On the Role of Applied Mathematics in Economics

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Abstract: Applied mathematics plays an important role in the research of economics. Applied mathematics can promote the efficient treatment of complex economic problems, and can also encourage economists to produce more inspiration, which has played a significant role in promoting the progress of economics. This paper analyzes the thought and hypothesis of applied mathematics in economics, points out the important role of applied mathematics in economics, and formulates the matters needing attention of applied mathematics in economics, hoping to reflect the role of applied mathematics efficiently in economics.

1. Introduction

With the continuous improvement of applied mathematics theory, and the vigorous development of economic research activities, the applied mathematical tools are increasing in the process of economic research activities, which greatly improves the scientificity of economics and promotes the research activities of economics to a more precise direction. At present, in the process of carrying out economic research activities, the important role of applied mathematics is irreplaceable. It is necessary to strengthen the research activities of applied mathematics in economics and accelerate the development of economic analysis activities.

2. Thought and Hypothesis of Applied Mathematics in Economics

2.1 Emphasize Static, Ignore Dynamic

The thought of equilibrium clearly points out that the essential characteristic of economic operation activities is to pay attention to the static equilibrium situation, pay very little attention to the specific economic operation process, and pay no attention to the uncertain factors. In the view of western economics, all economic activities are centered on equilibrium, which is an objective existence with certainty. Even if the specific economic operation lacks stability, it will be attributed to equilibrium in the end. Under this premise, in the process of studying western economics, it is unnecessary to consider complicated and dynamic factors, such as interpersonal system, history and culture. In the related research activities, we only focus on the static relationship between things and between people and things, without considering the relationship between people. In the concept of equilibrium, there is no difference in history, culture and system, which is very similar to the laws of physics. In western economics, when it comes to the research on the law of a certain quantity change, it is usually assumed that other conditions are unchanged.

2.2 Pay Attention to Rationality, Reject Irrationality

In specific economic activities, historical, cultural, psychological, economic and other factors will affect people’s behavior. These factors are extremely cumbersome. In other words, rational and irrational factors work together. Applied mathematics is mainly responsible for carrying out rational analysis activities. Rationality, logic and certainty are the same, and uncertainty will be eliminated. In the process of analyzing human economic behavior, western economics highly praises the influence of rational factors on people’s behavior, and does not involve the influence of irrational factors. This idea can be fully reflected in the basic assumptions of western economics, such as the

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law of supply and demand, rational expectation, rational broker and so on. Thus, in economics, the hypothesis related to complete rationality is at the core.

2.3 Pursue Certainty, Avoid Uncertainty

The certainty of theoretical content promotes the development and progress of natural science to a great extent. As for the method, it emphasizes the static, ignores the dynamic, pays attention to the rationality, rejects irrationality, and focuses on the practical role of the correlation between irrationality and hypothesis. In essence, it is the pursuit of certainty in economic theory, which lays the mathematical application foundation of economic theory from the aspects of belief and method. In the process of practical research activities, its more in-depth performance is the pursuit of deterministic form in theory, the analysis and conclusion of geometric and mathematical model form. The acquisition of these deterministic forms needs to adapt to all mathematical methods, and should also ensure the scientificity of all assumptions, even if the assumptions do not exist in real life.

3. Important Role of Applied Mathematics in Economics

3.1 Enhance the Scientific Nature of Economics

Applied mathematics belongs to the category of scientific methods and research tools. In the process of economic theory deduction, applied mathematics has the function of methodology, and can enhance the scientificity and accuracy of economic prediction and decision-making activities through strict deduction and expression activities. In the process of specific work, such as the expression of economic phenomena, the analysis of economic relations, applied mathematics can play a good guiding role through their own rigorous logic, and promote the standardization of relevant activities to be strengthened. After clarifying the economic theory, through its practicality, we can effectively carry out the test activities of economic theory. For the theory that is contrary to the facts, we can also carry out a new demonstration at the first time, and revise the irrationality, so as to strengthen the scientificity of economic discipline, provide scientific methods for the derivation of economic theory and fully embody its scientific spirit. In essence, economics highly values science and accuracy. Therefore, applied mathematics can meet the needs of the development of economics and play an important role in promoting the progress of economics.

