



Research on the Concept and Promotion Mechanism of Enterprise Economic Resilience

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Abstract: The economic resilience of enterprises measures the ability of enterprises to resist the impact of negative factors and to optimize and upgrade after impact. Especially today, when the business environment of enterprises around the world is changing significantly, the significance of improving the economic resilience of enterprises is particularly prominent. Based on the theory of evolution, this paper puts forward the concept of enterprise management toughness, then further explores the promotion mechanism of enterprise economic toughness, and puts forward three transmission levels of enterprise economic toughness improvement, namely, enabling layer, evolution layer and toughness increasing layer. It is worth emphasizing that this paper enriches the research on economic resilience at the micro level of enterprises, and contributes to the high-quality development of enterprises.

Keywords: enterprise economic resilience, theoretical framework, promotion mechanism

1. Introduction

At present, the world economic environment has undergone "great changes not seen in a century". The virus sweeping the world has subverted the way of national governance, economic operation and social communication, and the major changes in the economic environment have revolutionized the inherent understanding of production and management of enterprise managers.

The national economic resilience is based on the economic resilience of enterprises. Improving the economic resilience of enterprises can provide necessary support for the high-quality development of the country. The concept of "resilience" was originally used in physics using. And then the concept of "resilience" was introduced into ecology to express the ability of ecosystems to maintain or restore to their original state after suffering from natural or man-made disturbances. In the field of economic research, there have been many regional financial crises around the world. How to improve economic resilience to deal with the impact of negative factors on economic development has gradually become a hot topic.

At present, there are two main research perspectives on economic resilience in academic circles, which are based on equilibrium theory and evolution theory. The equilibrium theory includes two concepts: engineering toughness and ecological resilience. Engineering toughness represents the ability to return to the original state when the system is subjected to negative impact, and the engineering toughness holds that the system has a single equilibrium state. the system has the trend and ability to return to the original equilibrium state after being affected by the external crisis. Ecological resilience breaks the setting that the system has a single equilibrium state, and it is considered that the system has multiple equilibrium states and has an elasticity threshold. When the external disturbance exceeds the springback threshold of the system, the system will transfer from the original equilibrium state to another equilibrium state, so the ecological resilience represents the disturbance energy that the system needs to absorb to achieve the state transition. However, neither ecological toughness nor engineering toughness can get rid of the limitation of equilibrium theory, that is, the equilibrium state of the system is stable. However, the equilibrium state in the economic system is constantly changing with the external environment, and the research perspective of economic resilience equilibrium theory has been criticized.

Based on the evolutionary toughness of evolution theory, it is considered that the system toughness is a continuous state, not just a return to the original equilibrium state after being impacted. Evolutionary resilience is defined as the ability of a system to adapt to changes in the external environment and maintain optimization and upgrading by continuously adjusting its own organization and structure. According to the definition of evolutionary toughness, the response of the system to external shocks at a certain point in time can not be used as the result of measuring the toughness of the system. Evolutionary resilience regards economic organization as a complex adaptive system that can acquire knowledge from the outside world and continuously optimize it. Evolutionary resilience is affected by both the historical accumulation of the system and the external environment. After that, the concept of evolutionary toughness has generally penetrated into the research field of

economic toughness.

At present, the research literature on economic resilience is now focused on the concept of resilience, national resilience and regional urban resilience, and there is a lack of research on the microeconomic level of enterprises, but the core executor of national macroeconomic and industrial structure policies is enterprises. The main reasons why the current research has not penetrated into the micro level of the enterprise are as follows. First of all, the concept of enterprise economic resilience has not been fully studied and demonstrated, and the indicators and data range that need to be measured still need to be screened scientifically. Then, the convenience of data acquisition is poor. It can be seen from the relevant literature that the indicators to measure economic resilience include per capita GDP, R & D investment, the number of invention patents granted per 10,000 people, the registered unemployment rate in cities and towns, the number of people employed, total factor productivity and the rate of change of economic growth, etc., and there are usually professional institutions to measure these indicators. Importantly, micro-data at the enterprise level requires a certain amount of field research. In addition, some data need to be obtained by web crawlers and other new methods.

2. A conceptual and quantitative study on the economic resilience of enterprises

Based on the theory of evolution, this paper defines enterprise economic resilience as the defense ability of enterprises to cope with external shocks and the ability to optimize the transformation and sustainable development after shocks.

