

Behavioral Economics and its Applications for Public Policy

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For the traditional economic theory to be able to predict economic outcome, there is one basic behavioral model that it is based upon: homo economicus. During the past decades, however, the drawbacks of the concept of economic man became apparent and the need to turn to psychology for explanations about the irregularities observed in consumers' behavior surfaced. The recognition that the unbounded rationality of homo economicus is no longer a sufficient tool for explaining consumers' choices led to the unification of psychology and economics. The new sub-field of economic theory created by this marriage is called behavioral economics.

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1 Introduction

Economics is the discipline which studies the “behavior of economic agents, be they firms or consumers, suppliers or demanders, bankers or farmers.”¹ The field of economics informs us about how much we choose to consume of a particular good or service, given the scarcity of resources and our unlimited desires. Economics is divided into macroeconomics- the study of the economy as a whole-, and microeconomics- the study of the economic behavior of particular individuals, households and firms.

For the traditional economic theory to be able to predict economic outcomes there is one basic behavioral model that it is based upon: homo economicus. In other words, every individual in a society is an economic man who transacts with other economic men and their main purpose is maximization of their welfare. Due to the fact that choices are not made by consumers only , the concept of the economic man also refers to a household or a firm.

The fundamental characteristics of the economic man are that he is rational and self-interested or, as Mullainathan and Thaler (2000) put it, “Economics traditionally conceptualizes a world populated by calculating, unemotional maximizers that have been dubbed Homo Economicus.” Rationality, according to Stiglitz, can be defined as the fact

“that people weigh the costs and benefits of each possibility. This assumption is based on the expectation that individuals and firms will act in a consistent manner, with a reasonably well-defined notion of what they like and what their objectives are, and with a reasonable understanding of how to attain those objectives.”²

In public economics, where public policy and economics join together, policy makers must transform ideas into policies which, in turn, must be evaluated in order to guide reforms that will increase public well-being. At this point, economic man enters to inform policy makers about how people choose and what they really prefer so as to implement the best reforms towards welfare maximization. For that reason, our focus here is in microeconomics and how public policy makers rely upon the models, assumptions and predictions of the traditional economic theory, to create policy outcomes that will, directly or not, affect individuals’ and households’ transactions and choices about spending, saving, investing etc.

¹ Mullainathan S., Thaler H. R. (2000),, p.2

² Stiglitz J. (2003), as cited in McAuley I. 2010 p.2

During, the past decades, however, the drawbacks of the concept of economic man became apparent and the need to turn to psychology for explanations about the irregularities observed in consumers' behavior surfaced. The recognition that the unbounded rationality of homo economicus is no longer a sufficient tool for explaining consumers' choices led to the unification of psychology and economics. The new sub-field of economic theory created by this marriage is called behavioral economics.

Behavioral economics has arrived to challenge the "unemotional consumer" argument and at the same time enrich our knowledge about the reasons why individuals deviate from the traditional economic man concept. Moreover, the most important in the use of behavioral economics' findings is their application to public policy choices. Many policy makers have come to realize the importance of behavioral economics and their application in very crucial public policy issues has produced remarkable results.

The rest of the essay is organized as follows: In the first chapter, I will present the key points of mainstream microeconomic theory and its applications for public policy. Moving on, the reader will be introduced in the building blocks of behavioral economics and, in the third chapter, I will use one example of public policy domain to demonstrate similarities and differences of these two approaches. Finally, I will conclude by giving some food for thought for further research as my purpose here is not to cover the entire field of behavioral economics- something like that would be rather ambitious- but to set a starting point from which the exploration of behavioral economics and its applications for public policy begins.

2 The building blocks of conventional microeconomics and implications for public policy

2.1 The economic-man concept and public policy

Out of all social sciences that one can think of, only in economics we meet such a concrete behavioral model like homo economicus, where all the assumptions and predictions of the discipline are based on. Economic man was first introduced by Alfred Marshall in late 1800's but the idea that people act rationally and only out of self-interest goes back even more when Adam Smith wrote that:

“It is not from the benevolence of the butcher, the brewer or the baker, that we expect our dinner, but from the regard to their own self interest. We address ourselves, not to their humanity but to their self love, and never talk to them of our necessities but of their advantages.”³

Transactions in the marketplace occur only for extracting gains and maximizing welfare and wealth. In other words, a society consists only of private interests and the public interest is nothing else but the summation of these private interests. Following this point of view, individuals alone know what is best for their society and what output their economy should produce in order to increase well-being. This supports the idea of “consumer sovereignty” where the preferences of the consumer predetermine the output of the economy.

According to welfare economics, the ultimate goal of an economy is to achieve equilibrium so as scarce resources to be allocated efficiently. That is, to achieve Pareto Optimality, a state where no further action can be taken to make someone better off without making someone else worse off. According to Levy (1995), “A Pareto optimal allocation of resources cannot occur unless all of the gains of trade can be realized by equilibration at the margin (...)” which can only be done by the consumer himself because he knows better his system or preferences, he is sovereign to put it differently.

In order to achieve efficiency, the sum of consumer and producer surplus has to be maximized which happens when price is set equal to marginal cost- the cost of an extra unit produced. Then, the economy functions in its full capacity and individuals enjoy maximum welfare or, in other words, achieve ‘first-best’.

