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**THE CONCEPT OF HOMO ECONOMICUS
IN RICHARD THALER’S BEHAVIORAL ECONOMICS**

ABSTRACT

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The dissertation thesis was discussed at the Department Council (DC) on 17.02.2023 and is scheduled for defence by a decision of the DC of the Department of Economics at the Faculty of Economic and Social Sciences of Paisii Hilendarski University of Plovdiv.

This dissertation paper contains an introduction, three chapters, a conclusion, a bibliographical reference, a list of abbreviations used, a list of tables (8 tables), a list of figures (11 figures) and appendices (2). It consists of a total of 263 pages, of which: an introduction, three chapters and a conclusion – 234 pages, appendices – 5 pages, bibliography of sources – 14 pages. The bibliography includes 313 sources, of which 50 are in Bulgarian and 263 in foreign languages.

The publications about the dissertation work are three independent and three co-authored.

The public defence of the dissertation work will take place on 29.05.2023 at, Rectorate of Paisii Hilendarski University of Plovdiv at an open meeting of the Scientific Jury, appointed by Order by the Rector of Paisii Hilendarski University of Plovdiv.

The author is a full-time doctoral student in the Department of Economics of the Faculty of Economic and Social Sciences at Paisii Hilendarski University.

The materials on the defence are publicly available on the website of Paisii Hilendarski University of Plovdiv (<https://uni-plovdiv.bg>).

1. OVERVIEW OF THE DISSERTATION THESIS

1.1. Relevance and Significance of the Dissertation Subject

The relevance of the research subject is supported, *firstly*, by the ongoing discussion in the economic circles concerning the validity of the traditional model of behavior of the economic agents. Undoubtedly, the future of economy and social development passes through a better understanding of human nature. The economy should benefit the people and the people should benefit the economy. Economists continue the debate whether the concept of *homo economicus* is the necessary evil and whether the concept of *homo sapiens* provides the necessary prescription. Actually, the problem will exist until it answers the questions which the theory as a whole tries to answer—whether greed pushes us or destroys us; should there be an evolution in the model and a paradigm shift to better anticipate the future problems the economy will face.

The dissertation examines the concept of homo economicus in Richard Thaler's behavioral economics which constitutes the fundamental and most important overall change in the understanding of the economic human and replaces it with the understanding of homo sapiens.

Richard Thaler's concepts and experiments are considered to mark the beginning of the *New Behavioral Economics*. Behavioral economic theory recognizes the weaknesses of human consciousness, takes into account the psychological aspects of decision-making and applies them to the economic actions of people. It is a relatively recent trend in economics which builds a bridge between economics and psychology. Its aim is to enhance the realism of the models, as well as to demonstrate the existence of facts which are incompatible with the traditional models and which will be the tool in establishing a new approach to economics based on people and not on *homo economicus*.

***Secondly*, the relevance of the topic is based on the issue of the characteristic features of the economic human during crisis.** The global financial crisis was a focus which drew the attention to behavioral economics. The search for the crisis causes highlighted as a trend the application of the insights of behavioral economic theory and sharpened the criticism towards the mainstream theorists regarding their *homo economicus* explanation of the global financial crisis. The increasing climatic deterioration, as well as social and economic trends also intensify the urgency of a better understanding of the concept of *homo economicus* in solving current problems.

***And on the third place*, the topicality of the theme is based on the continuing interest in the tools of behavioral economics to develop policies based on the altered economic agent.** Richard Thaler suggests specific tools to direct the individual's attention in the right decision-making direction through the so-called "nudge".

The popularity of behavioral economists' publications is based on their efforts to guide people towards better decision-making for themselves by providing them with actual tools to deal with bad choices in life. Apart from the individual benefits, their implementation is obvious in the structure of various organisations, as well as in management decision- and human-centered policy-making, creating separate units for nudges which to advise governments, institutions and organisations regarding the application of behavioral economics approaches.

Within the research scope of the dissertation thesis lie also the forms of the practical application of the modified concept of the individual in the economy, included in response to the interest of individual governments and international organisations in implementing the tools, because of the low costs and the promising public acceptance. Individual proposals for nudge policies are outlined in line with the current economic and social development trends.

1.2. Object and Subject of the Study

The research object of the dissertation paper is the development in terms of economic theory of the ideas related to the behavior of economic agents in the economic system, their characteristic features, motives and expectations.

The research subject is the concept of *homo economicus* in the theory of R. Thaler, the development and the main change which he introduces in the category and the ways in which he applies it through the nudge. The enriched characteristics of the concept compared to the previous ones, the reflection in his theory and its application.

1.3. Research Thesis

The main thesis defended in the dissertation claims that the understanding of *homo economicus* is built within the dynamics of historical times, gets altered depending to the problems of economic and social realities, i.e. *the concept evolves as science develops*. Richard Thaler's behavioral economics reaches certain conclusions and changes in the models, overcomes the shortcomings of the concept, which arise from the limited view of human behavior, motives, incentives and psychological characteristics. However, along with creating a more accurate, true and adequate idea, R. Thaler also applies the concept of overcoming various weaknesses, biases and faults in human behavior in modern conditions.

The hypotheses on which we constructed the main thesis are:

1. Richard Thaler's model of a different *homo economicus* is applicable to public behavior.

2. If gaining knowledge on the psychological aspects leads to shifts in the models, then *the behavioral model is flexible enough to respond to the dynamic variables in the modern conditions.*

3. If the *homo economicus* model in behavioral economics can more accurately predict the contemporary economic behavior, then *the tools of behavioral economics have the potential to trigger a long-term change in the behavior of the economic agents.*

1.4. Purpose and Tasks of the Study

The purpose of the dissertation paper is to examine the changes in the concept of *homo economics* discussed in the works of the 2017 Nobel Prize winner Richard Thaler. This concept is key to understanding and justifying the new stage of behavioral economics associated with his name. The main objective is decomposed into several sub-objectives: (1) to outline the differences in the essence and manifestations of the concept introduced by Thaler and behavioral economics; (2) to reveal how the changes in the methodology of application of this concept are projected on the modified understandings of rationality promoted by him and on the altered behavior of the economic agents; (3) to evaluate the possibilities of application of the new concept through the tools of nudging, as well as to propose new ones in the contemporary conditions.

To achieve the purpose of the study, it is necessary to perform **the following research tasks:**

1. To define the essence and features of the concept, to study the place and function of *homo economicus* in the economic theories.

2. To justify and formulate the changes which the concept undergoes in order to periodise the development and to evidence the evolution of *homo economicus*.

3. To analyse the essence and derive the principles and characteristics of the behavioral economic theory, revealing the problematic points of the behavioral economics model. To point out trends in the progress of behavioral economics.

4. To compare the common features and differences of the behavioral economics model and the traditional concept of the rational economic model. To lay out the changes in the methodology of applying Richard Thaler's concept in substantiating and implementing the principles and theories introduced by him.

5. To establish the significance of the application of behavioral economics. To determine the spheres of practical implementation of behavioral economics.

6. To propose specific policies applicable to the current socio-economic situation.

1.5. Methodology and Limitations in the Scope of the Study

The research **methodology** for achieving its purpose is based on a detailed analysis of scientific literature sources. The study of the historical process leads to the disclosure of the logic of the evolutionary dynamics. The emergence and development process are studied in chronological order. A comparative analysis of the category through different paradigms is performed. Institutional analysis is applied, and behaviorist methodology is analyzed. Documentary analysis and a deductive approach are used to exhibit trends and characteristics.

The research is limited to the theoretical limitations of the economic theories related to the economic human, to the views of the behavioral economists regarding *homo economicus* and the way the methodology related to the economic agent evolved in the unfolding of Richard Thaler's theory.

The applications of behavioral economics to other spheres and their development remain outside our spotlight. Historically, the dissertation is limited to the leading figures of economic theory with a focus on the rationally thinking agent, economically-wise, without claiming to be comprehensive in terms of the abundance of the economic schools. Due to the development of digitisation and the preservation of ever more data electronically, the data base will be limited to reliable sources when presenting reports and studies, on the one hand, with an emphasis on primary sources, and on the other - with highlight on new achievements and analyses.