According to the above definition, we can know several characteristics of enterprise economic resilience. First of all, the economic resilience of enterprises needs to be examined in two aspects, namely, the ability to resist impact and the ability to adjust and develop after impact. The examination of the two stages of enterprise economic resilience is indispensable. If we examine the ability of only one stage, we will get incomplete or misleading conclusions. Then, after the impact, the development state reached after optimization and transformation may change. The development state of enterprises after the impact is usually different from that before the shock, and the current and future enterprises must have the ability to adapt to market changes if they want to survive in the market. When enterprises are affected by changes in the external environment, they need to upgrade themselves by adjusting strategic planning, optimizing organizational structure, increasing the application of new technologies and personnel adjustment. Enterprises will usually have better development capabilities after optimization and transformation.

The measurement of the economic resilience of enterprises is also carried out from two aspects. The indicators to measure the resistance of enterprises to shocks include the following indicators. (1) deducting the change in the growth rate of non-recurring profit and loss net profit (ned) in the year affected. This index measures the change of the growth ability of enterprises in the year of shock, which measures the most intuitive performance of enterprises to resist shocks. The calculation method of this index is that the growth rate of net profit deducting non-recurrent profit and loss in the year in which the enterprise is hit minus the difference of the previous year, which is directly proportional to the resistance of the enterprise to the impact. (2) Market share (mkt). Market share usually refers to the proportion of sales of certain (category) products in the market of similar products, which reflects the operating position of an enterprise in the market. The larger the index is, the stronger the competitiveness of the enterprise is, and the value is proportional to the resistance of the enterprise to the impact. (3) interest guarantee multiple (icr). This value measures the solvency of the enterprise, which is calculated by dividing the profit before interest and tax by the interest expense. The stronger the debt-paying ability of the enterprise, the greater the resistance to the impact. (4) Total asset turnover (tta). The total asset turnover ratio is the quotient obtained by dividing the annual operating income of the sample company by the annual average total assets. this index can measure and evaluate the matching relationship between the total asset input and operating performance of the enterprise. the higher the value of this index, the higher the efficiency of total asset turnover, the better the asset utilization and investment income. The control variable can reflect the operating efficiency of the total assets of the company in a fiscal year. The larger the value of the variable is, the more opportunities and times the total assets are put into use, which is proportional to the resistance of the enterprise to the impact. (5) return on net assets (roe). Return on equity is the ratio of net profit to average owner's equity, which can measure the profitability of the sample company. The owner's equity of shareholders is part of the total assets of the enterprise. The higher the rate of return on net assets, the higher the rate of return on investment of shareholders, which can reflect the ability to use their own funds to obtain net income.

Measuring the optimization and transformation ability of enterprises after impact includes the following indicators. (1) deducting the change of non-recurring profit and loss net profit growth rate (nedt) after 2 years of shock. The index is calculated by deducting the net profit growth rate of non-recurring profit and loss minus the difference of the value in the year of impact after 2 years of impact. This value is the comprehensive embodiment of the enterprise's resilience, and it is proportional to the enterprise's ability to optimize and transform. (2) Enterprise learning ability (lea). Using the "learning

organization diamond tool" proposed by Raili Moilanen (2005), a total of 40 questions were designed, of which 20 questions were about learning ability at the organizational level and 20 questions were about the learning ability at the individual level. (3) Enterprise innovation capability (inn). The indicators to measure the innovation capability of enterprises usually include R & D investment index and innovation output index. The ratio of R & D expenditure to sales may be used as an index to measure the innovation ability of enterprises, and then innovation output can be used as an indicator of robustness test. (4) Environmental, Social and Corporate Governance (referred to as ESG). The indicator assesses the impact of enterprises on climate, natural resource conservation and waste disposal in the environmental aspect, employee management, welfare and suppliers in the social aspect, and organizational structure and business ethics in the aspect of corporate governance. The index uses commercial green ESG rating data, and the database combines international standards with Chinese company disclosure requirements to develop an ESG rating system for Chinese companies.

In this study, we plan to use entropy method to determine the corresponding index weight, and the calculation idea of entropy method is to give it objective weight according to the variability of the index. According to the meaning of entropy value, the information entropy of an index is inversely proportional to its degree of variation. The smaller the information entropy of an index is, the greater the degree of variation is, the greater the amount of information provided, so the greater the weight given in the process of comprehensive evaluation. On the contrary, the greater the information entropy of an index, the smaller the weight given to it.

3. Analysis on the promotion mechanism of enterprise economic toughness

The influence mechanism of digital management on enterprise economic resilience is mainly reflected through three levels, namely, enabling layer, evolution layer and toughness increasing layer. The enabling layer refers to the collection of operating factors that can increase or enhance some capabilities for the enterprise. The evolutionary layer refers to the effect of the ability given to enterprises by operating factors to promote the optimization and upgrading of all aspects of production and operation. The increasing layer of resilience refers to the level that the operating factors are finally transmitted to the level that contributes to the improvement of the economic resilience of enterprises.