However, this would be the outcome of a perfectly competitive market, without the presence of monopolies and oligopolies. In real world, though, things are different as transactions occur in an environment of imperfect competition and, the presence of monopolistic power, the provision of public goods (goods that are non-excludable and

³ Adam Smith (1965), p.14, as cited in Levy J. (1995), p. 9

non-rival in consumption), the presence of externalities and the lack of perfect information (ignorance) lead to market failures. The task of correcting market failures is assigned to elected governments which pursue the prevalence of the overall public interest.

Governments impose sets of laws and rules, within which rational and self-interested individuals make their decisions in the market place, aiming at achieving efficiency and equitability. The role of a government is to enter in areas where markets fail, to promote public interest and to support those negatively affected by the markets. In an economy, the government shall be responsible of stabilization, redistribution and allocation, to use the Musgravian classification.⁴

In brief, stabilization includes “antirecessionary policy at low points in the business cycle and anti-inflationary policy at high points in the business cycle”⁵ using fiscal and monetary policies as implementation tools. Redistribution refers to income and allocation of the output of the economy. In other words, we are talking about a state with a public sector and an appropriate amount of control over the activities of the private sector. It is assumed that government makes all the right decisions that will lead to optimum allocation of incomes, goods and services or, in other words, it is “a single entity or intelligence, and the purity and single-mindedness of its motives is not questionable.”⁶

Soon it became clear, however, that economics and politics are not two “divorced” disciplines but two sides of the same coin. Politicians need economists and economists need to have political science knowledge in order to best advise politicians about the right reforms. Public Choice theory is exactly that: the application of economics into collective decision-making. The cornerstone assumption of public choice is the application of the economic-man concept in politics. Individuals behave the same way as voters, bureaucrats and legislators as they behave as consumers, i.e. rational and guided by self-interest.

As a voter, an individual chooses a government that will pursue his private interests, as a legislator he votes for the bills that will satisfy the interests of the voters who, in turn, will satisfy his interest which is re-election, and as a bureaucrat supports these mechanisms of interest-satisfaction because he needs his job!⁷ As a result, a

⁴ Musgrave A. Richard, Musgrave B. Peggy, (1984), as cited in Levy J. (1995), p. 80

⁵ Levy J. (1995), , p.80

⁶ Ibid p.94

⁷ Public choice theory is not as simple as presented here for the purpose of this paper. One major argument of the theory explains the way voting systems affect voting decisions and the ignorance of

government consists of vote-maximizers and the meaning of the term “citizen” is the same with the term “consumer”. Everybody acts in order to satisfy his best interests.

Public choice theory also refers to the notion of “government failure”. Since the government is no longer a single intelligence with pure motives but a mechanism consisting of varying interests, it sometimes fails. Failure, here, is not making the wrong political decisions but the idea that these political decisions create market failures. Thus, “tariffs, import quotas, price supports, price controls, tax preferences, excessive regulation, subsidization, and other acts of government frequently cause market failure.”⁸

All the above denote that the concept of the economic man applies not only in economics but in public policy as well. So far, it is obvious that the traditional economics’ model of the economic man is applied in collective decision making as well and that governments consist also of rational and self-interested individuals. Thus, we have to admit at this point that this behavioral model applied in both economics and political science is widely accepted and supported by the vast majority of academics, economists and policy makers.

Despite its overall acceptance, economic man receives criticism based on two counter-arguments. According to Levy (1995), first, it is inaccurate when describing human nature and, second, it has serious moral implications for society in general. Concerning accuracy, it is widely accepted that humans could not be described only as unemotional beings acting only in order to satisfy their self-interests. There is also altruism, philanthropy, the expectation that your vote will change the world etc. If we agree in defining human personality only inside the borderlines of the economic man model, then we question psychology, sociology, anthropology and other disciplines whose purpose is to study the several different aspects of human nature!

Economists argue that there is no such inaccuracy if we assume that each individual’s preferences include preferences of other individuals as well, or, “economic man’s utility function can include part of someone else’s utility function.”⁹

the voter about election results. In brief, voters are not as well-informed about which candidate they will choose in elections as they are when they have to choose about which car to buy. This happens because the purchase of a car will affect their lives directly while the election of a candidate indirectly. There is also the notion that voter’s choice may not affect the elections’ results at all. For a simple but rather adequate presentation of public choice theory, check Shaw S. Jane (2002), “*Public Choice Theory*”, Library of Economics and Liberty- The Concise Encyclopedia of Economics, available online at <http://www.econlib.org/library/Enc1/PublicChoiceTheory.html>.

⁸ Levy J. (1995), p.98

⁹ Ibid p.13

In welfare economics, a person's utility function describes what he or she prefers given some specific sets of goods and services. The preferences of an individual/society/firm are depicted by the indifference curve where at any point on the curve that represents a specific set of goods and services the consumer is equally satisfied. Given the budget that each one has to spend, the indifference curves map is unique for every individual or firm and for society.

As a result, economists' argument is based on the fact that it is not impossible for someone to be satisfied preferring only what other people like or want. Even when someone gives to charity, he still acts as an economic man because his private interest is to satisfy other people's interests. At this point we come to admit that everybody behaves and acts at the exact same manner and there are no irregularities in human behavior. But what happens with morality? The sociologist Amitai Etzioni in his book "The Moral Dimension" denotes that if could explain different models of human behavior in a society with one single model of behavior then this model would be useless because no distinctions could be made.

