



## Mechanisms of structural upgrading in the feed industry against the background of rural revitalization

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### Abstract

In the context of rural revitalization, industrial prosperity is fundamental. The feed industry, serving as a crucial link between the supply of raw materials from crop farming and the supply of feed for livestock farming, is closely associated with rural revitalization through its structural upgrading. This study, grounded in the broader context of rural revitalization, explores the necessity of the feed industry in promoting rural economic development. It specifically examines the current status and existing challenges of structural upgrading in China's feed industry. Finally, the study proposes effective mechanisms for upgrading the industry's structure, emphasizing the importance of integrated feed enterprises and the coordinated development with rural revitalization efforts.

**Keywords:** Feed industry, rural revitalization, industrial upgrading

### Introduction

The "19th National Congress" report proposed the Rural Revitalization Strategy, emphasizing that industrial prosperity is the foundation of rural revitalization. The feed industry, as a major component of modern animal husbandry, serves as a bridge connecting crop farming on one end and animal husbandry on the other. The structural dynamics of this industry impact both farmers' income and the quality of livestock, playing a significant role in achieving rural revitalization.

### The Necessity of Structural Upgrading in the Feed Industry under the Background of Rural Revitalization

#### 1. Structural Upgrading of the Feed Industry and Its Impact on Farmers' Income

Current economic conditions in rural China reveal that the low economic value added from crops and the high cost of feed in animal husbandry are key factors limiting farmers' income. The feed industry, closely tied to both crop farming and livestock breeding, could optimize its structure to align with the goals of rural revitalization. By integrating feed industry development with the broader rural revitalization strategy, we could leverage the prosperity of the feed industry to drive agricultural development, thereby promoting high-quality rural economic growth. The feed industry, which directly influences the quality of life for the populace, occupies a critical role between crop farming and livestock breeding. It sources raw materials from crop farming and supplies products to livestock breeding. In most rural areas in China, farmers primarily earn their income from crop farming and livestock breeding. From the perspective of enhancing farmers' income, developing the feed industry can incentivize farmers to cultivate economically valuable feed crops, thereby increasing the per-unit land output value. Thus, there is a strong correlation between the development of the feed industry and farmers' income growth.

The feed industry's development is closely linked to agriculture and significantly impacts rural economic growth as a secondary industry. Crop farming and livestock breeding are primary economic activities for Chinese

farmers. Under the framework of rural revitalization, promoting structural upgrades in the feed industry can enhance the efficiency of both crop farming and livestock breeding, thus effectively boosting farmers' incomes. Analyzing the downstream side of the feed industry, its development can drive the processing and value addition of livestock products like meat and eggs, thereby enhancing the overall economic benefits of agriculture.

#### 2. Structural Upgrading of the Feed Industry as a Foundation for Rural Livestock and Animal Husbandry Development

Against the backdrop of rapid urbanization in China, a significant portion of rural labor has migrated to urban areas for employment, resulting in underutilized arable land and an aging rural population. Recognizing these socio-economic trends, the Chinese government introduced the Rural Revitalization Strategy, aiming to promote farmer prosperity and urbanization. This strategy represents an upgrade in the socialist new countryside construction strategy, aligning with the core socialist principle of common prosperity. The feed industry's development is crucial to the advancement of livestock breeding and animal husbandry. Historically, China's supply of meat and eggs has primarily relied on small-scale farming. However, with economic development and rising per capita income, there is a growing demand for meat, eggs, and dairy products. Future consumer demand trends necessitate improvements in the scale and quality of livestock breeding, which cannot be met solely by small-scale family farming. This scenario calls for the establishment of large-scale livestock enterprises and rural family farms, and the upstream feed industry must enhance feed quality to support these developments. The safety of feed products is foundational to the safety of livestock products. Substandard feed quality in livestock breeding can turn livestock products into carriers of bacteria and viruses. Structural adjustments in the feed industry are, therefore, vital for improving production efficiency, product quality, and pricing in rural livestock breeding.