3.2 Strengthen the Richness of Economics

Economic society is in constant change. With the rapid progress of economy, the contingency of economic phenomenon is more prominent, usually using the random form to determine the value of economic variables, which makes the research activities of economics more complicated. However, in applied mathematics, its mathematical thinking is relatively simple, which can promote the above problems to be properly dealt with and improve the conciseness of economic research. In economics, with the expanded application scope of applied mathematics, the discipline types of economics are more diversified, and the combination form between disciplines is also developing in a more diversified direction. The logical characteristics of applied mathematics will also play a good role in regulating the development of economics and enhance the integrity of its theory. Through the guidance of applied mathematics, the systematicness of economics can be enriched.

3.3 Make Economics More Mature

In the process of economic research activities, the applied mathematics can not only promote the generation of economic theory, but also accelerate the development of economic communication activities and strengthen its communication efficiency. In many economic problems such as decision-making improvement and resource development, the use of applied mathematics can make the problem-solving activities more concise and improve the accuracy of the problem results. Many economic theories and economic problems are based on applied mathematics. If applied mathematics is separated from economics, it is likely to evolve into economic philosophy, and it is difficult to apply theory to practice. With the help of applied mathematics, economics has become

more mature. Applied mathematics has played a good role in promoting the progress of economics towards a more sound and mature direction.

4. Notes of Applied Mathematics in Economics

In the analysis of economic activities, mathematics is highly effective and plays a crucial role. Using applied mathematics can make some complicated economic problems more abstract. It can carry out relevant demonstration activities based on the mathematical perspective, and promote the development of economics. However, economics has not only mathematical attribute, but also prominent ideological features. Therefore, in economics, applied mathematics also has high limitations. In the process of problem analysis, it is necessary to base on the framework of economics system. Only in this way can the real function of applied mathematics be reflected. The specific situation is mainly shown as follows.

First, economic problems are not just a simple superposition of mathematical problems, and the work of digital transformation is not aimed at various economic elements. In the process of carrying out economic analysis activities, we should systematically grasp that all factors will affect economic research activities, such as legal morality, cultural philosophy, social system, etc., but the degree of influence is different.

Second, in order to ensure the scientificity and reliability of the obtained economic theory, in the process of economic development activities, the research vision of economic theory should be at the basic position. Only by scientifically controlling the essential characteristics of economics, can we find out the actual economic laws, and then enhance the rationality of the economic conclusions. In this way, we can also make the proposed assumptions in specific conditions, and carry out relevant research activities according to the assumptions of specific conditions through relevant mathematical methods, so as to enhance the effectiveness of economic problem treatment measures and ensure that economic problems are dealt with scientifically.

Third, in the process of studying economics, applied mathematics is not unique. In order to promote the development of economics to become more diversified, in the process of analyzing specific economic problems, we should not only need mathematical modeling, but also carry out relevant selection and application activities according to the specific situation of knowledge content of other disciplines, such as biology and physics, so as to enhance the scientificity and flexibility of problem analysis activities, make the research direction of economics more diversified, promote the development of economic research, and make economics more perfect and mature.

5. Conclusion

In economics, applied mathematics has an important foundation, and its application range is very wide, which plays a good role in promoting the development and progress of economics. With the rapid development of market economy, the relationship between applied mathematics and economics becomes closer. In the research of economics, it is more necessary to assist with applied mathematics. Therefore, in the process of carrying out specific work, we should pay great attention to the important role of applied mathematics in economics, carry out the learning activities of applied mathematics scientifically and understand the methods and essence of it. At the same time, we should also pay more attention to the economic methods and ideas. Only in this way can we further study and analyze the complicated economic phenomena, so that they can better serve the economic life.

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