Levy (1995) uses the examples of the sociopath and the saint to support Etzioni's argument about morality and demonstrate that self-interest is something meaningless. On the one hand, the sociopath "is also a specimen of economic man. His utility function, however, excludes the interests of other people."¹⁰ On the other hand, the saint's utility function "happens to be exclusively of other people's interests."¹¹ Etzioni (1988) argues that people act upon morality other than self-interest. More particularly, "moral acts are a source of value other than pleasure (...)"¹² and he gives examples like the fasting or penance that are not so satisfying to individuals.

The discussion of whether economic man is an adequate model for economics and politics can continue indefinitely. Both sides use concrete arguments in defending their point of view but, despite that, accepting economic man as the only model of behavior in a society is like denying the existence of more complex models of human behavior that psychology and sociology have formulated after centuries of observations. The way in which psychology enriches economic theory with respect to consumer choices, by providing explanations about consumers who deviate from the

¹⁰ Levy (1995) p.14

¹¹ Ibid.

¹² Etzioni A. (1988), p46, as cited in Levy (1995) p. 14

traditional economic man concept, is the subject matter of the third chapter of this essay.

In the next section, I will discuss the assumptions of the standard economic theory regarding individuals' preferences. This is important in order to understand the contribution of behavioral economics in consumers' choices. Standard economics denote that individuals like, prefer and choose according to a specific manner and their preferences are stable and concrete during the life cycle. Understanding the rationale of standard economic theory for preferences will help us evaluate better the innovations introduced by behavioral economics.

2.2 Preferences and Choices

Based on mainstream microeconomic theory, a typical consumer is someone with scarce resources at his disposal, for instance his limited time and income, and has access to an unlimited desire for a variety of goods and services. Given the scarcity of his resources, the consumer has to make rational choices that best satisfy his needs and likes and maximize his well-being. As standard consumer behavior theory denotes, we must first check what a consumer wants to do, then to realize what he can do and finally put together his likes and restrictions and find the best available choices in order to achieve his target, that is, maximize his utility. In other words, consumers choose the best set of goods they can afford.

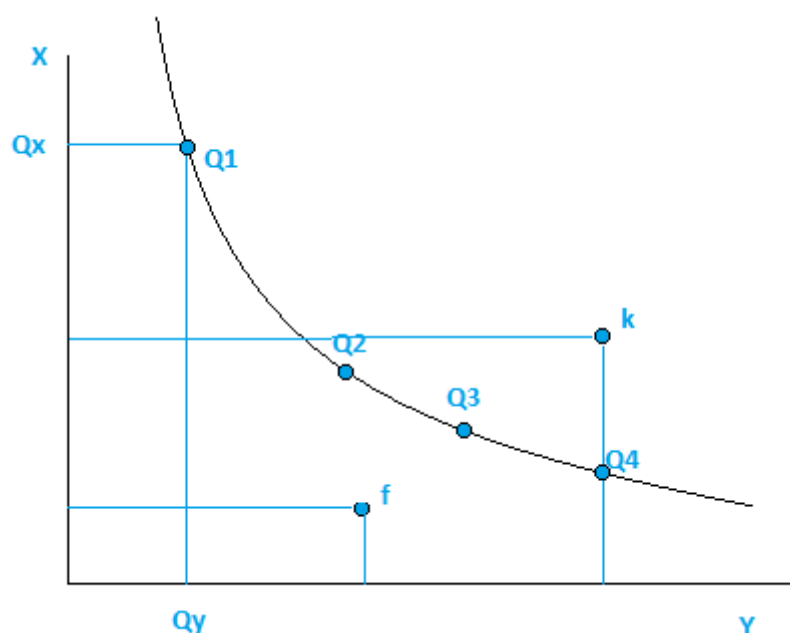
Since there is a vast variety of goods and services a consumer is going to prefer some and not all of them. Economists, in order to simplify things for a better understanding of consumers' preferences, use only two combinations of goods or services. This is indeed an unrealistic situation but if assumptions are satisfied here, then this modeling of preferences could be applied in reality as well where there is an indefinite number of different combinations of goods and services that an individual could prefer.

Assuming that there are two combinations of goods or services for a consumer, X and Y, four assumptions have to be met for consumer's preferences to be well-behaved: First, preferences are complete, i.e. a consumer must be able to distinguish between X and Y or to be indifferent among them. If he lacks this ability, then it is very difficult to create a model about what the consumer really prefers.

Second, preferences are transitive. For example, if consumer prefers X over Y and Y is preferred over Z, then X is also preferred over Z. This assumption ensures consistency in consumer's preferences. Third, preferences display lack of satiation. If X contains more of a specific good or service, consumer is always going to prefer X over Y, or, in other words, the more the better. Finally, there is the assumption of diminishing marginal rate of substitution which informs us about the quantity of X the consumer is willing to give up to acquire more of Y.

The preferences of a consumer can be depicted by the graph called indifference curve. All points along the curve show that the consumer is indifferent for the specific combination of goods X and Y, for example Q1, Q2, Q3 and Q4. Point k is better than the other three and point f is worse. Why k is preferred over Q4 on the curve can be easily explained by the satiation assumption, for point k contains more of good X without reducing the quantity of good Y (figure 1). At the same time, point f is not at all preferred because it contains less of both goods than at any point on the curve.

