

# Application of Mathematical Modeling in the Field of Quantitative Investment and Risk Management

Zhichen Cheng\*

Kunshan High School of Jiangsu Province, Kunshan, Jiangsu 215300, China

\*chengzc20071228@163.com

## Abstract

**With the continuous improvement of residents' consumption level and the continuous accumulation of personal deposits, in order to achieve the preservation and value-added of assets, personal investment plans have attracted more and more attention. This paper collects and analyzes the data of personal and enterprise investment products, studies the characteristics of various personal or enterprise investment and financial products, and builds a model for risk assessment. The share allocation of investment products for individual investors has established a set of models to help individuals carry out portfolio and planning of investment, and verified and analyzed through specific cases. The research of this article will have certain application value for the investment strategy selection of individual investors.**

## Keywords

**Venture Capital; Financial Products; Mathematical Modeling; Portfolio; Data Analysis.**

## 1. Forward

At present, the AI industry is developing rapidly and has a wide range of applications, all of which are inseparable from the application of mathematical modeling ideas., the same is true in the field of economic management.. Nowadays, artificial financial investment and risk control are still lacking.From the perspective of investors, the tools and methods of data science can provide investors with a more reliable investment basis.So as to facilitate various investment industries and risks manage industry.

Chen Hedan and others proposed the application of artificial intelligence in the asset management industry, especially the method of fundamental investment research.Four people the application experience of artificial intelligence in the asset management industry is introduced, including primary applications and advanced applications. Then, the article discusses the advantages of fundamental quantitative investment, including the limitations of EI investment and AI investment. Then, the article introduces an application example of fundamental quantification, that is, AI+EI-based pricing combined with the economic timing framework, including timing framework construction, pricing factors, economic factors and empirical evidence.[1].Ren Wenjun The application of mathematical modeling in the teaching of higher mathematics in colleges and universities is discussed., and explained its importance.[2].Tang Huiyu The application of mathematical modeling in logistics network models and the role of financial management refinement in new energy charging pile enterprises are introduced. Mathematical modeling methods can provide comprehensive, systematic and accurate logistics network optimization.The analysis and solutions provide a strong guarantee for the efficient operation of the logistics system. Financial management refinement can improve the efficiency and competitiveness of the enterprise's capital operation.[3].

Li Zhengyang discussed the risks faced by state-owned enterprises in the field of financial investment and the prevention and resolution strategies. The article points out that state-owned enterprises face the risks of strategy, decision-making, management and operation in the process of financial investment. It is necessary to establish a perfect financial investment risk management system, build a professional financial investment talent team, strengthen internal audit and supervision, establish a risk reserve system, actively promote digital transformation, and use science Technology empowers corporate governance. Through these measures, state-owned enterprises can reduce the risk of financial investment and achieve steady development.[4]. Zhang Yan introduced the current mainstream investable financial assets, including savings deposits, bank financial products, stocks and public offering certificates. Coupon investment funds, etc., and combined with the types of personal financial investment, the principles and strategies of personal investment and financial management are discussed, and the development prospects of financial assets that can be invested from the perspective of personal financial management are put forward, which are mainly reflected in the two major sectors of wealth scale and wealth creation sources.[5].

Zhang Jigang, the uncertainty in individual investment and financial management, including exogenic uncertainty and endogenic uncertainty, is discussed. Exogenic uncertainties include market cycles, bank interest rates, the rise and fall of financial product prices, product cycle choices and the uncertainty of economic strategies. Endogenic uncertainty includes individual life cycle, uncertainty of individual income and expenditure, and individual quality and financial concepts. The article also discusses the risk research of individual investment and financial management, including the study of individual investment preferences, individual risk attitudes and risk assumptions. Finally, the article gives a few opinions on individual investment and financial management, including maintaining an enterprising mentality, when choosing financial products, appropriateness is the most important, the adjustment of financial plans, financial management is more important than making money, consultation and early investment, and long-term adherence[6].

