the crisis had taken systemic proportions. In addition, we believe that, long-term, behavioral economics is supposed to be one of the solutions to contemporary economic problems, such as the financial crisis in 2007, due to concern for the individual and for its role in gearing the economy.

Personal contributions and future research directions

The research on the economic and financial crisis presented in this thesis, contributes to the existing literature both qualitatively and quantitatively. The theoretical model proposed can fill a small gap in the existing literature, by incorporating the influence of cognitive level on psychological factors in decision-making, which, according to my research, has not yet been achieved. It contributes to a better and more realistic understanding of investment decisions, showing that for a complex analysis of the financial crisis must be taken into account both the objective and subjective elements as well as the interaction between them. The proposed model can be the subject of continuing investigations and further development.

The experiment presented in the first part of the last chapter and its results contributes to the economic literature in the sense that, apparently, there have not been made experiments with the same design. This experiment provided useful results, but it would be interesting for the experiment to be repeated with a larger sample size and also with other target groups.

Also, the quantitative model proposed at the end of the last chapter can bring a number of important personal contributions through: naming the four types of behaviors: offensive, defensive, optimal offensive, optimal defensive which I've never met before in the literature; dividing the analysis into three periods of the crisis, prior and post crisis and observing how the four behaviors have succeeded over the whole period analysed, as well as the manner in which this model has helped us in support of the basic hypothesis that behavioral economics by appealing to psychology can provide a contribution in explaining the economic and financial crisis, in addition to conventional economics..