### 3. The Significance of Feed Industry Structural Upgrading for Food Security

The feed industry is a major consumer of grain. According to data from China's livestock industry, using feed in livestock breeding rather than solely relying on grain can reduce grain consumption by 23%-25% annually. Additionally, as animal protein intake increases, reliance on grain diminishes. The dietary structure of Chinese residents is evolving, with increased consumption of meat, eggs, dairy, and aquatic products and reduced consumption of grains and cereals. The development of the feed industry can transform previously low-value agricultural by-products into high-value feed products. Estimates suggest that processing corn stalks alone into feed could save tens of thousands of tons of feed grain annually nationwide, significantly contributing to agricultural income growth.

#### Theoretical Foundation for the Transformation and Upgrading of the Feed Industry

##### 1. Theory of Agricultural Industrialization

According to industrial economics theory, an industry is defined as the collective of all enterprises engaged in the production of the same or similar products, representing a group of economic activities. Based on this definition, the feed industry encompasses both feed production organizations and non-production organizations that align with feed production, specifically comprising a complete industrial chain that includes crop farming, feed processing enterprises, livestock breeding, and the transportation and sale of feed. A complete feed processing industry mainly includes the production of feed raw materials and feed additives, as well as an aggregation of enterprises related to processing, procurement, research and development, and sales associated with feed product production. From the perspective of industrial integration, the feed industry is connected upstream to crop farming and downstream to livestock breeding. By effectively integrating the feed industry with rural economic development, it is possible to better address the issue of low added value of agricultural products in the context of rural revitalization, thereby aiding in increasing farmers' income and promoting rural economic development.

Agricultural industrialization is based on market orientation, with a focus on enhancing agricultural economic efficiency. It gradually forms an integrated agricultural production and management system that encompasses cultivation, processing, and production-sales integration. The adjustment of China's agricultural industrial structure is a long-term and complex process, with varying agricultural development models across different regions and no fixed model for agricultural industrial structure. The following principles are mainly followed: First, the principle of market orientation, which involves combining the latest market trends, enhancing the prediction of future agricultural product prices, and promptly adjusting the industrial structure layout based on these predictions. Second, the principle of regional comparative advantage, where the adjustment of rural industrial structure should further rely on regional advantages, leveraging local resources, markets, and technological strengths to capitalize on local distinctive resources and implement regional complementarity.

### 2. Theory of Enterprise Integration

Enterprise integration involves the development of an enterprise along the lines of vertical or horizontal integration under the management of the same group, based on advantages in products, sales markets, capital, and technology. The integration strategy signifies that enterprises, when expanding their scale through external investments, inevitably face substantial risks, necessitating the formulation of integration strategies based on the external environment and actual operational conditions. Vertical integration is a form of enterprise integration strategy where a company's operations extend upstream or downstream in its existing industry. This is a common strategy adopted by large feed enterprises in China today. The strategic intention of feed enterprises adopting vertical integration is to extend the industrial chain, thereby effectively mitigating unpredictable market risks.

#### Issues in the Structural Development of China's Feed Industry under the Background of Rural Revitalization

##### 1. Predominance of Small-Scale Operations and Workshops in Rural Feed Enterprises

Under the backdrop of rural revitalization, the integration of the rural feed industry has not accelerated. Currently, rural feed enterprises mainly consist of traditional small-scale businesses or small workshops. In terms of processing methods, these small-scale rural feed processing enterprises employ relatively rudimentary methods, focusing on primary feed processing and selling the produced rough feed to nearby farmers. Feed processing equipment is predominantly limited to simple machines like crushers, making the production process straightforward with low investment and minimal requirements for production machinery and feed processing ratios. However, this extensive feed processing approach has significant drawbacks, primarily in the low added value of feed products. For instance, in corn feed processing, companies purchase corn at a cost of 2.10 RMB per kilogram and sell the ground corn powder at only 2.50 RMB per kilogram, indicating that the added value of agricultural feed products from this extensive production method is minimal.

