THE USE OF INDUCTIVE, DEDUCTIVE OR ABDUCTIVE RESONING IN ECONOMICS

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Abstract

Although we think that, regardless of the type of reasoning used in the construction of utterances, they acquire their scientific character at the level of the group that accept them and not at the level of the individual that develops them, we tend to support, at the of our study, the application of the inductive logic in the economic research.

Key words**:** *induction, deduction, abduction, economic scientific statements, economic research methodology*

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1. The causality in economics

We believe that the economic explanation involves, like any other scientific explanation, a causal approach. Applying Kant's (2009) philosophical approach on the realm of economics the following idea was often supported: if the objective reality remains unknown to us, knowledge being composed from a set of subjective representations built by using our senses in a predefined spatial and temporal framework, we can know either in economics or in other areas only the perceptible manifestations of this reality (i.e. the phenomenon - after Dinga, 2009).

But we can not agree with the approach presented before. If the reality exists but can not be known, we believe that there is no need to introduce "the phenomenon" between the objective reality and subjective representations of

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it, which is not really a new concept, but a synonym for the subjective representation. What we know are our subjective representations and not the perceptible (objective) manifestations of a reality unknown.

Even if there are a lot of methodological aspects that make the undertaking to provide economic explanations difficult, we do not consider that, logically, these represent arguments of the impossibility of explanation in economics. Where causality exists, it can theoretically be highlighted, and that means explanation. The higher the complexity of the issues examined the greater is the difficulty to reflect the causal influences within them, but the mentioned issue is related to the instruments used and not the logical possibility. So, logically, the economy may provide explanations and satisfies this condition to the same extent as all the other sciences do.

Regarding the predictive capacity of the economy we believe that this criterion of demarcation - used by some authors, but which we reject is not met not because economics is not a science, but because accurate prediction is, especially in the social sciences but also in science in general, logically impossible. We will argue below.

Given the evolving nature of the economy and of the other human actions, due to the inclusion of the subject in the object of study, the economic explanation refers to longer or shorter periods from the past. These explanations are valid, regarding the analyzed period, if the methodology enables the accurate identification of the causes of the analyzed aspects and of their influences and if their falsification wasn't successful. If the explanations are contradicted within the same system of values, scientific statements relating to the same subject and at the same time, more consistent from a logical standpoint, the falsified ideas are temporarily abandoned. That does not mean that a particular economic statement, invalidated at a time, is not true (in an absolute meaning). The only conclusion that can be drawn from the falsification of an economic scientific statement formulated within a system of values is that, at the time of the falsification, the statement is not truthful for the followers of that system of values and therefore will not be considered true, being adopted, for the moment, another valid statement (if there exists such a statement). At the moment of the initial acceptance of the statement, it surely seemed truthful.

Assuming they are not falsified, the economic scientific statements are explanatory models of the period to which they relate. Their use for prediction is not, however, logically possible, as they are built to characterize a punctual

situation in the past, which will not occur again in the future, due to the variation of the initial conditions. Using these models we predict the future assuming that the same initial conditions considered in the past will occur in the future, but knowing that this will not happen again (in the economy). Since more than eighty years, Morgenstern (1928) argued that in economics it is not possible to predict because the economy is self - defeating and understanding by that that the more reliable the prediction is, the faster the economic subject will adapt and therefore the prediction will destroy itself. Some recent studies performed on the U.S. capital markets support Morgenstern's idea showing that reaching certain limits for some indicators constructed for these markets in the past that showed the imminent change of the trend now reflect exactly the opposite, the continuation of the trend (Țăran - Moroșan, 2011).

In conclusion, these trends can only be the base for the construction of predictive models of the tendency. In the sciences of human action that is the only type of prediction logically possible. No social science can not or will not ever make predictions as accurate as the ones made by physics (Redman, 1993).

We think that natural sciences and economics differ in terms of their predictive ability. Although both could, logically, make universally valid predictions in invariant initial conditions, only the natural sciences benefit sometimes (but we do not know when, due to the effect of appearance), in formal terms, from these conditions. Unlike the economy, which is hampered in making predictions by the variability of the initial conditions and the effects of appearance, the natural sciences are affected only by the appearance.

