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Research on China's Manufacturing Industry Upgrading from the Global Perspective

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Abstract. The global industrial competition is undergoing major readjustment. Accompanied by the re-industrialization strategy of the developed countries, as well as the integration of the new generation information technology and the advanced manufacturing technology, China's manufacturing industry is facing opportunities and challenges at the same time. This paper analyzed the global manufacturing industry development trend and pointed out China's manufacturing industry existing problems. In the end, this paper put forward relevant suggestion to promote the transformation and upgrading of China's manufacturing industry.

1. Introduction

Manufacturing is the main part of the national economy and the foundation of a strong country. Manufacturing quality is a concentrated expression of a country's comprehensive strength and core competitiveness.

The protectionism and unilateralism that emerged in current international trade are essentially a game around the manufacturing industry. Developed countries have tried to maintain the competitiveness of high-end manufacturing industries and curb the post-development countries into high-end manufacturing by implementing trade protectionist policies. In particular, the Sino-US trade disputes and subsequent influences in this year have cast a shadow over China's development from a pure big manufacturing country to a great power in manufacturing country. At the same time, advanced manufacturing technologies and new generations of information and communication technologies continue to merge. China's manufacturing industry development is at an important historical juncture, facing challenges and opportunities at the same time.

2. Analysis of the development trend of global manufacturing industry

The proportion of manufacturing industry in total economic output continues to decline, but it is still the basic force and important kinetic energy to boost the global economic and optimize the global economic structure. It is the main battlefield of the technological innovation and new industrial system in various countries.

According to World Bank data, the proportion of manufacturing in the global economy in the past 20 years has generally declined, from about 20% in the early 21st century to about 15% in 2016, as shown in Figure 1. The fundamental reason for the continued sluggish of global manufacturing industry is that the replacement of new and old growth drivers has broken down, that is to say, the traditional growth momentum is weakening, but new growth points have not yet formed.



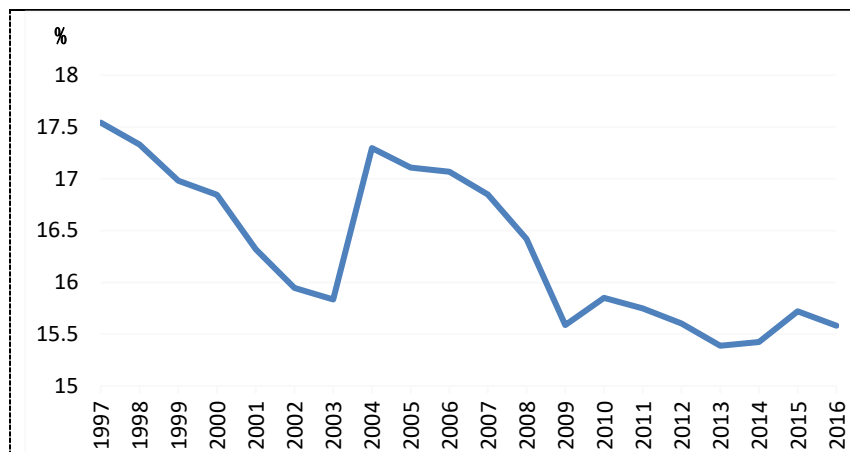


Figure 1. The proportion of value added of manufacturing industry to GDP in the world (Source: World Bank).

The world's major manufacturing countries have formulated national industrial strategies. European and American countries have successively initiated the process of "re-industrialization".

After the international financial crisis, the US and European countries have launched strategies such as "re-industrialization" and "return of manufacturing industry", trying to get rid of the crisis with the revitalization of the manufacturing industry and seek to regain the dominance of industrial development in the future competition. For example, the United States has put forward a strategic vision of reconfiguring the global industrial system around the "Advanced Manufacturing Plan" and "Industrial Internet", and revitalized the global leadership of advanced manufacturing through the integration of high-end manufacturing and modern information technology. Focusing on the deep integration of the Internet and industry, Germany has upgraded "Industry 4.0" to a national strategy, aiming to seize the opportunities in this new round of industrial revolution. Japan has vigorously promoted the application of artificial intelligence technology in the manufacturing industry, using robots as a breakthrough to upgrade the manufacturing model and improve the level of intelligent manufacturing.

This new round of industrial revolution will continue to release new impetus for the growth of manufacturing industry, and activities related to advanced manufacturing in various countries around the world will be carried out rapidly.

