

## Theoretical basis and path choice of current industrial structure transformation--Analysis in the perspective of Marxist political economy

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**Abstract.** The transformation of industrial structure is a key task for realizing high-quality economic development. Different from western economics, which locates the industrial structure and its transformation in the ratio of the three industries of the national economy and their changes, this paper logically analyzes the theoretical content of Marxist political economy, takes into account the "qualities" of the organic composition of capital of the industry, and summarizes the transformation of the industrial structure as the process of optimizing the ratio between the two categories of social reproduction and their intersectoral relations to realize the upgrading of the industry in the contradictory movement of the productive forces and the relations of production. The transformation of industrial structure is summarized as the process of industrial upgrading, in which scientific and technological innovation promotes the adjustment of the organic composition of capital, optimizes the proportion between the two major categories of social reproduction and their respective sectors. This process has different manifestations at micro, meso and macro levels, and is constrained by the objectives of total social reproduction balance, structural balance and productive labor-based. Accordingly, the article proposes that we should base ourselves on the level of development of productive forces, strengthen the real economy, adjust the relations of production, improve the form of ownership, strengthen macroeconomic regulation and control, and promote scientific and technological innovation in order to realize the transformation of China's industrial structure.

**Keywords:** industrial structural transformation, political economy.

At present, the world's century-old changes are accelerating, the new round of scientific and technological revolution and industrial changes are developing deeply, and the status quo and development level of industrial structure have become an important factor affecting the economic development of a country or a region<sup>[1]</sup>. Xi Jinping clearly put forward "building a modernized industrial system" in the report of the 20th Party Congress, emphasizing "insisting on putting the focus of economic development on the real economy and promoting new industrialization"<sup>[1]</sup>, which points out the direction for the transformation and upgrading of industrial structure. Since the reform and opening up, China has utilized its comparative advantages to establish an industrial system and actively integrated into the global industrial chain, with a complete range of industrial categories, an increasingly large scale, and a constantly improving technical level, which has promoted economic development and social progress<sup>[2]</sup>. However, China's industrial system is still characterized by a low level of industrial structure, which makes it difficult to meet the requirements of high-quality development under the new development pattern. To promote the high-quality development of China's economy, it is necessary to promote the transformation of industrial structure. Industrial structure transformation involves many important theoretical issues: what is industrial structure transformation? What are the connotation and driving mechanism of industrial structure transformation? What are the manifestations and constraints of industrial structure transformation? How to promote industrial structure transformation? These issues have been discussed in Western economics, but they cannot effectively guide the transformation of industrial structure in China. Therefore, it is necessary to study industrial structure transformation from the perspective of Marxist political economy, in order to study the implementation path of

China's industrial structure transformation, and to provide a deeper theoretical basis for the promotion of high-quality economic development.

## 1. Literature review

Industry is a common concern of both Western economics and Marxist political economy. According to Western economics, there are different levels of economic units in the modern economy and society, the most basic and smallest economic units being the enterprise and the family, and the largest economic unit being the entire national economy. Between the two economic units of various kinds and sizes, which have some of the same attributes and combined together the collection of enterprises, can be regarded as the national economy according to a certain standard division of the part, which is the industry. In Marxist political economy, industry is the product of the development of productive forces and social division of labor. Marx divided social production into two categories: production of means of production and production of means of consumption. As the scale of social production continues to expand and the social division of labor becomes more and more refined, capital promotes the redistribution of factors of production such as labor and technology, forming a new organic composition of capital, and new types and sectors of means of production and means of consumption appear, and industry is the same organic composition of capital in the two major categories of the production sector. Industry is one of the two sectors of production with the same organic composition of capital.

