

Chapter

HAPPINESS OF ECONOMIC MAN

Katalin Martinás*

ELTE, Atomic Physics Department, Budapest, Hungary

Zsolt Gilányi

University of West Hungary, Institute for Economic and Social Sciences

Veronika Poór

Ágoston Reguly

Budapest University of Technology and Economics, Hungary

ABSTRACT

Economic man, the Homo Oeconomicus, is the model of human behaviour for economic investigations. It is aiming at describing the decisions on trade, production and consumption in an equilibrium world. The Homo Oeconomicus takes rational decisions based on the expected results in an attempt to pursue happiness.

Based on the results of modern happiness research, we show that the happiness of Homo Oeconomicus is related to the hedonistic approach. On the other hand, the eudaimonic happiness concept requires a new model of economic man, who does not live in an equilibrium world. In opposition to Homo Oeconomicus; our economic man, the Homo Sapiens Oeconomicus lives in a complex, non-equilibrium world and is more suitable for economic modelling.

Keywords:

Economic Man, Happiness, Ecological rationality

INTRODUCTION

Since its emergence as a separate science, economics has made a long way. In most of the time, we are dealing with specialized in detail questions and we realize conceptual problems just when we meet paradoxes. Under the realm of methodological individualism, the dominating economic thinking focuses on individual choice to explain economic phenomena. The working hypothesis is the existence of rational agents who pursue their own interest and

* Corresponding Author: Katalin Martinás ELTE, Atomic Physics Dept., Budapest, 1117. Pázmány Péter sétány 1. Hungary
Email:kati.martinas@gmail.com

always consciously calculate and act as it seems to be the best for them. Vernon Smith (2003) calls this type of rationality “constructivist rationality”.

The human beings of economic science are clearly far from flesh and blood human beings. Economists are aware of this fact, and call the economic human being *homo oeconomicus*¹. Therefore, the fact that “*human institutions and most decision making is not guided primarily, if at all, by constructivism*” (Smith, *ibid.*), is of no importance for economists in itself. In addition, we have strong arguments in favour of our *homo oeconomicus*; just think of Friedman’s (1953) “as if” argument², the *ex post* (experienced utility) definition of agents’ own interest, or the fact that deliberate actions may also have unintentional consequences.

The Easterlin paradox (GDP increase does not result in self reported increase of happiness) represented the first serious leakage in the unity of economic society: the reduction of human beings who “*are endowed by their Creator with certain unalienable Rights, that among these are Life, Liberty and the pursuit of Happiness*” (US Declaration of Independence 1776) into *homo oeconomicus* perhaps was not quite proper. Though the economics of happiness is a rapidly expanding topic in economics, it seems to us that the core hypothesis of *homo oeconomicus* is practically untouched in general models aiming at describing the market mechanism³. From this perspective, we do believe that Smith’s (2003) argument as to the market efficiency tests is a break through:

¹ The history of the term dates back to the 19th century when John Stewart Mill (1848) first proposed the definition of *homo oeconomicus*, although Mill never used this term. Mill proposed for political economy the definition of man to be “*a being who invariably does that by which he may obtain the greatest amount of necessities, conveniences, and luxuries, with the smallest quantity of labour and physical self-denial with which they can be obtained in the existing state of knowledge.*” (p. 326)

² “Consider the problem of predicting the shots made by an expert billiard player. It seems not at all unreasonable that excellent predictions would be yielded by the hypothesis that the billiard player made his shots *as if* he knew the complicated mathematical formulas that would give the optimum directions of travel, could estimate accurately by eye the angles, etc., describing the location of the balls, could make lightning calculations from the formulas, and could then make the balls travel in the direction indicated by the formulas. Our confidence in this hypothesis is not based on the belief that billiard players, even expert ones, can or do go through the process described; it derives rather from the belief that, unless in some way or other they were capable of reaching essentially the same result, they would not in fact be *expert* billiard players.” (p.13)

³ In mainstream economic models the market mechanism refers principally to the law of supply and demand (called also invisible hand, or Walrasian auctioneer) stating that if the quantity demanded is greater than the quantity supplied at a given price, the price of this commodity will increase and *vice versa*. In a perfectly competitive market no-one has power to modify this process in her advantage. A perfectly competitive market has the following properties: each agent is price taker (for Smith this hypothesis corresponds to the great number of agents), has perfect knowledge; there are no externalities (agents’ behaviour is affected exclusively through the market (prices), no transactions costs (exchanges can take place without costs of searching the exchange partner or costs of enforcing contracts), no public goods (others cannot be excluded from the consumption and or the consumption of one agent does not affect the consumption of another).