Zhang Liping discussed the issues of personal investment and financial management and risk management. First of all, the article introduces the current situation of the investment market, including the resurgence of financial management platform turmoil, the "Central Mother" moves for illegal financing platforms, and the continuous actions of banks to collect savings. Then, the article analyzes the origin and influencing factors of risk management, including the definition of risk management, the development process of risk management, and the factors affecting risk management. Finally, the article puts forward risk management and preventive measures, including investing in their favors, diversifying risks, doing a good job in responsibilities, ensuring a clear division of labor, and strengthening the informatization construction of enterprise inventory management, etc. [7] Yao Hong'e introduced personal investment and financial management methods, including funds, stocks, bonds, bank financial management, trust investment, insurance, foreign exchange and other investment tools, and analyzed the impact of different stages of life and personalities on the investment direction. The article also refers to the professional services of personal financial planning, and recommends that investors choose investment tools that suit them according to their actual situation to achieve wealth appreciation [8]. This paper analyzes the problems, causes and countermeasures and suggestions in China's personal investment and financial management market. The article points out that the scale of China's personal investment and financial management market is small, and the supply and demand remain low-level equilibrium; banking services are not in place; financial management products lack novelty, and homogenization is prominent. The causes include technical constraints, personal financial management concepts, talents, financial legal system, regulatory and personal credit system in China. In response to these problems, the article puts forward countermeasures such as

improving the external investment environment, further deregulation, striving to provide high-level services, increasing the innovation of wealth management products, establishing a personal credit system, and strengthening risk management [9]. Zhao Ming and others introduced the selection of household investment and financial management, portfolio adjustment, income acquisition and risk avoidance. Household investment and financial management include bank deposits, stock and bond investment, investment funds, real estate investment, insurance investment and futures investment. The adjustment of household investment and financial management portfolio needs to consider liquidity, return and risk. The income of household investment and financial management needs to be reasonably planned, life risk tolerance is calculated, and invested according to its ability. Risk aversion of household investment and financial management requires building a good family investment file, understanding and mastering the knowledge of relevant fields and disciplines, maintaining a calm mind, calculating the risk tolerance of life, and investing according to your ability [10]. It mainly discusses the importance and challenges of risk management.

The article points out that with the change of the social environment, the risks faced by organizations are also increasing, and risk management is becoming more and more important. However, there are also some problems in risk management, such as over-reliance on internal control and over-emphasis on compliance, which may lead to a weak moral environment within the organization, thus affecting the development of professional culture. The article suggests that organizations should adopt a "smart" approach to risk management, avoid over-reliance on internal control, and cultivate an irresponsible internal organizational environment to meet the challenges of risk management. [11].

Eckhard Platen mainly introduced a benchmark-based square. The quantitative financial methods of the law include asset pricing, continuous financial market, portfolio optimization, random volatility modeling, minimum market model, multi-currency minimum market model, guaranteed minimum death compensation valuation and market event risk. The core idea of this method is to use the benchmark portfolio to evaluate the value of other portfolios, and to use the super-martal nature to prove the superiority of the benchmark portfolio. In addition, the problems of strong arbitrage and non-arbitrage pricing are also discussed, and the corresponding theorems and proofs are given. [12] Dai. [13] And Zhu [14] And others proposed to use the Internet and social networks. The communication ability can greatly improve the risk assessment ability of investment decision-making, and show a good publicity ability for individual investors to understand reasonable investment projects.

This article mainly introduces the mathematical model of quantitative evaluation of financial investment risk management system, including the difference between venture capital and general investment, risk assessment, experimental design, parameter estimation and conclusion. This model can be used for risk assessment of financial investment projects to provide reference for investors.

In summary, The existing research mainly focuses on how to quantify an individual's financial portfolio aspects, but in the personal portfolio the research on this aspect is not enough. The study of this article quantitative investment. The problem is broader, from the type analysis of personal financial investment products, to the description of the problem and the establishment of the model, to the data collection and model solution, the analysis of the results, and finally the conclusion. I hope to establish a relatively complete set of quantitative investment and risk management methods for the Chinese market, which is convenient for individuals to choose investment products, evaluate the risks they can bear, and choose suitable investment products rationally and reasonably.

