

Logic Analysis of Economic Forecast

Chicheng Huang

School of Marxism Institute of Logic, Xuchang University, Xuchang 461000, Henan, China.

Abstract: Since ancient times, prediction has existed in human activities in different forms, which is the instinctive reaction of human survival, and logic is the rational thinking activity of judgment, reasoning and demonstration in human brain. With the development of society, prediction has experienced a scientific process from ignorance relying on intuitive experience to logical reasoning, and formed prediction logic. In the field of economic activities, prediction logic has its unique logical characteristics. On this basis, qualitative and quantitative prediction methods are produced. The combination of the two prediction methods reflects the alternation of different logical reasoning processes, and also makes the economic prediction conclusion more reliable, so as to avoid risks and improve the decision-making level.

Keywords: Logical; Forecasting Logic; Economic Forecasting

In the field of logic, there are clear meanings and differences between pure theoretical logic and applied logic. In particular, it should be noted that applied logic refers to the theoretical process of abstract logical characteristics in specific professional disciplines, such as military logic, quantum logic, medical logic, litigation logic, etc. Economic forecasting logic also belongs to the category of applied logic. It is not the application of existing logical knowledge in economic forecasting, but abstracts its unique reasoning form and demonstration process from the economic principles, theoretical basis and process methods relied on by economic forecasting. Starting from the relationship between prediction and logic, this paper follows the process from general to special, and analyzes the logic of economic prediction.

1. Prediction and logic

In ancient China, ancestors used tortoise shells and animal bones to ask for divination and infer disasters and blessings. In the west, the ancients predicted floods, weather and even wars between city states by building temples and offering sacrifices to gods. These judgments based on personal observation and experience remained at the level of perceptual knowledge, belonging to low-end thinking activities, and conducted ineffective reasoning, which is essentially a manifestation of ignorance. Logic is the dynamic response of the objective world in the human brain. It is a means for people to understand the world and transform the world. It has the nature of a tool. Logic represents rational thinking, promotes the movement of concepts to judgment and reasoning, and produces various reasoning forms such as induction, deduction and analogy. It can be said that the emergence of logic often represents the improvement and leap of people's cognitive ability. Because "logical thinking can surpass intuition to grasp the objective object, phenomenon to grasp the essence, individual to grasp the general, accidental to grasp necessity, and surpass concrete to grasp abstraction," therefore, it has the function of prediction, and only logical prediction can guide people's practical activities, which has practical significance.

2. Prediction logic

The combination of prediction and logic is not a simple superposition process. The prediction process obtains new knowledge through the abstract reduction of logic, produces an effective reasoning form to infer the future

or unknown state according to the mastered knowledge, and forms the thinking activity of prediction logic.

Prediction logic has a solid theoretical foundation. The first is the principle of knowability. The epistemology of dialectical materialism holds that there is a law of development and change of knowable things in the objective world. People reveal the essence of things, solve subjective and objective contradictions and grasp the internal change law through the repeated cycle process of practice cognition re practice re cognition. According to the principle of knowability, people can summarize the law and infer the future development trend through observation, judgment, analysis, reasoning and demonstration. The second is the principle of analogical reasoning. Analogical logic refers to the logical reasoning that two or two kinds of things are the same in some attributes, so as to deduce that they are also the same in other attributes. Its model is:

Object	Attribute
A-----	a,b,c,d
B-----	a,b,c

So, B may have D

Dialectical materialism holds that objective things are not isolated, but there are universal connections, the changes of things are coherent, and there are similarities and correlations between things. It is the existence of this similarity that can transfer the structure, knowledge and development mode of one kind of things from one to another. The third is causality. In practice, people not only repeatedly see that one phenomenon will inevitably lead to another phenomenon, but also create necessary conditions to achieve the expected result according to the understanding of causality. That is, the antecedent of the cause can be derived as the consequent of the result. It is worth noting that we cannot mechanically think that the same cause will inevitably lead to the same result. The characteristics of one cause and multiple results, multiple causes and one result and mutual causality are common in the real world. Therefore, the prediction logic reflects a generalized probabilistic causality. In the predictive reasoning logic, its reasoning cannot be simply considered from special to general, general to special, or special to special. Instead, while considering the horizontal comparison of things in space, it pays more attention to the vertical changes of things in time, and deduces the particularity of things in the future while recognizing the generality of things in the past. The latter conclusion is not only a new thing and knowledge, but also an uncertain result. Therefore, the common reasoning of prediction logic is the alternating use of induction, deduction, analogy and even trend extrapolation.

