

Research on Macro-economic Decision Model Based on Big Data Analysis

Xiangqi Yan

Changsha Changjun High School, Changsha 410002, China

Abstract. Macroeconomic forecasting is guided by rational expectation, which emphasizes various historical information used. It is similar to using historical data to predict macroeconomic development trends. When making investment decisions, enterprises generally need to consider the cost of investment. The economic downturn seems to have entered a bottomless pit. The main reason is that although the government has stabilized the economic growth through large-scale stimulus policies, it also hinders the process of economic natural adjustment, leading to the artificially prolonged market economic cycle. Therefore, in order to effectively deal with this complex situation, we must rely on a more mature theory and method system to systematically analyze the transmission mechanism that affects enterprise investment decisions. This paper will analyze the macro-economy based on big data. The development strategy of big data has become a hot issue for enterprises around the world. Many enterprises integrate big data strategy with their own decision-making management system, and make more scientific decisions through comprehensive collection, screening and analysis of all kinds of data.

Keywords: Big data, Macroeconomy, Decision-making model

1. Introduction

Recently, China's economic growth has slowed down further, and employment, economic restructuring and other aspects are facing enormous pressure. The analysis of China's macroeconomic problems has strong timeliness and practical significance. Macroeconomic forecasting is guided by rational expectation, which emphasizes various historical information used. It is similar to using historical data to predict macroeconomic development trends. In short, in the eyes of rational expecters, monetary policy and fiscal policy are both ineffective policies in the long run, because the former can only lead to inflation, and the latter is also true [1-2]. The expectation of the level of macroeconomic development and macroeconomic policies undoubtedly affects the confidence of enterprises in future development, and thus affects the investment behavior of enterprises. Thus, in the face of future uncertainty, enterprises must consider macroeconomic factors when making investment decisions. To establish a socialist market economy and push leaders at all levels to the main battlefield of market economy management, leading scientific decision-making has become the key to success. "Management is decision-making, and decision-making needs information.

When making investment decisions, enterprises generally need to consider the investment cost, which includes not only the cost of asset acquisition, but also the financing cost and related taxes incurred by the enterprise

as a result of asset acquisition. The former is affected by market supply and demand, while the latter is affected by national interest rate policy and tax policy. Investment income refers to the new income brought by the new investment of an enterprise. In the early days of reform and opening up, in order to make use of foreign capital and seize the opportunity of foreign economic system transfer, China was mainly a labor-intensive industry such as processing industry, with low requirements for the quality of labor. In the first decade of the 21st century, China's emerging industries have risen. Faced with the fierce competition in the world, enterprises are in excessive demand for senior professional and technical personnel [3]. The economic downturn seems to have entered a bottomless hole. The main reason is that although the government has stabilized the economic growth through large-scale stimulus policies, it has also hindered the process of natural economic adjustment, leading to the artificially prolonged market economic cycle. In addition, considering the current decline in the return on capital of the real economy, the heavy financial burden, and the expectation of RMB devaluation, various uncertainties have seriously affected the economic recovery [4-5].

Therefore, in order to effectively deal with this complex situation, we must rely on a more mature theory and method system to systematically analyze the transmission mechanism that affects enterprise investment decisions. In recent years, the development

strategy of big data has become a hot issue for enterprises around the world. Many enterprises integrate big data strategy with their own decision-making management system and make more scientific decisions through comprehensive collection, screening and analysis of various data.

2. Problems existing in the macroeconomic structure and their analysis

For developed countries, the proportion of tertiary industry should be the largest, basically about 70%, and the development level of tertiary industry in China needs to be upgraded. Among them, the heavy chemical industry in the secondary industry has a serious overcapacity, and the agricultural development is still extensive. There are significant differences in the impact of macroeconomic fluctuations on the profitability of different industries. Usually, in monopoly industries, enterprises can reduce the adverse effects of macroeconomic fluctuations and weaken the impact of macroeconomic fluctuations on their investment income by transferring risks to upstream and downstream industries, but the impact of macroeconomic fluctuations cannot be completely eliminated [6].

