THE PROCESS OF MAKING PENSION DECISIONS –
THE NEOCLASSICAL CONCEPT VERSUS
BEHAVIORAL ECONOMICS

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Abstract
The explanation of retirement decisions making is based – implicit or explicit –
on neoclassical basis, such as expected utility theory or efficient market theory. Decisions of participants of pension systems are explained in the sense of an optimal choice, according to the criteria of neo-classical economics. Behavioral economics – such as prospect theory of Kahneman and Twersky, the theory of bounded rationality of Simon or the concepts of “mental framing” and “mental accounting” of Thaler – represent a different point of view, based on more realistic assumptions and evidence of psychological experiments and observations. The aim of this paper is a comparison between these two basic economic theories that are applied in pension economics. This publication is of a conceptual nature. The goal is not a detailed presentation of research results on the practical applications of behavioral decision-making theory in reforming pension systems. The literature analysis method and a comparison method have been used in presented paper.

The comparative analysis of the neoclassical and behavioral theory of decision-making shows that the traditional neoclassical way of explaining pension decisions based on the theory of expected utility and the concept of homo economicus turns out to be too simplistic and inadequate. Research conducted within the framework of behavioral economics is not yet a new paradigm in economic sciences, but should be included in pension economics.

Keywords: behavioral economics, bounded rationality, expected utility theory, mental framing, prospect theory.

JEL codes: J32, J38, H55.

1. Introduction
The neoclassical economic theory developed its concept of a rationally acting subject (or entity) – so called homo economicus – as early as the 19th century. It was further developed, within the concept of expected utility. Expected-utility theory was axiomatically derived by von Neumann and Morgenstern (1944) as a criterion for rational decision-making. This work was highly influential and still serves as the benchmark theory of individual decision-making. The expected utility theory deals with the analysis of situations where individuals must make a decision under uncertainty (that means: decision making without knowing which outcomes may result from that decision). These individuals will choose the act
that will result in the highest expected utility, determined by utility over all possible outcomes and their probability. The decision made will also depend on the agent’s risk aversion and the utility of other agents. The concept of the decision-making process adopted on the basis of neoclassical economic theory was normative, not descriptive, but it also found the application in explanations of the real-life economic phenomena. The big advantage of this approach was the possibility of creating advanced statistical models allowing for the optimization of decision-making processes and forecasting. At the same time, the psychological and sociological aspects of decision-making processes were omitted. For a long time there was a kind of anti-psychology in the approach to explaining the decision-making processes in “main-stream” economic theory. Neoclassical economics, for many decades, has revolved around the choices that human beings make in a perfect world.

Studies of behaviors and decisions of real people making economic decisions have shown that they have limited knowledge, do not always act in a consistent manner, and in their behavior there are a number of deviations and anomalies in relation to the concept of homo economicus (Thaler and Sunstein 2009, p. 7). Too many deviations from the neo-classical economic theory paradigm, revealed in the analysis of real decision-making processes, led from the mid-20th century to the emergence and development of a new alternative trend: penetration of psychology into economics and development of behavioural economics.

One of the precursors of behavioral economics was Simon, the creator of the concept of bounded rationality. His theory was developed by the creators of the prospect theory – Kahneman and Tversky and by Thaler.

Behavioral economics theory – contrary to the neoclassical decision-making theory and the concept of purely rational homo economicus – is descriptive, not normative. It is based on linking economic research with psychological experiments, referring to choices made in risk conditions and with limited access to knowledge, decisions made by economic subject with bounded rationality. Its results have undermined not only the neoclassical model of making economic decisions based on maximizing the expected utility, but also the standard theories explaining decisions on the distribution of income between consumption and savings, such as the lifecycle saving theory of Ando, Brumberg and Modigliani (Modigliani and Brumberg, 1954; Ando and Modigliani, 1957), and Friedman’s permanent income hypothesis (1957).

