Research on Promoting the International Competitiveness of China's Manufacturing Industry under the Background of TPP

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Abstract. As the United States, Japan, Australia and other 9 countries joined trans-pacific partnership (TPP), it has become the highest standard and the largest free trade agreement in the history. But China is excluded, and with the development of the negotiation, contracting states gradually formed a sort of circle around China, which will no doubt have a significant impact on China's foreign trade development, especially on China's manufacturing industry. No matter whether China will join TPP or not, it will never take the easy way out. So, exploring how to improve China’s international competitiveness of manufacturing has been an important topic.

1. Introduction

In 1980, China's total exports amounted to $18 billion 120 million, of that manufacturing sector, accounting for only 50%. Since the reform and opening up, the export scale of China's manufacturing industry is expanding day by day, of that was inevitably affected by the global financial crisis in 2009. Although the total export volume has fluctuated, while the proportion of manufacturing exports has risen, without declining, this has led successfully to a rapid recovery of China’s economy. China has succeeded in exporting more than $2 trillion and 50 billion of manufactured goods to the United States, making it the world's largest manufacturing country in 2011. In 2015, it reached $2 trillion and 274 billion 949 million, accounting for 18% of global manufacturing exports, second only to 38.5% of EU economies, compared with 0.8% in the early period of reform and opening up, it has a qualitative upgrade. The average annual growth rate of China's manufacturing exports is 11.8% during the period of 2005-2010; China still maintains its first annual growth rate of 11% at that time. It can be seen that the manufacturing industry is not only a pillar industry in China, but also a real "the workshop of the world"[1].

1.1. Competitive Advantage Enhancement
Since joining WTO in 2001, the international competitiveness of China's manufacturing industry has been continuously improved, and the share of international market has steadily increased. Both comparative advantage and competitive advantage play a major role, but the decisive role is the enhancement of competitive advantage. This result is inseparable from China's efforts to integrate into the global economic system, make use of two markets and resources at home and abroad, conform to comparative advantages and focus on developing labor-intensive industries since the reform and opening up. These measures not only greatly reduce the cost of manufactured goods in China, improve the product structure, but also promote the quality of intangible factors such as management, technology, human resources and so on, and the advantages are constantly enhanced, resulting in a substantial increase in the manufacturing industry's capital and international competitiveness[2].

The export growth rate of China's manufacturing industry fluctuates greatly, and even negative growth occurs in some previous years; In recent years, the export growth rate has obvious weakening trend, and the export growth rate advantage is almost zero in 2013 and 2014; From 2009, the international competitiveness index of China's manufacturing industry has been maintained at around 0.22, and there has been no obvious upward trend in recent years, China's exports of manufactured goods facing more and more competitive pressure. For a long time, the profits and international competitiveness of China's manufacturing industry mainly rely on extensive expansion to obtain, which allows manufacturing industries and enterprises to maintain international competitiveness by reducing the cost of tangible elements of labor and resources. China's resource endowment advantage began to show weakness, labor-intensive industries began to face the pressure of transformation and upgrading since 2010.

1.2. High Technology Becomes a New Growth Point

With the growing scale of China's manufactured products and the development of science and technology, China's manufacturing industry began to focus on innovation and development of science and technology, product structure and industrial structure adjustment have achieved good results, high technology become a new growth point.

First of all, since the reform and opening up, the proportion of China's manufactured goods in total exports has steadily risen, it has been smoothly transformed from the initial exporter of manufactured goods to a big producer of finished products. The structure of China's export commodities has been further optimized.

In addition, according to customs data statistics, in 1992, China's high-tech products exports accounted for only 5.9% of finished goods, and began to improve continuously since its accession to the WTO in 2001; In 2002, the export of high-tech products accounted for 20.8% of the total exports of manufactured goods, and has been stable over 2003-2015 for 29% years, and reached the highest 33.11% in 2009 when the financial crisis spread to the world; In 2015, the export of high-tech products reached 655 billion 211 million US dollars, accounting for 30.18%, which has obviously become the main force to promote the export of China's manufacturing industry[3].