2. STRUCTURE AND CONTENT OF THE DISSERTATION RESEARCH

This dissertation contains an introduction, three chapters, a conclusion, a bibliography, a list of abbreviations used, a list of tables, a list of figures and appendices.

The text is structured as follows:

INTRODUCTION

FIRST CHAPTER. Development of the Idea of *Homo Economicus*

1.1. Origin of the idea of *homo economicus* in economic theory and place of the concept in classical economic theory

1.1.1. Essence and importance of the category for the economic theory

1.1.2. *Zoon politicon* by Aristotle

1.1.3. The contribution of Adam Smith

1.1.4. The introduction of the term through the description of John Stuart Mill

1.2. Validation of the concept by the Neoclassical School

1.2.1. The marginal approach and the concept

1.2.2. The dualistic view of the Cambridge School

- 1.2.3. The contribution of the Lausanne School
- 1.2.4. Modern defenders of neoclassical features
- 1.2.5. Analytical development of the concept in the neoclassical paradigm
- 1.3. Main approaches of criticism to the concept
 - 1.3.1. The historical school
 - 1.3.2. Institutional criticism
 - 1.3.3. Neoliberal criticism through the "man of action" by Ludwig von Mises
 - 1.3.4. Schumpeter's original view
 - 1.3.5. Herbert Simon and the critique of "global rationality" in Neoclassicism
- 1.4. Heterodox theories and development of criticism in terms of the concept
 - 1.4.1. The changing meaning in the economics of transaction costs
 - 1.4.2. The critical view of a new institutional economy
- 1.5. The evolutionary view of the concept
 - 1.5.1. The institutional roots of Evolutionary Theory (Evolutionary Institutionalism)
 - 1.5.2. Development of evolutionary economics
- 1.6. Summary analysis of the development of the concept of *homo economicus*
 - 1.6.1. Heterodox criticism
 - 1.6.2. Evolutionary tree of *homo economicus*

Summary

SECOND CHAPTER. The Development of the Concept of *Homo Economicus* from Behavioral Economics

- 2.1. Antecedent ideas of behavioral economics and outlines of the directions of change in the concept of *homo economicus*
 - 2.1.1. Evidencing of the relationship with psychology
 - 2.1.2. The rising voices against rationality
 - 2.1.3. The relationship with experimental economics
- 2.2. D. Kahneman and A. Tversky: Building the Foundations of Behavioral Economics
 - 2.2.1. Dual process
 - 2.2.2. Heuristics and biases
 - 2.2.3. Prospect theory
- 2.3. R. Thaler: Unfolding of behavioral economics
 - 2.3.1. R. Thaler's approach to adapting prospect theory
 - 2.3.2. R. Thaler's behavioral economics constructive theories
 - 2.3.3. Correction of the assumption of rationality in the understanding of the economic agents

2.3.4. The methodology used by R. Thaler to change <i>homo economicus</i>	
2.4. Trends in behavioral economics	
2.4.1. The evolution of <i>homo economicus</i> in behavioral economics	
2.4.2. Criticism guidelines	
Summary	
CHAPTER THREE. Practical Applications of Behavioral Economics. Nudge.	
3.1. The general aspects of the nudge	
3.1.1. Definition, methods and categorisation	
3.1.2. Nudge philosophy - Libertarian Paternalism	
3.1.3. Choice Architecture	
3.1.4. Institutionalising the application of nudge	
3.2. Potential fields and opportunities for application of nudging	
3.2.1. Behavioral finance	
3.2.2. Behavioral economics of development	
3.2.3. Environmental behavioral economics	
3.3. Specific ‘nudge policies’	
3.3.1. Specifics of behavioral economics when building nudge policies	
3.3.2. Currently implemented nudge policies	
3.3.3. Current proposals for nudge policies in conditions of brewing crises	
3.3.4. Limiting conditions for the nudge policies	
3.4. Summary, recommendations and guidelines	
CONCLUSION	
Contributions	
Applications	
Bibliography	

3. BRIEF DESCRIPTION OF THE DISSERTATION STUDY

The significance and relevance of the problem are offered in the introduction of the dissertation, the object and subject of research are indicated, the research thesis, hypotheses, purposes and tasks, the methodology and existing limitations, as well as the structure of the dissertation research are formulated.

3.1. FIRST CHAPTER. DEVELOPMENT OF THE IDEA OF *HOMO ECONOMICUS*

The first chapter of the dissertation is distributed in six parts. The chapter traces the origins and development of the idea of the economic agent, how the individual in economic theory acquires the characteristic features of the modern concept of *homo economicus*, the object of research in this work.

The first part shapes the essence and core meaning of the definition of *homo economicus*. The presence of rationality in its content is validated. The analysis of the individual before the appearance of the term is based on Aristotle's exposition, where the foundation of orthodox development is laid with the possession of reason and the pursuit of acquisition of own benefits. However, a connection is also made with the modernised version possessing the social nature of the person and the implied invisible unreasonable side of the individual.

We made a basic assumption of the beginning which sets the direction in the economic aspect for the individual in A. Smith's classic description of the pursuit of personal interest. The selfish motives of human nature which guide production are deduced. The relationship of behavioral economics with the analysis of sympathy and altruism, emotions and the limiting role of society on selfishness is explored. Rationality is not only related to selfishness, feelings are allocated some space and the social side of the human is taken into account. The contrast with the further development of the features of *homo economicus* is outlined.

Jeremy Bentham sets the foundations of the idea of optimization by placing utility at the spotlight of the study and the direction for considering the individual with the qualities related to the achievement of utility. The goal is to attain pleasure and avoid pain. The introduction of the term *economic man* by John Stuart Mill is highlighted. He adds also the avoidance of work and the desire for expensive pleasures and emphasizes the importance of separating economic motives and actions.

The second part of the chapter reveals the establishment of the term through the well-known economic paradigm of the neoclassical school. Neoclassical development imposed the use of the concept of *homo economicus* in science and idealized it. The rising traits of the neoclassical features of *homo economicus* are emphasized.

Karl Menger implements the *economizing individual* and sets an alternative direction to the development of the concept of *homo economicus*. Economic activity is the choice between the needs and the estimation of the relative importance of those needs. The individual is the one to

select and to optimize. The planning, anticipating, improving through experience, classifying one's needs and the selective side of the person is emphasized. William Stanley Jevons sees the individual as a maximizer, smart enough to anticipate their future needs correctly, even goes so far as to address the use of mathematical toolkits.

Alfred Marshall, on the one hand, criticizes, but on the other, continues to apply, even further develops, the idea of *homo economicus*. There is a certain attempt to justify its use, yet his human is the most judicious in their economic calculations. Custom and habit are also mentioned, which, however, are used to overcome limited information.

Leon Walras attempts at making a clear distinction between social and economic phenomena. The human has a self-conscious, controllable will, and people are mutually coordinated in society, but material prosperity prevails over morality in economic terms. Vilfredo Pareto strongly advocates the use of *homo economicus*. Essentially, it is the view that human actions are the object of scientific study because of their uniformity. Science examines the various similar cases, and non-conforming cases are viewed as exceptions. The innovation of V. Pareto initialized with the examination of only the psychologically-stripped theories necessitates the elimination of the non-essential factors. In this way, moral reasoning is eliminated, and through repetition one is able to clear one's calculation errors. He operates with clear economic utility. He is so confident in his preferences that there is already a point at which, having different combinations, these satisfices are equalized.

The recent view of utility calculation has its roots in *The Theory of Games and Economic Behavior* (1944) by the economist Oskar Morgenstern and the mathematician John von Neumann. Alongside the enhancement of mathematical methods, the concept finds a place in the theory of expected utility, where the subject is able to compare the differences in utility not only in terms of the possibilities in front of him/her, but also of the combinations of these possibilities. In modern development, with the theory of expected utility, *homo economicus* possesses conventional rationality, an ability to deal with combinations of possibilities with a logical sequence, under the uncertainty s/he faces, to the resulting calculations of the expected utility values s/he adds multiplication by their probabilities. The modern reading of the theory of rational choice with clarified axioms of rationality leads to the so-called over-rationalization and mathematization, which is widely applied in contemporary economics. The research starting with the origin of the idea to its affirmation, as well as its recent sophistication, enables us to outline the following characteristics:

First. The individuals possess reason, follow logic, are aware and know how optimization can be achieved to get the best for themselves. They have the knowledge of what is good and follow it, and that is utility maximization. With this awareness, the influence of feelings on actions is excluded. The essential point is the consistency of the subject in the claim of rationality, the individual is consistent both in his/her preferences and actions.