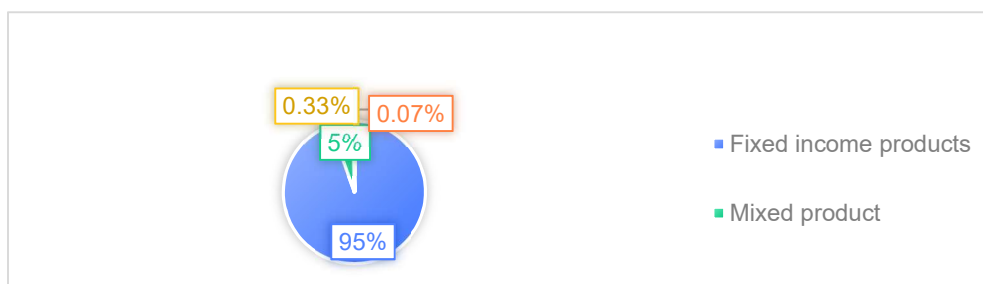
## 2. Type Analysis of Personal and Corporate Investment and Financial Products

Personal investment and financial management refers to the act of individuals investing their funds in various financial markets to obtain profits. With the development of society and economy and the accumulation of personal wealth, more and more people are beginning to realize the importance of investment and financial management. Through reasonable investment planning and risk control, individual investors can obtain stable financial income and achieve financial freedom.

### 2.1. Basic Overview of Investment Products

There are many kinds of personal investment and financial management, including stocks, bonds, funds, real estate and foreign exchange, bank deposits, medical insurance, precious metals, antiques, etc. Speaking of this, it is inevitable to mention the risk and liquidity of investment. The risks and liquidity of the various financial investment products mentioned above are different. Among them, precious metals, antiques, etc. have the highest investment risk due to the extreme instability of their market. Stocks, bonds, funds, foreign exchange and other markets are relatively stable and the risk is relatively low. The rest of the products are very stable and there is almost no risk. Among them, precious metals (gold, etc.), stocks, bonds and real estate are the most popular.

Figure 1 shows the scale of existence of various financial products in 2022. [16] The proportion of the situation.



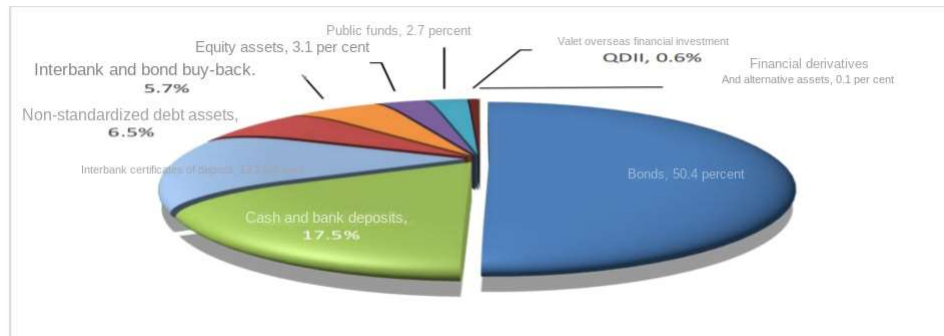
Data Source: Banking Financial Registration and Escrow Center

**Figure 1.** The proportion of the existence scale of various types of financial products in 2022

Figure 1 It shows that by the end of 2022, the existence scale of fixed income products was 26.13 trillion yuan, accounting for the proportion of the existence scale of all financial products reached 94.50%, an increase of 2.16 percentage points over the same period last year; the survival scale of hybrid products is 1.41 trillion yuan, accounting for 5.1%, a decrease of 2.28 percentage points over the same period last year. In addition, the existence scale of equity products, commodities and financial derivatives products is relatively small, with 0.06 trillion yuan, respectively and 0.02 trillion yuan.

In terms of investors, with the significant reduction of the investment threshold of bank financial products, the variety of products is constantly enriched. By the end of 2022, the number of investors holding financial products is 96.71 million, an increase of 18.96% over the beginning of the year. At present, the investor structure is still dominated by individual investors. By the end of 2022, the proportion of individual investors is 99.01%, institutional investors account for 0.99%.

Judging from the distribution of investors' risk preferences, the overall style of financial investors in 2022 is more conservative.