1.3. Internationally Renowned Brands in Small Quantities

According to the 2015 BrandZ Top 100 Global Brands, in the list of the most valuable top 100 brands in the world, the United States occupies 59 seats, Japan 7 seats, as the emerging economy of South Korea also has 3, although our country has 14 enterprises to be listed in the top 100, but only HUAWEI is a manufacturing enterprise, ranking in the seventieth place, which is still the first time to be listed in this list for China. According to the statistics of 2015 Machine Top 500 Global Brands, the United States occupies 26 of the top 100 enterprises, Japan ranks second as its 18, and China has 16 enterprises to enter the top 100. Although China has become the world's third largest manufacturing power seen by it’s the total number of brands, based on the huge population of 1 billion 300 million, compared with other developed countries, China's well-known brands are numbered, only one company into the top ten. After all, it is still the market situation that Chinese enterprises won by quantity rather than quality. The existing brands have a low proportion of independent intellectual property rights and lack of well-known brands with extensive international influence.
2. Factors Restricting the Upgrading of International Competitiveness of China's Manufacturing Industry

2.1. Factor Cost Increase
At the beginning of reform and opening up, China has been developing labor-intensive and resource-intensive industries to maintain export-oriented economy with the advantages of labor and resource endowments, up to now; the advantage of China's manufacturing industry in the global market competition is still dominated by factor cost advantage. However, as the scale of manufacturing industry continues to expand in an extensive mode, China's resources, energy and labor costs are changing dynamically, the rise of labor cost and the deterioration of human resources make the original comparative advantage of China's manufacturing industry become weaker. On the one hand, from the cost of resources and environment, China has begun to show the trend of relative shortage of resources, environmental carrying capacity weakened, depending on the demand for natural resources is difficult to survive in the industry policy and long-term development, and with the national attention on the environment, the costs of resource exploitation in improving constantly. On the other hand, from the perspective of labor cost, with the development of China's economy and the change of the age structure of the population, the labor cost of our country is rising rapidly, and the labor advantage is constantly being weakened. From 2000 to 2014, a total of 15 years, China's manufacturing average wage increased by nearly five times from 8750 Yuan to 50620 Yuan. In addition, there is still a big gap between China's educational level and technical level and developed countries, which affect labor productivity and makes the market demand for high-quality labor constantly rising[4]. Industries have to offset the impact of low cost advantage by improving the quality of labor.

In addition, the tariff, environmental protection, labor and the high standards of origin in the TPP negotiation terms will directly or indirectly enhance the manufacturing cost of China's manufacturing industry. The customs union between the TPP Contracting States that "98% of the product tariff will be exempted" will undoubtedly have a huge impact on the competitiveness of manufacturing industries in the international market of our country. China's manufacturing costs will be relatively high, while labor, environmental protection and high standards of origin will also directly increase the cost of factor inputs in manufacturing. As non-contracting countries, in the international market competition with the contracting parties, the related enterprises can maintain their competitiveness only by reducing costs in a short period of time. The first is affected by the interests of workers, in the long run, it will cause tense labor relations in China, the formation of labor costs continue to be forced to reduce and international competitiveness can’t enhance the vicious circle.

2.2. Lack of Technological Innovation Ability
Technology is the key element to constitute the competitive advantage of industry, the lack of technological innovation in China has been one of the important factors that restrict China's manufacturing industry to improve economic efficiency, development level and international status[5]. First, the low intensity of R & D investment. R & D activity is the core of scientific and technological activities, is an important mean to achieve independent innovation. According to the data of China Statistical Yearbook 2015, in 2014, the R&D expenditure of China's manufacturing industry was 1 trillion and 301 billion 560 million Yuan, accounting for only 2.05% of GDP, however, the share of R & D funds in GDP in developed countries is generally around 3% or even higher. Moreover, the experimental development accounts for a large proportion in R&D investment in China, while the proportion of basic research and application research is very small, which indicates that the original innovation ability of China's manufacturing industry is insufficient.