**In Western economics**, industrial structure usually refers to the quantitative and proportional relationship between the three major industries. Of course, the scope of industrial structure includes not only the relationship between industries, but also the relationship between industries and the overall economy. As Syrquin emphasized, industrial structure takes "sector" as the main object of analysis, and measures the relative importance of the sector in the overall economy from the perspective of output or factor use, and the economic activities have gradually formed the process of organizing in the form of "industry"<sup>[3]</sup>. Based on Fisher's three-industry classification, structuralist analysis was introduced by Arthur Lewis and other development economists to analyze growth and development, and further expanded by Rostow, Kuznets, Kaldor, Chinnery and Taylor, gradually forming the industrial structure transformation with the change in the proportion of the three industries as the core. The idea of<sup>[4]</sup> is that the measurement index of industrial structure transformation is mainly the distribution ratio of output and employment in the three industries, and it is used as a criterion to judge whether the industrial structure of an economy is reasonable and optimized, which is used to guide the practice of industrial development in all countries, especially in developing countries. Kuzilets concludes that industrial structural transformation is the redistribution of economic activities among sectors, and the metrics are the output structure, consumption structure or employment structure of industries or sectors<sup>[5]</sup>. Acemoglu incorporated intra-industry production efficiency into the analytical framework of structural transformation, attributed industrial upgrading to the dynamic change of output and employment among industries and the improvement of intra-industry production efficiency, and finally formed the so-called "standard structure" theory<sup>[6]</sup>. Generally speaking, in the western classical industrial structure research, structural analysis is a long-term, dynamic and endogenous problem<sup>[7]</sup>, which mainly takes the ratio of the three industries in the national economy and its changes to measure the transformation of industrial structure, and takes the ratio of the current form of industrial structure in the developed countries as a regularity<sup>[8]</sup>. However, the paradigm of industrial structure analysis in Western economics simplifies the manifestation of industrial structure transformation in an economy and does not take into account the driving and targeting constraints on industrial structure transformation by the smooth progress of social reproduction.

**In the domestic research on industrial structure transformation**, many scholars once drew on the three-industry classification method, believing that the transformation and upgrading of industrial structure focuses on the adjustment of the structural proportion of the three industries,

with the proportion of the primary industry greatly reduced, the secondary industry gradually reduced, and the tertiary industry gradually developed into the leading industry. After some developing countries have successively experienced economic crisis, limited industrial development, serious environmental pollution and low value-added products, many scholars have reflected on the three-industry classification and explored different mechanisms, paths and modes of industrial structure transformation. Some scholars have proposed to shift from traditional industries to strategic emerging industries from the perspective of industrial evolution, and Han Xiaoming<sup>[9]</sup> 's "leaping theory" proposes to leap from traditional industries to high-tech industries. Li Yining<sup>[10]</sup> thinks that the development of high-tech industries in China should be combined with the development of traditional industries, and Gu Shengchou<sup>[11]</sup> points out that insisting on the industrialization of high-tech industries and the high-tech traditional industries are two major directions of the development of high-tech industries, and in the period of industrialization has not yet been completed, it is necessary to put the high-tech traditional industries in the first place. Sun Jun et al.<sup>[12]</sup> think that traditional industries and new industries show a spiral upward trend, the upgrading of the former can form strategic new industries, while the cultivation of the latter can provide support for the upgrading of traditional industries. Under the condition of limited resources, each region faces the dilemma of developing strategic emerging industries and traditional industries, and the basic path to solve this dilemma is innovation-driven<sup>[13]</sup>. In the period of "14th Five-Year Plan", China will enter a new stage of development, forming a new development pattern which is mainly based on the domestic macro-cycle, and the domestic and international double-cycle will promote each other, which requires us to change the predicament of over-dependence on the international market of part of the industries in the past, the industrial level is located in the middle and low-end, and the domestic market is not sufficiently explored, and to promote the transformation and upgrading of the industrial structure to realize the high-quality development of the economy. This requires us to change the predicament of over-dependence on international market of some industries, middle and low-end industrial level, and insufficient exploitation of domestic market, so as to promote the transformation and upgrading of industrial structure, and realize the high-quality development of economy. The research of scholars has provided some reference for us to study the transformation of industrial structure: the direction of industrial structure transformation lies in the upgrading of industrial structure, and in the promotion of the upgrading of traditional industries and the development of high and new-tech industries by relying on the progress and innovation of science and technology.

As the guiding ideology for the development of socialism with Chinese characteristics, Marxism, especially Marxist political economy, also has many important insights on industrial structure transformation, which has profound theoretical and practical significance. Therefore, it is necessary to analyze the transformation of industrial structure from the perspective of Marxist political economy, to determine the connotation and power mechanism of industrial structure transformation, to find the manifestations and constraints of industrial structure transformation, and to put forward suggestions for the transformation of China's industrial structure that can be used for reference, so as to provide a deeper theoretical basis for the promotion of high-quality economic development.