Data source: Banking Financial Registration and Escrow Center

**Figure 2.** The proportion of investment amount of various investment products in 2023

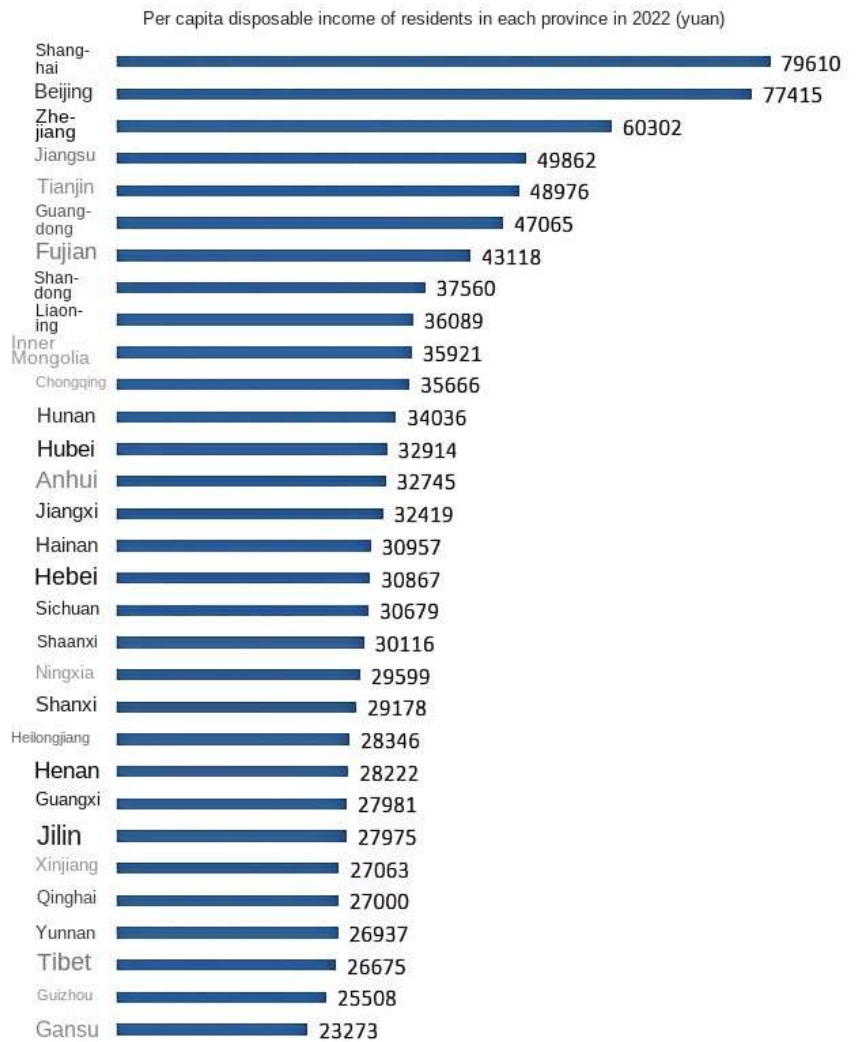
Judging from the allocation of bond categories, by the end of 2022, financial products hold credit bonds.[17] 3 13.68 trillion yuan, accounting for 45.66% of total investment assets, accounting for a decrease of 2.47 percentage points compared with the same period last year; holding interest rate bonds[18]4 1.42 trillion yuan, accounting for 4. of total investment assets74%.

As the largest type of asset management product in the market, financial products actively respond to the call of national policies, give full play to the function of capital optimization and allocation, increase the proportion of direct financing, and strive to promote high-quality development. By the end of 2022, bank financial products have supported about 22 trillion yuan of real economy funds by investing in bonds, non-standardized claims, unlisted equity and other assets. The scale of green bonds exceeds 270 billion yuan, and the scale of special bonds invested in epidemic prevention and control, rural revitalization, poverty alleviation, etc. exceeds 120 billion yuan, providing financial support for the development of small, medium and micro enterprises of more than 3.5 trillion yuan. In order to help China achieve the goals of carbon peaking and carbon neutrality, the financial market issued a total of 110 ESG-themed financial products in 2022, raising a total of more than 70 billion yuan. By the end of 2022, the existence of ESG-themed financial products reached 130.4 billion yuan, an increase of 35.55% over the beginning of the year. In order to promote the realization of the goal of common prosperity, a total of 131 social responsibility-themed financial products such as rural revitalization and public welfare charity have been issued throughout the year, raising about 50 billion yuan[19].