The numerous feed processing workshops that have proliferated in rural areas since the 1990s have historically played a significant role in promoting rural economic growth. At that time, small-scale production units like flour mills, feed mills, and fertilizer plants in rural areas contributed to farmers' income growth. However, the rural economy in China has since developed to a certain stage. Under the requirements of rural revitalization, rural economic development should not only aim for the prosperity of individual businesses but also seek dual improvements in environmental and social benefits. Small-scale feed processing enterprises have limited effectiveness in driving economic growth for nearby farmers and may even result in negative outcomes, such as environmental pollution and wastage of agricultural products.

The current predominance of small-scale enterprises in China's feed industry does not significantly contribute to rural economic growth. Environmental issues arising from feed processing, such as wastewater and dust, have caused substantial environmental pollution in rural areas. From both the perspectives of industrial development and economic efficiency, the prevalence of numerous small-scale feed enterprises is not aligned with the broader goals

of rural revitalization. Some local governments lack adequate understanding of the need for structural adjustments in the feed industry, failing to recognize the issues caused by the large number of small-scale feed processing enterprises. In the long run, this is detrimental to the sustainable development of the rural economy.

## **2. Severe Low-Level Homogeneous Competition among Feed Enterprises**

A segment of feed enterprises in China focuses only on cost, neglecting the quality of feed products. This short-sighted market behavior ultimately harms the overall interests of the feed industry. Over 80% of rural feed enterprises are small workshops or small feed processing factories, characterized by small scale and high substitutability among their products. These enterprises engage in prolonged price wars, without forming a stable customer base. Most small-scale enterprises do not cater to the demands of the high-end feed market, leading to competition purely based on price and preferential policies.

Against the backdrop of rural revitalization, feed enterprises can only grow stronger and better contribute to the development of the agricultural economy by focusing on specialized, high-quality, and practical markets. In the current environment of homogeneous competition, low feed prices result in low prices for upstream feed raw materials, which leads to lower earnings for farmers from cultivating feed crops. For the feed industry to develop better and drive agricultural economic development, it must rely on industrial upgrading, clearly defining core products and specialties, and gradually achieving brand benefits through long-term enterprise development planning.

## **3. Overextension of the Industrial Chain in Feed Enterprises' Upstream and Downstream Expansion**

Some feed enterprises that have achieved initial scale recognize the importance of extending the feed industry chain. However, they overlook the risk that blindly extending the chain upstream or downstream can lead to a loss of core competitiveness. Some feed enterprises have implemented an integrated strategy to connect upstream and downstream industries, but in doing so, they have overextended their industrial chains. By dispersing limited resources across various segments of the industrial chain, these enterprises ultimately weaken their support for future core products and core businesses, reducing their competitiveness. For example, the listed company Chuying Agro-Pastoral Group initially focused on the feed industry. Still, as the company expanded, it invested heavily in livestock breeding, slaughtering, meat packaging, and processing industries. Notably, from 2016 to 2018, the pig farming industry was consistently unprofitable. During this period, Chuying Agro-Pastoral Group aggressively pursued livestock projects, leading to a tight cash flow. The company defaulted on numerous pig recovery contracts with farmers, resulting in financial losses for the farmers. By diverting significant capital into the downstream industry chain, the company failed to update feed industry technology and equipment, causing the original core industry to become obsolete.

## **Mechanisms for Upgrading the Structure of the Feed Industry under the Background of Rural Revitalization**

### **1. Collaborative Development Mechanism between Feed Industry Upgrading and Rural Collective Economy**

The scaling-up of feed enterprises has a significant impact on promoting rural economic growth. Therefore, to enhance farmers' income, it is crucial to expand the scale of rural feed enterprises. In the upgrading and optimization of feed enterprises in rural areas, key factors affecting their upgrading effectiveness include limited capital, small scale, outdated equipment, and backward products. To fundamentally address this situation, it is essential to strengthen the rural collective economy. Currently, about one-third of rural feed processing plants are collectively owned by villages. In the new era, the state emphasizes "common prosperity," and it is important to ensure the interests of farmers in the expansion of the collective economy. Relevant departments and grassroots agricultural institutions can encourage farmers to invest in feed enterprises through capital or land shares or participate in feed production by establishing rural feed cooperatives. Farmers' feed crops can be sold directly through feed enterprises. Additionally, the government and relevant functional departments should provide certain policy support to rural feed enterprises, thereby establishing a "rural feed industry + collective economy" model. This model lays a solid foundation for rural economic development and accelerates the pace of rural economic growth.