There are many differences between China's economic theory on the micro basis or the problems faced by the macro economy and western countries. The macroeconomic control of western countries is based on the pursuit of the most cremation of profits by enterprises, which is a single goal. However, all enterprises in China are multi-objective. That is, the enterprise not only pursues the maximum profit, but also pursues the maximum output, the maximum personal income, the maximum authority of the enterprise and so on. In terms of fiscal policy, the downside risk of domestic economy is still very big, and micro-stimulus policy can't completely wash off the downward pressure of economy, so I personally think that the government is no longer suitable for using micro-stimulus policy, and secondly, it should choose a large-scale fiscal policy [7-8]. China's economic growth model is difficult to maintain for a long time: at present, in the industrial sector structure of China, the export sector is growing abnormally, and the export-oriented economy may have two consequences: first, the increase of foreign exchange reserves will force the central bank to issue more RMB, thus inducing inflation; Second, it caused international trade disputes, shrinking exports, and causing a serious surplus of production capacity. Through the analysis of the above contents, it can be concluded that the problems existing in the macroeconomic structure are mainly divided into three aspects, as shown in Figure 1.

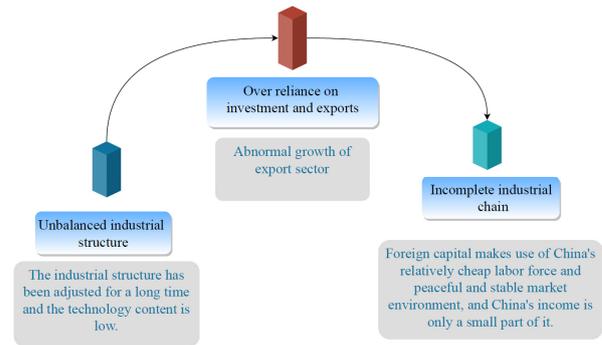


Figure 1 Problems in the macroeconomic structure

When foreign capital invests to set up factories in China, there is only one link, that is, production is carried out in China. In fact, China's income only comes from the production link, while the remaining six links are completely in the hands of foreign investors. According to the real option theory, enterprises have the right to choose investment opportunities, which is the specific embodiment of investment value [9]. For each investment project, if the investment income only offsets the investment cost, considering the randomness of the investment income, the enterprise will face huge risks. As all enterprises are pursuing maximum profits, it is bound to lead to excess supply. However, the macroeconomic problem that China has been facing for a long time is the problem of excess demand and insufficient supply, which is a resource constrained economy.

Macroeconomic decision-making is complicated and changeable, and the decision-making process is restricted by the development and changes of objectives and environment. For highly comprehensive and complicated activities, we can find out the questions and determine the goals according to the general rules and procedures of decision-making activities. This is the starting point of decision-making activities. If there is no problem, no decision is needed. Putting forward the problems that need to be solved is the premise for determining the decision-making objectives. Therefore, we must not easily apply the relevant western theories and policy propositions to our country. One of the major defects of the socialist market economy system is the lack of competition mechanism. Although it can be used for reference to blindly imitate the development experience of western developed countries, this development mode can no longer enable us to reach a new level of economic development [10]. However, the value of this real option is only reflected in avoiding the negative impact of uncertainty factors, and it cannot improve the investment income of the project. For enterprises, substantial investment is required when the purpose of avoiding risks is achieved.

3. Strategies for Solving the Realistic Dilemma in Macroeconomic Decision-making Management

3.1 Constructing a Macro-economic Decision Model for Big Data Analysis

The current big data environment is very complex, so enterprises should fully understand the current development background, fully adapt to the development and changes of the environment, and reduce the difficulty of decision-making. Data analysts should skillfully use big data and cloud computing technology to analyze and predict data and extract data information. Enterprises should integrate and optimize the decision management system, realize the unity of system expansibility, comprehensiveness and practicality, collect relevant data and information through more channels, fully understand users' ideas and needs, conduct follow-up return visits and surveys, and make corresponding adjustments to decisions according to customers' wishes [11]. In the process of adjustment, all preferences are not adjusted at the same time. Instead, the preferences which have great influence on the consistency of decision-making and are highly accepted by decision-makers are selected and provided to decision-makers as adjustment targets. The decision-makers decide which preferences to adjust and the specific adjustment range according to their own judgment. Build a macroeconomic decision-making model to quantitatively evaluate the ecological impact of enterprises and their layout on the industrial system in the region, and provide scientific and accurate decision support for industrial layout optimization, ecological investment promotion. Its overall framework is shown in Figure 2.