Happiness of Economic Man

„In market experiments... the results are more commonly in accord with standard competitive models that maximize group welfare.” „Although this is a giant victory for the economic theory of markets it simultaneously demonstrates that the theory is incomplete. The unexpectedly weak conditions under which the results obtain are good news for market performance, but not such good news for the scientific community because it demonstrates that we do not understand why markets work as they do. You do not have to have large numbers of agents, each an insignificant part of the whole—three or four buyers and as many sellers are entirely adequate in a wide range of economic environments; they do not have to have complete or perfect or common information — each can have only private information; nor is it required that individuals make decisions systematically or be economically sophisticated.” (p. 468).

In brief, the image of economic man should be modified not because - what we all know - flesh and blood human beings are different, but because the homo oeconomicus is conceptually deficient as to the aims of theoretical economics, namely the description of the market.

The question can be raised: what should the model of economic man for theoretical economics be, so that it is compatible with the empirical tests mentioned by Smith?

In this chapter we aim to show the way to construct an economic man, which allows for modelling the market mechanism.

We will follow the common way in economics as to the construction of the model man; the model of economic man should contain:

1. the purpose of the model agent
2. the way of evaluation of the different situations
3. the rule of decision making
4. a mathematical description.

In a first point, we deal with the purpose of Man. No doubt, it is the pursuit of (the greatest) happiness. The logical step is to determine happiness. Not an easy task. Brilliant ancient philosophers have already made long debates. Fortunately, for our economic man there is no need to take part in this debate. In fact, for our economic man,

what we need is the possible factors that determine happiness, which can be learned from empirical studies. The usual happiness concept in economics is utility, which means the satisfaction from the consumption of commodities. We suggest that the utility evaluation concept of economic man should be modified in favour of an expected utility concept. The major difference is that the former evaluates instantaneous flows (satisfaction from eating an apple), while the latter evaluates stocks (expected satisfaction if I can have the apple and can eat it later). As we will see, this modification allows us to separate decision on exchange and consumption opposed to modern economic theories where these two decisions are considered together as one decision.

In a second point, we discuss the decision rule of Man. In addition to constructivist rationality, Smith (2003) insists on another type of behaviour, the ecological rationality, which corresponds to routine actions and decisions. Constructivist rationality appears formally as the maximisation of an objective (utility) function. According to Smith, routine actions are not based on such calculus, therefore the rule of maximisation should be modified. Also, the utility function clearly does not contain all the factors that determine happiness; there is not much sense to maximise on a limited set of variables (because the “best” we find with the maximisation may be not the best for the whole set).

In a third point, we conclude that because of the non-exhaustive factors that determine happiness and because of ecological rationality, the omnipresent utility maximization principle in economics has only very limited validity. We show that without the maximization principle both constructivist and ecological rationality can be introduced in a mathematical description. We argue that economic man is also different in an other aspect from flesh and blood man: a model agent necessarily takes decisions on some aggregate level. At least, because it is of no importance for economists that Monday morning a real man takes other decisions than Friday morning. In opposition to mainstream economics, we do not aggregate the results of all actions but we aggregate the same type of actions.

We will call this modified economic man *Homo Sapiens Oeconomicus* (HSE). In brief, HSE’s decisions are rather based on ecological rationality than constructivist rationality and HSE rather pursues eudaimonia than hedonism.

1. CONCEPT OF HAPPINESS AND ECONOMICS

Happiness of Economic Man

The usual construction of a model man consists of defining her purpose, her evaluation concept of the different situations, the rule of decision and a mathematical description. We start with the first.

No doubt, happiness is the most important for human beings; it is the pursuit of happiness that makes free people act. Let us put aside the interference of the notion of free in the determination of happiness as Aldous Huxley (1946) foresees the possible abuse with this truism: „*The most important Manhattan Projects of the future will be vast government-sponsored enquiries into what the politicians and the participating scientists will call "the problem of happiness"- in other words, the problem of making people love their servitude.*” Unfortunately, if the notion of happiness is considered separately in itself, there is no definite answer: different people feel happy for different reasons. In a very simplistic way, ancient philosophers distinguished two concepts of happiness.

Following the concept of happiness known as hedonism, happiness is an instantaneous passing feeling like satisfaction and pleasure (or the lack of dissatisfaction and pain). This means that „*Hedonic psychology (...) is the study of what makes experiences and life pleasant or unpleasant. It is concerned with feelings of pleasure and pain, of interest and boredom, of joy and sorrow, and of satisfaction and dissatisfaction. It is also concerned with the whole range of circumstances, from the biological to the societal, that occasion suffering and enjoyment.*” (Kahneman, Diener & Schwarz, 1991) Naturally there are several interpretations of this concept from Aristippus, father of radical hedonism, to Epicurus, father of the epicurean hedonism. From economic perspective, the most important followers of hedonism are Jeremy Bentham and J.S. Mill.