Second. Psychology is related to egocentrism because of the pursuit of satisfaction, so the limits are marginal utility versus marginal cost. Through egoism, human psychology as a whole is unified for the needs of the economy. Preferences are transitive and do not alter, choice is not influenced by physical or mental state, moral is within the bounds of the legal, the actions are strategic, not emotional, and irrationality is reduced to error. Environment has no influence, and so the social preferences are not included in the analysis.

Third. Human will be self-aware and controllable. Preferences fall within certain scales, respectively, self-control is not a problem point. Past losses or gains cannot influence or sway the subject, s/he is not affected by side contexts nor by other individuals and is not biased.

Fourth. Since the rational person calculates their maximum utility, they respond to incentives, the future costs that they are expected to incur in each individual choice are sufficient for them, including the future, but not the past. The optimization is done automatically. In addition, the person has information about availability and possibilities, is familiar with alternatives and knows how to include them in his/her calculations. As one performs repetitive actions, one becomes better at calculating by predicting future events. Since one is prescient of the future, one has made the calculations now and follows them. In their development, the individual has also reached a stage where one is able to deal with the uncertainty of the future by managing to relate the probabilities to the expected benefits.

Fifth. The individual in economics also considers the expected utility, and accordingly responds to axioms of rationality which become increasingly complex. There is an imposition of economic rationality with completeness, orderliness, dominance, transitivity, continuity, substitutability and independence.

In this manner, the characteristic features can be summarized as: possessing reason, being characterized by egoism, by mastery of one's will, by good cognitive skills and by rationality with modern understanding. This clear upward rationality, optimization, calculation with available information, combining utilities with their probabilities and self-interest are all in the name of building mathematical models. The aim is to avoid the complexity, unpredictability and insolubility of human psychology, as the logic of analyzing a company and a consumer is similar.

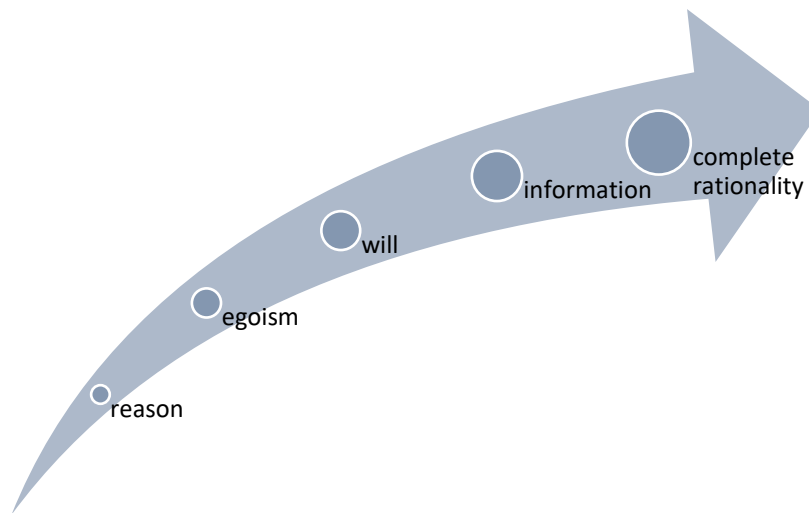


Fig. 1. Development of the neoclassical features of *homo economicus*

Source: Author's Interpretation

In the third part of the first chapter the main approaches of criticism to the concept are outlined. The historical school, emphasizing the unity of the nation to create productive forces, also delineates the necessity, susceptibility, and motives for directing the human intellect. Self-interest is knocked off the pedestal and the creation of productive labour is put in its place. It is believed that the human alone will not do everything necessary. Another criticism targets the lack of morality. The beginning of criticism on the possession of information and knowledge is also set.

The direction and clarification of the criticism of *homo economicus* is performed by institutionalism. Utility-maximizing behaviour is replaced by the concept of instinctive behaviour. The person has ancestors, from them s/he learns how to act in society, s/he also has instincts and established habits to follow, but s/he is still a constantly adapting being to the changing circumstances. Conscious choice happens when habits contradict other principles.

By including in the analysis, the evolution of productive forces and placing the corporation at the centre, John Kenneth Galbraith introduces the new entrepreneur who pursues not only personal benefit but also progress. He provides a new interpretation of motives such as gaining respect from the accumulation of wealth, ostentatious spending is replaced by discretion, the idle class now shows results, all because of technocracy. The economy is accused of creating a consumer society. The author is convinced that production gives rise to desires, it denies the diminishing urgency of needs and the necessity to adapt the theory to the new age by examining preferences and utility through a new analysis.

Ludwig von Mises synthesizes economic theory with general sociology through his extreme and individualistic views into a science of human action – praxeology, reflecting the individual's

motives for economic action. He indicates the necessity to treat economic problems beyond the traditional framework. He attempts at building a general science of human action, where human behavior is both conscious and purposeful or unconscious and reflexive.

The neoliberal beliefs of L. Mises focus on demystifying the ideal model. The attempt is for the person to be seen as one is, with one's active side brought to the fore. It faces the spectre of *homo economicus* mostly in the standardization of one's goals in the material aspect, such as profit maximization. The human is active, showing weaknesses which are also reflected in one's economic actions. Standing against individualism, J. Schumpeter seeks to reveal the worthless side of *homo economicus* in the theories as a hedonistic egoist, places him/her, albeit irrational, at the centre of the business cycle. The ideas of the interdisciplinary approach in general and about *homo economicus* are present in the work of J. Schumpeter.

The fourth part of the chapter is devoted to heterodox theories and their development in terms of *homo economicus* criticism. Herbert Simon takes the first step in the deeper study of the economic agent as the author of the concept of bounded rationality. The foundation is shaped by the thesis that even if they want to maximize, due to limited cognitive capacity, time and information, the economic agents make a series of "simplifications" to arrive at "satisfactory" solutions. This big step of H. Simon is also the starting point of the basis of change of *homo economicus* in the behavioural economic theory.

The exploration of psychology finds a new analysis in the economic works and develops with neo-institutionalism. On the part of Oliver Williamson, the spotlight is occupied by the change in the analysis of the individual, which includes the pair of bounded rationality and opportunistic behavior, and all that within the company analogy, which has not been fully examined until neo-institutionalism. Both human computing difficulties and conflicts of interest are involved. In her analysis, Eleanor Ostrom accepts bounded rationality and opportunism, but suggests adding trust, reciprocity and reputation to the characteristics of the individual. She highlights the inefficiency of the rational model and opens the possibility of self-organization of the subjects.

The fifth part of the chapter examines the contribution of evolutionary economics to the criticism of the concept. Evolutionary economics distinguishes bounded rationality and knowledge and gives importance to the environment. Routine practices, procedures and decision-making positions are analyzed, focusing on the path of adaptation change by R. Nelson and S. Winter. Geoffrey Hodgson's critical view expands the application of the evolutionary approach and gives importance to morality in the economy by distinguishing hedonism from the firm, and individualism from the society. Tony Lawson points out that in reality the individuals are

influenced by the social structure, which also relates to the individual's rationality. He considers rationality as a capacity.

The sixth part traces the evolution of *homo economicus*. Initially, the lines of criticism and the heterodox characteristics of the individual are indicated. Attempts to introduce various terms describing the human in the economic aspect are made. The critical direction in the development of the examination of *homo economicus* can be summarized in challenging such features of the economic agent as rationality, self-interest, permanency, and the necessity to include precise psychological features. The recently developed heterodox characteristics can also be enlisted: the inclusion of instincts, bounded rationality, opportunism, reciprocity, and constant change (Fig. 2).