Taking the business factor of digital transformation as an example, the empowering of enterprises by digital operation includes the following aspects. First, internal and external data connectivity. Internal data connectivity refers to the connection of various business units, systems and databases within the enterprise, so as to achieve the overall connectivity and optimization of the internal digital platform. External data connectivity includes customers and supply chain enterprises. For example, smart wearable products are one of the products of the combination of the Internet of things and cloud computing technology. The emergence of such products makes it possible for enterprises to break through the limitations of space to connect customers. Other tools with similar functions include corporate mobile apps, WeChat Mini Programs, online stores, official account and Weibo. Second, the ability to obtain data. There are two breakthroughs in data acquisition, namely, the amount of data and the type of data. With the rapid popularity of digital terminal devices such as the mobile Internet and the Internet of things, an Internet of everything society is taking shape. At the same time, the amount of data generated by the whole society is also growing exponentially. According to the Data Age 2025 report, 481EB data will be generated every day in 2025. In addition, the types of data obtained by enterprises are rapidly rich, such as customer web stay time, health and hobbies, etc. Third, the ability to implement the algorithm. The software .l.related to digital technology not only makes the operation of complex statistical models possible, but also greatly improves the computational efficiency. Fourth, the ability to use cloud computing. The emergence of cloud computing enables small and medium-sized enterprises to obtain high-quality computing service support through a small amount of investment. For large technology companies, the cloud computing platform built by distributed servers can provide itself with unprecedented computing power.

The evolutionary layer refers to the effect of the ability given to enterprises by digital technology to promote the optimization and upgrading of all aspects of production and operation. First, strategic planning. Digital operation will adjust the formulation process and way of enterprise strategic planning, and enterprise decision makers will know the technology development trend, consumer demand and market supply trend of the industry mainly by obtaining and analyzing the real-time data of the industry. Second, customer demand forecast. Digital operation will increase the amount of data and validity needed for customer demand forecasting, thus improving the accuracy and efficiency of demand forecasting. Third, the creation of products and services. With the increase of material wealth and the enrichment of cultural activities, the personalized consumer demand of customers is growing day by day, and the long tail effect of the market is becoming more and more obvious. On the other hand, enterprises that can make effective use of digital technology will better meet the personalized needs of customers and the long-tail effect of the market. The use of data for product and service innovation is expected to enable enterprises to create a new blue ocean. Fourth, pricing strategy and inventory management. Digital technology not

only increases the analysis ability of structural data, but also realizes the acquisition and utilization of non-structural data, and then formulates the price demand function to obtain higher profit. In big data environment, machine learning method is used to consider inventory and customer demand at the same time, so as to effectively reduce the cost of out-of-stock and inventory. Fifth, supply chain management. Enterprises use big data and artificial intelligence technology to maximize the operational efficiency of the supply chain, and need to deal with the whole process from raw material procurement to meet the needs of consumers to the maximum extent. Sixth, employee promotion and performance management. Enterprises use digital technology to understand the effect of employee value creation, can analyze the total amount of benefit creation and the fastest progress and other information, at the same time combined with salary incentive mechanism to stimulate employees' enthusiasm and talent potential.

The resilience increasing layer refers to the level that digital technology is finally transmitted to the level that contributes to the improvement of enterprise economic resilience. The improvement of enterprise economic resilience can be reflected from eight aspects (corresponding to nine indicators used in the quantification of enterprise economic resilience). These eight aspects are growth ability, market position, debt paying ability, operation ability, profitability, learning ability, innovation ability and social responsibility.

4. Conclusion

This paper studies the concept definition and promotion mechanism of enterprise economic resilience, and puts forward that the promotion mechanism includes enabling layer, lifting layer and toughness increasing layer. The research on economic resilience has important theoretical and practical significance, but there are also some difficulties in the study of related topics. For example, the measurement of the economic resilience of enterprises. The economic resilience of enterprises at the micro level needs to be measured in two aspects, one is the resistance stage after the impact, and the other is the optimal development stage after the impact. In the first stage, the data availability of the research indicators is high, while in the second stage, the indicators such as corporate learning ability, innovation ability and social responsibility are relatively abstract, so it is necessary to scientifically design questionnaires and establish quantitative models to measure the indicators reasonably. Additionally, explore the influence mechanism of business factors on the economic resilience of enterprises. Before studying the influence mechanism, we first need to master the principles, functions, methods of use and economic effects of digital technology, and then deeply combine business factors with all aspects of business activities to discover the new capabilities given to enterprises by business factors. and what kind of new science and technology products will be created when enterprises use new technologies, etc.

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