## 2.2. Liquidity Analysis of Personal Assets

Asset liquidity refers to the assets held by the bank can be repaid at any time or sold without depreciation, that is, the ability to realize it quickly without loss. The stronger the realization ability of the asset, the lower the cost paid, the stronger the liquidity; the liquidity of liabilities refers to the ability of banks to obtain the necessary funds at any time at a lower cost, and the ability to raise funds The stronger and the lower the cost of financing, the stronger the liquidity. Due to the categories, nature and market complexity of various investment products, different products have different asset liquidity. Customers can choose investment products or investment product portfolios with different liquidity according to actual needs. Generally speaking, users with weak risk-taking ability and frequent use of funds will choose investment products with greater liquidity, such as bonds, short-term deposit slips, etc. Although the profit is low, it can calmly deal with any emergencies that urgently need money. On the contrary, users with strong risk-taking ability, infrequent use of funds and large amounts of funds will generally choose investment products with less liquidity, such as stocks, real estate, etc. On the basis of the above analysis, users can get higher returns by sacrificing liquidity according to their personal asset allocation. ( Table (the strength of risk tolerance), compare what kind of

products different people prefer to invest in) Analyze the asset liquidity of people in a city, compare with inflation, compare with different cities, and compare between urban and rural areas).



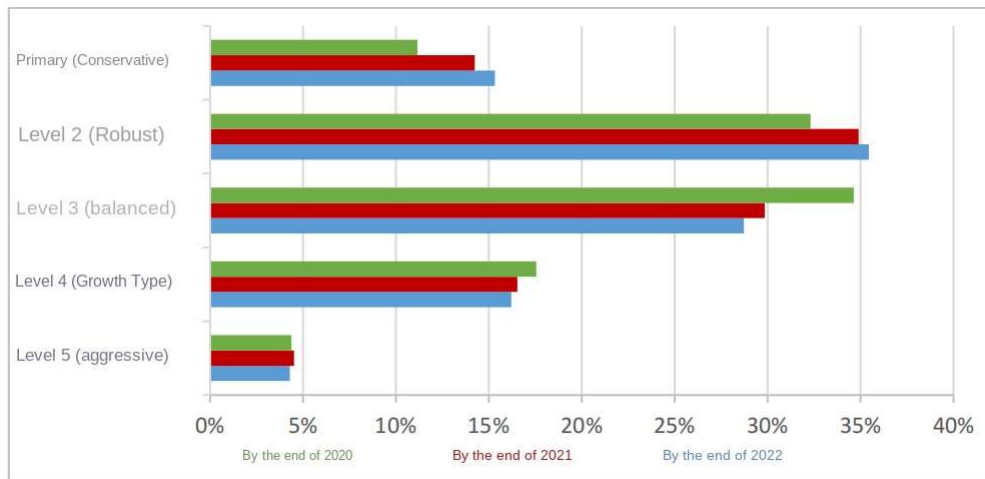
Data Source: China Financial Network "Annual Report of China Banking Financial Market (2022)"

**Figure 3.** Per capita disposable income of residents in each province (2022)

### 2.3. Investment Risk and Return Analysis

There is a saying in economics that "the greater the risk, the higher the interest rate". This sentence tells us that the risk of an investment product is directly proportional to the interest rate.

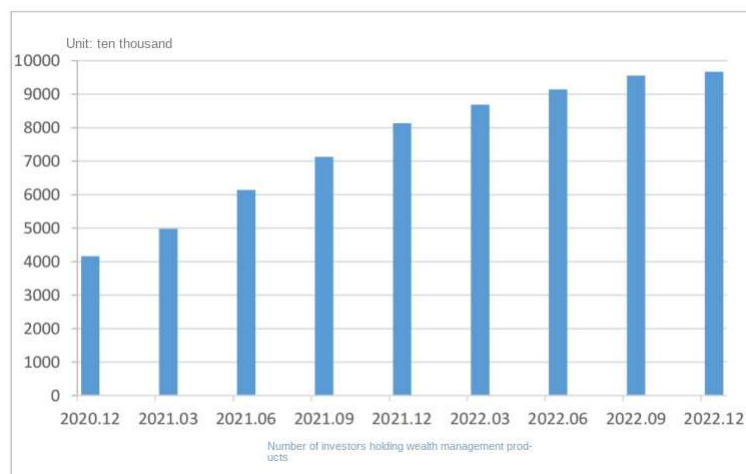
Judging from the distribution of investors' risk preferences, In 2022, the overall style of financial investors has become more conservative. Among them, the number of individual investors with a risk preference of first-level (conservative) and second-level (steady) has further increased compared with the same period last year, an increase of 1.10 percentage points and 0.55 percentage points respectively; the risk preference is level three (balanced), the proportion of individual investors in level 4 (growth) and level 5 (enterprising) is relatively reduced. By the end of 2022, the largest number of individual investors holding financial products were investors with a second-level (stable) risk preference, accounting for 35.44%.