2. Aim and Methodology

The aim of this paper is an attempt of comparison of two approaches of contemporary economics. First of them – stamming from neoclassic approach – can be situated in so called main stream economics and still dominates in economics textbooks and also pension economics (Blake 2006; Byrne et al. 2009). The second one, funded on behavioural economics, become more visible since last two decades of the XX-th century and especially in first two decades on XXI-st century. Both approaches differ mainly in the general concept of rationality.
In the studies, which results are presented in the article, the methods of the literature, description, explanation and comparative method have been used.

3. Neoclassical, rationalistic approach to the decision-making process

The basic model of conventional (classical and neo-classical) economics actor (economic subject, economic entity) – commonly referred as homo economicus – is characterised by a number of very strong behavioral assumptions, which form the basis for key economic predictions. They are especially useful to build economic models and serve as tool to statistical analysis (for example – to distinguish between correlation and causation).

The most important conventional assumptions of the neoclassical theory of economics, which have found application in explaining economic decisions (also – pension decisions) include (Soukup et al. 2015, p. 2):

1) The entity (economic subject) makes a choice from a closed set of given and known alternatives.
2) The entity knows all relevant information for each alternative.
3) The entity’s preferences are stable and consistent.
4) The preferences are given exogenously, they are complete and transitivitive.
5) The entity’s utility function is clearly given mainly by its preferences.
6) Choices (decisions) of an entity are not dependent on framing of the problem (including prejudices, superstitions etc.).
7) The individual is the sole entity of decision making (the principle of methodological individualism).

These simplifying assumptions have been critiqued as not realistic (not only by representatives of behavioural economics) but still belong to the main stream of economic theory – also the theory of pension economics. A model of a perfectly calculating and selfish entity is suitable for mathematical modelling. Theoreticians of this stream (e.g. Friedman) understand how unrealistic these assumptions are. However, they use them not for the description but for predictions. This is a well-known theory of “as if”. In his famous essay “The Methodology of Positive Economics” (1953) Friedman claimed the unreality of a theory’s assumptions should not matter; what matters are the predictions made by the theory. A truly realistic economic theory would have to incorporate so many aspects of humanity that it would be impractical or computationally impossible to do so. Hence, it is necessary to make simplifications, and cross check the models against the evidence to see if we are close enough to the truth. The internal details of the models, as long as they are consistent, are of little importance. Friedman’s famous exposition of the “as if” argument has been also presented in his example of decisions of a snooker player. He used the analogy of a snooker player who does not know the geometry of the shots they make, but behaves in close approximation to how they would if they did make the appropriate calculations. We could therefore model the snooker player’s game by using such equations, even though this wouldn’t strictly describe the mechanics of the game.
4. Criticism of the neoclassic theory of making economic decisions carried out in the field of behavioral economics

Observations of humans making economic decisions led the representatives of behavioral economics to the conclusion that in real situations of choice, people do not behave according to the homo economicus model. Accepting unrealistic assumptions leads to erroneous and can have serious consequences for both individuals and the entire economy.

Empirical findings in the areas of judgment and decision making (JDM) and behavioral economics depart from the notion of man as economically rational, explain instead that people often act in ways that are economically suboptimal (Knoll 2010, p. 1).

One of the basic and most influential thesis of behavioral economics is Thaler’s concept on bundededly rational decision making.

It is worth to mention at least some of his predecessors, such as Simon, Kahneman and Tversky.

Already in 1950’s Simon (1978 Nobel Prize winner in Economic Sciences) explored the effects of limited cognition. He used the term “bounded rationality” to explain the dependence of human decisions from the design and performance of organizations (Simon 1955). His thesis, based on the results of theoretical analyses and empirical studies in American corporations, opposed the neoclassical homo economicus model. Simon argued that, rather than finding optimal solutions that maximize lifetime expected utility, decision-makers typically try to find acceptable solutions to acute problems. According to Simon, bounded rationality is a result of the existence of two types of reasoning: the first – intuitive, unconscious, making conclusions more quickly; and the second one – rational, functioning according to the principles of logical thinking, working more slowly. The thinking process, as a whole, integrates both types.