We find that economics satisfies the only logical condition we identified as necessary for a discipline to be considered a science, namely providing causal explanations. Economics is, in this respect, a science like any other science. Realistically, the prediction is not logically possible in economics just as it is not possible, the acceptance of the appearance principle being given, in any other science. In this context we believe that Friedman's (1953) statement, that the positive economics should provide a system of general rules that can be used to make predictions, is an unattainable goal due to the lack of any kind of logical basis. Such a statement can not lead, we believe, than to the emergence of situations where the scientific nature of the economy is challenged.

We find that the economy is not a theoretical science but an empirical one, this being determined primarily by the variation of its initial conditions.

By non-theoretical we mean that "there is no chance to build a set of obvious statements with a small cardinal from which to derive, based on accepted rules, a set of logical sentences with a large cardinal (infinite, in principle). The explanation of this impossibility is that consideration of values in making decisions and economic action prevents the formulation of a finite and complete system of axiomatic statements for economics. [...] Economics must simply develop a bank of empirical sentences that are continuously the subject of the refutability of the actionable facts. Obviously, in this case, a sentence refutation would not generate the empirical refutation of the whole science, as it would happen if economics was a theoretical science. So, the disadvantage of being unable to provide an economy of thought (as theoretical sciences do) is offset by the fact that cognitive losses caused by refutation can be quickly replaced by new empirical propositions" (Dinga, http://www .edinga.ro/files/studii/8_ro.pdf).

The need for a paradigmatic framework applicable to the social sciences, different from those applicable to the natural sciences (see Hollingsworth and Müller, 2010), with emphasis on the concept of evolution and its derivatives, emerges as a natural consequence of our analysis so far.

2. The genesis of the economic concepts and the economic theory

If the case of the statements referring on primary observations, that do not belong, to the category of the scientific ones, the problem of accepting them at a time is relatively simple. A specific statement, representing a valid primary observation at a time, is a part of the system of values shared by a group of individuals, as it was interpersonally confirmed by using the unification mechanism which does not generates scientific knowledge as it does not involves the use of causal explanations. When a primary observation contrary to one already included in the system of values of the group is interpersonally confirmed and accepted by the group by the means of the unification mechanism, it replaces the one it denies.

For the economic scientific statements, however, their refutation never implies the permanent rejection of the contents of the statements. If another economic scientific statement accepted by the group and not falsified by primary observations becomes consistent by providing causal explanations in the new given context, this statement is adopted instead of the old refuted one. If, however, the primary observations made signal the appearance of anomalies in the construction of the known economic scientific statements and

there aren't other scientific competing statements in the same system of values that, in the light of new observations, become consistent, the refuted statements are not replaced. Their veracity is certainly called into question, but there are no competing statements to better explain the issues analyzed, so the refuted statements remain the best explanation that exists at a time. The researcher will analyze, in this situation, the primary observations used, the reasoning involved, the assumptions made, the tools used in the observation and any other issues that might clarify the anomalies arising in the economic scientific statements. When the listed items of such scientific statements can be adjusted in order to increase the consistency of the statements, this happens, and anomalies are removed. Where, however, the anomalies remain regardless of the adjustments made for a specific scientific statement within a system of values, the solution is the practice of the system of values with the highest rate of present progress, even if the practice is not accompanied by the acceptance of that system of values (Laudan, 1978). Thus, it is possible that an inconsistent economic scientific statement within a system will gain consistence within another system of values. Such a situation will cause that statement maker to adopt the new system of values, at the expense of the old one, only if the first values in the hierarchy of the group that already supports this system correspond to the first values in the hierarchy of the researcher in question and the value referred by the statement in question follows in the researcher's individual hierarchy immediately after the common values shared. If not, the researcher will not abandon its system of values in the favor of another, but will try to adjust it - in terms of content and hierarchy - as they will accept some of the values practiced.

But the subject of economics is the human beings pursuing its material exchange with the nature. The object of economics, the material exchange with the nature, is involving the integration of the human subject. Or, in these circumstances, making primary observations in economy is impossible. The economic disciplines involve the use of primary observations in developing their statements, but these statements are not related to the object of study of economics. Primary observations always refer to the natural laws, while the object of study of economics is the relationship between man and nature. Economic empirical statements are, therefore, always scientific, as opposed to empirical statements in generally which include the primary observations (which, according to our approach, are not scientific).