Following the concept of happiness known as eudaimonia, happiness is a lasting, complete and justified satisfaction with life as a whole. This means that “*Satisfaction is only happiness when it is complete satisfaction. Next, even complete satisfaction does not necessarily add up to happiness. Satisfaction with particular things, however important - health or an untroubled conscience, success or position - falls short of happiness if it is not accompanied by other satisfactions. It is then only partial satisfaction; happiness requires total satisfaction, which is satisfaction with life as a whole.*” (Tatarkiewicz, 1962, p. 8) Naturally there are several interpretations of this concept. The most famous ancient proponents are Plato and Aristotle. The differences between classical

Greek philosophers arose on the question of the connection between active and contemplative life, and on the role of socialization and civil virtues. (Bruni, 2008)

A human being guided by the greatest happiness as greatest hedonism is willing to maximize the pleasure of the present; a human being guided by the greatest happiness as greatest eudaimonia is willing to maximize for the whole lifespan. In the eudaimonian perspective, happiness is not a definite state to be realized at a definite moment; there is no definite goal, that is to say there is no sense of conceiving a state of maximal happiness. There are no levels of happiness: either we are happy even if there are some pains or inconveniences in our life, or we are unhappy even if seemingly we have all conveniences. Happiness is not achieved by the conscious pursuit of it; happiness is the by-product of other activities.

The lesson to be drawn from this brief reference to the problems of defining happiness is the following: the adoption of the maximization principle implies the adoption of the hedonistic conception of happiness. In turn, without the maximization principle both interpretations remain possible. In addition, the latest empirical results on happiness show that individual happiness depends 50% on psycho-genetic factors, 40% on (voluntary) actions and just 10% on the ownership of goods (Ljubormirsky, 2008). Therefore even with the hedonistic happiness concept, maximizing on a non exhaustive set of factors determining the happiness has not much sense.

It was Jeremy Bentham's moral philosophy, which made accessible the notion of happiness for economic theory. The core assumption that allowed the integration of happiness into economics was that pleasures and pains can be quantified. Though Bentham assumed that happiness is commensurable among agents, the modern utility approach does not require this assumption. The goal of an action as it was put succinctly by Edgeworth (1879) was to achieve "*the greatest possible value of $\int \int \int dn \, dt \, dp$ (where dp corresponds to a just perceivable increment of pleasure, dt to an instant of time, dn to a sentient individual.)*" This utilitarian project was abandoned in favour of rational choice theory (Read, 2004). As in use now, the utility function is rather a simple evaluation function than a function representing the Benthamian concept of happiness, though the common interpretation of utility is the satisfaction from the consumption of commodities. For example, Kahneman, Wakker and Sarin (1997) distinguished two meanings of the term utility: Decision utility or ex ante utility and experienced or ex post utility. The first is the weight of an outcome in a decision that guides human decisions

Happiness of Economic Man

and cannot be observed. The latter would correspond to the hedonistic Benthamian utility, which is assumed to be measurable in empirical experiences.

For this reason, we do believe that it is more expedient not to discuss the concept of the utility function of the economic man. In order to obtain what we need – the proper representation of the economic man's actions – the importance is attached to the fact that the evaluation of the economic agent (happiness) is subjective and we are able to identify some of the quantifiable factors that determine this happiness and hence that determine individual economic choices and actions. The major methodological modification of the description of the decision of economic man in order to obtain a better representation of human choice will be the following: we agree that human beings are willing to possess commodities to use, to consume them. Nevertheless, the decision of acquisition and the decision of consumption generally differ in time. Therefore we will consider them as separate decisions.

DECISION MAKING

In the previous point we have seen that the purpose of the economic man as conceptualised in mainstream economics is hedonism. The opposing concept of eudaimonia is ignored. This is probably because hedonism can be conceived as a state; hence the maximal happiness can easily be captured by the maximum of a mathematical function. In this point we will see that the choice of the rule of decision making – the third points for constructing a model man – is decisive also for the possible interpretations of the purpose of the economic man.

In an attempt to explain economic phenomena, the dominating economic thinking adopts the working hypothesis of rational agents who pursue their own interest and always consciously calculate and act as it seems to be the best for them. Economists call this modelled human being *homo oeconomicus*⁴ or MaxU, because this agent is aiming at maximising her utility from the consumption of commodities. For different purposes economists tried to improve the modelled economic man. Just the list of the different names of the modelled human beings collected by O'Boyle

⁴ The history of the term dates back to the 19th century when John Stewart Mill (1848) first proposed the definition of *homo oeconomicus*, although Mill never used this term. Mill proposed for political economy the definition of man to be “a being who invariably does that by which he may obtain the greatest amount of necessities, conveniences, and luxuries, with the smallest quantity of labour and physical self-denial with which they can be obtained in the existing state of knowledge.” (p. 326)

(2007) show the number of attempts aiming at amending the homo oeconomicus: homo reciprocans (Gintis and Allen), homo politicus (Nyborg), homo sociologicus (Hirsch, Michaels, and Friedman; Weale), homo socioeconomicus (Nitsch; Lindenberg), homo hobbesianus and homo darwinianus (Wiker), homo orthodox (Dinello), neo-homo oeconomicus and paleo-homo oeconomicus (Doucouliagos; Pearson), homo erroneous and homo gustibus (Pearson), homo sovieticus (Tischner), homo sapiens (Thaler), homo religiosus (Zabieglik), homo heroicus (Drucker).