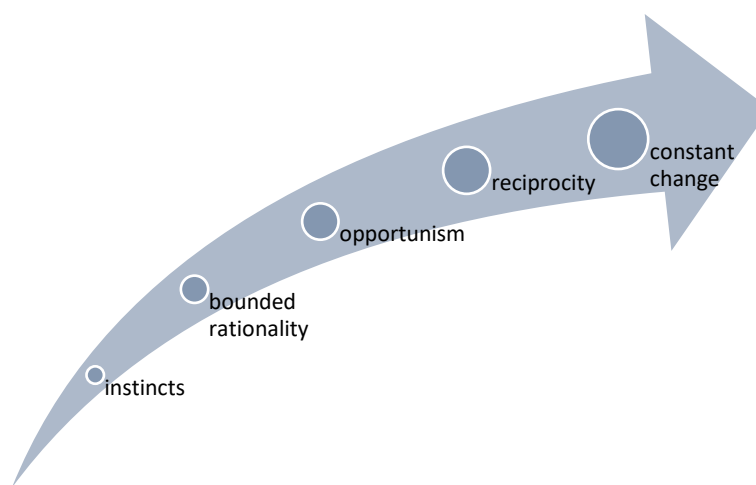


Fig. 2. Heterodox characteristics for change of *homo economicus*

Source: Author's Interpretation

In their course the economic theories enhance the understanding of the individual according to the knowledge and the framework of the time in which the scientists operate. The observation of the characteristics of *homo economicus* also happens along with the building of the connection with the main philosophical currents of scientific progress. The study of *homo economicus* is placed within the framework of its evolution according to the logic of Richard Thaler, who believes that it will evolve into *homo sapiens*. An analysis is also performed of the traits which were inherited before the very appearance of the term. The assigned traits are not static. With the heterodox views, the features which are acquired, developed and changed are indicated before reaching the stage of the interdisciplinary approach of the study and declaring the final change of the original idea. Fig. 3. offers an attempt to indicate the characteristic features of *homo economicus* in their completeness of development by the various schools and their representatives.

The transformation of *homo economicus* passes from the initial comprehension of the term through an adaptation to the new reality which allows the better knowledge of the human to be incorporated into the concept to achieve a complete and real concept. Instead of neglecting them, behavioural economic theory considers the roots of economics, too, as the connection is traced. It is the reason why it is claimed that behavioural economics returns to the roots of economics.

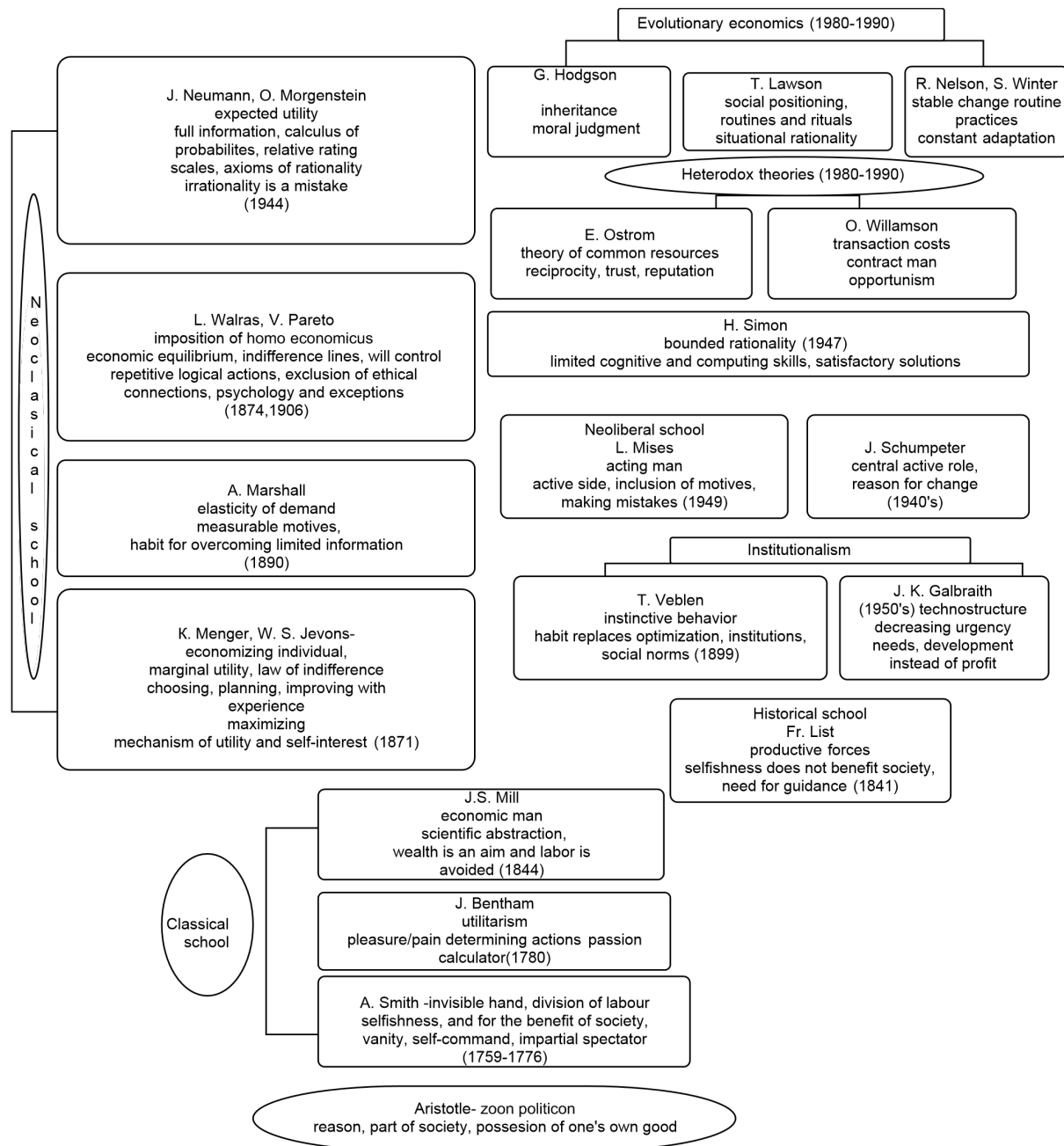


Fig. 3. Evolutionary tree of *homo economicus*

Source: Author's Research

3.2. SECOND CHAPTER. THE DEVELOPMENT OF THE CONCEPT OF *HOMO ECONOMICUS* IN BEHAVIORAL ECONOMICS

The second chapter is dedicated at the exploration of the route which is formed by the interaction between economists and psychologists and gives a reason for embedding embedding of real people in the economic theory. The aspiration of behavioral economics is a more correct understanding, and description, adding needful features to the already built economic models if necessary, to achieve an improvement of the results and more correct predictions of the models. On the one hand, the contribution is due to the development of psychology, on the other - to the sophistication of the experimental method, which facilitates the proof of the claims about behavior. In this way the use of non-standard reasoning of the individual economists regarding the principles of rationality is justified.

The chapter details the complex periodization of the founding and development of the school. The psychological research agenda and related theories on which the concepts of behavioral economics are built are defined. The manner of incorporating and applying psychological findings in economics is highlighted, which shapes modern behavioural economics and brings about the most significant overall transformation of the understanding of the concept of *homo economicus*. The stages of shift of *homo economicus* are traced within the unfolding of behavioural economics.

As a result, the contribution of the behavioural economic theory is summarized, and the criticism of the established concepts and principles is marked.

The first out of four parts of the chapter lays out the antecedent ideas and representatives who triggered change in the characteristics of *homo economicus* and contributed to the development of behavioural economics. Behavioural economics has a complicated history of emergence and periodization. For the purposes of this study, the beginning is considered to address the particular adaptation of the works of Daniel Kahneman and Amos Tversky by Richard Thaler, due to shaping the distinctive methods and principles of the school. The so-called "old school" behavioural economists from G. Katona are examined together with other authors as the forerunners of their own scientific field of behavioural economics.

The emergence of behavioural economics is framed by several strong theoretical currents. The first is to demonstrate the relationship of the economic decisions which the individual makes with the individual's specific psychological characteristics. In connection to the former is the special emphasis on cognitive psychology and decision theory. The mathematical approach to the study of psychological problems provides an adequate basis for furthering the theories of human

behavior and the decision-making process. The verifiable, subject to assessment qualities of the economic agent are determined.

