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Exploration of the Methods of Using Mathematics in the Financial Economy of the Enterprise

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Abstract: As a matter of fact, with the development of the times and the advancement of economic system reform, the activity of China's financial market has increased. As a consequence, the financial and economic development is facing new opportunities. In this case, it is necessary to give full play to the role of economic mathematics knowledge. Enterprises in their own business development, need to focus on how to strengthen the financial and economic analysis, a comprehensive display of the advantages of economic mathematics, the use of economic as well as mathematical theories, the financial and economic value of the enterprise for a period of time, usually involving the derivative, differential, function models and other knowledge, can provide support for the formation of the results of the enterprise's financial and economic analysis, which in turn helps enterprises to adapt to the changes in the financial market in a more comprehensive manner contemporarily.

Keywords: Mathematical methods, economic mathematics, financial economy

1. Introduction

Mathematics is very rich in content, based on the theory of economic mathematics, the formation of various mathematical models and algorithms, not only with professionalism, but also practicality [1-3]. Financial and economic analysis can provide enterprises with more data and information support, to meet the needs of enterprises in line with the development of the times, help enterprises combined with the changes in the financial and economic market, targeted response to financial and economic issues for the long-term development of enterprises to bring a positive impact on the realization of the healthy and stable development of the enterprise's financial and economic development is of great significance [4].

Finance is mainly a study of money and its related activities, and changes in these activities can usually be measured and reflected by data, so the process of changes in monetary activities can be measured and expressed through mathematics, and the patterns and changes in the process of monetary activities can be studied accordingly. Quantitative analysis and mathematical modelling can help financial professionals have a more intuitive understanding of monetary activities, and make accurate calculations of exchange rate changes, interest rate changes, and investment yields, so that the results of financial analyses can be more accurate, and thus help related entities make optimal choices and decisions [5, 6].

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Finance comprises a large number of factors and the complexity of the relationships between these factors makes it more difficult to express them directly in writing. Mathematics teaching itself is very abstract, associated with more specialized terminology skills, so the development of the financial field can use mathematics to know the functional relationship between different variables, so that the complex system of knowledge can be presented more objectively. Finance combined with the logic of data to discuss and explain the financial theory, can further expand the influence of the concept of finance, but also more professionally persuasive.

The development of financial markets is subject to a high level of risk, which means that financial market players are very concerned about how to improve risk control. Financial markets may provide investors with financial income in the long term, but investors need to consider how to prevent financial risks. The use of mathematical logic can be used to understand the specific relationship between the different factors involved in financial activities, to improve the investment program based on the analysis of the evolution of the model, to improve the scientific nature of investment decision-making, and to achieve a higher return on the premise of keeping the risk as low as possible.

2. Mathematical theories with more applications in the field of finance

At present, enterprises in the process of financial and economic activities, the use of mathematical models is very common and common, such as profit function, product demand function. The use of derivatives can better develop the function calculation and provide effective support. The derivative can be used as a basis for clarifying the transformation rules between variables and constants. Enterprises in their own business development, can take an effective analysis of the way more comprehensive knowledge of the current state of business operations, and quickly get to know and enterprise investment and development of the minimum cost required, so as to improve the level of economic activity organization and development [7, 8].

In recent years, enterprises more often use the derivative as the main financial and economic activities tools, economic elasticity, economic costs and other analytical indicators, to efficiently complete the financial analysis and produce objective financial and economic activity reports. Enterprises can sort out the market supply and demand relationship, understand the impact of supply and demand changes on prices, and use market research to know the purchasing preferences of target consumer groups, so as to formulate appropriate product prices, and lay a solid foundation for the promotion of various financial and economic activities of enterprises.

The substantive concept of differential equations is the return of the specialization relationship, which consists of the independent variables, differentials, unknown functions and other basic elements. Enterprises in the organization of financial and economic analysis, by the complexity of the function relationship, mathematical field knowledge of professionalism and high impact, analysts in the evaluation of variables, need to start from a global perspective, sorting out the specific relationship between the independent variable and the dependent variable, but this work is often more difficult. Usually, differential equations can be used to analyze the financial economy, taking the independent variables as the basis, and then showing the coordinated effects corresponding to the dependent variables. The financial economy of the enterprise involves a large number of elements, and the correlation between the variables is complex, and all of them will have a significant impact on the function. Enterprises analyzing financial and economic activities can introduce the concept of differential equations to calculate the relevant variables, so that they can be transformed into constants through certain rules, in order to improve the professionalism and scientificity of differential equations. For example, when calculating approximation values, the principle of differential can be used to make effective derivation calculations and improve the effectiveness of analyzing financial and economic activities.

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As a crucial component of the mathematical system, functions play a very important role, and the precise grasp of the inner connection is the most significant feature of functions. When carrying out economic and mathematical analysis, enterprise staff need to refer to the characteristics of financial and economic activities, make an overall analysis of the function correlation, in order to improve the financial and economic activities of enterprises in the environment, and effectively respond to the actual problems faced by the development of enterprise management. Enterprises need to take the market supply and demand relationship as an entry point for analysis, actively collect market information, grasp the financial and economic activity information, to provide support for the formation and use of function models, which can further improve the ability of enterprises to adapt to changes in the market environment. Under the support of economic mathematical model, enterprises look at their own financial and economic activities to be analyzed, to understand the main reasons for investment gains and losses, so as to further optimize the business development program, improve the return on investment ratio, so that the enterprise production link and sales link better convergence. In the use of the function, the dependent variable selection can be used as a supply function, in the actual function operation, there is a positive correlation between the price and the supply, and there is a negative correlation with the market demand [9, 10].