Nevertheless, it seems to us that most of the proposed alternatives to the homo oeconomicus are the same in the sense of constructivist rationality. As Vernon Smith (2003) wrote:

“In summary, constructivism uses reason to deliberately create rules of action, and create human socioeconomic institutions that yield outcomes deemed preferable, given particular circumstances, to those produced by alternative arrangements.” (p. 468)

But in addition to constructivist rationality, Smith (2003, 470.p.) insists on another type of behaviour to take into account, the ecological rationality:

„Ecological rationality uses reason – rational reconstruction – to examine the behaviour of individuals based on their experience and folk knowledge, who are “naive” in their ability to apply constructivist tools to the decisions they make; to understand the emergent order in human cultures; to discover the possible intelligence embodied in the rules, norms, and institutions of our cultural and biological heritage that are created from human interactions but not by deliberate human design. People follow rules without being able to articulate them, but they can be discovered.”

In Smith’s view, the model agent should therefore be rational in both constructivist and ecological sense. It is clear that for decisions based on ecological rationality the omnipresent (utility) maximization principle cannot be applied.

FORMALIZED MODEL OF DECISIONS

What have we learned about Man that is relevant for our economic man? Man, as our economic man is able to act. Our agent has naturally a limited scope of actions compared to the reality: production, exchange and consumption. If we can see that someone acts, it means that this someone has taken a decision to act (even unconsciously, by routine). In other words, we choose the actions.

Happiness of Economic Man

The economic description differs from the reality in the extent that we do not represent the action itself, but the result of the action. The result of actions considered is the change of the quantities of goods (commodities) and the change of the happiness of the agent. It is important to note that the change of happiness is not only due to the change of commodities but it can result simply from the fact of acting. Commodities are stocks that can be changed by actions, and can be possessed. The fact that goods are stocks does not mean that they are material, just think of money, knowledge, social capital (relations), and time (if time is divided into periods). As to the time, Gary Becker also insisted on the necessity of introduction of time as a scarce resource “*Different constraints are decisive for different situations, but the most fundamental constraint is limited time.*” (Becker, 1993) This is an evident comment, nevertheless ignored in economics: even if the budget constraint (income) would allow for doing several activities at the same time, clearly at a time we can do just limited amount of activities. Therefore we introduce time in our representation. The time constraint means that the total time needed for the selected activities should not exceed the time interval of the aggregation.

In mathematical terms, the result is the variation of the economic agent's commodity stocks due to her action and the utility from this action. The variation of stock will be represented by a vector $\underline{R}=(q_0, q_1, \dots, q_n)$ - where q_i is the variation of the quantity of the i^{th} commodity, and the utility by U .

Sen (1987) noted that the description of choices in terms of utility “*does not give any independent evidence on what the person is aiming to do or trying to achieve*” (p. 73). In fact, for decision theory the utility must be decisional (ex ante) utility in the Kahnemanian sense, which is unobservable (Hodgson, 2012). This means that it is only expected results that can guide our decisions, because the result of a decision is known only after the decision and action. Nevertheless, we will argue later that even decisional utility is observable for economic process (trade and production), because in that case decisional utility coincides with subjective wealth. The point of such an observation is that analysis of an agent's answers for purchasing offers. In that way, the problem raised by Sen can be encountered.

The classical problem of the consumer with a Cobb-Douglas utility function ($U(\text{quantity}_{\text{apple}}, \text{quantity}_{\text{milk}}) = \text{quantity}_{\text{apple}} * \text{quantity}_{\text{milk}}$) is to choose a consumption bundle of apples and milk under the budget constraint ($\text{price}_{\text{apple}} * \text{quantity}_{\text{apple}} + \text{price}_{\text{milk}} * \text{quantity}_{\text{milk}} = \text{income}$) and happiness is reduced to utility. With our notations this means that the choice is $R=(+2\text{kg apple}, +2\text{liter milk}, -6 \text{ Euros})$ and $U=4$ in the case of an income $M=6 \text{ Euros}$. The

theory does not say anything about the fact that this consumption bundle of (2,2) was bought during the period in two purchases or in one. This means that economic theory aggregates the results of the activities.