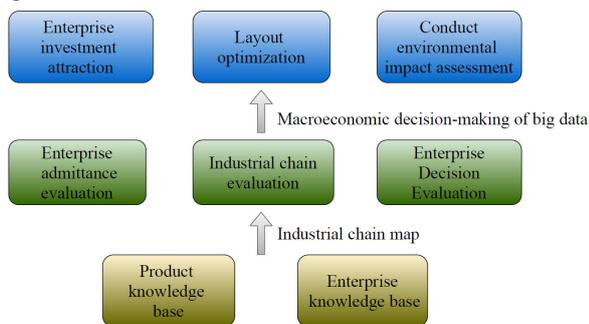


Figure 2 Macroeconomic decision-making model based on big data analysis

Considering the difference of decision-making participation, knowledge level and decision-making mode between enterprise decision-makers and the public, their decision-making preferences are given in two completely different forms, namely heterogeneous preferences. In order to deal with the heterogeneous preferences given by enterprise decision-makers and the public, based on the basic decision-making logic architecture in modern decision-making theory, a reverse reduction model of decision-making preference information is designed, which reversely restores the preference information processed by enterprise decision-makers to the original

state similar to the public preference, thus realizing the aggregation of heterogeneous preferences of different types of decision-makers.

3.2 Countermeasures to realize healthy development of macro-economy

At present, the economic downturn is a recognized fact, but what is more worrying than the downturn is that we don't know when the downturn will end. Theories like China's economy will have a hard landing often appear, but the fact is that the economy has not bottomed out after many times. Therefore, speed up the development of modern vocational education, promote the connotative development of higher education and improve the quality of higher education. Actively develop continuing education and improve lifelong education. In addition, we should also vigorously develop farmers' education. In recent years, in the economic downturn, the government has been artificially influenced by micro-stimulus policies, which have limitations. Once the effects are exhausted, the economy will continue to decline. Moreover, as time goes on, the economy gradually resists micro-stimulus, and some small policies can only scratch one's boots and have little effect. With the continuous improvement of urbanization in China, a large number of farmers have entered the city. On the one hand, a large number of laborers have been injected into the economic development, but at the same time, they are faced with the situation of low quality and structural unemployment. By vigorously developing farmers' education and training, we can improve farmers' skills and quality, and turn them into higher productivity.

The growth of capital stock is driven by savings and investment, so encouraging capital formation comes down to encouraging savings and investment. Therefore, on the one hand, China should continue to attract foreign capital, improve the level of opening to the outside world and improve its financial system; On the other hand, strengthen the management of various social funds to promote their value preservation and appreciation. At present, the shortage of funds is still unresolved. Therefore, we need to further promote the reform of interest rate marketization, strengthen the guidance of monetary policy on interest rates, reduce the cost of social financing, and take the form of open market operation to guide monetary policy. In addition, it is necessary to strengthen bank debt restructuring in the financial sector to digest local financial pressure. Therefore, China should continue to implement the appropriate family planning policy; As far as the quality of labor supply is concerned, China should provide a good education and training system and expand investment in human capital.

4. Conclusions

Economic development has a certain periodic law. It is of great significance to predict the future economic development situation according to this law. By analyzing the current economic situation and combining the macroeconomic prediction theory, it is conducive to providing advice for the national economic development

and contributing to the national economic take-off. Based on the analysis of big data, this paper conducts research on the macro-economy. Big data has brought a cutting-edge perspective and a new environment for the decision-making management of enterprises in general. It also enables enterprises to continue to develop in the direction of optimization and innovation. It allows enterprises to occupy an important development position in today's society where the market economy is developing rapidly. It can also continuously improve their decision-making management ability and core competitiveness through the analysis of data. The preferences that are highly accepted by the decision-makers are provided to the decision-makers as adjustment targets. The decision-makers decide which preferences to adjust and the specific adjustment range according to their own judgment. The opinions of the decision-makers are fully respected, and the adjustment results are more easily accepted by government decision-makers and the public. In a word, big data mining technology can be applied to macroeconomic decision-making and information analysis, provide intelligent and information-based auxiliary means for commanders' decision-making, improve the real-time and accuracy of command decision-making, and improve the comprehensive effectiveness of weapon system combat tasks.

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