Second, the core technology is controlled by People. From the overall industry point of view, the manufacturing technology in China, especially the core technology, mainly relies on imports from developed countries such as the United States, Japan and Germany. The core and key technology dependence of China's manufacturing industry is 50%~60%, while that of advanced countries is 30%. 70% of new product development depends on foreign technology. Such as high-speed rail bearings, construction machinery, hydraulic system seals, automotive engines and other important components and key materials, more than 80% rely on imports; Since 2009, China's automobiles have ranked No. 1
in the world with a production volume of 13,791,000 units and sales volume of 13,644,800 units, but the core technologies mainly rely on imports from Germany and Japan; According to the data released by the Ministry of Commerce, in 2015, the total output of air conditioners in China was as high as 103,8462 million sets with a total export value of 9.382 billion U.S. dollars, ranking first in the same field. But even the Haier and GREE, which focus on product R & D, and the core technologies of refrigerants and compressors, are still in the hands of developed countries. On the whole, although some industries in the manufacturing industry in China have led the world in output, they still do not possess the absolute technical superiority through the massive labor input and policy support.

Third, patent application structure is not balanced. According to the statistics of China Statistical Yearbook 2015, in 2014, the number of patent applications accepted and authorized number ranked first in the world. However, judging from the types of patents, the proportion of the number of invention patents accepted and the number of authorized patents is at a relatively low level, which are respectively 39.3% and 17.9%, the proportion of applications and authorized amount of foreign invention patents are 86% and 80.1% respectively. This has directly led to the lack of independent property rights and well-known brands in our manufacturing industry and hindered the improvement of the overall level of our manufactured products in the international market[5].

2.3. Irrational Industrial Structure

First, based on low value-added products. Since the reform and opening up, the country has been improving the international competitiveness of China's manufacturing industry for a long time with the continuous development of labor intensive industries and a large number of tangible elements such as resources, and has expanded the scale of manufacturing industry in a flat, lack of depth and depth, which leads to manufacturing technology for labor market development model of heteronomy, eventually decide that China's industrial added value of manufactured goods is much lower than the developed countries to master the core technology. According to the World Bank WDI database data, the results show that the added value of China's manufacturing industry has maintained a steady upward state since joining WTO, even in the financial crisis, the growth rate in 2010 is still more than 16%, and the proportion of manufacturing value added in GDP has remained above 30%. But from the point of view of value-added sources, the situation is not optimistic. In 2014, the proportion of domestic indirect industrial added value of the manufacturing industry as a whole was higher, which was 37.33%, the proportion of domestic direct added value of nine manufacturing enterprises is generally low, and the proportion of domestic direct added value is 29.76% and 25.96% in addition to transport equipment and mechanical equipment, and other industries are below 25%, especially the industry electronic and optical equipment that needs strong technical support, only 17.09%. Therefore, the value-added of China's manufacturing exports still remain in the low value-added stage and mainly rely on the production of low-tech production processes such as component production and product assembly to obtain added value[6].

Second, low proportion of high-end manufacturing. The proportion of low-end industries in China is far higher than that of high-tech industries, although our country enjoys a higher position in the clothing, textile, chemical, home appliances and other manufacturing technology field, such as aircraft manufacturing factory, while in the automatic control system, scientific instrument and precision measuring instruments and other high value-added effect the development of high-tech fields, basically by developed countries monopoly, or even blocked. The status of China's manufacturing industry in the global value chain division is still very low, which has led to the phenomenon that the gross domestic product and the manufacturing industry's international competitiveness in the past 30 years of reform and opening up have become extremely high, exposing the awkward situation of "big but not strong" in our manufacturing industry.

Third, unreasonable industrial agglomeration. Generally speaking, the countries or regions that realize industrial agglomeration will occupy the leading advantage in the international market, such as Silicon Valley and Germany's tool manufacturing industry cluster. On the one hand, when industrial agglomeration occurs, enterprises can understand each other more quickly in competition and game, at the same time, the survival of the fittest, the free and cruel way of competition make them constantly
improve in technology and management, and ultimately achieve the overall level of competition in the industry. On the other hand, in addition to the industrial agglomeration, the cooperation, exchange and complementarity of each enterprise can promote their own technology and product quality, previous horizontal cooperation between firms in different parts of the value chain can also play a big role in reducing manufacturing costs in all sectors. Furthermore, enterprises in the cluster can quickly perceive changes in the market, seize market opportunities ahead of time, and create leading products. And so far, China's industrial agglomeration has mainly occurred in the labor-intensive industries of traditional manufacturing industry in Jiangsu, Zhejiang and Shanghai coastal areas, Beijing, Shanghai, Guangzhou and Shenzhen Internet industry, agglomeration within the industry has reached a relatively saturated degree, but the inter industry division of labor to reduce costs has not yet achieved remarkable results, new high technology manufacturing industry agglomeration is in the initial state. China's geographical reasons make the industry agglomeration in different regions relatively difficult, which limits the efficiency of agglomeration. In addition, the immaturity of technology and the backwardness of innovation make the structure and product upgrade of various industries slow, and can’t occupy the international market technically [7].