Figure 1- Indifference Curve



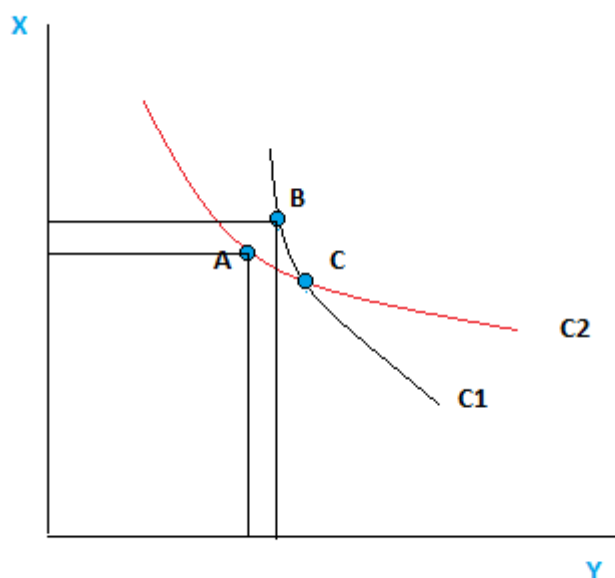
The descending slope of the curve demonstrates the diminishing marginal rate of substitution (MRS). As we move downwards along the indifference curve, marginal rate of substitution is getting smaller which shows that the consumer is willing to sacrifice a lower amount of good X to gain even more of good Y. This consents with a fundamental axiom of microeconomic theory, that of diminishing

marginal utility: “after some point, the additional utility obtained from the consumption of an additional unit of any good or service begins to decline.”¹³

Many indifference curves illustrate a consumer’s indifference map. This map helps us understand the consumer’s preferences pattern and construct models about his behavior. At this point, it is useful to mention that the way indifference curves are formulated is based upon the rationality with which the consumer makes his choices—not that the choices of the consumer are rational.

The fundamental properties of indifference curves are that they always have a descending slope (due to the “more is better” assumption), MRS is diminishing, and they do not intersect (due to the transitivity assumption), albeit they are not usually parallel either but they tend to come closer to each other as they continue further on. The fact that they do not intersect can be proved as long as we consider two points on intersecting indifference curves. In Figure 2, point B is simultaneously the same with point A but, at the same time, B is preferred from A. Something like that is not consistent with the overall model of indifference curve itself and would violate the transitivity assumption..

Figure 2



¹³ Levy J. (1995), p.21

In 1938, Nobel Prize award winner Paul Samuelson introduced the Revealed Preference Theory as a complement to the concrete utility maximization assumption of economic theory. Revealed preference theory explains consumer's preferences given his budget constraint. If the consumer chooses X over Y, when both combinations of quantities of these goods are affordable, this will be his preference over time. Consequently, X maximizes the utility of the consumer and he will not change this preference as long as X is still affordable. This is the cornerstone of preferences analysis of neoclassical economics that support even more the rational, time-consistent preferences of the consumers.

All the above illustrate the fact that consumers use rationality as the first and foremost property to decide what to choose. Under the standard model of consumer choice theory, individuals must obtain some specific characteristics concerning their preferences and these are the same for all, without exceptions. While this was the case, recent observations of irregularities in behavior that deviate from the standard model had led some economists to search for alternative explanations. Despite the fact economic man is still an adequate framework explaining most of the economic choices and remains the rule behind the vast majority of public policy choices, it appears that it suffers from various limitations like most of the traditional economic models. These limitations had put this specific framework under the microscope.

The existing fields of economics do not seem able to provide valid answers for these "exceptions of the rule". As a result academics have started a new research based more on the sphere of sociology and psychology. Under this new conceptual criticism of homo economicus, a new subfield of economic theory emerged, that of behavioral economics.

3. Behavioral economics

When in 2002 Daniel Kahneman was awarded the Nobel prize for his work, he reminded the world of the existence of behavioral economics but it was in 1739 when David Hume “wrote on what would later become known as ‘hyperbolic discounting’ or ‘myopia’ in decision-making¹⁴:

There is no quality in human nature, which causes more fatal errors in our conduct, than that which leads us to prefer whatever is present to the distant and remote.”¹⁵

It is obvious that irregularities in human behavior regarding the model of rational choices became apparent. However, attention on behavioral economics was drawn intensively in 2000s, when the standard model of behavior became even more inadequate in explaining the consumer of the new millennium.

In this part of the essay, basic principles of behavioral economics will be addressed along with a comparison with standard economics. More focus will be given on observed irregularities of consumer behavior that mainstream microeconomics failed to encounter but behavioral alternatives in unbounded rationality of homo economicus are imminent.

According to Mullainathan and Thaler (2000), behavioral economics identify behavior differentiated from the standard model and shows how this behavior matters in economic contexts. They argue that “unbounded rationality, unbounded selfishness and unbounded willpower”, which are three (unrealistic) characteristics of human nature that the standard economic model uses as indisputable arguments, need to be revised. Talking about unbounded rationality means that consumers process all information available in ways that lead them to make always the right decisions.

Herbert Simon in 1955 challenged this “unlimited information processing capabilities” of consumers suggesting “bounded rationality” as “a more realistic conception of human problem solving capabilities.”¹⁶ In 1979, Kahneman and Tversky introduced Prospect Theory, an exceptional paradigm of behavioral economics that explains how risky choices are made, including specific aspects of

¹⁴ McAuley I. (2010), p. 4

The notion of ‘hyperbolic discounting’ means that “individuals show very sharp impatience for short horizon decisions, but much more patience at long horizons.” and it is the opposite of standard economics’ ‘exponential discounting “in which patience is independent of horizon” (Mullainathan and Thaler, 2000).