## **2. Industrial Structure Transformation from the Perspective of Marxist Political Economy**

In Marxist political economy, science and technology innovation throughout the contradictory movement of productive forces and relations of production, and in the movement of capital to adjust the organic composition of capital, the two major categories and their proportionality of each industrial sector changes and develops, and ultimately promote the transformation and upgrading of industrial structure.

## 2.1 Connotation of industrial structural transformation

Although the structuralist analysis of Western economics has seen the importance of structural transformation in cultivating sustainable development capacity and power, it favors the phenomenal description of structural transformation<sup>[3]</sup> and takes the industrial structure transformation of developed countries as a law, and fails to indicate the power operation mechanism of industrial structure transformation, and fails to give the manifestations and constraints of the industrial structure transformation under the flow of capital, which makes it lose its greater practical significance and sustainability. This makes it lose greater practical significance and sustainability. In order to clear up the problems of the mainstream western industrial structure transformation theory and the related problems of industrial structure transformation, it is necessary to return to the perspective of Marxist political economy.

**In Marxist political economy**, different organic compositions of capital determine the nature of different industries, reflecting the distribution of factors of production, and the interrelationship of different "qualitative" organic compositions of capital forms the industrial structure. From a quantitative point of view, the industrial structure is a reflection of the quantitative relationship of the organic composition of capital. At the same time, labor creates value, the value of goods is determined by the production of the goods of socially necessary labor time, productivity, that is, the level of labor productivity and to a large extent determines the level of profitability, the profit-seeking nature of capital is to continue to improve labor productivity, the pursuit of more surplus value and profit. The ratio and quantity relationship in the industrial structure is essentially the value relationship, and the change of industrial structure is the flow of value or capital. To realize the transformation and upgrading of industrial structure, it is necessary to promote and guide the flow of capital. In the early industrial era, it mainly relied on the expansion of scale and the increase of the number of labor force to accumulate capital and expand reproduction, and after the second industrial revolution, it relied on technology and management to enhance the efficiency of capital, promote economic development and become the mainstream. In the current information age and even the age of artificial intelligence, the new round of scientific and technological revolution and industrial revolution are advancing in depth, and scientific and technological innovation is becoming more and more influential on industrial change and economic development, and is gradually becoming the source of industrial structure transformation<sup>[14]</sup>.

Marxist theory holds that the contradictory movement of productive forces and relations of production is the most fundamental driving force of all development. The contradictory movement of productive forces and relations of production also drives the flow of capital and the transformation of industrial structure. As the manifestation of production tools, science and technology innovation improves the skills of laborers and expands the scope of labor objects, becoming a representative factor of productivity. In the process of scientific and technological innovation to promote the development of productive forces, the combination of laborers and means of production is also changing, the ownership of the means of production has appeared more forms of expression other than pure public and private ownership, the distribution of products has become more diversified, and the relations of production have also changed. Therefore, the process of scientific and technological innovation is to apply scientific discoveries and technological inventions to the industrial system in the contradictory movement between productive forces and production relations, to promote and guide the flow of capital, to create new technologies, new products and new industries, so as to adjust the organic composition of capital, to optimize the relationship between categories and to promote the transformation of industrial structure. Therefore, we believe that the transformation of industrial structure is a process of adjusting the organic composition of capital, optimizing the proportional relationship between the two major categories of social reproduction and their various sectors, and realizing industrial upgrading, driven by scientific and technological innovation.

## 2.2 Productivity and structural transformation of industry

The contradictory movement of productivity and production relations is the most fundamental driving force for capital flows and industrial transformation and upgrading, of which productivity is again the most fundamental factor.

