

Research on Mechanism and Path of High-Quality Development of China's Manufacturing Industry

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Abstract—Promoting high-quality development of manufacturing is not only an important part of promoting high-quality economic development, but also an inevitable requirement for deepening supply-side structural reform, as well as an objective requirement for comprehensively building a great modern socialist country. The three driving mechanisms to achieve high-quality development of manufacturing industry are innovation drive, structure optimization and efficiency support. The path to high-quality development of the manufacturing lies in encouraging enterprise innovation; promoting supply-side structural reform; highlighting integrated industrial development; promoting smart manufacturing with the development of the digital economy; accelerating the integration of industrial chains.

Keywords—High-quality development, manufacturing industry, Transformation and upgrading, Dynamic mechanism, Development path

I. INTRODUCTION

Regardless of dynasty changes, ethnic integration, conflicts and wars, development is a category of dynamic evolution, and economic development is a topic of enduring development. The basic requirements of high-quality economic development are mainly from improving the anti-risk ability and stability of economic development with high level of opening up, maintaining the efficiency and innovation of economic operation, maintaining the low consumption and coordination of economic operation, and improving the competitiveness of national economy under the double cycle of domestic and international. The core of developing high-quality economy is the development of high-quality manufacturing. Promoting high-quality development of manufacturing is the prerequisite and foundation for accelerating the development of the real economy, building a modern economic system, and achieving high-quality economic development.

II. THE CONNOTATION AND CHARACTERISTIC OF HIGH QUALITY DEVELOPMENT OF MANUFACTURING INDUSTRY

The core feature of modern economic system is high-quality economic development, and the basic feature of modern economic system is also to achieve high-quality economic development. The premise and foundation of high-quality economic development is the high-quality development of manufacturing industry. High-quality development of manufacturing industry is an important part of high-quality economic development and a key strategic support for building a moderately prosperous society and a modern socialist country in all respects. It is of great

significance to scientifically understand and accurately grasp the connotation, basis and direction of high-quality development of manufacturing industry.

High-quality development of manufacturing industry is an organic whole, runs through the whole process of enterprise research and development, production, sales, has low requirements on the input of production factors and high resource allocation efficiency, which can significantly improve the strength of the brand, optimize the ecological environment, and achieve good output effect of economic benefits. That is, the high-quality development of manufacturing industry is not only the development of high efficiency, effective supply, medium and high-end structure, but also the green, sustainable and harmonious development.

III. THE DYNAMIC MECHANISM OF HIGH QUALITY DEVELOPMENT OF MANUFACTURING INDUSTRY

While seizing the opportunities brought by the new Industrial revolution, we need to promote high-quality development of China's manufacturing industry in a timely manner, and establish a new manufacturing system that is service-oriented, international, intelligent, green and ecological. This will enable China to cultivate new growth points and at the same time create new drivers and new advantages.

A. Innovation driven

Innovation is the primary driving force for economic development and industrial upgrading. Dynamic mechanism of economic growth in China has gradually from the factors of production and investment structure to scientific and technological innovation, and thus the dynamic mechanism based on technology and human resources of science and technology innovation in China is formed, which is the fundamental reason to promote the high-quality, steady and sustainable development of China's manufacturing industry. Supported by new technologies, new processes and new products with completely independent intellectual property rights, it has built a new model of innovation-driven high-quality development of manufacturing industry.

Innovation drive includes scientific and technological innovation, institutional innovation, management innovation and cultural innovation, etc. Scientific and technological innovation is the core of many innovation factors. The most fundamental driving factor of high-quality development of China's manufacturing industry comes from scientific and technological innovation, which is the basic mode and fundamental means of social material wealth

accumulation. To promote scientific and technological innovation, we need to adhere to the demand-oriented, problem-oriented and competitive-oriented development, to improve the transformation of technology innovation and technology application sharing platform, the technology spillover mechanism, to build China's science and technology chains, industrial chains, innovation chains, capital chains and policy chains, to construct the national scientific and technological innovation of manufacturing system, regional technology innovation system, innovation system of industrial structure and enterprise's own innovation management system.

B. Structure optimization

The upgrading of the demand is used as the driving force to promote the optimization and transformation of industrial structure and form the demand-pulling force for the high-quality development of manufacturing industry. Consumption is the ultimate destination and purpose of social production, and plays an important role in the optimization and upgrading of industrial structure. Consumption demand drives is the lasting driving force to maintain the long-term efficient and stable growth of manufacturing industry. The high-quality development of the manufacturing industry should adapt to the new requirements of the demand side of the market economy, handle the relationship between supply and demand in a scientific and reasonable way, guide residents to expand consumption, enhance the basic coordinating role of consumer demand in the development of the manufacturing industry, more effectively stimulate the vitality of the market economy, and ultimately improve the contribution rate of household consumption to economic development. For enterprises, We should give full play to the driving role of mainstream demand in the market economy in optimizing and upgrading the industrial structure, and promote the transformation and upgrading of the manufacturing industry. With the development of new technology, consumers' final consumption structure is toward diversification, personalization, branding, intelligent direction. Consumers are increasingly pursuing better consumption feelings, manufacturing enterprises are increasingly catering to consumers' needs and constantly developing and updating their products and services.