In the economic mathematical system, limit theory can fully meet the real needs of financial and economic analysis, is a practical and operational method, especially in the enterprise economic management activities play a very important role. Enterprises can consider the use of limit theory in business development, the past development history of enterprises, future development planning for combing, in the discussion of financial and economic activities, limit theory can be used as a support for the operation of the economic mathematical model, the associated content generally includes the calculation of annuities and compound interest calculations, which not only can guarantee the rationality of the enterprise's financial calculations, but also help enterprises to better cope with the needs of the financial and economic development. Such as the current stage of the enterprise in the organization of financial and economic activities, the limit theory can clarify the calculation direction, grasp the input cost and product value of the correlation between the existence of the marginal problem is also explored more, can be more scientific to improve the effect of enterprise cost control. In the cost exploration link, enterprises need to evaluate the return on investment in commodities, if the average cost exceeds the marginal cost, then enterprises need to adjust the production and management plan, all-round improvement of their own production capacity. If the average cost is lower than the marginal cost, the enterprise should optimize the product structure, reduce the production volume of products to improve the return on investment ratio.

All investment activities in the financial market have risks, but there are differences in the degree of risk, the scope of risk impact, and the probability of risk generation. For enterprises, different ways, different projects do not have the same rate of return on investment, so enterprises need to use the theory of probability to analyze the dynamics of the financial market. First of all, according to the content of probability, the investors how to implement the project investment analysis, the specific indicators include economic efficiency, profit and loss ratio, etc., so that the investors as much as possible to improve the investment return ratio; Secondly, probability can be informed of the different market investor demand preferences, and then the formation of the appropriate investment advice, which means that different types of risk preferences of the customers selected by the differences in the investment program, and the understanding of risky investment also This means that clients with different types of risk preferences select different investment options and have different understandings of risky investments.

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3. Specific applications of mathematical knowledge in the field of finance

With the continuous improvement of the market economic system and the overall economic development downturn, enterprises are prone to temporary operational difficulties, such as insufficient funds and single marketing channels, after increasing production capacity or intensifying competitive pressure in the industry. Usually, the enterprise will propose to the commercial bank loan cooperation, and commercial banks for risk avoidance considerations, require enterprises to provide collateral, and evaluation of the business potential, credit, etc., in order to minimize the business risk. At this time, the commercial bank will generally make an assessment of the asset items held by the enterprise, including the investment return rate, liability structure, net profit, etc., and form a corresponding assessment report. When conducting national economic assessment, the investment can be first added related analysis, such as the analysis of the national income rate, investment tax, etc., to take a vertical comparison to understand the development prospects of the project. Not only that, for loans with a longer term, it is also necessary to analyze and forecast the future annuity and compound interest situation. Since the enterprise loan and bank lending is a definite amount, it is necessary to adopt the form of quantitative analysis in the process of financial project appraisal.

Financial investment will inevitably appear corresponding risks, and most of the risk of interest rate changes, stock price changes are associated. This means that market investors need to raise awareness of risk aversion, and when implementing financial investments, they need to evaluate the risk of investment projects from a number of aspects in order to understand the expected return on investment ratio. Usually, market investors can calculate the probability of risk with the help of sub-linear mathematical expectation model, although this work will be associated with bond yields, stock prices and other factors, to build a suitable analytical model, as far as possible to sort out the relationship between different risk factors, so as to obtain a relatively objective and accurate risk evaluation results. However, the development of the financial market is subject to a number of uncertainties, which suggests that the implementation of quantitative investment risk assessment may still result in assessment errors, so it is generally necessary to combine probability theory, variance calculation and other factors to obtain the risk range, based on which to determine the investment return or investment loss, presenting the degree of investment risk that the investor may be exposed to, so as to form the corresponding risk prevention measures.

In the past, researchers generally used stochastic dynamic models as the basis for analysing financial market movements. However, from the existing experience, such models are prone to obvious errors, and they usually only predict the approximate trend, but cannot present the range of price fluctuations in the financial market, and it is difficult to provide investors with objective information as a reference. In order to effectively deal with this problem, people in the financial sector have applied the concept of calculus to financial analysis, combing the uncertainties in the market to produce a relatively accurate range of market price fluctuations, enabling investors to improve the rationality of decision-making, and not only this, but through calculus calculations, it can also help investors to detect abnormal price movements in the financial market in a timely manner, so that investors have enough time to take measures to cope with the risks that may occur. Calculus can also help investors to detect abnormal price movements in the financial markets in a timely manner so that they have enough time to react to possible risks.