**Firstly**, the development of productive forces, especially scientific and technological innovation, has led to a continuous flow of capital within industries, promoting the structural transformation of the industry sector. As far as capital in the same industrial sector is concerned, in order to obtain more surplus value, it is necessary to continuously improve its own utilization efficiency, and to obtain the excess surplus value of the difference between the selling price and the market price by increasing the labor productivity to a level higher than or equal to the average labor productivity of the industrial sector. Therefore, "every capitalist has the motivation to increase labor productivity to make goods cheaper", through the application of science and technology, improve the production process, adjust the management style, expand the scale of production, improve the skills of workers and other ways to increase labor productivity, to obtain excess surplus value. Among these ways, scientific and technological innovation is the most important factor. Constantly innovating science and technology can be applied to the production process, and combined with the factors of labor means, labor objects and laborers in the productive forces to be transformed into actual productive capacity. Individual enterprise capital through scientific and technological innovation and other ways to improve labor productivity, will cause other capital within the industry to imitate, thus forming the industrial technology or production organization of intra-industry diffusion mechanism<sup>[3]</sup>, which promotes the capital within the industrial sector continue to labor productivity and more excess surplus value of the flow of production activities, thereby improving the overall level of technology and production capacity of the sector, so that the industry sector The organic composition of capital changes and the structure of the industrial sector is transformed.

**Secondly**, the development of productive forces requires the flow and transfer of capital among different industries, which stimulates competition among industrial sectors and promotes the transformation of industrial structure. The development of productivity needs to improve the scale efficiency and labor productivity, which makes the capital flow will not be limited to a certain industrial sector, but will also expand the production scale of enterprises and improve the production efficiency through the capitalization of surplus value and mergers and reorganization among capitals, etc.<sup>[3]</sup>. This flow of capital between industrial sectors is based on competitiveness on the one hand, and only the industrial sectors with stronger production and investment capacity have more capital. The flow of capital between sectors in pursuit of profits incentivizes each sector to increase capital investment, expand production scale or promote scientific and technological innovation, and improve production efficiency in order to improve competitiveness and thus obtain more profits. On the other hand, while capital is transferred to higher profit margin industries, new technologies and techniques are also being transferred or diffused to the original or traditional industries, and the original industrial sectors that cannot adapt to the new mode of production will lose their competitiveness, with decreasing profit margins, a lack of capital investment, and the inability to reproduce, and will gradually withdraw from the market. This inter-industry competition has led to changes in the organic composition of capital in different industries, promoting the transformation of industrial structure.

**Finally**, with socialized mass production and people's growing need for a better life, science, technology and innovation will also be "grafted" or "fissioned" in different fields, giving rise to new industrial sectors and promoting the transformation of the overall industrial structure. With the increase in labor productivity and the limited size of the original market, capital's pursuit of surplus value will make the excess capital elements in socialized mass production create a qualitatively different new production sector for these "free capital and labor"<sup>[15]389</sup>. In this process, the added new industrial sector is qualitatively different from the old industrial sector in terms of organic composition of capital, which promotes the transformation of industrial structure. Moreover, the

industrial revolution under the new scientific and technological revolution will in turn lead to the refinement and diversification of products, and "a number of entirely new branches of production, and thus new fields of labor, will be formed, either directly on the basis of the machine system, or on the basis of the general industrial changes which are compatible with the machine system. The great increase of productivity in the field of large industry, and the consequent intensification of the exploitation of labor in all other branches of production, both in its inner and outer dimensions, have made it possible for larger and larger sectors of the working class to be devoted to unproductive labor"<sup>[16]153</sup>, and driven by the desire of capital to make profits, production will be more attentive to the immaterial sphere of production, with an increase in the spiritual sphere of scientific research and service labor. In the past, there has been a massive shift of industries to new and tertiary industries<sup>[17]</sup>, thus promoting the transformation of the entire industrial structure.

### 2.3 Production relations and the transformation and upgrading of industrial structure

In Marxist political economy, "Along with the revolution in the productive forces that once took place and manifested itself as a revolution in the craft, a revolution in the relations of production is also realized." <sup>[18]340</sup> The change and adjustment of production relations is an important driving force for the transformation and upgrading of industrial structure.