Another important factor in the structural optimization transformation of manufacturing industry is to optimize the supply of production factors and foster a new dynamic mechanism for high-quality development of manufacturing industry. It not only includes the improvement of traditional factors of production such as capital, land and labor, but also includes the development of new factors of production such as business data, professional knowledge, organizational structure, emerging technologies, emerging business forms and new business modes. Only by constantly optimizing the supply of factors of production and the allocation of resources can we unleash new consumer demand, foster new drivers of development, and promote the development of

emerging technologies, new forms of economic business and new business models.

C. Efficiency support

To promote the high-quality development of manufacturing industry, it is necessary to promote the organic combination of new production factors and traditional production factors, and improve the quality, allocation efficiency and use efficiency of production factors. Improving manufacturing efficiency development needs to speed up the integration of social and public data resources, establish a sharing framework of public information resources, improve resource utilization and development of data market, increase the ascension information infrastructure level, speed up the construction of ultra-high speed, large capacity, a new generation of intelligent information infrastructure, and effectively promote the development of manufacturing high quality. To promote the efficient development of manufacturing industry, it is necessary to innovate the new mode which mainly refers to the new manufacturing mode with new technology, new business format grafting technical standards and quality standards. Intelligent manufacturing is a new manufacturing mode by the depth of the fusion of information technology and manufacturing, which is the concentrated embodiment of manufacturing production mode and modernization, it has an irreplaceable value for the development of manufacturing concept conversion, transformation of kinetic energy transformation, structure, efficiency and environmental transformation, and will become one of the main engines for the high-quality development of manufacturing industry in the new era.

IV. THE MAIN PATH OF HIGH QUALITY DEVELOPMENT IN MANUFACTURING INDUSTRY

A. Encourage enterprise innovation and promote the growth of emerging industries

Innovation is an important driving force for the high-quality development of manufacturing industry. To promote the development of emerging industries, the government should encourage enterprises to innovate by extending incubation periods and implementing rent subsidies, reduce the operating burden on start-ups given priority to financial support that have been greatly affected by the epidemic but have good development potential, meanwhile, simplify the loan approval process and increase the proportion of medium - and long-term credit loans.

Integrated developmental platforms of large-medium-small enterprises should be encouraged to build for emerging enterprises, for high-tech products manufactured by emerging enterprises, which should be used in the procurement system of large enterprises. It should be established a cooperation mechanism for large-medium-small enterprises by collaborating with technological R&D and industrialization to strengthen the scale and profits of enterprises. Meanwhile, we will encourage financial institutions to cooperate with demonstration centers for

business startups and innovation to provide financial services such as equipment financing lease. Finally we will build an innovation-driven and coordinated development ecosystem and form an integrated innovation system in which enterprises are the main body and market is guidance.

B. Promote supply-side structural reform and drive the upgrading and transformation of traditional industries

We will deepen supply-side structural reform, which focuses on making structural adjustments, correcting economic distortions and optimizing the allocation of factors of production, so as to achieve high-quality development that is innovative, coordinated, green, open and shared. It is not only the key power and important symbol of the development of a country, but also is the fundamental way out for transformation of the pattern of economic development, meanwhile is the basic path of manufacturing high-quality development in a new era.

The difficulty in promoting the high-quality development of manufacturing lies in accelerating the transformation and upgrading of traditional industries. Firstly, the traditional manufacturing industry needs to be upgraded by introducing new technologies, new forms of business, new management and new models, meanwhile industrial reform, transformation and innovation should be realized through institutional reform, structural optimization and factor upgrading to improve total factor productivity. In the past, the supply management of "Three go, one drop, one supplement" played a role in optimizing the traditional economic structure, but it also increased the pressure of "stabilizing employment, financial operations, foreign trade, foreign investment, domestic investment and expectations". How to accelerate the increase in manufacturing stock adjustment, greatly catalyze the emerging industries, and promote the technological upgrading of traditional industries has become a prominent issue of supply-side structural reform under the pressure of "six stability". Secondly, we should carry out an all-round, full-angle and whole-chain digital transformation of traditional industries by a new generation of information technology, promote system reconstruction, process reengineering and management innovation, speed up the industrial structure adjustment and improve the ability of agile manufacturing, We should expand the proportion of mid - and high-end products with high added value to give them new vitality and new advantages.

C. Highlight the concept of integrated industrial development and promote transformation of the manufacturing

For a long time, the product homogeneity of China's manufacturing enterprises is serious, which leads to low-level repetitive construction and overcapacity and other problems of product homogeneity. Meanwhile, enterprises mainly use price war to participate in market competition, which makes manufacturing enterprises make little profit. Industrial integration, especially the integrated development of advanced manufacturing and modern service industry, can

not only effectively improve the supply quality of manufacturing industry, achieve differentiated competition and enhance the profitability of enterprises, but also is conducive to manufacturing enterprises to climb up the industrial chain and improve their position in the global industrial division.