An economic theory is, in our view, a set of complex economic empirical statements - unrejected by the known laws of nature at a time and which combine these statements with your personal assumptions and beliefs of the group - characterized by a high degree of consistency and capable to provide causal explanations (within a system of values) on the object studied. Those economic scientific statements that represent indivisible units of an economic theory are the economic concepts.

3. The inductive, deductive and abductive reasoning in economics

We think that the only element that has to be considered from a logical standpoint when it is desired to analyze a scientific statement for its possible acceptance within a group with a common system of values is how that statement stands the test of falsification. The reasoning used in the construction of a scientific statement may be the result of inductive, deductive, or abductive logic, as well as the statement may be the result of a revelation. As long as it has been tested and factual denial does not exist, the statement is scientific regardless of the logic used to compile it.

The different types of logical reasoning mentioned before, however, lend themselves to a lesser or greater extent of use in the various fields of science. Next we analyze the importance that the induction, deduction and abduction have in obtaining scientific knowledge in economics.

As we mentioned before, economics is an empirical science, so it is not able to identify a small number of axioms that can be derived, by using a set of rules, in a large number of logical sentences. We will try to analyze the effect that this feature of economics can have on the types of logical reasoning already mentioned.

We begin with the induction. This is an inference from singular statements (descriptions, observations, experiments, calculations made for certain sizes) to general statements. When using the inductive reasoning, the similarities and / or differences observed are extended, thereby characterizing the overall population. Such reasoning is used very frequently, but the question we try to answer here is whether the use of inductive reasoning in economics is better justified than the appeal to the other forms of reasoning. Some initial conditions that are in constant change cause difficulties in the generalization of particular observations. The fact that all the earthquakes that have occurred up to a point (or, for example, 80 % of them) have decreased

the country's currency exchange rate, does not mean this will happen after that moment, too. One of the main disadvantages encountered when using inductive reasoning is also, one of its main advantages, namely that a general statement built using the foundation of this reasoning is based on observations made before. When the researcher chooses the induction, falsification, at the individual's level occurs within the inductive reasoning. Of course, the statement will acquire scientific nature, as we showed before, only with its acceptance within the group, and such acceptance cannot occur before attempting to falsify it. A falsification at individual level is therefore unnecessary. However, given the evolving nature of the economy, we believe that an economic statement prepared using the inductive logic determines increased confidence in its veracity from its own creator.

The deduction is a form of reasoning that yields a conclusion of two or more judgments given, called premises, one of which must be universal. The conclusion results from the premises and is true if all the premises are true (according to the majority of authors). But no empirical statement accepted at a time, in a group with a common system of values, can have a universal character. The principle of appearance preclude the universal generalization and thus implicitly excludes any possibility to deductive reasoning (in the sense described) in science. In economics there is an important argument for rejecting the deductive statements, and this is variation of the initial conditions. As I mentioned before, the manifestation of the universal laws is not possible in the economy, because the object of economics adapts to the results of the researches conducted in the field. By replacing the term "universal" used in the definition of deduction, with "universally accepted in the group" and "true premises" with "testable premises", the situation changes. Reasoning that yields a conclusion from several valid premises, one of which is being universally accepted, is sometimes called deductive (but is not deductive in a logical sense). Such reasoning, however, should be the subject of falsification since its enunciation, because between the issue of the judgment and the moment of the observation of the premise, it is possible that the premise may have already changed.

Abduction is an inference from certain observed data to a hypothesis about a structure or process that could explain the data. In contrast to the induction where by using specific observations it is found that there is a feature that characterizes the level of the entire population, abduction appears when using one or more events that are filtered through the statements already

known and may be linked to those situations, to find the best explanation for their occurrence. For example, noting the lack of food in grocery stores in a particular area and knowing that drought usually generates food crises in the area, a researcher can conclude using an abductive reasoning that it is most likely that drought determined that specific lack of food. Abductive reasoning assumes the existence of possible alternative causes. The reliability of the researcher utterances constructed by using abductive reasoning is lower than that obtained as a result of inductive or (false) deductive reasoning, because the researcher knows that there are several possible explanations that can lead to the observed outcome and chooses the best of them (in his opinion). The attempt to falsify the statement in the group is absolutely necessary in this situation to give it a scientific character.

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