The second part examines the building of the foundations of behavioral economics. The contribution of D. Kahneman and A. Tversky in the construction of behavioral economics is clearly stated in three directions: their discoveries regarding the so-called Dual Process; the Heuristics and Biases Approach and presenting a framework for heuristics through Prospect Theory.

D. Kahneman and A. Tversky develop H. Simon's principle of bounded rationality and satisficing decisions during research on the decision-making process. Their target is to build a "map of bounded rationality". Dual thinking refers to the mind's choice of "slow" and "fast" thinking. They illustrate the idea through the metaphor of two actors called "System 1" and "System 2". System 1 is intuitive, automatic and fast, and System 2 is analytical and slow. Kahneman and Tversky's model of the agent consists of a two-system structure, emphasizing the automatic system which functions intuitively according to what it perceives in the present moment. Dualistic process is the grounds for change of *homo economicus* by behavioural economists. The rational agent possesses a system which is rational but incurs no costs for its use, and in fact, even if *system 2* meets the imposed features of the rational agent, it fails because of *system 1*.

The first claim, part of the *heuristics and biases* approach, states that people use shortcuts, simplifications and problem re-organizations in order to facilitate the decision-making process in uncertain situations, rather than logic and probability calculations. The automatic side of the mind uses heuristics which might result in systematic errors. Bias represents the systematic error that heuristics can lead to. The basic purpose is to point out the deviation from rationality, but also that this is not provoked by the role of emotions alone. Heuristics claims that in reality individuals do not behave as if they meet the requirements of the theory imposed on them in a systematic approach. It rather shows the actual simplification rule, which is used, not the regulatory recommendations. If biases are predictable, then inconsistencies with rational choice models will also be predictable.

For a deeper understanding of the approach, the dissertation work examines both the initial heuristics *anchoring, availability and representativeness* and the biases generated by them, as well as the various possible biases and effects which are grouped according to individual heuristics.

Prospect theory is the third most substantial stage of setting the foundations of behavioural economics. It is also a framework for heuristics and is the alternative descriptive theory to the theory of expected utility. Prospect theory is used to introduce real individuals into economics as intuitive choice is sought.

Prospect theory is constructed on the grounds of expected utility theory. The accepted findings that individuals are not rational because of the characteristics of *system 1* are derived from psychology. Furthermore, the uncertainty of consequences is derived from the research on decision-making.

Among the contributions of prospect theory is the establishment of a reference point as a basis for comparison, a status quo or a set goal, as it allows for the determination of a subjective point and thus judgments of gains and losses are separated. The loss aversion outweighs the joy of gain. Humans apply heuristics to manage complex decisions involving estimation of probabilities and prediction of values. The differentiation of the decision-making phases indicated that the individuals assess edited perspectives and subjective perception of utility and possibility.

Among the most substantial findings of perspective theory is *framing*. It is established that the choice of the individuals is influenced by the way the choice is framed. The choice is influenced by the situation, the wording, the settings, often by the understanding of gain or loss. So the choice can be framed by highlighting the positive or negative aspect. *Framing* indicates the power of context wording to change decisions.

The third part examines the unfolding of behavioral economics with the theories of Richard Thaler. The basis of the construction of behavioral economics is the idea of a changed economic agent with the applied characteristics. The idea which underlies the prospect theory for understanding the intuitive choice of individuals provides the fundament for the famous "anomalies" of R. Thaler. This view serves to prove the features which differ from those applied on the basis of rationality. Richard Thaler develops behavioral economics initially by distinguishing a series of inconsistencies with the current paradigm. The culmination is seen in the question whether, in the presence of a series of anomalies, standard economic theory can predict people's behavior.

Thaler develops an approach through which he applies cognitive psychology and decision theory. Since heuristics lead to systematic biases, his conclusion is that the normative model cannot predict the behavior of the individual, and from the framing he reaches the conclusion which sets the direction for the application of behavioral economics. Richard Thaler uses the ideas derived from prospect theory in his attack on consumer choice theory in the economic theory, which is considered the beginning of modern behavioral economics.

His initial inference as a behavioral hypothesis is the existence of an *endowment effect*. His second conclusion concerns the existence of a *sunk cost effect*. The third important one concerns the place of *regret*. When a choice can cause regret, the individual has an incentive to eliminate it.

The fourth important finding affects self-control issues, the temporal dimensions of decisions, and the relationship with prior commitment.

R. Thaler's theories set the scene for behavioral economics and, therefore, the modern version of behavioral economics is regarded as "R. Thaler's behavioral economics". They can be distinguished as: behavioral theory of consumer choice; economic theory of self-control; transactional utility theory; theory of justice; behavioral life cycle theory. Behavioral economics aims at finding solutions to people's economic problems caused by the differing traits of *homo economicus* and at directing the behavior of individuals in their benefit.

The periodization of R. Thaler's contributions to behavioral economics performed in this chapter is as follows:

- The initial stage of deployment of behavioral economics with the behavioral theory of consumer choice, where anomalies related to heuristics and biases, endowment effect, sunk cost effect and mental accounting, is particularly influenced by the findings of prospect theory. This phase represents the clear embedding of psychology in economics, shaping the approach of behavioral economics as anomaly detection and seeking to change standard models against the findings of psychology that overturn the understanding of the rational optimizing behavior of the agent in economics.
- The construction of the economic theory of self-control, where a model of the agent as a planner and implementer is built. Enhancement of social preferences with justice embedded.
- Building behavioral finance as the greatest defenders of the rational model. It should be emphasized that the most common anomalies come from the field of finance and the goal is to include human reactions and cognitive limitations.
- Founding of libertarian paternalism. The emphasis is on the cooperation of economics with psychology and law. Thus, the so constructed models can be applied to improve the well-being of the individual both at the individual and at the societal level.

R. Thaler, in correcting the assumption of rationality, mainly relies on the theory of prospects. In the style of the anomaly approach, he addresses principles of economics which need to be loosened, in addition to the principles of rationality.

On this basis, the following corrections are found:

First. The individual's preferences are influenced by the wording.

Second. In reality, there may be a change in preferences.

Third. Probabilistic judgments are influenced by heuristics and biases, and the individual makes mistakes.

Fourth. Individuals respond to the perception of gain and loss. They remain under the influence of uncertainty and are also affected by incurred costs and previous conditions.

Fifth. The individual is driven by motives other than profit.

These findings lead to the construction of Thaler's methodology in three basic aspects:

1. Individuals do not optimize, they make mistakes and there is a need to model the mistakes.
2. Individuals are not only selfish; it is necessary to add other characteristics.
3. There is a way of directing the individual's behavior towards the best outcome of the decisions.

The true change of *homo economicus* lies in three major modifications of the agent: in the *quasi-rational agent*, where a method is built to model errors, in *homo psychologicus*, where psychological features of the agent are added to the models, and in differentiation between people and econs or *homo economicus* and *homo sapiens*, which is used in the application of theories.

R. Thaler includes quasi-rationality of the agent, indicating that irrational behavior does not maximize utility. Mapping is added to illustrate the way human judgments fail to fit rational standards due to a lack of focus on necessary aspects of the information possessed. The direction is to build an "error modelling method".

There is a clarification on the basic differences and the systematized features which should be replaced on the basis of *homo psychologicus*: bounded rationality, bounded self-control and bounded self-interest. Thus, the theory arrives at the deployment of libertarian paternalism. With the application of behavioral economics the use of *econs* and *people* in the development of the approach is initialized.

Bounded rationality – heuristics and biases indicate outcomes which do not comply with the rational model, the individual does not consult their reasoning and take shortcuts in decision-making which lead to predictable errors such as availability heuristics, anchoring, hindsight bias, overoptimism, loss aversion, endowment effect. Prospect theory enables the construction of limited rational decision-making models. The value function is defined by perceived changes in wealth, loss aversion indicates the differential response, probabilities are replaced by a decision-weighting function. The accessibility heuristic is applied to assess probabilities related to harmful activities, environmental issues, so it can lead to both under- and over-regulation in terms of the proximity and judgment of the future possibility and outcome of the close example.

Limited will-power – the planner-doer model contains the internal conflict born of self-control. The planner maximizes the current value of the utility stream of the doer, who controls the daily decisions. Mental accounting is a planner's tool, it differentiates accounts by labelling them differently, and hyperbolic discounting indicates problems with self-control.