The development of advanced manufacturing industry needs high-level production factor, and most of modern services industry which belongs to the knowledge intensive service industry, has the strong ability of industrial innovation, so integrating advanced manufacturing with modern service industries, and promoting manufacturing enterprises to engage in more service activities in value-added links of the value chain, such as R&D, design, marketing, after-sales service, brand management, can help China's manufacturing industry to get rid of the situation of being in the middle and low end of the value chain for a long time and improve its position in the division of labor in the international industrial chain.

D. Promote intelligent manufacturing by developing digital economy

The intelligent manufacturing and digital economy brought by the new industrial revolution provide the possibility and opportunity for the path innovation of high-quality development of China's manufacturing industry. Information technology and intelligent manufacturing technology is the core of the new industrial revolution. To promote the transformation, upgrading and high-quality development of China's manufacturing industry, China should focus on breakthroughs in the key areas, key technology, speed up the manufacturing supply-side structural reform, promote technology innovation and accelerate the application of human-computer intelligent interaction, additive manufacturing, industrial robots, intelligent logistics management and other technologies and equipment in manufacturing process.

The development of digital economy which is a new driving force of economic development in new era will not only help the manufacturing industry optimize resource allocation and improve total factor productivity, but also adjust the industrial structure and improve the quality and efficiency of the manufacturing industry. The supporting role of digital economy in the high-quality development of manufacturing industry is not only reflected in the reform and upgrading of R&D, production, logistics, management, service and other links by the new generation of information technology, but also reflected in the new forms of business, new models, new systems and even new concepts brought about by the digitalization of manufacturing industry.

E. To speed up the industrial chain integration, promote high-end manufacturing to the global value chain

In accordance with the concept of "collaborative innovation, intelligent upgrading, service support, brand building, green transformation and global cooperation", the manufacturing industry chain is integrated, so that China's manufacturing industry is transformed from a participant in

the division of industrial chain to a controller of the industrial value chain, and from "made in China" to "created in China". In the process of industrial chain integration, we need to focus on intelligent manufacturing, support manufacturing enterprises in accelerating digital, networked and intelligent, and actively foster new manufacturing methods such as internet-based personalized and customized online value-added service sharing manufacturing.

We should attach importance to the decisive role of innovation-driven development, and establish a division of labor system for emerging industries that integrates innovation, value, ecological and industrial chains to raise the status and level of China's manufacturing industry in the international division of labor and the global value chain. Accelerate the transformation from "Made in China" to "created in China", "Quality in China", "Brand in China" and "service in China", thus realizing the goal of "manufacturing power".

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REFERENCES

- [1] Adamson G, Wang L, Holm M, et al. *Cloud Manufacturing a Critical Review of Recent Development and Future Trends*. International Journal Of Computer Integrated Manufacturing, 2017, 30(4-5):347-380.
- [2] Bai Y. *Industrial Internet of Things over Tactile Internet in the Context of Intelligent Manufacturing*. Cluster Computing, 2017, (4): 1-9.
- [3] Barefoot K, Curtis D, Jolliff W, et al. *Defining and measuring the digital economy*. US Department of Commerce Bureau of Economic Analysis, Washington, DC, 2018, 15.
- [4] Cardin O, Ounnar F, Thomas A, et al. *Future Industrial Systems, Best Practices of the Intelligent Manufacturing and Services Systems (IMS2) French Research Group*. IEEE Transactions on Industrial Informatics, 2017, 13(2):704-713.
- [5] Cardin O, Ounnar F, Thomas A, et al. *Future Industrial Systems, Best Practices of the Intelligent Manufacturing and Services Systems (IMS2) French Research Group*. IEEE Transactions on Industrial Informatics, 2017, 13(2):704-713.
- [6] Farid A M. *Measures of Reconfigurability and Its Key Characteristics in Intelligent Manufacturing Systems*. Journal of Intelligent Manufacturing, 2017, 28(1):1-17.
- [7] Farid A M. *Measures of Reconfigurability and Its Key Characteristics in Intelligent Manufacturing Systems*. Journal of Intelligent Manufacturing, 2017, 28(1):1-17.
- [8] Gao Y S, Yang Y. *Research on the Goals and Paths of China's Manufacturing High Quality Development under the Background of Global Value Chain Reconstruction*. Economist, 2020, 262(10): 65-74.
- [9] Hwang W S, Shin J. *ICT-Specific Technological Change and Economic Growth in Korea*. Telecommuni-Cations Policy, 2017, 41(4):282-294.
- [10] Koren Y, Wang W, Gu X. *Value Creation Through Design for Scalability of Reconfigurable Manufacturing Systems*. International Journal of Production Research, 2017, 55(5):1227-1242.
- [11] Koren Y, Wang W, Gu X. *Value Creation Through Design for Scalability of Reconfigurable Manufacturing Systems*. International Journal of Production Research, 2017, 55(5):1227-1242.

- [12] LI Q H. *The Dynamic Mechanism and Realization Paths of High-quality Development of the Manufacturing Enterprises in the New Era*. Finance & Economics, 2019, 375(6): 57-69.
- [13] LuY. *Industry4.0: A Survey on Technologies, Applications and Open Research Issues*. Journal of Industrial Information Integration, 2017, (6):1-10.



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