Fourth, low status of global value Chain division of labor. In recent years, with the decrease of communication and transportation costs, the level of international division of labor gradually goes from product to specific production link. The cutting of the value chain between different places makes the global value chain come into being. With rich natural resource elements and low-cost labor force participating in low-tech and low-profit manufacturing processes such as processing and assembly in the global value chain, China has obtained extremely limited processing fees. This passive participation in the international division of labor has made China's manufacturing industry in the international division of labor in the low position has been determined for a long time, which is not conducive to the construction of independent brands and the improvement of innovation and R & D capabilities, thus restricting the development space of manufacturing industry and its pulling effect on the overall economy.

Taking into account the industrial structure and technological level of China's manufacturing industry at this stage, although the continuous investment and improvement of high-tech has already achieved initial success in promoting the division of global value chain in China's manufacturing industry, the results are still difficult to compare with the developed countries, the reason behind the manufacturing technology of our country makes the ability to create high value-added sectors to create accounts for a low level, in addition, in the global value chain, R & D, design, manufacturing, marketing and other key parts of the complex high-end part is difficult to imitate innovation, a short time is difficult to achieve the effect of rapid, which requires the support of the national innovation system, but also needs long-term exploration of enterprise transformation.

Fifth, imperfect quality supervision system. In recent years, "made in China" has become a hot word all over the world, but at the same time of being crowned "the workshop of the world" and "manufacturing power", "made in China" is also faced with many problems. The unqualified rate of the products of the national supervision and inspection is as high as 10%, and the export products are the first to recall the products in foreign countries for the first time, the annual direct manufacturing industry loss of more than 200 billion Yuan. As labor costs continue to rise, prices rise in the international market, and many major components and core systems quality assurance is not high, the quality image of product and brand did not achieve synchronous improvement, which directly led to the decline of the international competitiveness of China's manufacturing industry. On the other hand, China's department products are shoddy, and the product standards and quality supervision system are far less than developed countries, leading to "made in China" become synonymous with "poor quality", consumers of China products do not trust the China manufacturing industry is facing a serious quality problem of credibility, directly affect the product export volume, indirectly restricts our country to improve the international competitiveness of the manufacturing industry.

3. Suggestions on promoting the international competitiveness of China's manufacturing industry under the background of TPP
First, strengthening education and training. Strong industrial workers are the strong cornerstone of "made in China". China has entered an aging society, demographic dividend is disappearing, and various labor costs and labor utilization issues have begun to gradually highlight. Good education and training can not only improve the quality of labor, but also provide a good human foundation for the R & D and production of high-tech products.

The strategy of education structure should be adjusted. First of all, on the basis of continuing to improve the basic education, vocational education should be placed in a higher position, strengthen vocational training and education fit for industrial needs, and promote the deep integration of industry and education, form the new force of government, enterprise and social capital to promote the development of advanced vocational education, transport more efficient workers for the manufacturing industry. Secondly, the cultivation of technical research talents should be strengthened simultaneously; the government should implement more favorable policies for innovative education, and provide a solid human capital to improve the international competitiveness of China's manufacturing industry.

Second, increase technology investment. In order to promote the international competitiveness of China's manufacturing industry, the most important thing is to further accelerate the construction and improvement of technological innovation capability system and support system. First of all, improve the technological innovation capability system of manufacturing industry. Strengthen the innovation investment, make the innovation investment structure rationalization, on the basis of the introduction of advanced production technology from developed countries, improve the innovation output efficiency, improve the ability and level of re innovation, perfect the market competition system, and stimulate the two innovation ability in the industry. Strengthen the manufacturing sector overall technical level and the ability of independent research, increase the added value of the products, the ability to adapt to the international competition in the market has improved technology. Secondly, perfect the supporting system of technological innovation in manufacturing industry, the government should strengthen the awareness of manufacturing industry as the main body of technological innovation through a series of measures, increase the subsidy and support of the government to the corresponding industries, and strengthen the financial support for the manufacturing technology innovation activities, at the same time, it is necessary to take various measures for commercial banks and other financial institutions to improve the financing environment for the manufacturing industry to participate in technology research and development.