These two types of thinking can sometimes complement each other. But in many situations the intuitive type modifies the results of the second and has impact on important decisions, which should be made very carefully with the use of logical thinking and calculations. The is why errors in reasoning or mental shortcuts do not show in every situation, but only in some.

In 2002, psychologist Kahneman received the Nobel prize in economics for his research on human judgement and decision-making under uncertainty. Together with fellow psychologist Tversky (Kahneman and Tversky, 1979) he developed the prospect theory which aims to describe the actual behavior of individuals when making decisions under risk. They proved that many of such decisions may not necessarily be rational or optimal. Their theory was motivated by a number of findings on how people systematically violate the predictions of expected-utility theory.
Prospect theory contains four main elements:
1) Individuals derive utility not from wealth (or consumption) levels, but rather from gains and losses relative to some reference point;
2) Individuals are more sensitive to losses than to gains, i.e., they exhibit loss aversion (see Fig. 1);
3) Individuals exhibit diminishing sensitivity to gains and losses;
4) The Prospect theory incorporates probability weighting: individuals weigh outcomes by subjective, transformed probabilities or decision weights, overweighting low probabilities and underweighting high probabilities.

![Utility from change in wealth]

**Fig. 1.** Kahneman’s value function
Source: Kahneman and Tversky 1979.

Thaler (1980) was the one of the first economist to apply prospect theory to economic issues and problems. For example, he analysed so called endowment effect, connected with risk aversion: he proved in psychological experiments that if giving up an object is perceived as a loss, then loss-averse individuals will behave as if the objects they own are more highly valued than similar objects they do not own.

Very important from the view of pension economics was the next Thaler’s concept of mental accounting (Thaler 1985, 1999) – a psychological theory of how limited cognition affects spending, saving, and other household behaviour. It was a radical break with the standard neo-classical of utility maximizing consumers. The theory of mental accounting is the empirical observation that people group their expenditures into different categories (housing, food, clothes, etc.), with each category corresponding to a separate mental account.

Mental accounts are used more generally as a way for boundedly rational individuals to simplify their financial decision-making. Each account has its own budget and its own separate reference point, which results in limited fungibility between the accounts. Thaler and other authors (Hastings and Shapiro, 2013) provide evidence for a key aspect of mental accounting: the lack of fungibility of money. For example, many people have large surplus on their current bank
account and at the time huge debt on credit card account. It is also hard to move money from one mental account (consumption, short term savings etc.) to another mental account (for example long-term savings for retirement). But different presentation of possible options (so called choice architecture) can change the structure and reference points used in mental accounts. In mental-accounting theory, consequences are perceived and evaluated depending on context, as well as on how the decision-problem is presented ("edited"): the pain of a loss can be mitigated by grouping it together with a larger gain.

The next stage in the development of behavioral economics were works on the influence of weaknesses of will and limits of self-control on decisions regarding the distribution of income between current consumption and savings. Consuming more today usually means consuming less tomorrow. The standard neoclassical model of rational intertemporal choice is the exponential discounting model of Fisher (1930) and Samuelson (1937). Fisher's model showed how rational forward looking consumers choose consumption for the present and future to maximize their lifetime satisfaction. The standard exponential discounting model implies time-consistent preferences. In reality, many preference reversals and problems with self-control have been observed and verified in psychological experiments and observations of decision making (also decisions about savings for retirement).

Also the Life Cycle Hypothesis (LCH) model of Modigliani defines individual behavior as an attempt to smooth out consumption patterns over one's lifetime (see Fig. 2).

