

Suggestions on the resilience and quality safety of agricultural products industrial chain and supply chain

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Abstract

Under the new development pattern of "double cycle", how to improve the resilience and safety level of agricultural products industrial chain and supply chain is an important task to ensure the high-quality development of China's economy and society. Based on the theory of system science and from the perspective of industrial ecology and resilience, this paper constructs an evaluation index system for the resilience and security of agricultural products industry chain and supply chain, uses entropy weight method and comprehensive index method to conduct an empirical analysis on the resilience and security level of China's agricultural products industry chain and supply chain, and puts forward policy suggestions to improve the resilience and security level of China's agricultural products industry chain and supply chain.

Keywords

agricultural products industry chain, Supply chain, Toughness, Safety level

1. Introduction

In recent years, with the acceleration of the trend of economic globalization and profound changes in the domestic and foreign environment, China's industrial chain supply chain is facing many challenges, and there is a problem of "stuck neck". Building a new development pattern of "double cycle" is an important content of the Thought on socialism with Chinese Characteristics for a new era, and provides a major opportunity for China's high-quality economic development. China has formed a new pattern of development in which the domestic cycle is the main body and the domestic and international cycles are mutually reinforcing. As an important part of national economic and social development, agricultural industrial chain and supply chain is the key to implementing rural revitalization strategy and realizing agricultural and rural modernization. Improving the resilience and security level of

agricultural products industrial chain and supply chain will not only help ensure the high-quality development of agriculture and rural areas, but also help safeguard national food security, energy security and industrial security, and enhance China's voice in international agricultural trade. Therefore, how to effectively improve the toughness and security level of China's agricultural product industry chain supply chain, and ensure the smooth and stable agricultural product supply chain under the new development pattern of domestic and international double cycle mutual promotion is a major issue to be solved urgently.

Identify the key issues facing the agricultural product industry chain supply chain, further improve the construction of the agricultural product industry chain supply chain security system and resilience system and improve the competitiveness and resilience of the agricultural industry chain supply chain.

2. Literature review

Since the 1970s, global supply chain crises have occurred frequently, especially since the COVID-19 epidemic, and the global supply chain is facing many uncertainties. In the context of the complex international situation, improving the resilience and security level of China's industrial chain and supply chain has become an important task to ensure high-quality economic and social development in China. Regarding the resilience of the industrial chain and supply chain, scholars have conducted research from multiple perspectives. In the context of economic globalization and the new development pattern of "double cycle", we should build a smooth domestic agricultural product industrial chain and supply chain security system. From the aspects of improving the resilience and security level of the industrial chain supply chain, we can cope with the uncertainties and challenges faced by the global industrial chain supply chain. To enhance the resilience and safety level of China's agricultural products industrial chain supply chain, we must improve the organizational structure, risk identification, early warning mechanism and other aspects. Regarding supply chain resilience, to improve the resilience of China's agricultural product supply chain, we must optimize from the aspects of ecological environment, market factors, and social economy. Based on the theory of system science and the perspective of industrial ecology, this paper constructs the index system of agricultural products industrial chain supply chain resilience and safety evaluation.

3. Theoretical Basis

Based on the theory of system science and the perspective of industrial ecology, this paper aims to improve the resilience and safety level of the industrial chain and supply chain of agricultural products in China, and applies the principles of integrity, open coordination, self-organization and self-adaptability in the theory of system science to the construction of the resilience and safety evaluation index system of

the industrial chain and supply chain of agricultural products. To improve the resilience and safety level of China's agricultural products industrial chain and supply chain. The principle of integrity in the theory of system science requires starting from the whole of the system, grasping the system from the whole, and studying the system from the whole. The principle of open collaboration requires that in the construction of the agricultural products industrial chain supply chain resilience and safety evaluation index system, from the perspective of upstream and downstream enterprises in the supply chain, upstream and downstream enterprises should be linked together to form an organic whole, so as to better cope with the risks and challenges brought by changes in the external environment. The principle of self-organization requires that enterprises can form a cooperative network to reduce costs.