**On the one hand**, different types of ownership and forms of ownership organization form different types of industrial structure, and their changes and adjustments also promote the transformation and upgrading of that industrial structure. Among the different ownership systems, the public economy represented by state-owned economy and collective economy is generally engaged in high investment, high technology and other general private enterprises can not operate independently in the field, and its industry is inclined to be heavy and rigid; the private economy represented by private economy is more flexible and rapid, but it will also cause the contradiction between the flexibility of the enterprise and macro-control<sup>[15]</sup>. The selection and transformation of industrial structure should effectively reflect the current level of productivity and the direction of development, not only to determine the components of the form of ownership under the overall level of productivity, but also to adjust the ownership structure according to the level and stage of development of different industrial sectors, combined with the needs of the country, in order to promote the transformation of the industrial structure and the development of productivity. At the same time, with the development of productive forces and the expansion of market demand, the form of organization of ownership will also change. When the workshop handicraft industry could no longer meet the needs of the market and withdrew from social production, capitalism eventually established a machine-based industrial system through social division of labor. The massive application of machines and science and technology made the function of workers and the social integration of the labor process constantly change along with the technological basis of production, forming the factory system, the Taylor system, the Ford system, the Toyota production, and the Wendt system and other different stages of the organization of production. The machine-based large industrial system has led to the continuous differentiation of the capitalist labor process, promoting both the division of labor within the enterprise and the expansion of the scope of the social division of labor, as well as the specialization of scientific research labor, which focuses on the discovery of new useful objects and the creation of new methods of production<sup>[3]</sup>, which in turn has become an independent industrial sector, promoting the diversification of industries. The new round of scientific and technological revolution and technological innovation represented by artificial intelligence, cloud computing and 5G will also promote the emergence of new forms of ownership organization and production organization, and facilitate the transformation of industrial structure.

**On the other hand**, China's socialist market economy has not only inherited the essence of Marxist political economy, but has also innovated and developed socialist political economy with Chinese characteristics, one of the important achievements of which is the dual-track system of resource allocation. In terms of the specific process of the role of the market mechanism, whether in Marxist or Western economics, the market mechanism plays a role through the price mechanism,

the supply and demand mechanism, the competition mechanism and other integrated role to realize<sup>[19]</sup>. In Marxist political economy, price is determined by value and fluctuates up and down around the value, supply and demand in the market affect the price, and "free competition makes the intrinsic law of capitalist production work as an extrinsic law of compulsion for every capitalist"<sup>[20]334</sup>. Driven by the intrinsic profit-seeking drive, each capitalist promotes scientific and technological innovation, pursues excess surplus value, and the organic composition of capital in each industrial sector increases, leading to an increase in the average organic composition of capital in the whole society, and a gradual decline in the average rate of profit. The decline in the rate of profit forces capital to carry out more intense competition within the industry, and promotes the structural transformation of the industry through technological progress and product innovation. And capital concentration and capital accumulation make the scale of capital expanding, the scope of competition is also expanding to different industries, and break through the geographical and national boundaries to limit the flow of cross-industry, cross-regional, cross-border capital transfer and diffusion, thus promoting a wider range of industrial restructuring and transformation. While emphasizing the decisive role of the market, it is also necessary to give better play to the role of government. We should improve the demand structure through macro-control and other means, take the domestic macro-cycle as the main body, further explore the potential of the domestic market, expand the effective demand for products of the consumer goods sector, so as to absorb the excess capacity of the production sector, and use industrial policy and other tools to guide the adjustment of the industrial structure, promote the reasonable growth of the production sector, dissolve the excess capacity, eliminate the backward production capacity, and adjust the product structure and improve the quality of the products through scientific and technological innovation, so as to promote the transformation and upgrading of industrial structure and promote the transformation of the industrial structure. Through scientific and technological innovation, product structure is adjusted, product quality is improved, industrial structure is transformed and upgraded, and domestic and international double-cycle mutual promotion is realized.

### **3. Manifestations and target constraints of industrial structural transformation**

The transformation of industrial structure implies the flow of capital and the restructuring of industries, the realization of which is a continuous process in social reproduction. It is both a process of deepening scientific and technological innovation and social division of labor, and a process of expanding capital in space and time<sup>[21]</sup>. The flow of capital in different enterprises, industries and inter-industry triggers changes in the organic composition of capital, promotes the adjustment of industrial sectors and changes in the proportional relationship between industries, and ultimately realizes the adjustment and transformation of industrial structure.