¹⁵ Hume D. (1739), as cited in McAuley (2010)

¹⁶ Mullainathan S., Thaler R, October 2000

psychology. Prospect theory also incorporates the key notions for behavioral economics, “mental accounting” and “loss aversion”.¹⁷

For example, Mullainathan and Thaler (2000) cite the findings of Camerer et al (1997) study on taxi cab drivers in New York, which presents in a very descriptive way how loss aversion and mental accounting affect individual’s utility. Cab drivers must pay a fixed fee for renting their taxi and keep the revenues. Deciding how many hours they should work, the rational choice would be to work fewer hours in bad days but more hours in good days. However, the results showed that because they set a specific amount of money to be earned each day they ended up working more in bad days because these days were addressed as shortfalls.

Moreover, considering willpower and selfishness, there are numerous real life examples where humans demonstrate both lack of self-control and altruistic behavior. It is not rare to behave out of self-control, especially in time when we are having fun for example, and choose to drink and eat more than we need to. Or, in terms of altruism, individuals do participate in volunteer initiatives and offer to charity all the time without aiming at satisfying any private interest but they do it out of actual love for their fellowman.

Of course, in contrast, someone could argue that there is the free rider’s problem observed and discussed throughout economic theory which is a proof that people are not concerned with public goods unless there are private gains involved . However, experiments in controlled laboratory environments have shown that “subjects often cooperate in public goods and prisoners dilemma games, and turn down unfair offers in ‘ultimatum’ games.”¹⁸ For instance, Riedl A. (2010) presents the results of a “mini” ultimatum game conducted by Falk et al. (2003) which clearly deviates from what traditional economic reasoning would have predicted . More particularly, in terms of a take-it-or-leave-it amount of money, subjects do not accept any kind of offer, as rational choice would argue (“less money better than no money”). On the contrary, in their vast majority they chose the fairest offer out of the two which is to split the money in half. ¹⁹

All the above reveal the tendency that is obvious in the literature to doubt the dominance of rational economic man as the only behavioral model in economics. The

¹⁷ Mental accounting: the framing of transaction process in someone’s mind affects the utility this person receives eventually, introduced by Thaler in 1985. Loss aversion: the fact that people are more easily affected when their wealth is decreased than increased.

¹⁸ Mullainathan S., Thaler R, October 2000

¹⁹ See Riedl A.(2010), p.8, for a more analytical presentation of the experiment.

truth is, though, research and experiments revealed many additional conceptions of how individuals choose. Is it the same whether a choice is made sequential or simultaneously? Does the framework of a presented choice- negative or positive-matter? What about the exogenous environment where the decision has to be made? Does competition affect choices? In terms of public policy, what if people did not have to choose by themselves? What if policy makers had made the choice in advance and people had only to accept or change it? These questions reveal significant behavioral biases and irregularities that will be addressed in the next subsection.

3.1 Behavioral Irregularities of the rational Economic Man and public policy implications

First and foremost it has to be understood that behavioral economics do not claim to be a separate discipline nor a sub-discipline like labor and public economics but, by integrating features from other disciplines, like psychology, try to evaluate and rather expand economic man rationale to more realistic behavioral patterns. In a few words, behavioral economics “understands itself as a modeling approach which should be applicable to a wide range of economic questions.”²⁰

“Rational economic man and woman will always choose according to their preferences. These preferences are assumed to be well-behaved, coherent and invariant with respect to superficial variations in the way a choice problem is presented. However, one might start to wonder then why grocery and other stores are pricing their products that often with 9.90, 19.99 and similar (...) prices. Is this just co-incidence and does it happen that the true marginal costs of all these products are exactly these prices? Probably not.”²¹

Indeed, in super market and grocery store shelves prices like the above appear frequently, motivating the consumer to buy. The fact that indicated prices like 19,99 are more attractive to consumer reveals that the way choices are framed is very important for decision makers. I will mention two examples based on experiments that vividly support the concept of the way a choice is presented affects the decision of consumer.

First, Simonson (1990) suggested the importance of timing. He stresses out that a person may chose differently among a variety of goods if he or she had to make the choice simultaneously or sequentially. More specifically, the laboratory

²⁰ Ibid p.4

²¹ Ibid p.5

experiment Simonson conducted was about choosing free snacks for three weeks in two available ways; first, subjects had to choose three snacks at once to consume the next three weeks (simultaneous choice), and second, one snack per week of consumption (sequential choice). According to economic man reasoning, the rational way for deciding denotes that preferences are going to be the same and consumers would have chosen the same snacks either in sequential or simultaneous timing.

However, the results were somewhat different. Only 9 percent of the subjects chose a different snack in the sequential choice frame which means that 91 percent made the same choice three weeks in a row, whereas in simultaneous choice frame 64 percent of the subjects chose a different snack for consumption for each of the following weeks. The above results indicate that preferences may not be stable and unchanged as economic man rationale denotes, but individuals to be sensitive in the various ways a choice could be presented.²²

In terms of public policy, simultaneous or sequential choice could have important implications. Riedl (2010) cites Lindsay and Wells' (1985) experiment about police lineups as a very representative example. In this case, "the likelihood of false identification of an innocent subject is much higher under simultaneous than under sequential choice."²³ Hence, adopting the sequential presentation of individuals in police lineups may lead to more accurate judgments and significantly decrease the probabilities of false identification.