3. Economic forecasting logic

Economic forecast is a probabilistic or fuzzy inference of future changes in the economic field, local or overall, macro or micro, short-term or long-term, under the guidance of economic theory and using modern computer information technology. The logic of economic forecast is a science about studying the logical characteristics and reasoning relationship of propositions in economic forecast. In the fields of physics, chemistry and other natural sciences, the internal laws are invariable for a long time. If there is no major breakthrough in basic scientific research theory to correct the previous theories or the extreme changes of the external environment, these laws will always be followed. However, the time invariance of the law of social business behavior such as economic activities is very short. The variability of this economic law mainly comes from three aspects. First, the innovation of economic activities and the changes of the whole economic system, such as the emergence of new financial derivatives and the overall changes of domestic and foreign economic environment, which will bring about economic behavior that has not happened before. Second, the randomness of economic activities of micro individuals such as individuals, enterprises, financial institutions and even the government, such as different personal abilities and wishes, different responses to the same thing, etc. Third, the interaction between economic subjects and objects. The economic subject's expectation of the future itself will bring changes in the subject's behavior, thus affecting the operation law. Based on the particularity of the above economic laws, the economic forecast adopts the method of combining qualitative analysis and quantitative analysis, and uses a variety of logical thinking modes to infer the future.

3.1 Qualitative prediction method

Qualitative prediction method is a judgment and prediction made by individuals based on their own

background knowledge and experience accumulation and usage of logical thinking. It has certain subjectivity. The common prediction methods include subjective induction method, group prediction method, Delphi method and so on. Subjective induction is an incomplete inductive thinking logic, which can be regarded as a simple enumeration method in traditional inductive reasoning. Although it is simple, fast and efficient, its conclusion is probabilistic and unreliable because it draws general new knowledge only from personal experience knowledge. Group prediction method improves the reliability of prediction conclusion by increasing the number of observations and expanding the scope of investigation, but it still belongs to the idea of enumeration and inductive reasoning. Delphi method, also known as expert investigation method, is the most reliable method in qualitative analysis. The main process is to obtain the opinions of industry experts through anonymous letter inquiry, and then feedback the results to the experts participating in the letter inquiry after collection, statistics and analysis. Each expert reconsiders its original answer according to the anonymous opinions of other experts. After several rounds of repeated process, a consensus opinion can be obtained, so as to obtain more reliable prediction results. Experts will think about causality and give explanations when giving conclusions. Therefore, it is a kind of scientific inductive reasoning. In short, the logical characteristics of qualitative reasoning determine that it can only be used as an auxiliary method of quantitative prediction.

3.2 Quantitative prediction method

Quantitative prediction is a prediction method based on economic data and the relationship between economic variables to establish a prediction model and calculate the future value with a mathematical model, mainly including time series method, causal analysis method and so on. The time series arranges the statistical variables at the same time interval according to the sequence of occurrence time, finds their laws and characteristics with time through mathematical methods, and establishes a time series prediction model for statistical analysis, so as to extend the time trend outward, and predict the future economic change trend. This method mainly relies on the logical thinking of trend extrapolation to avoid falling into the logical trap of mechanical analogy and improve the reliability of prediction conclusion. The traditional time series analysis only pays attention to the data itself and ignores the causality of economic variables. After analyzing the relationship between prediction objects and relevant influencing factors, the causality analysis method abstracts the change law, establishes a regression model representing causality, and then comes to the conclusion. It is a more essential prediction method for the law of economic development. This method not only embodies the thinking characteristics of trend extrapolation, but also alternately uses scientific induction, hypothetical deductive reasoning and other thinking methods.

In short, various methods of economic prediction reflect different logical thinking activities. The combination of qualitative and quantitative methods and the alternating use of inductive logic, deductive reasoning and analogical reasoning will help to improve the reliability of prediction conclusions and provide decision-making basis for people's production and life.

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