A Rational Irrational Man?

A man is a key subject of economics. "A man is irrational" - this opinion can be made from Allais paradox, risk aversion and other well-known fundamental problems. For a long time, this opinion was a barrier to proper solution of these problems and the development of the economics. A radically new way is proposed to solve them and remove this barrier. The way is the generalization of a breach of a term of contract.

Contents

Introduction. The problem of rationality
and the fundamentals of the economic theory

A man and man's decisions are the key subjects of economics and economic theory. An answer to a question 'whether a man is rational' determines, in a sense, ways of development of the economic theory. (Other names of the problem are: 'rational economic man', 'Homo economicus', 'economic human' etc. (see e.g. Henrich, J. et al (2001)))

The fundamental work of von Neumann and Morgenstern (1947) had given rise to promises of feasibility of the correct and, naturally, rational fundamentals of the economic theory. But Allais (1953) and other works had shown that real man's decisions are undoubtedly inconsistent with rational models. Moreover, "A man is irrational" is the most natural conclusion to be made from Allais paradox, risk aversion and other well-known fundamental problems. Due to Gowdy and Erickson (2004) "Looking back it is difficult to understand how the Walrasian model held sway for so long. Its two foundations include a model of behavior (Homo economicus) that makes every living human "irrational" and a model of production … ".

Can a theory that has an irrational key subject be rational? Such inconsistencies, first of all choosing between guaranteed and risky choices, toss a challenge to promises of developing rational fundamentals of the economic theory.

Since 1950–ies, choosing between guaranteed and risky choices is one of the important problems of the economic theory. This problem is one more barrier stopping the development of the game theory and economic theory as a whole.

There are numerous works devoted to this topic (e.g. "a brief overview of the "state of the art" in the theory of rational decision making since the 1950's" in Egidi (2005)). The examples of this problem are Allais paradox, risk aversion, equity premium puzzle etc. (e.g. Allais 1953, Allard et al 2003, Goetzmann and Ibbotson 2005, Schoemaker 1982).

This is a working paper from the series explaining main ideas of the new approach.

1. An irrational man in the scope of formal approach
1.1. The gain example

The simple example of the problem:

Suppose Somebody offers you to choose just one of the following:

    1A) A guaranteed gain of 99$.

    Or

    1B) A lottery:

        1B1) the gain of 100$ with the probability 99%

        and

        1B2) 0$ with the probability 1%.

(For the experiment accuracy, both 99$ and 100$ should be in 1$ banknotes. So 99 and 100 banknotes of 1$)

The mathematical expectations of outcomes A and B are exactly the same. But it is not the common choice of people:

In general, the first well-determined experimental fact (e.g., Di Mauro and Maffioletti 2004) is: at high probabilities, guaranteed gains are more attractive than risky ones. In similar experiments the obvious majority of people chose the guaranteed gain instead of the lottery one.

The first possible assumption to explain this fact, is "People cannot count". More precisely, "People count wrong".

But experiments were performed also among students, businessmen, etc. who obviously "can count". The results were the same.

1.2. The loss example

The second possible assumption to explain this fact, is "People can count, but they are afraid of risk".

Suppose you are to choose just one of the following:

2A) A guaranteed loss of 99$.

Or

2B) A lottery:

2B1) the loss of 100$ with the probability 99%

and

2B2) 0$ with the probability 1%.

The mathematical expectations of outcomes A and B are exactly the same also. But it is also not the common choice of people: the next well-determined experimental fact (e.g., Di Mauro and Maffioletti 2004) is: at high probabilities, guaranteed losses are less attractive than risky ones. In similar experiments the obvious majority of people chose the lottery loss instead of the guaranteed one.

1.3. A man is irrational. A barrier to the theory development.

The remaining possible assumption to treat these facts is "People are irrational". Or they are not always rational. Sometimes they like risk, sometimes they do not. There is no clear logic; no clear sense; no rationality. So there is a barrier to a rational theory development.