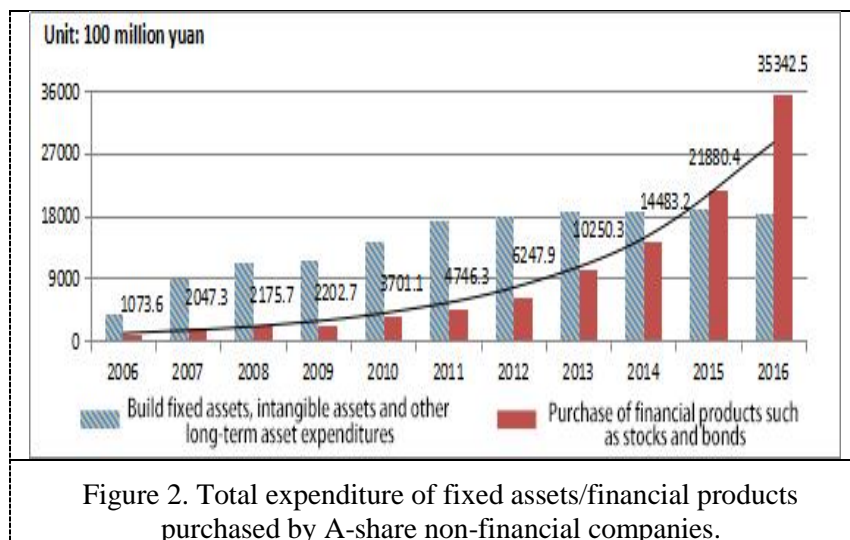
The integration of the new generation of information and communication technology and manufacturing is the main line of this new round of scientific and technological revolution and industrial transformation. The manufacturing development strategies of developed countries such as Germany, the United States and Japan all regard smart manufacturing as an important direction for development and reform. The wide application of the new generation of information technology will promote the transformation of enterprise production from the traditional product manufacturing to the supply of products and services with rich connotations. The innovation subject of manufacturing is also becoming increasingly networked. New innovative methods such as crowd-sourcing, crowd-innovation, crowd-funding, and online to offline (O2O) have emerged intensively, further expanding the way in manufacturing technology R&D and entrepreneurial model innovation. The flattening of internal organizations and the globalization of resource allocation will also become new ways for manufacturing companies to cultivate competitive advantage.

3. Analysis of Major Problems in the Development of China's Manufacturing Industry

3.1. Getting rid of the real to the virtual and hollowing out the industrial development

From a macro perspective, the growth rate and proportion of industry and manufacturing industries have declined rapidly. From 1991 to 2000, China's industry grew at an average annual rate of 13.6%, and by 2016 it fell to 6%, that is to say, the growth rate fell by more than half. Compared with the history of developed countries, the rate of decline is relatively fast.

From a micro perspective, more and more companies are reluctant to continue to invest in production, but invest in virtual economies such as financial products to seek short-term profits. A large number of industrial capital is gradually detached from the real estate industry, and they have switched to the asset market, factor market, and even consumer goods market, which have led to the shrinking of the physical industry and the serious mismatch of industrial resources, which has intensified the "industry hollowing out". As shown in Figure 2, in the past ten years, China's A-share non-financial companies have seen little change in the long-term investment in the development of fixed assets and other development industries, while expenditures on the purchase of financial products have grown exponentially.



3.2. The core technology is owned by other countries, and key components, system software and high-end equipment are heavily dependent on imports

First, due to the lack of independent technological innovation capability, China's manufacturing industry is generally in the "manufacturing-processing-assembly" process with low added value, lacking competitiveness in R&D and design with high added value, and is in the middle and low location of the global industrial chain, with limited room for profit growth.

Second, some high-tech industries are facing severe challenges from trade strikes by developed countries and curb industrial upgrading in China. In an environment of increasing global manufacturing competition, The US domestic trade protectionism is prevalent, and its strategic containment against China is gradually strengthened. The competition for economic interests of China and the United States are fierce. In this round of Sino-US trade disputes, the United States imposed sanctions on ZTE. Canada's request for the detention of Huawei's CFO Wanzhou Meng in response to the United States became a typical event of concern in the trade war. Under the leadership of the United States, the actions of developed countries to crowd out Chinese high-tech enterprises tend to be frequent, which casts a shadow over China's manufacturing from a pure big manufacturing country to a great power in manufacturing country.

3.3. Resources force China's manufacturing transformation and upgrading, the development mode should shift from resource-driven to innovation-driven and green development

First, labor resources have strongly supported the rapid development of China's light industry and manufacturing industry. However, the current demographic structure of China has undergone significant changes, the supply of labor has decreased, and the population has become aging. This requires China's manufacturing industry to shift from labor-intensive to high-tech.

Second, China's industrial structure dominated by heavy industry, which has led to strong energy demand. Some localities and enterprises rely solely on large-scale input to obtain economic growth rate and economic benefits. The extensive growth mode brings many problems, such as energy security, resource utilization and environmental pollution.

Third, this new round of industrial revolution has driven the development of the world's manufacturing industry to show a new trend of digitalization, networking and intelligence. China should seize this new round of industrial revolutionary strategic opportunity period, play a late-comer advantage in the technology path, system design and development strategy, "complement the short board" and consolidate or enhance the international competitiveness of manufacturing industry by strengthening the application of new generation information technology.

4. Advice on promoting the transformation and upgrading of China's manufacturing industry

From high-speed growth to high-quality development is a distinctive feature of China's economic development in this new era. High-quality development reflects the development of new development concepts, and is based on the principle of quality first and efficiency first. In the process of building a strong country, we must closely follow the requirements for high-quality development, seize the opportunity of this new round of scientific and technological revolution and industrial transformation in the world and the historic convergence of China's transformation of development patterns, strengthen strategic guidance and promotion, and effectively exert the autonomy of enterprises. Work hard in key areas, and truly grasp the initiative of the international competition and development of the manufacturing industry. Efforts will be made to realize the transformation of China's manufacturing to China, the transformation of China's speed to China's quality, and the transformation of manufacturing powers to manufacturing powers.

Acknowledgments

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