In economic modelling the aggregation by time is not just a simplification but it is also necessary, because activities have finite time span and are not really continuous. As for instance, during the cooking one can also clean the kitchen. The activities are embedded into each other. (Martinás & Reguly 2013)

As we have seen, the aggregation of the results gives the amount of the variation of commodities due to the actions in the time interval. Doing so, the decisions of the economic agent in t_0 are dependent only on the expected aggregated result. But the aggregation of the results is not the only possible solution. If we aggregate the activities we do not lose all the elements of the aggregated result. Especially, we still have the partners in economic actions, which is crucial for market price determination process (who meets whom). By the aggregation of activities, the decisions of the economic agent in t_0 depend on the expected result of each type of activity.

To illustrate the aggregation by activities, we have to identify the same type of activities. An activity is of the same type if it results in the same change of stocks with a scalar multiplier difference, all other factors held unchanged. This definition of activity is somewhat different of the everyday use of the term where go shopping is the same activity regardless what we buy and where we go. In our representation, if agent A goes twice to the minimarket at the corner in the week and the variation of stocks are (+1,+1,-3) and (+2,+2,-6), then these shoppings are considered as the same type of activities, because $2 \times (+1,+1,-3) = (+2,+2,-6)$; by contrast (+1,0,-2) and (0,+1,-1) are different, even if the sum of them gives (+1,+1,-3). Also, during the week we can go shopping and buy apples and milk, Monday (+0.5,+0.5,-1.5) and Friday (+1.5,+1.5,-4.5). In brief, we say that activities are of the same type, if the results satisfy the relation, $\underline{R}(t_0) = c \underline{R}(t_1)$. We note that shopping in the supermarket instead of the minimarket is considered as different activities. Let us choose the smallest element of each type of activity. Let us call it unit activity and denote it by e^K , where K refers to the type of the activity. In our example, this means $e^{me,corner,shopping} = (+0.5,+0.5,-1.5)$. (Martinás & Gilányi, 2012). The scalar difference c can be interpreted as the intensity of the activity K . Instead of c , let us use the symbol J^K .

Monday shopping at the minimarket is

$$R(Monday) = J^K(Monday) \underline{e}^{me,corner,shopping} = 1 * (+0.5,+0.5,-1.5),$$

Friday shopping at the minimarket is

Happiness of Economic Man

$$R(\text{Friday}) = J^K(\text{Friday}) \underline{e}^{me, corner, hopping} = 3 * (+0.5, +0.5, -1.5).$$

The shopping for the week at the minimarket is

$$R(\text{week}) = J^K(\text{week}) \underline{e}^{me, corner, hopping} = (1+3) * (+0.5, +0.5, -1.5).$$

In brief, instead of the aggregation by the results of the activities, we add up the intensities of the activities of the same type of activities:

$$\underline{R}(t) = J^K(t) \underline{e}^K \quad (1)$$

As in the example above, sometimes it might be useful to distinguish the activities by the partners, too. In that case, instead of K a triple index abk can be applied, where b identifies the partner of agent a . $e^{ab,k}$ is the k -th unit activity with partner b , aa stands for activities without partner, and $J^{ab,k}$ is the intensity of this activity.

It is an important difference to orthodox economics that exchanges here are fundamentally pair-wise⁵. Therefore, decisions must meet. For example, in an exchange the partners have to make decisions simultaneously and the intensities of activities have to correlate because of the conservation law:

$$J^{ab,k} \underline{e}^{ab,k} + J^{ba,k} \underline{e}^{ba,k} = 0 \quad (2)$$

That is to say, the commodities that agent a gives to agent b are the same as the commodities that agent b obtains from agent a and *vice versa*

To continue, the set of all possible activities e is given and the economic agent determines the intensity of the activity J^K , obtained by the aggregation of the intensities during the period. This modification of the aggregation – adding up intensities and not the results – makes possible the integration of Smith's ecological rationality concept, the decisions taken by routine based on the expected utility. The decisional problem of the economic man is to select the aggregated activity intensities. From mathematical point of view the expected utility, U is analogous to the driving force in physics (Martínás, 2003). We suppose that the higher is the expected utility the higher is the willingness to act. Or mathematically: $J^K = J^K(U)$.

In order to express the expected utility of goods we adopt an evaluation function. We suppose that this evaluation function depends on the property of goods; hence depends clearly on stocks. This evaluation coincides with the colloquial notion of wealth, except that it is not measured in monetary terms and it is subjective. This wealth is subjective, because the integrity of commodities is not taken all the time to the market; therefore its value is not

⁵ In general equilibrium theory exchange partners are ignored and exchanges are modelled as exchanges between commodities, so exchanges are transformation of commodities.

acknowledged by the society (Marx, 1867). We denote it by a function Z . (Martinás, 1995, Ayres & Martinás, 2006)

With these notations, the utility in the ordinary sense of the stock change is:

$$U_z = Z(X+q) - Z(X) \quad (3)$$

and the expected utility of an activity is:

$$U = U_z + u \quad (4)$$

where u is the utility (happiness) related to other factors than the change in the possession of commodities. Again, this division is useful because utility in the economic sense can be observed and have the properties, which allows for a functional representation. (In order to avoid misunderstandings, in the above example of shopping u was 0.) For economic decisions (trade and production) the omission of u seems to be acceptable, because $u \ll U_z$.