This barrier to the theory development was stated, for example, in amounts of highly qualified publications concerning this subject. The next diagram represents the approximate total amounts of publications "matching utility or prospect in Keywords & Title" in top journals: American Economic Review, Econometrica, Harvard Business Review, Journal of Economic Literature, Journal of Finance, Journal of Financial Economics, Journal of Political Economy, Quarterly Journal of Economics.
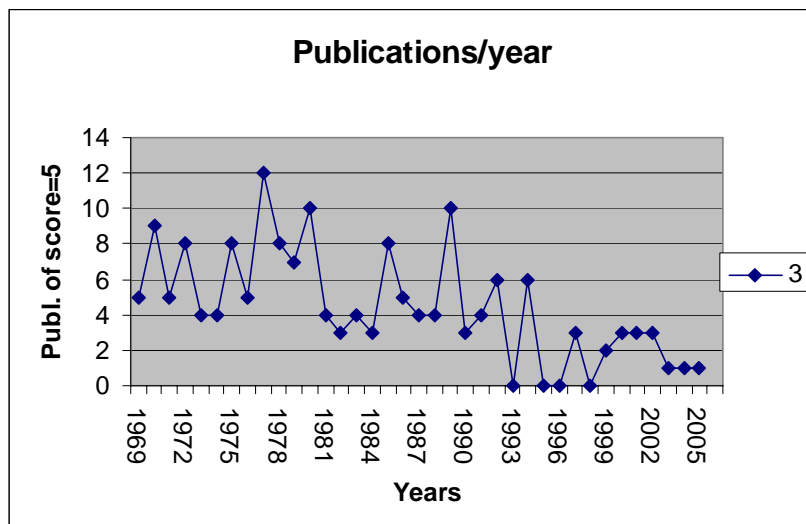
The diagram shows the evident decrease of the interest to utility and prospect theories in the years 1969 - 2005.

In general, can a theory, describing irrational phenomena, be rational, simple and clear?

In particular, can we see an increase of the interest to utility and prospect theories?

2. The new approach
2.1. Other source

Such a theory can be rational, simple and clear. The interest can increase.

Two steps are needed to achieve these results.

1. Suppose "People are rational" or "People try to be rational". This supposition allows the theory to be rational as "people try to be" and forces the theory to search for some other source of such "irrational" behavior.

2. Find this other source of such "irrational" behavior.

This step is the crucial one. To find the source of such common "irrational" behavior is the key to solve the problem.

The main idea of the new approach is that the possibility of arrangement infringements can be the source.

2.2. Definitions of the elements of the approach

In the scope of this topic, the basic terms mean the following:

An arrangement will refer to an arrangement, agreement, assumption, regulation, bargain, contract, plan, project, budget, etc.

An infringement will refer to an infringement, violation, breach, modification, disturbance, deviation, change, alteration, adding, etc.

A condition will refer to a condition, term, circumstance, characteristic etc. Naturally, the term "condition" means the essential, material condition.

An arrangement infringement will refer to an infringement at least one of the arrangement conditions that take place after the decision to fulfill this arrangement was made.

The most obvious example of arrangement infringement is a breach of a term of contract. An arrangement infringement is also the generalization of a breach of a term of contract.

An arrangement infringement possibility approach is a new approach, which considers the possibility of arrangement infringements.

The general idea of the approach is not absolutely new. In economic literature there are analogous or similar ideas (e.g. Quiggin 2005, Novarese 2002). In economic practice there is a well-known force majeure as an example of arrangement infringements.

The results of approach applications are consistent with economic experience.

The plan of publications is in Harin (2004). Current results of the approach are presented at www.harin.net.

2.3. The first result of the approach

The arrangement infringement possibility approach provides a radically new, in a sense contrary, view to phenomena based on comparison of risky and guaranteed choices.

Under the condition of the exact equilibrium of mathematical expectations, any influence of non-zero value will be considerable. Therefore, when comparing the risky and guaranteed choices in the same or almost the same conditions the possibility of an arrangement infringement should be considered.

The first result of the application and the first basic hypothesis of the approach: when a risky outcome has a high probability, arrangement infringement possibility can really reduce this probability. It can really lessen mathematical expectations (and, hence, real preferences) of such risky outcomes (or small deviations from standard ways of doing business) in comparison with the guaranteed outcomes (or standard ways of doing business).

This result may be useful, e.g., in estimating decisions of small deviations from guaranteed or well-known outcomes or ways of doing business, in predictions and planning of standard ways of doing business etc. The examples may be small deviations from a well-known style of goods or production; interventions into slightly new segments of market, banking and investment; situations with low level of risk.