#### **3.1 Manifestations of industrial structural transformation**

Capital flows not only take place in various sectors within the industry, but also among different industries and within the overall economic structure, which makes the transformation of industrial structure have different levels of expression:

##### **3.1.1 At the micro level**

At the micro level, the adjustment and upgrading of an industrial sector. By increasing inputs of production factors such as technology, labor, data<sup>[22]</sup> and management, or by improving production methods and the output efficiency of production factors, a sector or enterprise within the original industry has improved its labor productivity and profitability, which has led to the continuous flow of capital within the industry to sectors with higher profitability, and changes in the organic composition of capital, thus promoting the adjustment and upgrading of the industry sector.

##### **3.1.2 At the meso level,**

At the meso level, there is competition between different industrial sectors and the exit of a

particular industrial sector. Imbalances in the profitability of different industrial sectors lead to a gradual shift of capital from low-profitability sectors to higher-profitability sectors, providing incentives for the sectors to increase capital investment, expand the scale of production or improve production methods and efficiency in order to enhance competitiveness. If the profitability of an industrial sector is decreasing and it is unable to rely on new inputs to improve production methods, capital will increasingly flow to other sectors, resulting in a lack of capital inputs, inability to reproduce, and eventual exit from the market.

### 3.1.3 At the macro level

At the macro level, the emergence of new industrial sectors and the optimization of the overall industrial structure. The application of a new production technology or the innovation of production relations makes a certain production activity have a higher profit rate or market prospect, the people engaged in this production activity and the production mode will form a different quality of capital organic composition, forming a new industrial sector, and the diversity of the social production sector will also increase accordingly. The flow of capital between different industries will change the organic composition of capital in each industry, and the structure of the two major categories of society and the proportion of the relationship between the industries will change, thus affecting the overall industrial structure. If the national macro-control is involved or the macro-market environment changes, it can also guide the overall industrial structure adjustment, at which time the government's macro-control and industrial policy can guide the overall industrial structure transformation.

## 3.2 Target constraints of industrial structural transformation

At the same time, capital adjustment and ratio optimization in the transformation of industrial structure are not unconditional, subject to the constraints of total quantity and structure, as well as the constraints of the production base. The core of social reproduction is the realization of the total social product, compensation in value and compensation in kind, which requires that the capital expended in production be compensated in value, and at the same time requires that the means of production and the means of consumption expended in the actual production process be replaced in kind. In order for social reproduction to be successfully realized, it is necessary to maintain a certain proportionality between the two main categories and between the various industrial sectors and to develop them proportionately in order to achieve total equilibrium which means structural equilibrium is the basis for total equilibrium. Structural balance is the basis for aggregate balance. The proportionality between the two categories and their various sectors must be structurally balanced in order to ensure that the aggregate is balanced and enhanced, and both must use productive labor as the basis for product manufacturing and value creation.

### 3.2.1 Aggregate balance

Social production must be based on a certain level and stage of development of the social productive forces, so as to achieve a balance between the two major categories and their various sectors in terms of the quantity of production and to meet the needs of social reproduction, and the transformation of the industrial structure is therefore constrained by the accumulation of existing capacity and the level of industrial development. The means of production and consumption produced by the two sectors must satisfy the needs of production and consumption to maintain simple reproduction in the two sectors, and with the increase in social demand brought about by the increase in population, the industrial sector must make adjustments in order to enhance its production capacity and increase the supply of total social products. At the same time, in order to expand reproduction, there must be a surplus of the products produced by the two major sectors in order to meet the additional needs of the society to expand reproduction. The continuous investment of production factors such as technology and labor has promoted scientific and technological innovation, which has improved the organic composition of capital, promoted the improvement of labor productivity and the transformation of industrial structure, and increased the quantity of the



total products of the two major categories to meet the needs of social simple reproduction and expanded reproduction. Even if part of the surplus product and the value it contains which means the spillover from the existing level of social productivity development brought about by sustained productivity gains, capital will seek new production sectors for this part of the product and value, thus promoting the flow of capital and the emergence and development of new industrial sectors.