Splitting of utility into two parts – utility, which arises from the change of the quantities of goods, and the other effects – made possible the introduction of an observable, experimentally accessible quantity. The change of the subjective wealth in an activity corresponds to the expected utility of the change of the commodities. If we consider that happiness can be given by a function $H(X, \dots)$, which depends also on the stocks of commodities X that an agent holds, and other variables, and note that other variables are rather quality variables (ex.: psycho genetic factors, the activities), then we can conclude that measurable stocks determine just a small part of happiness. That is why we have called this reduced part of the happiness subjective wealth denoted by Z . (Martinás, 2010).

In order to obtain the variation of the subjective wealth due to the change of stocks, we have to simply differentiate the Z function (we suppose that Z is differentiable). For the sake of simplicity, let us consider the case where agent A buys or sells commodity X for money (see (Ayres & Martinás, 2006) for the general case):

$$dZ^A = \partial Z^A / \partial X^A dX^A + \partial Z^A / \partial M^A dM^A \quad (5)$$

We call the expression $\partial Z / \partial X$ the subjective value of commodity X , because the variation of X changes individual subjective wealth. We treat money M as other commodities, so money enters in nominal terms into the subjective wealth function. This means that money has also positive subjective value. For economists this assumption needs

Happiness of Economic Man

explication because of the utility concept, even if it seems a quite natural assumption from our daily life. As to economic arguments underlying this assumption, let us recall the St. Petersburg's paradox. The paradox is a simple pile or face game: the first face pays as many dollars as the number of trials and the game stops if there is a pay-off. The expected value of this game is infinity, but people are willing to pay a very limited amount for such a game. The solution to this paradox proposed by Bernoulli (1738) is to enter the pay-off into the utility function, and to suppose a root square dependence between income and utility. In brief, the lesson from this paradox is that money enters into the evaluation function of the economic man, thus it has subjective value .

From theoretical point of view, the hypothesis that money has positive subjective value implies that money also has positive value in exchange. A good part of standard monetary theorists take this hypothesis unacceptable, as Hellwig (1993). For them, the positive exchange value of money should be a result. We join economists who consider the positive exchange value of money problem as a false problem, as Cartelier (1996). The reason is simple: we do not believe that the choice of a consumption bundle is at the same level as the choice of the transactions technique. This is because an agent can independently choose a consumption bundle of other agents, as opposed to the transaction technique, where agents' choices are interdependent. In brief, the subjective value of money is not just a mathematical artificial concept.

The subjectivity of values naturally does mean neither that values are arbitrary,⁶ nor that they are constant. The subjective values attributed to the goods can be revised for two reasons: first, because of the success or failure of actions (this implies also expectations, which are always based on information and the agent's understanding); second because of the change in the quantity of goods owned by the agent. In general, the subjective value of a good decreases with the increase of its quantity.

In our conceptualization the subjective value is the wealth (happiness) increase due to the increase in the stock of the good. This is not observable. Nevertheless, relative values can be observed. In our monetary economies, the most

⁶ A little child who attributes high value to a little toy but no value to a 100\$ banknote is willing to make the exchange of the banknote for the toy but not *vice versa*. However, if she learns that she can get 10 toys for the banknote she will probably not exchange it just for one toy.

convenient way to measure subjective values is a measure in terms of money. The subjective value in monetary terms of the commodity X is⁷:

$$v = (\partial Z / \partial X) / (\partial Z / \partial M) \quad (6)$$

The measure is straightforward: we offer the commodity X for an individual at different prices. The individual will buy the commodity if it worth at least as much for her as the price she has to pay. The opposite is also true. If we observe the realized purchases of the same agent we can have an upper and a lower limit for the subjective values in monetary terms.

Let us outline as an example a decision for purchasing a single good for money. For the sake of simplicity, we omit the indices. The variation of the subjective wealth function is the following:

$$dZ = \partial Z / \partial M (\underline{v} dX + dM) \quad (7)$$

If the price of commodity X is p ($p dX = -dM$)⁸, then we finally have:

$$dZ = \partial Z / \partial M (v - p) dX = \partial Z / \partial M (v - p) J \quad (8)$$

In order to solve this expression we have two options. The first is the omnipresent maximization principle, which translates the constructivist rationality. In that case we would obtain the well-known result of general equilibrium theory:

$$v(J) = p \quad (9)$$

The second option is to abandon the maximization principle and the constructivist rationality in favour of ecological rationality. This also implies that we abandon the timeless setting (or infinite time setting) of the general equilibrium theory. Let us suppose that the volume of the transactions (J) depend on the unit gain of the subjective wealth in monetary terms, which is $(v - p)$. As a further simplification, let us consider a linear approximation of this function:

$$J = L(v - p) \quad (10)$$

⁷ This expression shows that money has no value in monetary terms. This assertion has already been formulated by Marx (1867) in another context, when he stated that the general equivalent excludes itself from the realm of commodities.