Source: Banking Financial Registration and Escrow Center

**Figure 4.** The proportion of individual investor types from 2020 to 2022

Figure 4 reflects the distribution of the number of investors with various risk preferences in financial products. It can be seen from the figure that from the end of 2020 to the end of 2022, the number of investors in conservative and robust investment products has grown steadily, while the number of investors in balanced and growth-oriented investment products has decreased year by year, while the number of investors in progressive investment products has fluctuated by about 4.5%. There are many reasons for this phenomenon. The main reason should be the outbreak of COVID-19 from 2019 to 2022 and China's economic recession in the short-term economic cycle. Therefore, GDP has fallen, the unemployment rate has risen, people's consumption capacity has decreased, and the desire to consume is not high. Conservative and robust financial products are mostly bank time deposits and large certificates of deposit. Compared with consumption and taking risks to pursue high returns, people are more willing to deposit money in banks to reduce their losses in the economic recession.



Source: Banking Financial Registration and Escrow Center

**Figure 5.** Changes in the number of individual investors

Figure 5 reflects the quantitative structure of financial investors from the end of 2020 to the end of 2022. Since the release of the new financial management regulations, the investment threshold of bank financial products has been greatly reduced, the variety of products has been continuously enriched, and the number of investors has continued to grow. By the end of 2022,

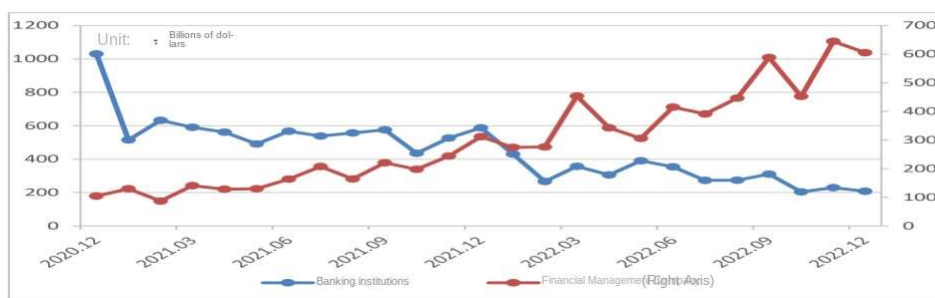
the number of investors holding financial products was 96.71 million, increased by 18.96% from the beginning of 2022.

Unit: ten thousand			
Types of Investors	By the end of 2020	By the end of 2021	By the end of 2022
All investors	4162.48 ( 100% )	8129.90 ( 100% )	9671.27 ( 100% )
Individual investors	4148.10 ( 99.65% )	8067.23 ( 99.23% )	9575.32 ( 99.01% )
Institutional investors	14.38 ( 0.35% )	62.67 ( 0.77% )	95.95 ( 0.99% )

Source: Banking Financial Registration and Escrow Center

**Figure 6.** Comparative analysis of individual investors and institutional investors

Figure 6 reflects the number and proportion of various financial investors. In 2022, the number of individual investors holding financial products increased by 15,808,900, and the number of institutional investors increased by 332,800. The overall structure is still dominated by individual investors. By the end of 2022, the number of individual financial investors was 95,753,200, accounting for 99.01%; the number of institutional investors was 959,500, accounting for 0.99%.



Source: Banking Financial Registration and Escrow Center

**Figure 7.** Comparative analysis of the revenue creation of banks and financial management companies

Figure 7 shows the cumulative income generated by financial products for investors. Under the background of breaking the rigid exchange rate in the asset management industry, bank financial management relies on its long-term and stable capital supply channels, professional and high-quality asset management capabilities, rich and diverse innovative product design and other advantages to achieve relatively stable product returns. In 2022, financial products generated a total of 880 billion yuan in revenue for investors. Among them, banking institutions have generated a total of 360.2 billion yuan in revenue for investors; financial management companies have generated a total of 519.8 billion yuan in revenue for investors, an increase of 1.45 times year-on-year. In each month of 2022, the average yield of financial products is 2.09%.

### 3. Risk Assessment Model Construct

It can be seen from the previous section that the risk of investment is inevitable, so it is especially important to get higher returns while reducing risks. This needs to involve a proper noun in economics - risk control.