### 3.2.2 Structural balance

Structural balance is the basis for aggregate balance; aggregate balance can be realized only if the various sectors of society develop proportionately and harmoniously, and the transformation of industrial structure can be promoted on the basis of aggregate balance and structural balance. The smooth progress of social reproduction requires that the compensation in kind and in value of the various components of the total social product in an economy must be fully realized through mutual exchange in a certain proportion. This makes it necessary to maintain a balance between the total supply and total demand for the means of production and the means of consumption, which means the entire industrial sector of an economy should distribute social labor in proportion to the structure of social needs, and achieve a balance between the two major categories and the proportionality of their various industrial sectors. The total capital of society should also be allocated to each industrial sector according to a certain proportion, to maintain the balance of total supply and total demand in the total quantity and structure of society<sup>23</sup>. Even scientific and technological innovation should not consume too much resources, but should be promoted gradually according to the overall planning and structural needs. According to this equilibrium condition, there exists an industrial association relationship of "reciprocal supply and demand" between material material production sectors, and the production expansion of one sector is premised on the corresponding expansion of another sector, thus forming the "structural constraints" between sectors<sup>[24]</sup>, which becomes the constraints for the transformation of industrial structure. This creates inter-sectoral "structural constraints" and becomes the constraints for industrial structural transformation.

### 3.2.3 Based on productive labor

Diversification of industries and transformation of industrial structure do not imply the transfer of the industrial base; productive labor and the labor products it creates are still the basis of social development and the pillar of industrial structure and the constraints of its transformation. Labor creates value, surplus labor creates surplus value, and the products produced by the two major categories of society and its various industrial sectors are mostly created by productive labor. With the development of science and technology, the emergence of unmanned factories, and the strengthening of the collaborative nature of the labor process, the concept of production labor and production workers has been expanded, and managers, engineers, etc. have also been included in the scope of production workers, and at the same time, the industrial sectors that serve the production labor have also been created and developed, including non-productive sectors such as the service industry, the prerequisite for which is the continuous improvement of the productivity of labor in the production sector.<sup>25</sup>, the labor production The labor production factor remains an indispensable part of the organic composition of capital. The allocation ratio and development degree of different natures of labor in a society are always based on the premise of productive labor and its efficiency, and are constrained by the efficiency of productive labor. Without productive labor as a solid foundation and quality support, the industrial structure will also be devoid of reality and turn into emptiness.

## 4. Implications for the current transformation of China's industrial structure

Under the target constraints based on aggregate balance, structural balance and productive labor, the transformation of industrial structure has to follow a certain path and promote the transformation of industrial structure and high-quality development of the economy through a series

of initiatives under the contradictory movement of productive forces and production relations.

#### **4.1 Base on the development level of productivity and enhance the real economy**

Industrial structure is a product of productivity development, and the transformation of industrial structure requires both a reasonable goal and a solid productivity foundation. The creation of value requires productive labor, and the profit-seeking of capital also needs to flow and spread on the basis of the accumulation of existing capacity. At the same time, the main contradiction in China's society has been transformed into the contradiction between people's growing needs for a better life and unbalanced and insufficient development, which is reflected in the economic field as the contradiction between supply and demand, and the main aspect of the contradiction is on the supply side. For this reason, China's industrial restructuring should be based on the existing level of development of productive forces, and enhance the quality of supply of the real economy. Starting from production and productive enterprises, we should make full use of the previous advantageous industrial foundation, carry out structural reforms on the supply side, improve the average proficiency of workers, the degree of development of science and technology, the organization and management of the production process, the scale and efficiency of means of production, and the natural endowment, etc., and, in particular, give full play to the multiplying effect of science and technology, applying it to the tools of production, laborers, objects of labor, and the organization and management of social production, etc., so as to enhance the quality of supply for the real economy. It is especially important to give full play to the multiplier effect of science and technology, applying it to the tools of production, workers, labor objects, and the organization and management of social production<sup>[26]</sup>, and optimizing the organic composition of capital, so as to continuously raise the labor productivity of the two major categories and their industrial sectors, especially to strengthen the real economy, improve the quantity and quality of the supply side, alleviate the imbalance between the two categories, and satisfy the development of the society and people's needs. At the same time, the government plays a macro-control role, strengthens productive labor, guides the real economy, increases investment in transformation to promote industrial optimization and restructuring, dissolves excess capacity, improves the rate of return of the real economy, and promotes the return of capital and industrial transformation of the real economy. In the process of improving labor productivity in the industrial sector, the original capital and surplus capital will continue to flow to the industrial sector with higher profit margins, so as to enhance its technological application ability and production capacity, and promote the transformation of industrial structure and high-quality development.