It is important to note that while expanding the scale of some rural feed enterprises, it is also necessary to shut down certain small workshops with outdated equipment, small scale, and lack of operational qualifications. These small workshops often have outdated production equipment and lack environmental protection capabilities, causing significant environmental pollution in rural areas during feed production. There should be training for rural feed enterprise leaders to improve their professional skills and comprehensive qualities. Through talent development, scientific operations can be achieved, enabling enterprise leaders to fully understand the importance of feed industry upgrading for rural revitalization. The development of feed enterprises can increase farmers' income, improve the industrial benefits of rural enterprises, and provide an industrial foundation for the continuous development of the rural economy.

### **2. Mechanism for Specialized and High-End Upgrading of the Feed Industry**

At present, China's feed industry still primarily relies on rough feed made from soybean meal and corn, with significant product homogeneity. Moreover, soybean meal and corn are greatly affected by international agricultural product prices. To address the current problem of severe homogeneity in China's feed industry, efforts should be strengthened in the research and development of high-end specialty feed products during the industry's upgrade. Most feed enterprises in China are following a path of extensive product development, which is disadvantageous in the highly competitive feed market. Therefore, feed enterprises need to enhance product innovation during industrial upgrading and optimization. By strengthening cooperation with universities and research institutions, feed enterprises can accelerate innovation in feed production and products,

thereby changing the current situation of a high proportion of extensive products and a lack of high-end feed products in China's feed industry. This approach will help increase the additional profits from feed products.

### 3. Collaborative Development Mechanism between Feed Industry Integration and Rural Revitalization

Industrial integration has become an inevitable path for industrial upgrading and development. Expanding an industry from a smaller dimension to a multidimensional one can promote not only the industry's own development but also the growth of related surrounding industries. The market concentration of China's feed industry is relatively low. Although some large-scale leading feed enterprises have begun to implement an integrated industrial strategy, the overall integration strength of the industry remains insufficient. The feed industry is connected upstream with agricultural crop farming and downstream with rural livestock breeding. Integrating upstream and downstream stakeholders into the long-term development plan of feed enterprises would have a positive impact on continuously leveraging the chain integration effect throughout the industrial chain. This requires the feed industry to merge with rural economic development during its structural upgrading, achieving deep integration of the feed industry with rural economic growth.

The government should encourage leading feed enterprises to extend their industrial chains and provide certain preferential policy support for these large-scale leading enterprises participating in rural revitalization. Once the leading enterprises in the industry achieve high returns through industrial chain integration, their exemplary role will influence other enterprises within the industry to follow suit. This approach will inevitably enhance the degree of integration within the feed industry chain and contribute to rural revitalization.

During the upgrading of the feed industry, it is essential to strengthen its relevance to farmers and agriculture. Firstly, the feed enterprises can enhance the benefit linkage with feed raw material growers, establishing a cooperation model of "shared benefits and shared risks" between growers and feed enterprises, allowing farmers to benefit from the development of feed enterprises. Secondly, it is crucial to establish a relationship between rural livestock breeders and feed enterprises, whereby feed enterprises offer rural breeders certain feed purchase discounts, enabling breeders to reduce risks through cooperation with feed enterprises. This strategy can control the quality of livestock breeding from the source of feed while expanding the sales of feed products. Thirdly, the industry should strengthen the recycling and processing of agricultural by-products such as crop straw and rice husks into feed, achieving a fusion of environmental and economic benefits.

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