The following second experiment by Tversky and Kahneman (1981) demonstrates that positive and negative framing also matters significantly. They argue that "it is often possible to frame a given decision problem in more than one way. Alternative frames for a decision problem may be compared to alternative perspectives on a visual scene." In their famous "Asian disease" study they asked students to choose between two differently presented ways to fight an Asian disease problem. The key point is that both ways have the same results whereas they are presented in a positive and a negative frame respectively.

Two different choices were given to two different groups of participants and were framed as follows: (reproduction of the original text; Capital N informs us about the number of participants and percentages in brackets about the percentage of participants that chose this option.)

²² For a more analytical and coherent presentation of the experiment and its finding see Simonson (1990).

²³ Riedl A.(2010), p.18

Imagine that the U.S. is preparing for the outbreak of an unusual Asian disease, which is expected to kill 600 people. Two alternative programs to combat the disease have been proposed. Assume that the exact scientific estimates of the consequences of the programs are as follows: (italics added)

Problem 1 [N=152]

If Program A is adopted, 200 people will be saved. [72 percent]	If Program B is adopted, there is 1/3 probability that 600 people will be saved, and 2/3 probability that no people will be saved. [28 percent]
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Which of the two programs would you favor?

Problem 2 [N=155]

If Program C is adopted, 400 people will die. [22 percent]	If Program D is adopted, there is 1/3 probability that nobody will die, and 2/3 probability that 600 people will die. [78 percent]
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Which of the two programs would you favor?²⁴

It is obvious from the text that Problem 1 presents the programs in a positive frame, including no risk, by using data for the lives that will be saved. On the contrary, Problem 2 is negatively framed by denoting how many lives will be lost. However, despite the fact that both problems are identical, choices differentiate within programs A, B, C and D. According to Tversky and Kahneman (1981), this occurs because “choices involving gains are often risk averse and choices involving losses are often risk taking.” That is true due to the fact that, in Problem 1, 72 percent of the participants chose the concrete outcome of 200 lives to be saved while only 28 percent went for the “risky prospect of equal expected value”²⁵ of 1/3 probability that 600 will be saved. In Problem 2, participants also rejected the idea of 400 people to die and went for the safest option of 1/3 probability that nobody will die.

Maybe the above example is rather cruel and unpleasant, having to decide of how many lives to be saved or lost. There are many cases, however, that public policy makers must make decisions similar to those of the experiment. For instance, deciding where a highway will be constructed first, according to available budget, when there are many areas with outmoded road infrastructure is a matter of risk taking. The area which will be second in infrastructure schedule will have to suffer from more deaths regarding car accidents. In general, this is the case for most of public investment

²⁴Tversky A., Kahneman D. (1981, p.453

²⁵ Ibid.

choices where decisions must be made in order to increase well-being of the majority of the population.

Brandts, Riedl and van Winden (2009) conducted an experiment testing the hypothesis that “the experience of competition versus no competition per se leaves its traces in subjects’ well-being (...) and in their social preferences”²⁶ According to traditional economics, participants’ social preferences should be subject to change neither on a competitive nor on a non-competitive environment, or, in other words, institutional framework does not play any role in subjective well-being and social orientation. However, the results were somewhat differentiated from this point of view.

After experiencing both frameworks, competitive and non-competitive, participants, through performing a social value orientation test²⁷, revealed that pro-social orientation decreases in both institutional frameworks but the decrease is greater after competitive experience. Also, another important finding was that, under competition, subjects’ well-being (or consumer surplus) decreased as well. Hence, social preferences are substantially affected by the institutional environment where trading occurs.

As mentioned in the previous chapter, government is assigned with the task of correcting market failures, like the absence of competition, for example, with regulation. If we take in consideration the findings of Brandts, Riedl and van Winden (2009), then this might not hold. Less regulation could be the answer for increasing well-being. This experiment’s findings contrast with mainstream microeconomics where consumer surplus increases when competition in the market increases. There is a vivid and rather recent discussion in the literature whether there are adequate tools for measuring subjective well-being. On the other hand, studies providing evidence that institutional diversities strongly affect behavior keep increasing. The point is that more academics and scientists start to question the validity of rationality and revealed preference theory for explaining the entire spectrum of human behavior.

As far we have seen that whether a choice has to be made simultaneously or sequentially, and presented negatively or positively, really affects final decisions and public policy reforms. However, policy interventions can be made by other means as well which sometimes are proven to be more effective. One way for public policy makers to intervene in humans’ decision making is by the use of defaults. “A ‘default

²⁶ Riedl A.(2010), p. 16

²⁷ For an analytical explanation of the experiment see Brandts J., Riedl A. and Winden F. v. (2009),

option' is the outcome resulting from inaction.'²⁸ In brief, defaults include less transaction and search costs and thus can be more effective than regular simple choices.²⁹

For a better understanding of how defaults work, consider organ donation systems. Johnson and Goldstein (2003)³⁰ conducted a research comparing two different default decisions about organ donation systems; "presumed-consent" and "explicit-consent". The former means that the default is to be registered organ donor until you decide to change it, while the latter refers to the fact that you are not an organ donor unless you decide to register for being one. Their cross-country analysis revealed that in Denmark, the Netherlands, UK and Germany, where explicit-consent is applied, consent for donation ranged maximum in 27.5 percent, while in the rest seven countries with presumed-consent applied there was a minimum consent in donation of 85.9 percent.³¹

There are numerous examples illustrating that the use of defaults can really affect public policies in areas like savings, pension schemes and taxation for example. The question that arises, though, is whether or not to use defaults for improving the effectiveness of public policies due to their paternalistic conception. Framing choices in public policy issues, with the use of defaults or otherwise, may be a manipulative intervention on behalf of the government. Behavioral economics' findings inform public policy in terms of effectiveness and provide guidance in the way a policy reform could be implemented not if it should be implemented or not. In this case, paternalism is not so much of a problem. Moreover, as Amir et al. (2005) rightly put it "policies uninformed by scientific research are no less paternalistic; they are simply likely to be less effective."