In order to ensure the safe and stable operation of the industrial chain and supply chain of agricultural products in China, it is necessary to carry out research from the following aspects: First, to build a complete domestic industrial chain and supply chain system of large-scale circular agricultural products; Second, increase the investment in the research and development of agricultural science and technology; Third, cultivate diversified market subjects and strengthen the cultivation of market subjects; Fourth, actively expand the international market to ensure the supply of agricultural products in China; Fifth, vigorously develop the digital economy and promote the construction of smart agriculture; Sixth, optimize the allocation of agricultural resources and factors of production, and accelerate agricultural modernization. In addition, it is necessary to improve the macro-control policy system, establish and improve the emergency management mechanism, and enhance the resilience and safety level of China's agricultural products industrial chain and supply chain.

4.Research review

The industrial chain and supply chain of agricultural products are interdependent in the international and domestic markets and are a complex ecosystem. It is necessary to promote the balance between supply and demand of agricultural products and ensure the security of the industrial chain and supply chain of agricultural products through the resilience of the industrial chain and supply chain. At present, the domestic scholars' research on the resilience and safety evaluation of agricultural products industrial chain and supply chain is not mature, and the research perspectives are mostly focused on the national level, the industry level, and the enterprise level. At the national level, from the perspective of national security, it proposes to build a security system of agricultural products industrial chain and supply chain. The industry level is mainly from the perspective of one or several specific industries to analyze the toughness of agricultural products industrial chain and supply chain; At the enterprise level, it mainly analyzes how to improve the supply chain

resilience in the face of risks from the micro-perspective of enterprises. First of all, existing studies are mainly based on a single perspective, and lack a comprehensive analysis of the factors affecting the resilience and security of agricultural products industrial chain and supply chain. Secondly, the existing research mainly discusses its impact on the toughness and safety level of China's agricultural products industrial chain and supply chain theoretically and lacks quantitative research. Finally, most of the existing studies put forward countermeasures and suggestions to improve the toughness and safety level of agricultural products industrial chain and supply chain from different perspectives, and lack of specific countermeasures and suggestions based on the characteristics of different industries.

(1) Strengthen the supervision function of the government and establish a traceability system for agricultural product quality and safety

Each member of the supply chain of agricultural products, including producers, processing enterprises, sales enterprises and consumers, has a complex interest relationship with each other, and once the quality and safety problem occurs, its impact is very wide. Therefore, the government should play a leading role in the construction and management of the agricultural product supply chain and strengthen the supervision of all links of the agricultural product supply chain. Specifically, the government should perform the following functions: first, to formulate relevant laws and regulations; The second is to formulate the quality and safety standards of agricultural products; The third is to strictly supervise the main body of agricultural production and management; Fourth, we will supervise and inspect the circulation and sale of agricultural products. In addition, the government should strengthen the leadership and management of agricultural product quality and safety testing and certification, and establish and improve the traceability system of agricultural product quality and safety; We will encourage the establishment of third-party testing institutions with independent legal personality, and improve the quality and safety testing system for agricultural products.

(2) Improve the operation efficiency of agricultural products production and management enterprises and reduce circulation costs

It is an important measure to improve the quality and safety of agricultural product supply chain to improve the operation efficiency and reduce the circulation cost of agricultural product production and management enterprises. First of all, the government should increase support for agricultural production and operation enterprises, especially strengthen technical training and guidance for farmers, and improve the management level of agricultural production and operation enterprises. Secondly, increase support for agricultural production and operation enterprises, through subsidies or preferential tax policies, provide loans and other ways to support agricultural production and operation enterprises to improve operating conditions and expand production scale. Finally, agricultural products production and management enterprises should change the development concept, through scientific

and technological innovation, reduce production costs to improve the competitiveness of agricultural products. This is the fundamental way to improve the quality and safety of agricultural products. Finally, strengthen the management and supervision of the processing, transportation and sales of agricultural products to avoid some illegal elements in the circulation link with shoddy, fake or jerry-cutting, so that farmers' interests are damaged. Strengthening the management and supervision of agricultural products circulation can reduce the impact of fake and shoddy products on the market, and then improve the quality and safety level of the entire supply chain.

(3) Strengthen the management of agricultural supply chain members to ensure the integrity and transparency of member enterprises

Because of the suddenness, uncertainty and complexity of the quality and safety of agricultural products, it is easy to have credit problems among the members of the supply chain of agricultural products. Distrust among supply chain members will make each other lack the basis for cooperation and affect the overall efficiency of the supply chain. In order to ensure the integrity of supply chain members, long-term cooperation agreements should be signed to regulate the behavior of each link, so as to avoid damaging the overall interests of the supply chain due to conflicts of interest. At the same time, the member enterprises of the agricultural product supply chain should strengthen internal management, improve the construction of information system, ensure the smooth flow of information in the supply chain, and reduce the damage caused by information distortion. In addition, it is necessary to strengthen the cooperation between the member enterprises of the supply chain, strengthen the interest linkage mechanism between enterprises, and actively encourage enterprises to carry out technological innovation and improve production equipment, so as to improve product quality, reduce production costs and improve management level.