Limited self-interest – the *homo psychologicus* model encompasses a preference for fairness, demonstrated through behavioral game theories. Utility involves both the individual's and

the counterparty's reward as well as the counterparty's attitude. People tend to cooperate. Justice bias and justice-related norms make people care not only about their material self-interest, but also about their reputation. The endowment effect and the effect of fair transaction may influence the outcome of the negotiation. Judgmental bias also leads to the understanding of justice through the prism of self-interest, which can distort the judgment of fairness and affect negotiation.

The conclusion is that, unlike *econs*, in terms of difficult, infrequent decisions, when they do not receive immediate feedback and have difficulty translating the situation into understandable language and terms, when the effect of the action is delayed in time and there is an ambiguous relationship between experience and consequences, people need a nudge.

Thus, R. Thaler's methodology for replacing *econs* with real people in the economy consists in distinguishing principles and inconsistencies with reality, in building a method for modelling errors in the decision-making process, adding psychological features to the models and on the basis of the qualities of the traditional agent - adding the qualities of real people.

The sixth part of the second chapter shapes the trends of behavioral economics with the evolution of *homo economicus*, which is the reason for the claims for shift of paradigm and directions in criticism. Decision-making processes under bounded rationality, prospect theory and the quasi-rational agent are investigated. Methodical and philosophical criticism arises, disputing the need to criticize rationality, a one-sided approach to psychology, delving into biases and the experimental method.

In this stage of the dissertation, we confirm that the change of *homo economicus* fully corresponds to the heterodox criticism developed in the first chapter. The newly constructed model for the agent in behavioral economics includes: limited calculation capacity, hesitation, influence by context, influence by social environment and norms, reciprocity, norm of fairness, problems of will, myopia, aversion to losses, influence of physical and emotional states, errors due to using response shortcuts, succumbing to inertia, susceptibility to nudging.

All in all, the transformation of *homo economicus* undergoes a stage of finding a method for modelling errors, incorporating the psychological traits and clearly defining the characteristics of bounded rationality, bounded self-control and bounded self-interest, and distinguishing *people* from *econs*.

3.3. CHAPTER THREE. PRACTICAL APPLICATIONS OF BEHAVIORAL ECONOMICS. NUDGE.

The focus of the third chapter lies on the "human" image constructed by behavioral economics through *the nudge*, which constitutes the general framework of the school's practical application.

In the first part we define *nudging* and outline the approach and tools used. The specifics of *nudging* are made clear from the description and are as follows:

1. It represents a side, aspect of the selection of the design process.
2. It aims at modifying behaviour with a predicted inference based on prior evidence.
3. It does not block any of the possible options of behavior.
4. It does not significantly change economic incentives.
5. The intervention can be avoided by the individual in an easy and cheap way.
6. It is not an order.

7. Nudges are the factors which influence *homo sapiens*, however, *homo economicus* will not pay attention to them.

8. Nudges involve cognitive rather than material expenditure and in this sense are a change in incentives.

9. The creators pose an open request: that the nudge be used for good purposes.

This approach is a response to the clear distinction of the common human from *homo economicus*, as the differences between them are implemented to improve the welfare of the individual. The default option, the wording option and the social influence option are the initial and most significant mechanisms of nudges. The complex categorization indicates the depth and breadth of the concept.

Table 1. Classification of Nudges

Category	Types of Nudges
Addressing System 1	Graphical warnings, environment design
Addressing System 2	Disclosure of statistical information and facts, reminders and warnings
Avoiding both systems	Setting of default option and automatic settings
Transparent	Using visual illustrations along the way
Opaque	Change the default option from auto-opt-out to auto-enroll
For individual use	Nudges to maximize individual utility
For public benefit	Nudges to avoid excessive use of public goods
For intended purpose	Mediation, confrontation, deception, social influences, use of fear, reinforcement
Manner of task structuring	Default option, simplification, social reference, change of effort, disclosure
Manner of describing choice options	Giving warnings, reminders, pre-commitment, feedback
According to sphere	Digital nudges Green nudges

Source: Author's Research

The enlisted nudges also set the scene for a contested application of the basic principles of the nudge. The nudge philosophy clearly differentiates this approach from the marketing techniques for change of behaviour. Libertarian paternalism differentiates between *econs* and people, builds the foundation for interfering with the individual's personal choices, and provides the direction for policy implementation. The effort to improve people's choices frequently based on mistakenly formulated and unclear preferences involves an element of paternalism towards the individual. At the same time, behavioral economics seeks to preserve the individual's right to choose and to keep liberalism as the main achievement of economic theory. In conclusion, the hereby discussed philosophy bears a conflict within its name, but the creators insist that this conflict opens a third way between paternalism and liberalism. The nudge requires a 'nudger' or a choice architect clarifying the way nudges are applied. Choice architecture is the *technology of applying* the nudge, accounting for the impact of small shifts in context so that the design properly responds to the stimulus-response relationship, the stimulus signal is consistent with the desired action. The research reveals a wide variety of choice architecture frameworks, but also shows ambiguity of implementation. It is an indication of the constructed elements of the various approaches to choice architecture.

Table. 2. Frameworks of Choice Architecture

Choice Architecture	Elements
N.U.D.G.E.S.	iNcentives, Understand mappings, Defaults, Give feedback, Expect error, Structure complex choices
Road Map Construction	defining the problem, diagnosing the behavior, discovering channels of action, determining the scale of the intervention and testing
MINDSPACE	Messenger, Incentives, Norms, Defaults, Salience, Priming, Affect, Commitment and Ego
The Behaviour Change Wheel	the source of the behavior, functions of intervention to the individual sources of the behavior, policy categories

Source: Author's Research

The route of institutionalization of the nudge approach is indicated with the initial creation of units and teams in governments, and the path of its implementation by international institutions and individual countries is outlined. Governments are beginning to handle the knowledge of behavioral economic theory of nudging first for its low costs and second for its public acceptability.

In its second part, the research addresses the potential areas of application and evaluates the real possibilities for their application. Behavioral finance is the most developed and researched

field which behavioral economists believe has the potential to become mainstream. Behavioral economics of development is the least developed area and is still expecting more attention. Environmental behavioral economics, as the problems in this area mature, is receiving increasing attention and best illustrates the limitations of this policy implementation.

In the third part we indicate the specifics of behavioral economics in the construction of nudge policies. The nudge focuses on policymaking without the complications of traditional regulations. Nudge policies develop in an environment where a significant portion of decisions are made by the automatic system of the mind as errors are made. A nudge policy will influence choice so that it improves people's self-estimated well-being. Keeping the basic principles of behavioral economics, psychological characteristics and the decision-making process are placed first. Yet, the aspiration is to preserve freedom of choice. The goal is to subtly encourage or guide people to join a certain policy themselves. Emphasis is placed on public acceptance of policies.

It is essential to bear in mind that their effectiveness is aimed at where people display biases and there should be an effort to guard them against manipulative creation of public architecture. The aim is to change the decision environment through choice architecture based on behavioral evidence, intended to change behavior. Nudges do not require material costs and do not burden taxpayers, so it is necessary to determine the time to use nudges and the time when measures or bans are needed.

The main direction in the use of behavioral insights is initially focused at revealing information, simplifying forms and procedures, giving warnings, building default rules, using social influences.

In Bulgaria, behavioral economics is not applied directly at government level. For this reason, the dissertation research aims to outline the problem points in our country, where behavioral economics can be applied based on the policies implemented in other countries. Digital nudges are a whole new field of application and hard work is invested to reveal the manipulation patterns on individuals. Health care and education are the spheres which are generally considered to need push policies and are actively reformed as behavioral economics offers the tools to improve access. Taxation, improving financial decisions, employment and inequality are the traditional areas of application, however are also subject to change in their approach to the individual and in response to the new reality. The dissertation work, taking into account the peculiarities of modern times, emphasizes the need to build tools for social cohesion, energy efficiency and sustainability.

The ongoing brewing problems in economy outline the urgency to promote energy efficiency, green behavior and prudence, in general and in particular for Bulgaria.