In financial market investment, there is often a positive correlation between risk and return, with high risk and high return occurring at the same time, so some market investors who have a tendency to make risky investments are more concerned about how to utilize high-risk means or high returns. In the formation of financial investment decisions, investors based on mathematical modeling of the relevant projects to implement risk measurement, so that the investment risk can be controlled in an acceptable range, in order to prevent large economic losses, the normal operation of the investor or

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the formation of a huge impact on life. Investors not only need to carry out risk assessment, but also need to take into account the actual investment needs and investment preferences, the future development of the financial market, investment project dynamics to understand, analyze the expected return on investment, and then form appropriate investment decisions. At the overall level, stock investment is a high-risk and high-yield investment method, which is concerned by many market investors, and investors need to use mathematical knowledge to analyze the trend of stock price changes in order to obtain stock investment decision-making solutions. A typical example is shown in Fig. 1 [11].

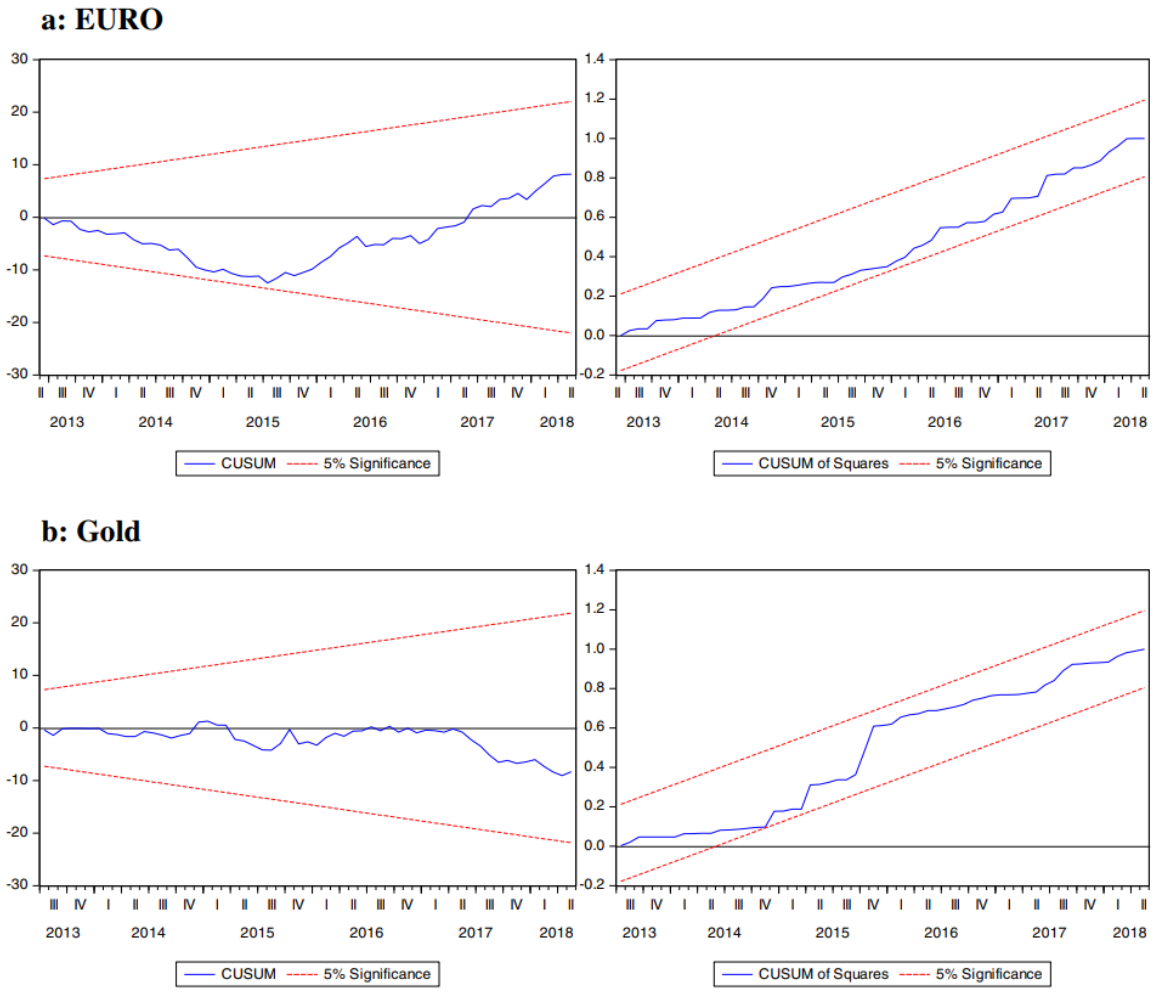

Figure 1: Analysis results for Euro and gold [11].

4. Conclusion

In conclusion, mathematics is a highly applied, widely used analytical tools, mathematics by virtue of its rigorous data analysis and accurate data calculation, along with the development of modern economy and finance, in the future, the application of mathematics will become more and more extensive and in-depth, artificial intelligence, big data, AI, and so on, are not based on mathematics as the basis for the development of the use of mathematical tools, in order to use mathematics to make more scientific decision-making support for the future of the development of finance. Use the tools of mathematics to make more scientific decision-making support for the future development of finance.

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