In this section we have seen the most important behavioral irregularities as found in the literature and there was some reference made to their implications for public policy issues. In the next chapter, I will present an example of a successful application of behavioral economics into public policy issues; retirement savings.

²⁸ Bernheim B. D., Rangel A., (2008), p.3

²⁹ McAulay I., (2010), p.9

³⁰ Johnson J., Goldstein D., (2003), , as cited in Riedl A.(2010), p.19

³¹ Riedl A. (2010) p.20

4 How Behavioral Economics can contribute to guiding public policy

There are many policy domains where behavioral economics can guide policy makers to adopt reforms towards efficiency maximization. Some examples are retirement savings, taxation, the provision of public goods, environmental policy, fiscal and monetary policy etc. and the list can be expanded even more. In some of these domains, behavioral economics have covered more ground in terms of successful application, than in some other. More particularly, it managed to provide the appropriate scientific guidance to policy makers in fields where standard economic theory failed to explain observed deviations from traditional economic rationale.

Retirement savings is the most commonly cited example of successful application of behavioral economics' models in terms of public policy. The problem of low retirement saving rates is a widely accepted problem among economists. Traditional economic theory cannot provide firm evidence to explain why rational individuals save less for the future while on the contrary behavioral economics seem to have found the answers. In the next section, I will present the way behavioral economics contribute to retirement saving policies by explaining why low saving rates occur and how behavioral theory tools helped in increasing savings and participation in tax-subsidized pension plans.

4.1 Retirement Savings

During the past decades, there has been an increasing interest in United States in the decreasing savings of Americans. Individuals seem to face difficulties in achieving optimality regarding saving for retirement period. In terms of the life-cycle theory of savings of traditional economics, "households (...) are expected to solve the relevant optimization problem in each period before deciding how much to consume and how much to save."³² In other words, households are able to calculate the optimal saving rate in order to have an adequate capital saved for their retirement period.

³² Thaler R., Benartzi S., 2004 p.165

Thaler and Benartzi (2004) argue that there is no need for people to show strong will power in none of the three ways in which a household accumulates retirement wealth (social security, pensions, home equity). Specifically, USA's defined-benefit pension plans provide people with a fixed retirement paycheck covered by the employer, social security is provided by the state and "once a home is purchased, the monthly mortgage bill provides a useful discipline in building up equity."³³ The authors also stress out that "those Americans who have access to and make use of all three low- willpower savings techniques appear to be doing a decent job of saving for retirement."

Recently, however, there was a shift from defined-benefit pension plans to defined-contribution plans. Defined-contribution plans allow employees to decide on their own the amount they want to save to a specific account, while this amount is deducted from their salary and the employees also choose where they want to invest that money. The most prominent pension plans of this kind are 401(k), named after a specific section of tax code. The most important characteristic of defined-contribution plans is that they are tax-subsidized; the amount of contribution does not count for income taxation. For example, if someone decides to contribute 10% of his annual income, then only the rest 90% of his income will be taxable. Moreover, 401(k) plans provide the possibility for the employer to match employee's contributions by a certain percentage as a reward for saving.

Despite the fact that benefits from savings for retirement are obvious, many individuals lack the necessary will-power to save for their future. According to Amir et al. (2005), "people understand the value of saving but they simply prefer to spend their money rather than save." In traditional economic theory rationale, individuals' preferences are stable during their life cycle and it is not subject to change in the future. Bounded rationality argument supports the fact that individuals have the necessary will power to reduce present consumption in favor of future consumption but they simply do not want to.

From behavioral economics point of view, will power matters and it matters a lot. Through their prescriptive analysis, Thaler and Benartzi (2004) argue that there are two main reasons which explain the low savings rates in USA: the lack of self-control and procrastination. More precisely, the "self-control" argument is widely cited in savings literature and points exactly at the very thing, whose importance the economists minimize, will-power. Most of us, if asked, would have answered that we

³³ Ibid.

would like to save more for the future but cannot control ourselves in present spending. Indeed, this is the case for several studies whose results indicate that people want to save more. For example, Choi et al. (2004) “report that two-thirds of their sample of 401(k) participants think that their savings rate is “too low””³⁴.

In terms of procrastination, the same study of Choi et al. (2004) showed that 35 percent of their sample (people who saved too little for retirement) admitted that they would try harder and increase their savings within the next months. However, the majority of them (86 percent) did not manage to change their rates at all. This “familiar tendency to postpone unpleasant tasks”³⁵ called procrastination is evident in many aspects of human behavior. Everybody procrastinates; students that make use of their right for extensions when deadlines for submitting their essays are closed is a very indicative example! Behavioral economics uses the concept of hyperbolic discounting to explain procrastination. As mentioned in the previous chapters, hyperbolic discounting (time-inconsistent behavior) refers to people’s tendency to be impatient when it comes to short-term decisions and patient in choices that do not have immediate benefits.