⁸ in the general case $dX^A = J^A \underline{e}^A$

Happiness of Economic Man

where L represents the willingness of transaction. In fact, the willingness of transactions has the indexes (as prices): L_j^{AB} where j stands for the activity and A and B for the agents involved in the transaction.

The above expression shows that the same expected gain implies different decisions (actions) as L^A changes. As an example, if agent B has already cheated agent A , then agent A can choose never to make exchanges with agent B , that is to say $L_j^{AB}=0$.

The parameter L corresponds well to ecological rationality: at the moment of decision, ex ante, it is given. In other words, the economic man does not calculate consciously at the moment of decision, she simply follows a rule of routine. After the purchase, however, she may be disappointed and therefore may revise ex post the decision rule incorporated mathematically in the parameter L .

It is worth noting that this ecological rationality setting allows us to solve the problem of market price determination as we have already cited. Smith remembers that fewer requirements are needed in order to attain the efficient market solution than the general equilibrium theory suggests. Therefore, the general equilibrium theory probably cannot capture the essence of the functioning of the market institutions.

In the ecological rationality setting the determination of the price of commodity X in a bilateral exchange for two identical agents using the tautology that the commodity that agent A offers is the same that agent B obtains and vice versa ($J_j^{AB} + J_j^{BA} = 0$), we have:

$$L(v^A - p) + L(v^B - p) = 0 \quad (11)$$

Hence the agreed price is

$$p = (v^A + v^B)/2 \quad (12)$$

At the end of this bilateral exchange, there is no guarantee that $v^A = v^B$. Therefore the two agents can make further exchanges until the two evaluations will be the same. Whether they do it or not, depends on the exact definition of the price formation mechanism. If agents have different L 's, then we have:

$$p = (L^A v^A + L^B v^B) / (L^A + L^B) \quad (13)$$

The quantity exchanged is:

$$J^A = (L^A L^B) / (L^A + L^B) * (v^A - v^B) \quad (14)$$

Whether we obtain the general equilibrium solution depends on the L parameters: no complete or perfect information is needed, neither “agents have to hold an insignificant part of the whole market; nor is it required that

individuals make decisions systematically or be economically sophisticated” (Smith, 2003). It is well known that the general equilibrium solution is just one possible solution of the equilibrium market price problem. In fact, if agents are allowed to make exchanges at will (including disequilibrium prices), the equilibrium outcome of the exchange process will be different from the predetermined general equilibrium solution (Fisher, 1983). The driving force description of economic decisions contains explicitly this result: depending on the L parameters and on the way agents meet, the equilibrium outcome will also be different.

HOMO SAPIENS OECONOMICUS

We have demonstrated, that Homo Sapiens Oeconomicus is not only more useful for economic investigations, but it is also closer to real human behaviour. We discussed that the ultimate goal of Man is the pursuit of happiness though there is no scientific consensus on the definition of happiness. The two major concepts are hedonism – happiness is a state – and eudaimonia – happiness is a satisfaction with life as a whole. As we have seen, the maximization principle (related to Homo Oeconomicus, as opposed to Homo Sapiens Oeconomicus) is compatible with the first, but not with the second interpretation because in the second case there is nothing to maximise. Following Vernon Smith, the actions taken by Man are based on two types of rationality: constructivist rationality, which uses attention and calculates; and ecological rationality, which rather consist of rules of action based on routine. The first is compatible with the maximization principle (to find the best we have to calculate), the second not (during routine action we do not calculate). The simplification of modelling actions by their results has also two forms: we aggregate the results of the actions or we aggregate the intensities of the same type of actions. The distinction between the two forms of aggregation is important for the introduction of ecological rationality: decisions taken by routine are related to the activities (and not to the result of the activities). The aggregation of results leads to Homo Oeconomicus, who lives in an equilibrium world; she is guided by hedonism and constructivist rationality. The aggregation of the activities offers an alternative model of economic man, the Homo Sapiens Oeconomicus.

The Homo Sapiens Oeconomicus (HSE) got rid of the burden of maximization: she is not seeking the maximum expected utility from each action, but she is simply driven to gain in terms of the expected utility. This assumption of driving force makes possible to abandon the equilibrium environment in favour of a changing environment, where the HSE can be guided either by constructivist or by ecological rationality.