(4) Smooth the information communication channels among all links of the agricultural product supply chain to improve the efficiency of information transmission

At present, the information asymmetry in the supply chain of agricultural products in our country is serious, which leads to the information transmission between the main body of the supply chain is not smooth, especially the logistics, information flow and capital flow. The asymmetric phenomenon of information leads to the low efficiency of agricultural supply chain and the imbalance of resource allocation. Therefore, it is necessary to solve the problem of information asymmetry from two aspects: First, the government should improve the information market mechanism, standardize the information transmission channels between the main bodies of the agricultural product supply chain, and improve the efficiency of information transmission.

Second, the main body of the agricultural product supply chain should strengthen cooperation with third-party organizations such as logistics companies, banks and

insurance companies to improve logistics efficiency and reduce transaction costs. At the same time, it is necessary to establish and improve the supervision system of agricultural products market and strengthen the supervision and management of agricultural products market. It is necessary to give full play to the role of the government and agricultural product market regulators and crack down on illegal activities in the production, sale and use of toxic and harmful substances in accordance with the law.

(5) Improve the construction of agricultural products market system and improve the efficiency of market circulation

From the perspective of the circulation process of agricultural products, there are problems of logistics, information flow and capital flow in each link of the circulation of agricultural products, which leads to the "intestinal obstruction" phenomenon of agricultural products in the market. To solve this problem, we must improve the construction of agricultural products market system and improve the efficiency of market circulation.

First, we should further improve the rural transport network, increase the investment in the construction of rural roads on the basis of the existing rural roads, and make the road network more reasonable and perfect; Second, it is necessary to speed up the construction of wholesale market of agricultural products, especially the construction of large-scale wholesale market, and actively guide farmers and agricultural production enterprises to enter the wholesale market; The third is to develop the futures market of agricultural products and play the regulating role of futures trading on the market of agricultural products; Fourth, we must strengthen the construction of agricultural products logistics system. In the construction of logistics system, we should pay attention to improving transportation efficiency and distribution efficiency and reducing logistics costs.

The fifth is to improve the agricultural information service system, the establishment of agricultural product supply and demand information network platform. Information sharing and online trading of agricultural products can be realized by means of information technology to further improve the circulation efficiency of agricultural products market.

(6) Establish an agricultural product quality and safety traceability system based on Internet technology

On the one hand, government supervision is insufficient, and there is a lack of effective communication and coordination of information among all links of the agricultural product supply chain. On the other hand, there is no unified platform for information exchange and sharing among the members of the agricultural product supply chain in our country. Therefore, government supervision should be strengthened, an Internet-based agricultural product quality and safety traceability system should be established, and unified technical standards, certification standards and management norms should be formulated. First of all, an Internet-based

agricultural product quality and safety traceability system platform should be established under the leadership of the government to collect and monitor information in all links of the supply chain. Secondly, to realize information sharing and exchange among all links of the supply chain, government departments can use the system to realize real-time monitoring and information exchange on the quality and safety of agricultural products. Finally, it is necessary to establish a unified certification standard and certification specification, and conduct unified certification for each member of the supply chain and issue certificates and identifiers to provide quality and safety assurance for consumers.

5. Conclusions and policy recommendations

We will accelerate the building of a high-level socialist market economy, continue to improve the business environment, and further stimulate the industrial chain and supply chain of agricultural products. We will comprehensively improve the resilience and safety of the industrial chain and supply chain of agricultural products, accelerate efforts to strengthen the weak links and weak links of agricultural and rural infrastructure, strengthen scientific and technological innovation capacity, vigorously develop digital agriculture and smart agriculture, and improve the stability of the agricultural industrial chain and supply chain. Finally, it is necessary to pay attention to the dynamic monitoring and analysis of the resilience and security of the agricultural product industry chain and supply chain, conduct timely and effective assessment of the resilience and security of the industrial chain and supply chain, and take targeted measures to improve the resilience and security level of the agricultural product industry chain and supply chain.

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