Risk control is the abbreviation of risk control. As the name implies, risk control is the risk management and control of the business and the company. The whole process of risk control includes risk identification, risk measurement, risk monitoring, risk control, risk evaluation, etc. Its core idea is to control risks within a reasonable range, not to completely eliminate the wind. Dangerous.

"Risk control measures" occupy a crucial position in the financial field. Its main goal is to reduce possible financial risks and ensure the safety of the funds of enterprises or individuals. Specific risk control measures will vary depending on the characteristics of institutions, industries and risks, but generally speaking, they cover the following main aspects.

First of all, the establishment of a comprehensive risk assessment system is the basis of risk control measures. This includes identifying and assessing various possible sources of risk and determining their possible impact. For example, in credit business, risk assessment will involve many aspects such as the borrower's credit status and repayment ability.

Secondly, the key is to formulate and implement strict risk control strategies. This includes setting risk limits, establishing risk early warning mechanisms, and formulating risk response plans. For example, in the field of investment, risk control strategies may include diversification, regular portfolio evaluation, etc.

In addition, strengthening internal management and supervision is also an important part of risk control measures. Enterprises should establish a perfect internal control system to ensure the effective implementation of various risk control measures. At the same time, conduct internal audits and risk assessments regularly to find and correct possible problems in time.

Finally, using scientific and technological means to improve risk control ability is also an important trend in modern risk control. For example, the use of big data, artificial intelligence and other technologies for risk identification and prediction can greatly improve the accuracy and efficiency of risk control.

In summary, risk control measures are a complex and systematic task, which requires enterprises to comprehensively use various means and methods on the basis of an in-depth understanding of risks to achieve effective control of risks. At the same time, with the continuous development and change of the financial market, risk control measures also need to be constantly updated and improved to adapt to new risk challenges.

Risk control is a systematic behavior, not a single logic. This system is from top to bottom, which is very huge. To do risk control, we must first understand the source of the risk. The sources of risk can be simply classified as: macroeconomic risk; market fluctuation risk; industry and enterprise change risk; position and allocation risk; trading strategy and system risk; asset allocation risk. Then think about how to control the risk. According to the content of macroeconomics, this article gives a threshold for each risk indicator to control. Assuming that we give each risk source equal weights and score it according to 1-10, defining the comprehensive risk value of 0-3 as low risk, 4-6 as medium risk, and above 6 as high risk. Here are 6 examples to illustrate:

1) Macroeconomic style risk: The global economy is depressed, but China's GDP is growing faster, inflation is moderate and interest rates are stable, and the macroeconomic risk value is very low (risk value = 2). Theoretically, we should increase our positions and invest heavily in China.

2) Market fluctuation risk: At this time, the overall valuation of A-shares is very high (such as 100 times PE), and the corresponding risk value = 10. If you invest in index ETF at this time, the risk you take is very high  $(10+2)/2=6$ .

3) Industry and enterprise change risk: But if you do not invest in an index, but invest in an industry with a very low valuation and stable prospects (such as financial stocks, white horse stocks, and high-quality Hong Kong stocks that significantly outperform the index after the

stock disaster), assuming the risk value = 1, your comprehensive risk value will be relatively low at  $4.3 = (2+10+1)/3$ . If you diversify and choose certain individual stocks, your risk level may be lower. The specific risk value depends on the fundamentals and valuation of individual stocks. Buying a 5PB brokerage stock and buying a 1PB brokerage stock has a huge difference in the risk level. This is difficult to quantify. It can only be measured by the prospects of the industry in which the enterprise is located, the future performance growth rate of the company, the current asset quality, the advantages and disadvantages of the management, the high and low valuation, etc. to give a general risk value.

4) Position and allocation risk: According to the above situation, if you hold an ETF or a stock (risk value 8) in 80% of your position at this time, your comprehensive risk value is greater than 6, that is,  $(2+10+4.3+8)/4=6.1$ , which is a high-risk investment according to our assumed definition. But if at this time, you diversify your investment in several undervalued industries or individual stocks with relatively low correlation coefficients, your risk value will be reduced (according to the current ability of most people to take risks, it is more reasonable to divide into 10-15 varieties).