2.4. "Ideal" and "non-ideal" economy and economics

The following analogy can be made:

Let us consider arrangements, agreements, contracts, plans. Can they be infringed, violated, modified?

If they cannot, economy and economics may be in a sense referred to as "ideal" ones. In such economics, all arrangements, conditions are "non-infringable". And all probabilities of outcomes are the "pure" probabilities, which cannot be modified.

If they can, economy and economics may be in a sense referred to as "non-ideal" ones. In such economics, all arrangements, conditions are "infringable". And probabilities of outcomes can be modified and are less than the "pure" probabilities. The values of these modifications are of the way up to the values of probabilities of arrangement infringements.

A "non-ideal" economics approach considers the possibility of arrangement infringements. It promises both the solution of fundamental problems of economic theory and the creation of new directions and fields of research.

3. Rationality of real experience
3.1. Real experience and the law of natural selection

What can be the source and the environment for these "irrational" decisions? Every person has his or her real experience. At least, it is true for everyone asked during the experiments cited here. This experience prompts him or her decisions that should correspond with the real world. If the real world is rational, the decisions should be rational as well. At least, if the real world is not evidently irrational, the decisions should not also be evidently irrational.

Indeed, the law of natural selection should select only the people who are consistent with the real world. So, the evidently irrational man should not make up the majority of people.

3.2. Persisting man

Moreover, according to Slovic and Tversky (1974): a man persists in such "irrationality". In their experiments, people made "irrational" decisions. After they made their decisions, the people were given the "rational" reasoning and arguments from different authoritative sources to prove the irrationality of their choice. The overwhelming majority of people didn't change their "irrational" decisions.

So, a man is not only "irrational". He persists in his "irrationality".

3.3. The explanation by means of the approach

As it was shown in Harin (2005), taking into account an arrangement infringement possibility provides a radically new approach to comparison of risky and guaranteed choices. The first result of the approach: when a risky outcome has a high probability, arrangement infringement possibility can really reduce this probability. It can really lessen mathematical expectations of such risky outcomes in comparison with the guaranteed ones.

General reasoning

Suppose an experimental or real situation having two outcomes: risky and guaranteed. At that, risky outcome has high probability. For example, suppose the situation described in chapter 1: the high probability lottery and the guaranteed outcome. The mathematical expectations of the outcomes are exactly the same. So, any influence, even infinitesimal one, can disturb the equilibrium.

Suppose a condition in the situation can be a little bit infringed, modified. For example, this condition is the outcome probability. The value of this modification is very small or infinitesimal.

The modification of the guaranteed outcome probability changes the nature of the outcome crucially (Indeed, the guaranteed outcome transforms to a risky one). The modification of the lottery outcome probability does not. Obviously, such modification can be made for the lottery more easily than for the guaranteed outcome. Obviously, this reasoning is not based on the assumption that outcomes are positive or negative, in other words it works both for gains and losses.

Therefore, the possibility of the arrangement infringement can reduce the probability of the lottery in comparison with that of guaranteed outcome. (One of the key points is that this reduction is not subjective but real)

This statement is obvious from the standpoint of real experience. Unfortunately; as it is shown in chapter 4.2., today it can not be exactly proved. Only hypotheses, assumptions or reasoning can be given. The above reasoning is one of the possible ones.

The explanation

So, the possibility of the arrangement infringement can reduce the probability and, hence, the mathematical expectations of the lottery in comparison with those of guaranteed outcome.

Therefore, we have:

The gain experiment: The values of the mathematical expectations are positive. The mathematical expectation in the case of the guarantee will be higher than that in the case of the lottery.

The mathematical expectation in the case of the guarantee will be the best.

People choose the best mathematical choice. Clear logic. Clear sense.

The loss experiment: The values of the mathematical expectations are negative. The mathematical expectation (not absolute value) in the case of the guarantee will be less than in the case of the lottery.

The mathematical expectation in the case of the lottery will be the best.

People choose the best mathematical choice. Clear logic. Clear sense.

So, in the scope of such example, people prefer the best mathematical expectations (the best expected values) in both experiments, in the cases of gains as well as in the cases of losses. People choose the best mathematical choice.