![Image of Consumption, Savings and Wealth in Life-Cycle Model of Modigliani](image)

**Fig. 2.** Consumption, Savings and Wealth in Life-Cycle Model of Modigliani
Source: Modigliani 1986.

The theory of the Life Cycle Hypothesis states that individuals seek to smooth consumption over the course of a lifetime – borrowing in times of low-income and saving during periods of high income. In his lecture on the occasion of receiving the Nobel Prize, Thaler directly referred to the theory of Modigliani and showed that it cannot be used as a universal model of building and consuming savings in the life cycle, because it does not include such important external and internal factors in relation to the entity making pension decisions, such as unexpected income disruptions or problems concerning self-control (Thaler 2017).
Thaler has also identified another psychological mechanism that can influence retirement decisions, called *endowment effect*. Referring to the prospect theory of Kahneman and Tversky, he pointed out an interesting phenomenon, consisting in that giving up an object is perceived as a loss, then loss-averse individuals will behave as if the objects they own are more highly valued than similar objects they do not own. Loss-averse individuals have a strong tendency to remain at the status quo, because the losses from a change are weighted more heavily than the gains. This so-called status-quo bias (Kahneman et al. 1991) can be a barrier when joining voluntary, employer pension programs. But changing the design of the program, using the heritage of behavioral economics, can help make better retirement decisions.

5. *Verification of neoclassical and behavioral theory of decision making*

It is a truism to say that the final criterion for assessing the validity of theories and scientific hypotheses is their empirical verification. The commonly occurring offenses from the homo economicus model in the sphere of pension decisions — such as procrastination, wrong choice of strategies and instruments in additional pension systems, lack of consistency and consistency of preferences — undermine and make inadequate neoclassical decision-making theory. What's more, the positive effects of using behavioral strategies in reforming pension systems make it possible to say that at least some of its assumptions have been positively verified empirically. In particular, it is about assuming the important role of default options and architecture of choice, emotions and emotional factors in making pension decisions and the possibility of controlling pension decisions in the desired direction, with the free will and freedom of choice for pension system participants. The innovations in occupational pension systems introduced in the US, and then in New Zealand and Great Britain can be considered as positive verification of the theory of decision-making. For example, Thaler and Benartzi (2013) designed and implemented a mechanism that increases pension savings by overcoming self-control problems and other behavioral biases. Their “Save More Tomorrow” (SMaRT) program helped to increase savings (contributions) paid by employees to occupational pension plans such as 401(k). Employees decided to increase their savings a considerable time before a pay increase, so the decision does not involve a trade-off between current consumption and future consumption, but rather a trade-off between consumption at different times in the future. This solution introduced in 2004 in employee pension programs of selected American companies has proven itself in practice. Just like changing the default option when joining the company's pension systems. Already in 1994 Thaler proposed changing the default in defined contribution plans for pension savings offered by US employers, such as 401(k) plans. The prevailing default was that employees needed to actively sign up for the plan by filling in several forms, choosing a savings rate and deciding how to invest the money. Thaler (1994) suggested that the new default option should be joining the plan (so called automatic enrolment).
Subsequently, auto-enrolment was successfully applied to increase the level of participation in occupational pension systems in New Zealand (KiwiSaver) and in Great Britain (Szczepański 2017).

6. Conclusion

Behavioral economic has given economists new insights into human psychology and new frameworks for understanding and predicting economic outcomes. There is no doubt that behavioral economics opens new perspectives also for pension economics. It does not replace of the paradigm of classical and neoclassical economics with a new paradigm in economic sciences, but helps to create a new synthesis – more realistic, based on the synthesis of economic and psychological research, description and explanation of pension decisions.

But it is also worth to mention a number of questions and doubts that arise in connection with behavioral economics and its possible applications in the pension economy. Are the mental barriers and decision-making mechanisms – identified in the behavioral decision-making theory – universal, or are they culturally determined and depend on the state of pension awareness and the institutional tradition in a given country? Is the stimulation of pension decisions in the desired direction through the creation of an appropriate choice architecture (the “nudges” – in terminology of Thaler) not a form of more sophisticated manipulation? These are just some of the questions and doubts that can be an inspiration for further conceptual work and empirical research.

References