#### **4.2 Adjusting the relations of production, improving the form of ownership and perfecting the socialist market economic system**

The relations of production include the relations of ownership, labor and capital, and the relations of distribution, reflecting the interests of capital or value among different subjects, while the form of ownership organization directly provides a platform for the flow of capital and at the same time imposes constraints. China's current ownership system is becoming more and more perfect, based on the public sector economy, a variety of ownership economy common development, promote the vigorous development of the national economy. However, in the face of the expanding reform and opening up and the need to improve the socialist market economic system, the production scope of the two major categories and their various industrial sectors is expanding, and the structural boundaries are becoming increasingly blurred, which requires us to adjust the production relations inherent in the past, innovate the organizational relations, and adapt to the diversity of the forms of division of labor and the multidimensionality of the creation of value. Theory and practice have proved that market allocation of resources is the most efficient form, and the enhancement of allocation efficiency requires the support and maintenance of the form of ownership. The Fourth Plenary Session of the 19th Central Committee has enriched the connotation of China's basic economic system, incorporating the distribution system and socialist market

economic system, which provides a reliable guarantee for the transformation of China's industrial structure. In the process of industrial restructuring, it is necessary to improve the organization and management forms of the ownership system for different types of industries and their social needs, and to promote the efficient flow and operation of capital. For the vast majority of industries oriented to social production and consumption, the original state-owned capital should develop mixed ownership economy in an orderly manner, and implement cross-shareholding and mutual integration. While enhancing the amplification function of state-owned capital and value preservation and appreciation, the market vitality of the private economy should be strengthened. Encourage non-public enterprises to participate in the reform of state-owned enterprises, encourage the development of non-public capital holding enterprises, innovative enterprise management mode, the establishment of a modern enterprise system and a reasonable commodity circulation organization system<sup>[27、28]</sup>, to provide effective support for the flow of capital and the transformation of industrial structure.

### 4.3 Strengthening macro-control and promoting scientific and technological innovation

In the process of market-determined resource allocation and scientific and technological innovation to promote development, the intrinsic profit-seeking nature and external competitiveness of capital make it move continuously to create benefits, but it also has the disadvantages of spontaneity and blindness. On the one hand, under the spontaneous drive of profit-seeking, the flow of capital is fast and effective, but at the same time, this fast flow makes it easier to pursue short-term benefits and neglect long-term development, and the efficient utilization of capital within a certain range is often accompanied by high energy consumption, high pollution, poor quality and other problems. On the other hand, under the pressure of external competition, capital is constantly flowing to high profit margin sectors, which may bring about problems such as unfair competition and overcapacity of economic entities while generating agglomeration and scale effects. This requires a corresponding force to balance or higher level way to guide, that is, give full play to the superstructure on the economic base of the counteraction, in the market to determine the allocation of resources at the same time, better play the role of the government to scientific macro-control and effective government governance to support scientific and technological innovation, and to promote the transformation of industrial knot<sup>[29]</sup>. It is necessary to deepen the reform of the science and technology system, especially the reform of the property rights incentive system for scientific and technological achievements, to stimulate the enthusiasm of scientific and technological personnel to innovate by improving the property rights protection system based on the principle of fairness, perfecting the system of fair competition<sup>[30]</sup>. It is necessary to improve the stability of the industrial chain supply chain and promote the birth and growth of new industries. Vigorously carry out scientific research, develop core technologies, and solve the problem of technological "necklace". Close cooperation between industry, academia and research, smooth channels for the transformation of innovation results, control the core technology of the industry through independent innovation, promote the upgrading of the quality of products and services, realize the high-end of the industrial chain and value chain, promote the continuous adjustment of the industrial structure, and ultimately promote the transformation and upgrading of the industrial structure of the national economy to achieve high-quality development.

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