In the subject matter of savings, time-inconsistent behavior pattern explains why people who want to increase savings and participate in 401(k) plans eventually do not. As Mullainathan and Thaler (2000) rightly put it:

“Though hyperbolic people will want to eventually participate in IRA’s³⁶ (because they are patient in the long-run), something always comes up in the short-run (where they are very impatient) that provides greater immediate reward. Consequently, they may delay joining the IRA indefinitely.”

The fact that individuals weight decisions in the begging of the life cycle more heavily provides adequate answers for the low savings rates problem. On the other hand, stable lifetime preferences of standard economics are not in the right place to explain the lack of willingness to save when intention to save is present.

In the previous chapter I stressed the importance of how choices are framed and presented and how this affects individuals in making the final choice. The most important way of framing for behavioral economics is setting a default option. Evidence has showed that the use of defaults in decision-making can alter the outcome of a specific policy reform in many different aspects of public policy

³⁴ Ibid p.167

³⁵ Ibid.

³⁶ IRAs, abbreviation for Individual Retirement Accounts, are another kind of tax-favored savings plan.

domain. In savings, the use of defaults is a determinant for reaching optimum savings rates.

Since the shift from defined-benefit to defined-contribution 401(k) pension plans, there was also an upward shift of saving rates as well. For behavioral economists this occurred due to the “automatic enrollment” characteristic of 401(k) plans. To be more specific, first an employee has to be eligible for joining 401(k) and then he has to make the choice of whether he wants to participate or not. However, many firms changed this and made the default option joining 401(k) unless the employee decided to opt out of the program. Employers chose the minimum contribution rate (3 percent) as a default and the fund where these contributions would be invested.

Evidence suggests that there were extraordinary changes in savings rates after the use of default. Choi et al. (2004), using the data obtained from a study of one company conducted by Madrian and Shea (2001), compared savings rates with two companies in a time frame of 27 months, four and three years respectively after the adoption of automatic enrollment plans. Their findings are rather significant;

“401(k) participation rates exceed 85 percent in all three companies regardless of the tenure of the employee. Prior to automatic enrollment, 401(k) participation rates ranged from 26 to 43 percent after six months of tenure at these three firms, and from 57 to 69 percent after three years of tenure.”³⁷

In a few words, more than half of eligible for 401(k) plans employees joined just because the enrollment procedure changed.

Despite increasing participation rates after automatic enrollment was introduced, there is one behavioral factor that explains why people would be discouraged from participating in 401(k) plans, and that is loss aversion. Losses have a greater impact on a person’s attitude than gains. For example, households will not value high future gains from contributions to 401(k), instead they will weight current income reductions more heavily because current consumption will be lowered as well. Loss aversion, which was first introduced by Kahneman and Tversky (1979) in their Prospect Theory, elucidates many aspects of human behavior and can contribute considerably in the formulation of public policy, not only in the field of savings.

To sum up, considering low savings rates, behavioral economics argue that individuals lack the self-control needed to save, they procrastinate and they are loss averse. Moreover, decision framing plays a key role in increasing savings rates. The

³⁷ Choi et al. (2004) p.83

introduction of defaults in the form of automatic enrollment resulted in significant increase in participation to defined-contribution pension plans as the 401(k) and in an important upward shift of savings rates. The example of savings clearly illustrates that behavioral economics can provide adequate guidance for public policy formation. After the outbreak of the global financial crisis of 2008, it is crucial for public policy makers to seek for alternative approaches and be able to embrace different aspects of the way economic agents formulate their decisions. This, in turn, will increase well-being and take society one step closer to more efficient allocation of resources.

5 Conclusion

In this paper, I discussed why behavioral economics had drawn so much attention and how they contribute to public policy in comparison with standard economic theory about consumer behavior. While traditional economics perceive individuals as rational and self-interest economic agents with the ultimate goal of welfare maximization, behavioral economics suggest a different point of view where unbounded rationality plays a key role.

The incorporation of psychological assumptions into economics has helped to improve understanding about those aspects of human behavior that deviate from traditional economic reasoning. Experiments have shown that preferences are not stable and fixed over lifetime but the way choices are framed is determinant for decision makers. It is important whether a decision is presented in a positive or a negative way and whether it is made simultaneously or sequentially. Consequently, behavioral economics can be very helpful in guiding public policy makers and this is obvious by their significant impact on retirement savings policy.

Behavioral economics is a promising area for research. Its incompatibility with traditional economics has led to the creation of several different models and theories about consumer behavior that can be very useful to policy makers. In fact, the magnificent increase of savings rates after the use of automatic enrollment as a default option clearly illustrates that public policy reforms can count on behavioral economics. However, I am not suggesting that traditional economic models should be abandoned. In contrast, I suggest that economists should encourage further research on behavioral grounds and try to understand the changes that the global financial crisis of 2008 has brought. Behavioral economics enrich the explanatory base of the rational economic man model and somehow “correct” its drawbacks.

To conclude, I would like to propose an area that I think more research needs to be done ; finance. There is some limited bibliography and research that has been made about how behavioral economics can explain the investors' overconfidence and other behavioral irregularities. I strongly believe, though, that since the financial breakdown of 2008, we must search for alternative approaches in terms of fiscal policy reforms. In fact, Barack Obama, elected President of the USA for the second mandate, realized the importance of behavioral economics since his first election campaign in 2009 and created a team of USA's best behaviorists; Thaler, Sunstein, Kahneman, Ariely. As Michael Grunwald correctly rights for the Time Magazine,

“President Obama is still relying on behavioral science. But now his Administration is using it to try to transform the country. Because when you know what makes people tick, it's a lot easier to help them change.”

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