Happiness of Economic Man

However, the quantifiable stocks that influence happiness constitute a little portion of all the factors that affect it. The restriction of our model of economic man to these quantifiable stocks seems to be quite acceptable for two reasons: first, because economics is dealing with the problem of assuring the material necessities for a happy life, not happiness itself. Second, because we do not pretend even theoretically to know the maximum happiness. All we assume that economic agents know what decision makes her better off ex ante. By assumption, this expected wealth (happiness) increase is the driving force for economic actions. Ex post, an agent can find that the result of her action is not as expected. In that case she may revise the rule by which she has taken the decision to act. The routine actions are taken by ecological rationality and the revision of the routine rule by which routine actions are taken is probably based on constructivist rationality. It is worth remembering that Kahneman et al. insisted on the distinction of ex ante and ex post utility also from empirical point of view: the decisional utility (ex ante) cannot be observed as opposed to the experienced utility (ex post).

We insist on the approach that the subjective wealth is in itself the expected utility of the commodities owned, opposed to the utility which is the utility of consumption of the moment.

Acknowledgements

We would like to express our gratitude to Lajos Izsó, Bálint Tremmel and József Kádár for the interesting discussions.

REFERENCES**

- Ayres R., Martinás K. (2006). On the Reappraisal of Microeconomics: Economic Growth And Change in a Material World, Edward Elgar
- Becker, Gary S. (1993). Nobel Lecture: The Economic way of looking at life. The Journal of Political Economy, 101(3), pp. 385-409.
- Bernoulli, D. (1738). Specimen Theoriae Novae de Mensura Sortis. Commentarii Academiae Scientiarum Imperialis Petropolitanae, Tomus V. pp. 175-192.
- Bruni, L., Porta, P.L.ed. (2008). Handbook On the Economics Of Happiness : Edward Elgar Publishing.
- Cartelier J. (1996). La monnaie, Dunod
- Edgeworth, F. Y. (1879). The hedonical calculus. Mind, 4, 394-408, cited by (Read 2004)
- Fischer F. M. (1983). Disequilibrium Foundations of Equilibrium Economics, Cambridge University Press
- Hellwig, M. F. (1993). The challenge of monetary theory. European Economic Review, 37, 215-242.
- Hodgson, G.M. (2012) On the Limits of Rational Choice Theory, Economic Thought 1, 94-108.
- Huxley, A., (1946) Foreword to Brave New World, second edition, Retrieved from www.mrtom.com/quotes/huxley_essay.htm
- Kahneman, D., Diener, E., & Schwarz, N. (Eds.). (1999). Well-being: The foundations of hedonic psychology. New York: Russell Sage Foundation

- Kahneman, D., Wakker, P. & Sarin, R. (1997). Back to Bentham? Explorations of experienced utility. *The Quarterly Journal of Economics*, 112, 375-406.
- Lyubomirsky, S. (2008). *The how of happiness: A scientific approach to getting the life you want*. New York: Penguin Press.
- Martinás, K. (2003). Is the utility maximization principle necessary? in: Edward Fullbrook (ed): *The Crisis in Economics*, Routledge, London and New York, p.203-208.
- Martinás K. (2010). Complexity and the Role of Interactions, in: *Complex Societal Dynamics: Security Challenges and Opportunities*, eds. K. Martinás, D. Matika, A. Srbljinoviæ, NATO Science for Peace, Series IOP, Amsterdam, p. 65-79.
- Martinás, K., Gilányi, Zs. (2012). Greatest Happiness Principle in a Complex System: Maximization - versus Driving Force. *INDECS*, 10, 103-113.
- Martinás, K., and Reguly, Á. (2013). Reappraisal of Rational Choice Theory. *INDECS*, 11, 14-28.
- Marx, K., (1867) *Capital*, Volume I.
- Mill, J. S. (1909, 1848). *Principles of Political Economy: With Some of Their Applications to Social Philosophy*. London: Longmans, Green, and Company.
- O'Boyle, Edward J. (2007). Requiem for Homo Economicus *Journal of Markets and Morality*, 10, 321-337.
- Read, D. (2004). *Utility theory from Jeremy Bentham to Daniel Kahneman*, London School of Economics Working Paper No: LSEOR 04-64.
- Samuelson, P. A. (1938). A Note on the Pure Theory of Consumer's Behaviour. *Economica*, 5, 61-71.
- Sen, A.K. (1987). Rational behaviour, in Eatwell, John, Milgate, Murray and Newman, Peter (eds), *The New Palgrave Dictionary of Economics*. London: Macmillan, 4, 68-76.
- Smith, V.L. (2003). Constructivist and Ecological Rationality in Economics, *American Economic Review*, 93, 465-509.
- Tatarkiewicz, W. (1962, 2010). *Boldogságról*. Budapest: Kossuth Kiadó. (in Hungarian)
- Thaler, R.H. (2000). From Homo Economicus to Homo Sapiens, *Journal of Economic Perspective*, 14, 133-141.