This thesis categorizes nudge policies, shapes modern problem areas and the applied similar practices. On their basis, the possibilities for nudging at individual problems of the current crises are also offered.

In order to increase energy efficiency, the goals of social acceptability of policies and of the building of public commitment are set to accelerate the implementation of the new guidelines for energy efficiency and the adoption of energy-saving solutions. The problems of the behavior of economic agents are shaped as an unclear outcome, inertia (lack of attention), aversion to initial costs, social influences. Practical ways to reduce consumption are provided - simplification of existing invoices, educational campaigns to form attitudes, providing a social norm by comparison with an average user or on a residential area basis.

For the promotion of green behavior, the goals of motivating environmental change, facilitating ecological choices for building preventive measures and creating a social norm as a corrective measure are indicated. Behavioral issues such as implicit harms, habits and inert behavior are raised. Among the tools to achieve the goals are: creating pride in environmental behavior; framing and personalizing messages to personal values and interests; minor financial incentives or lotteries with small prizes such as shopping vouchers or contributions to a local cause, facilitating choice through green automatic default options; offering an alternative solution through product and service substitutes; use of mobile banking; framing through eco-labels, creating a social norm through public engagement, introducing rankings with sustainability evaluation.

To promote saving behavior, targets such as motivating, facilitating and assisting the individual's saving behavior are set. The behavioral problems outlined are the effects of loss aversion and "myopia" due to hyperbolic discounting. The suggested tools to achieve the goals include: cost-effectiveness requirements and appropriate labels; pre-commitment with setting consumption limits; categorizing and anchoring of savings accounts; introduction of a liquid savings account for financial emergencies with automatic feeding; specialized units for financial advice on thermal insulation and energy saving; the application of intelligent data disclosure and opt-in engines.

In the same chapter of the dissertation, the restrictive conditions for the implementation of nudge policies are also illustrated. On this basis, the problems with nudge policies could be summarized in three stages:

Preparatory stage: the need for institutional support for local application, governmental and public support, need for research, experts and politicians in one team, application of

conclusions from good and failed practices, choice of architecture model, diversity of experts, inclusion of field workers, setting real achievable and realizable goals.

Action stage: choice of transparent and opaque policies, suspicions of manipulation and public architecture, need for policies which to respond to one instead of multiple problems and those that offer automatic options.

Evaluation stage: measures against the short-term effect because of hedonistic adaptation, need for long-term follow-up, provision of the opportunity to turn the adaptation level to its initial position and to update the techniques.

On the one hand, there is the issue of the durability of the effects, on the other, the challenge is to distinguish the most effective of them. According to the initial applications, the automatic default options are not only the most effective but they are also the longest lasting. Of the subsequent applications, messages are the most applicable where salience can be more emphasized in their application, engagement is used to a limited extent. Norms are among those which are approached with caution. It is them which hold the promise for long-term impact and the link to achieving cultural change on a behavioral basis.

The summarized evaluation of the research indicates that nudging is a widely applicable and effective approach to assist in making difficult decisions about complicated and complex issues. Nudge policies arguably best embody the principles of behavioral economics as the goal is not to alter the policymaking paradigm or abandon traditional tools. Yet, they make a significant contribution first by enhancing the predictive power of models, by guiding the preliminary evaluation of interventions, and by increasing relevance and applicability through the creation of greater public acceptability. The indicated current nudge policies and proposals providing guidance in the face of the overlapping crises also indicate the flexibility of the instruments to be modified according to the shifting circumstances. Despite the presence of restrictive conditions, the tools of behavioral economics continue to retain their relevance.

In the last part of the chapter, we summarize that the nudge policies, with their flexibility towards varying problems, times and conditions, complement the conventional ones with general, in most cases, easy and unobtrusive tools, which are aimed at facilitating the life of the society and the individual. With nudging, psychological characteristics and the decision-making process of individuals are placed as a base, which requires an emphasis on the biases of individuals, so the effectiveness of policies is aimed in this direction. It is accomplished without coercion and by taking into account points neglected by mainstream economics: assigning solved tasks to individuals, translating them into a language they understand, directing through the wording, and

using the social nature of people in their interest. The philosophy of libertarian paternalism is followed by preserving the freedom of choice, which also prevents nudges against the artificial creation of social architecture. The consideration of human diversity, the impact of individual change on society, and the low expenses are the prerequisites for the effectiveness and acceptability of the policies. The trust in behavioral policies also lies in the ease of opting out in combination with transparency and honesty. The drive at the policy level in full sync with technology is moving towards a return to consumer sovereignty.

It is necessary to remark that libertarian paternalism raises the question of choice by claiming to seek its enhancement. On the one hand, the individual is at the center, but in the approach's practical application, the individuals do not evaluate their own utility and preferences, so another architect intervenes, and in doing so, the latter also estimates the utility at the societal level. This points to a problem with the effectiveness and utility of the architect of choice. Preferences are not clear, and by framing the choice accordingly, communal and individual benefit can be achieved. The finding is that individual improvement will ultimately lead to societal improvement. Nudge defends freedom more than traditional interventions, but it raises the question of the freedom of the individual to learn from mistakes.

The methodology distinguishes several trends which are underdeveloped by behavioral economics in both theoretical and practical aspects: questions related to utility and memory.

Shaping a realistic image of the individual in the economy is the promise of neurobiology. Along with the new methods of neuroeconomics, preferences, utility, and bounded rationality, incentives and social behaviors such as cooperation, trust and their reactions can be tracked. The outlined problems of memory and utility understanding are subject to further investigation and may be enhanced by neuroeconomics.

3.4. Conclusion

This thesis delved into the origin, chronological development and essential features of one of the most fundamental concepts of neoclassical economics, playing a central role in its analysis and solutions – the concept of *homo economicus*. In the dissertation we traced, on the one hand, the idealization and the important consequences it leads to, and on the other hand, the neglected features of this idealization, which give grounds for a radical change of the concept.

Orthodox evolution displays the main prevailing features for the understanding of the individual in the economy. The human, by the very definition of political economy, is put into a narrow framework, built on the basis of the possession of reason, striving for the possession of own good. The tendency of the human to change, exchange and barter is explained by the pursuit of

selfish interests, the actions are determined by the goal of attaining pleasure and avoiding pain, the goal is clarified by the acquisition of wealth. Optimization and maximization of utility is the next step imposed by the neoclassical school, the human handling the mathematical toolkit is most rational in his/her economic calculations, difficulties due to limited information are overcome by repetition, habit and custom are examined in this light. Irrelevant factors such as psychological characteristics or moral values are cleared. The individual's preferences are precise and consistent. Society is a collection of individuals mechanically performing repetitive actions. In the economic aspect, the most controllable of the measurable motives are carried out. The theory of expected utility clarifies logical consistency and conventional rationality with certain axioms, the ability to deal with logical consistency and multiplication by probabilities of the outcome calculations under the uncertainty faced by the individual.

The heterodox challenge to this time-constructed image of individuals as utility-calculating machines is a challenge to rationality, self-interest, cognitive ability and awareness. Rationality as applied to optimization receives the recognized critique of bounded rationality. The other aspect is the need to accept the individual as an active party and the necessity to include accurate psychological traits. In this regard, heterodox evolution adds instincts, bounded rationality, opportunism, reciprocity, and constant change.

Through this analysis we prove that the gradual continuous change in the understanding of the individual takes place along with the progress and achievements of science. The evolutionary consideration of the common traits of the individual on behalf of the economists highlights the direct dialogue of behavioral economics with both heterodox theories and the classical and neoclassical schools.

The research emphasizes the need for an interdisciplinary approach to determine the direction of shift in the traits of the understanding of the individual in the economy with the approach of behavioral economics. Despite the main contribution of the development of cognitive psychology, we should not overlook the focus on the decision-making process of change of *homo economicus*. The contribution of the experimental method, in turn, lies in allowing the inclusion of proven characteristics.

In the dissertation work, R. Thaler's place in the development of behavioral economics is distinguished. The aspiration is to add human traits to *homo economicus* and on this basis to discover the errors or lacks of the existing ones in order to create a new generation of theories which better correspond to reality, the findings to be proven by empirical studies, i.e. economic theory to be enhanced with *homo sapiens*. Because the idealized image reduces the predictive power of models, there is a discrepancy between actual and rational choice.