5) Asset allocation risk: refers to macro-scale asset allocation (microscopic asset allocation is the position and the number of positions). For example, the global economy is depressed, the risky assets in various countries are expensive, and the overall risk level is very high, but you have allocated the assets of a risk-averse country (economically independent global), so your risk level can be relatively low. And for the same country, you allocate different types of assets, and the risk levels are also different. The risk levels of government bonds you buy with similar interest rates and corporate bonds are different, and the risks you buy a house and government bonds are completely different.

6) Trading strategy and system risk: Different trading strategies and trading systems have different risk levels. In terms of trading strategy: the risk value of long-term holding of white horse blue-chip stocks can be given 2, while the risk value of short-term speculative junk-themed stocks can be given 10; in terms of trading system: the transaction risk value based on subjective judgment is relatively high, and the risk value of quantitative trading is relatively low. Finally, the core key issue is how to define the risk value of each risk. It can be quantified by means:

For the index, we all know that the PE of U.S. stocks hovers between 15-25 times. More than 25 can correspond to a risk value of 10, and less than 15 can correspond to a risk value of 0 (our weekly market valuation interval table is based on this logic);

For trading strategies, it can also be calculated quantitatively. For example, the well-known overseas return trading method, you can backtest the history to calculate your maximum loss volatility yield, etc., and finally give a risk value;

Risk values can be man-made defined for large-class asset allocation, position height, number of position varieties, etc.

For macroeconomics, industry individual stocks, etc., various data indicators can be substituted into quantitative models to analyze the current risk values. For example, various macroeconomic data can be substituted into macro-analysis models to judge the current macro situation, such as the revenue and profit growth rate, profit margin, debt ratio, asset turnover rate, cash flow, R of industries and individual stocks. OE/ROIC, PE/PS/PB/PEG and other indicators are substituted into the analysis model.

Simply put, assuming that the economy is good, but the point you buy is very high, then you will take a lot of risk - but if you buy low-risk assets (such as stocks with good industry prospects and low valuations) and do a good job of reasonable position management and diversified asset allocation, then the risk you take is not so big - but if you use a very radical trading strategy, such as a short-term increase in a target with good fundamentals and low valuation, you choose

to chase the rise without using any stop-loss and take-profit strategy, or do not add quantitative trading model control, then your risk level may become very high again.

For example, another situation: assuming that the economy is very bad, you buy overvalued assets, there is no global asset allocation, and you do not look at the fundamentals of the industry and individual stocks, and hold heavy positions. Some are short-term game-themed varieties (typical retail operation techniques), but if you use a relatively bull trading strategy and trading system, such as implementing a strict stop-loss strategy (such as the 20-day moving average rule, which is particularly effective for A-shares), or adopting a ROC momentum strategy, then your risk level can still be said to be Accepted. Many people fail because there is no good risk control at the peak of the bull market. The high position continues to take risks, and finally the assets are a roast the coaster. Some people evacuate halfway up the bull market because they feel that the risk is too high, and do not eat the bubble in the second half. In the face of these two problems, the best situation is to develop a set of high-level chasing trading strategies, that is, in the case of high risk level, adopt the following the market strategy, and immediately stop loss and leave the market once the level is broken (such as ROC momentum strategy, 20-day moving average trading rule, turtle trading, etc.).

In order to reduce risks and improve returns, we generally do not only choose a single financial product when investing, but will reasonably allocate investment funds to various low-, medium- and high-risk financial products according to personal risk-taking ability. Single investment refers to the concentration of assets on the investment of a single product, and portfolio investment refers to the investment of dispersing assets on different products. Investment in a single product may bring individual risks to the product. For example, the sharp shock of the stock price of a stock in the short term may cause investors to suffer huge losses. The combination investment of different products can at least reduce the losses caused by individual products.

In order to solve the risk control problem more realistically, we might as well make an assumption that an individual's asset holdings are not fixed, that is, basic income and expenditure are not fixed. This requires a dynamic portfolio, that is, personalized, to adjust the investment strategy or portfolio in a year or quarter, which can effectively achieve dynamic control of risks and obtain stable returns.

## 4. Conclusion

This article mainly discusses and studies the characteristics of personal and corporate investment and financial products, as well as the investment preferences and income of individual or corporate investors, and collects and analyzes the data of personal and corporate investment and financial products. A portfolio model to reduce risks and increase returns has been established for individual investors. This model has certain application value in helping individual investors reasonably allocate assets and find the optimal portfolio. In order to further optimize the model and provide more help to investors, In the future, a model can be built for dynamic portfolios.

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