Clear logic. Clear sense. A rational man. A rational theory can be developed.

4. Nature of the approach

4.1. Nature of the approach. Approach elements as widespread economic events and fundamental concepts of economic theory

It is obvious that arrangements are widely used in economic reality. Arrangements, contracts between people, firms, firms and staff, buyers and sellers, governments and so on are examples of a wide variety of arrangements.

Since the theory tries to explain reality, there should also be the concept of arrangements in such theory. Risk, investment, insurance, micro- and macroeconomics, financial economics, financial markets, international economics, labor economics, public economics are examples of fields in economic theory where arrangements may be used and studied.

Examples of arrangement infringements may be failures of power supplies, natural disasters, sudden deterioration of health of people involved in this arrangement, criminal or terrorist interventions, dishonest behavior of people involved in this arrangement, alterations of interests of parts of this arrangement etc. The expansion of arrangement infringements is the expansion of, at least, these examples

There are theoretical and practical topics, such as insurance, which are specially connected with arrangement infringements. Moreover, all subjects of the economic theory connected with arrangements, may consider the infringements of them.

4.1. The nature of arrangement infringements.
The "Anything-can-happen" space

The precise analysis of such situations that include the consideration of arrangement infringements is rather complicated (if it is possible at all). One of the reasons of this complexity consists in the following:

When we consider arrangement infringements, the (mathematical) space of outcomes comes from the space of two (or few) discrete outcomes to the space of indefinitely large number of outcomes. Indeed, if we accept a possibility of arrangement infringements then we enter the situation where anything can happen and "Anything-can-happen" space. The statement "The probabilities of arrangement infringements can be very small" do not simplify the consideration.

Due to such reasons, in the situation when arrangement infringements are considered, a hypothesis, assumption or test model is often more pertinent then a try to give an exact proof.

5. Examples of practical application of the approach
5.1. Business project. A project manager's point of view

Suppose, there is an object, a project, for money deposit or investment of money or efforts. It may be a bank, a project of investing, a business project (industry, trade, banking, public and so on), an insurance company, etc. The object is characterized by a potential gain, profit, and by low or very low level of risk.

What net profit is sufficient in order to put your money and/or efforts into this project, this object?

Due to the influence of the arrangement infringement possibility, the probability of the project success and of the profit obtaining is less than in the case there is no arrangement infringement possibility. It lessens the expected value of the project profit.

So, if there is the arrangement infringement possibility, the net profit has to be more than in case there is no such possibility (The conclusion corresponds with the well-known facts).

Suppose, you are a project manager or a bank manager. When you estimate the real (distribution of) probability of the profit, you should lessen the probability value by the value up to the value of the probability of the arrangement infringement. Moreover, you should lessen the value of the success probability (return of the money) in the similar manner.

5.2. Business project. A depositor's, investor's, point of view

Suppose, you have got enough money to invest. "You have got money" in this case means (in a sense) the guaranty that you have got money. "You invest money in a project" means (in a sense) the risk of you losing the money. If you are a potential depositor (investor, State employee, statesman), you should assess and decide whether to deposit (to invest, to accept a public contract offer) or not. So, you should lessen the probability of the profit and return of money as if you were the project manager. Moreover, you should additionally lessen the values of the probabilities because you do not have all information the manager has.

Conclusions

A man is a key subject of economics and economic theory. "A man is irrational" - this opinion can be made from Allais paradox, risk aversion and other well-known fundamental problems. For a long time, this opinion was a barrier to proper solution of these problems and the development of the economic theory. A radically new way is proposed to solve them and remove this barrier. The way is to consider arrangement infringement possibility as the generalization of a breach of a term of contract. It helps to open new and rediscover old fields and trends for the research.

The elements of the approach are widespread economic events and fundamental concepts of economic theory. This proves a possible wide range of the role of the approach.

This is a working paper from the series explaining main ideas of the approach.

The paper shows when considering the possibility of arrangement infringement, the "irrational" behavior of people becomes truly rational.

The concept of the "Anything-can-happen" space is sketched.

The approximate total amounts of publications "matching utility or prospect in Keywords & Title" in top journals show the evident decrease of the interest to utility and prospect theories in the years 1969 - 2005.

The paper gives examples of practical application of the approach in relation to bank deposits, investments and business projects.

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