The examined changes in the concept of *homo economicus* in Richard Thaler's theory are outlined as a quasi-rational agent to build a method of error modelling, *homo psychologicus*, when adding psychological traits and undertaking the use of a distinction between *econs* and *humans*, as an abbreviation of *homo economicus* and *homo sapiens*. The methodology involves distinguishing the principles of rationality and comparing them with reality.

Along with the evolution of *homo economicus* under R. Thaler, people in the economy are already systematically making mistakes, trusting intuition, having problems with the will, are susceptible to influences and react to formulations and context. With the inclusion of psychological characteristics, the limitations of the concept pointed out by heterodox criticism have been overcome. Bounded rationality is given a map of thought, the causes and manner of making mistakes are determined, intuition and self-interest is replaced by the desire for coordination and a norm of justice, the agent is changeable and active and has proven psychological characteristics. This more realistically constructed model of the agent includes limited computing capacity, myopia, loss aversion, influence of physical and emotional states, hesitation, influence of social environment and norms, reciprocity.

The evolutionary consideration of *homo economicus* confirms Richard Thaler's prediction that the concept will evolve into another, closer to the real human nature of the economic agents, which he calls *homo sapiens*. Science will develop in examining the human, and this will affect economic research, in confirmation of the predictions of both A. Marshall and V. Pareto.

Behavioral economics is not provoking a paradigm shift, but a psychological revolution in economics. It is the establishment of two systems of thinking and heuristics which lead to systematic errors, motivate the distinguishing of the individual's traits from *homo economicus* and substantiate the reason for deviation from rationality. The influence of feelings and intuition is ascertained and with prospect theory these ascertained traits of real people are brought into the economy. The change of the established model of the agent in behavioral economics is made on the basis of examining the psychological aspects of the person better, and in this sense it is considered to be an improved version of the traditional model.

R. Thaler takes a step further with the conclusions that people do not always make decisions which are in their benefit and there is a way to influence their choices by including insignificant factors of the economy. The core of the practical application of behavioral economics is the understanding of the individual as acting not always as a rational human being. A new philosophy of implementing the political application is taking shape. Understanding wrong decisions and the reasons which hide behind them, the fact that people would change their decisions if they had full information, unlimited cognitive skills and control over the will also lead to the conclusion that people can be helped to make the right choice by keeping it free from coercion. R. Thaler's purpose

is to achieve better and more realistic predictions, results, and what is more, to improve the well-being of individuals while preserving the right to choose without creating additional costs.

Richard Thaler claims that individual psychological aspects do not lose importance even when economic agents act together in the market. The findings of the heuristic approach and the systematicity of making mistakes and the inevitability of social influences are outlined in support of the hypothesis of the applicability of the concept at the societal level. Behavioral economics traces the society-individual relationship in both directions. Taking into account the social essence of individuals is also the key to implementing the practices at community level and the easy applicability of the tools.

Behavioral economics develops in unison with modern trends, relevance is proven by the practical tools of the nudge. The main impetus for the resulting popularity lies in the wide scope of the political application of the nudge. Assigning the central place of real human traits with intuitive impact and adaptability to the environment, their focus on the dynamics and complexity of modern everyday life and taking into account the influence of technological development give the necessary flexibility of application of behavioral economics so that the tools could change according to different circumstances and problems. The practices of nudge policies and their applicability in modern conditions, indicated in the dissertation work, clearly show the flexibility of nudge and the ability to adapt according to the dynamics of current conditions.

A deeper understanding of an individual's psychology and decision-making process leads to better prediction of behavior. The long-term effects of nudging are set in the dissertation research as a challenge, in this regard, measures against their short-term nature with long-term follow-up and periodic renewal of the techniques are indicated. The tools of behavioral economics, which are aimed at influencing inertia mainly with the default option and targeting instincts and habits combined with social influences are assumed to have a long-term effect. This potential allows us to consider that the tools of behavioral economics have the capability of provoking a lasting change in the behavior of economic agents. For future development, the dissertation suggests an improved examination of memory and a focus on social influences and norms to enhance this potential for lasting behavior change.

The possibilities for application indicate the effectiveness and wide applicability of the nudge. The analysis of nudge policies outlines them as best embodying the principles of behavioral economics and reveals their contribution to increasing the predictive power of the models, for preliminary evaluation of interventions and high public acceptability. The nudging policies proposed in the current situation show the continued relevance and the ability of the tools to be modified according to different problems and circumstances.

The dissertation research addresses the innovations of neuroeconomics as the future direction for the development of the concept of the individual in economics. As part of this, the expected improvements that can be offered in understanding the individual in economic terms and behavioral economics are indicated.

4. CONTRIBUTIONS OF THE DISSERTATION THESIS

Theoretical and Methodological Contributions

1. A critical analysis of the views regarding the construction, development, confirmation and challenge of the model of *homo economicus* in economic theory is performed. The concept has been shown to evolve with the development of economic theories and altered scientific paradigms. As a result, an evolutionary tree of the development of the *homo economicus* category is built.
2. It is proved that not only cognitive psychology, but also experiments, decision theory, mathematical psychology, and the never-ending debate about rationality influenced the delineation of the principles of behavioral economics.
3. The central place of R. Thaler in the deployment and popularization of behavioral economics through the periodization of contributions is highlighted. The principles of rationality proposed by R. Thaler for correction are displayed. The change of the concept of *homo economicus* in R. Thaler's behavioral economics through the quasi-rational agent, *homo psychologicus* and *homo sapiens* is outlined. It is argued that the complete change of *homo economicus* is to a significant extent a response to the criticism made by the heterodox economics approach.

Theoretical and Applied Contributions

1. Commonly applied choice architecture frameworks and categories of nudge are presented to summarize how nudging is implemented. The institutions with departments applying behavioral economics and their focal directions of implementing nudge policies are listed. The problematic points and limitations of the implementation of nudge policies are identified.
2. The spheres of application of nudge policies are outlined. Specific nudge tools suitable for dissemination under current socio-economic conditions are suggested.

5. LIST OF PUBLICATIONS ON THE TOPIC OF THE DISSERTATION

1. Erturk, A., Valev, I. (2020) Institutional entrepreneurship- path to change. In: Jubilee International Scientific Conference "Economic and Social [Dis]integration. Plovdiv: Paisii Hilendarski University Press. 2020. p. 72-85. ISBN 978-619-202-565-6

2. Erturk-Mincheva, A. (2022) Hedonic Treadmill of the Digital World. In: Code Digital: economy, education and social relations Collection of reports. Sofia, Publishing house of VUZF, 2022, p. 54-66, ISBN 978-619-7622-30-0

3. Erturk-Mincheva, A. (2022) Behavioral environmental economics. In: International Online Conference for students and Ph.D. students Climate and world economy programs. e-Journal VFU, 18-2022 /special /, 2022, p. 71-87, ISSN 1313-7514

4. Erturk-Mincheva, A. Tchipev, P. (2023) Opportunities and problems of the practical realization of the "nudge" approach in the behavioral economics In: Economy and economic theory: problems and interactions, conference proceedings Conference Proceedings of the Jubilee Scientific Conference, Dedicated to the 85th Anniversary from the Foundation of the Department of General Economic Theory. Varna: Science and Economy Publishing House, University of Economics- Varna, p. 38-46, ISBN 978-954-21-1133-7

5. Tchipev, P.D., Erturk-Mincheva, A. (2023) "Nudge" policies - solutions of behavioral economics in conditions of overlapping crises. In: Conference Proceedings International Scientific Conference 2022 Economic Development and Policies: Realities and Prospects *Challenges and Risks in the Conditions of Overlapping Crises*. Sofia: Prof. Marin Drinov Publishing House of BAS (in print)

6. Erturk-Mincheva, A. (2023) Behavioral development economics and practical opportunities according to the recent tendencies. In: Annual Scientific Collection "Research Papers" of FESS. Plovdiv: Plovdiv University "Paisii Hilendarski" Press (in print)

DECLARATION OF ORIGINALITY

I declare that this dissertation is a complete author's product and, in its development, no foreign publications and developments have been used in violation of their copyrights.

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