Third, speed up efforts to upgrade its industrial Structure. We should strengthen personnel training, increase the policy and investment of technology introduction and re innovation, improve the proportion of high-value-added industries, optimize the product structure of enterprises and industries by increasing the added value of products, and transform labor-intensive industries by high and new technology. Then we cultivate outstanding enterprises in each industry, encourage independent innovation, play industrial agglomeration effect from the technology, make it become the supporting point of industrial agglomeration; The government supports the policy, promotes the cooperation among industries, optimizes the agglomeration structure of China's manufacturing industry, and expands the economies of scale. In addition, we should further improve the investment environment and enhance the ability of enterprises to attract foreign investment, further expand the channels to obtain investment, diversification of investment methods, so as to enhance the effect of attracting foreign investment, guide foreign investment in technology intensive industries, so as to promote the overall upgrading of China's manufacturing industry, enhance international competitiveness.

Fourth, strengthen quality management. Facts have proved that the closer to the end of the consumer market, the higher the profits of enterprises, if we want to firm the heels of the terminal market, we must vigorously develop their own brands. China's manufacturing industry to create can affect the global international brands, in addition to invest heavily in marketing, fundamentally need more strict quality management system, only by ensuring the quality of the product quality can we talk about the reputation and credibility of the brand. Enhance the quality of management, we must first upgrade production technology, promote the brand construction with the scientific management system, and constantly improve the quality standard system, certification system, inspection system and quality
safety warning system, the whole process of research and development, production, testing, sales and service of high standard and make the complete system throughout the product. To achieve this, we need to start from two aspects of enterprise and government: On the one hand, enterprises need to strengthen the quality management of the production process, to be in the industry model, establish quality benchmarking; On the other hand, the government needs strict supervision according to the standard system, from the national level to establish a sense of quality and promote “the spirit of craftsman”. At the same time, we should strengthen the construction and maintenance of brands, establish a good image of "made in China", and offer preferential financing and tax benefits to international brand enterprises with high added value and high reputation.

Fifth, promote China's regional economic integration. From this point of view, many topics in TPP will have a negative impact on China's manufacturing industry, the development of high standards and benefits of treaty between the parties on a lot of technologies are directly or indirectly suppress the manufacturing industry in China. But in the long time, whether or not China joins the TPP, the agreement can reverse the manufacturing industry in China. Because in the context of economic globalization, the overall situation based on regional economic integration, it is impossible to completely isolate the non-contracting states from the terms and standards of the contracting states. Facing this inevitable trend, China should pay close attention to the positive response and actively promote regional economic integration with China as the center, bypassing the free trade agreement between TPP and more countries. It includes signing bilateral free trade agreements with TPP member countries and promoting East Asian Strategy of China, Japan, South Korea, FTA and “ASEAN 10 + 3”, speed up the Regional Comprehensive Economic Partnership (RCEP) negotiations, complete the ongoing Chinese - Australia and China - GCC FTA negotiations as soon as possible, hedge TPP adverse impact to our country's, and combined with the development advantage of the The Belt and Road "further accelerate the deepening of the reform of the RMB, continue to expand the market advantage, so as to make our country occupy a leading position in the international market.

**Conclusion**

Through the analysis of the current situation of China's manufacturing industry and the factors that restrict the international competitiveness of China's manufacturing industry, we can see that since the reform and opening up, China's manufacturing industry has developed rapidly, the international competitiveness has been greatly improved, but compared with the developed countries there is still a big gap, the main reasons are that Factor cost is rising, technological innovation ability is insufficient, industrial structure is irrational, global value chain division of labor is low, and quality supervision system is imperfect. At present, China is a "manufacturing country" rather than "manufacturing power", the manufacturing industry in the world has not yet get rid of the low value-added, low quality status quo. And facing the big trend of TPP, China's manufacturing industry must fully upgrade, in addition to strengthen education and training, increase investment in technological innovation, accelerate the upgrading of industrial structure, strengthen the quality management of outside, we should pay close attention to TPP development progress, and actively take response measures to promote regional economic integration in China as the center, combined with the deepening reform of The Belt and Road, grab seize power at, and occupy the initiative.

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