

THE PRESENT SITUATION AND OPPORTUNITY OF LIAONING EQUIPMENT MANUFACTURING INDUSTRY UNDER THE BACKGROUND OF INTERNATIONAL CAPACITY COOPERATION

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ABSTRACT. *The equipment manufacturing industry in Liaoning has formed a complete industrial system. In the development of more than half a century, the equipment manufacturing industry has been deeply affecting the economic development of Liaoning. However, the development of the equipment manufacturing industry in Liaoning has shown a declining trend. “Belt and Road Initiative” has brought new impetus for the equipment manufacturing industry in Liaoning province and deepening reform. This paper studies the equipment manufacturing industry in Liaoning under international capacity cooperation. Through comparing its export and overseas investment data, it analyzes the competitive advantages and opportunities, weaknesses and challenges of Liaoning’s equipment manufacturing industry.*

Keywords: The equipment manufacturing industry, International capacity cooperation, Belt and Road Initiative, Liaoning

1. **Introduction.** Liaoning province is one of the first provinces in China to vigorously develop the equipment manufacturing industry. From 1950s onwards, after decades of development, Liaoning province has developed a complete industrial system. Some sectors of the technology already have the international first-class level, and have the basis of international capacity cooperation. In recent years, the economic growth of the old industrial base in the whole northeast is weak, especially in Liaoning province, GDP growth rate in 2016 was -2.5% , the bottom row in 31 provinces. In response to the call of the State Council to promote the international capacity cooperation of equipment manufacturing industry, it will not only help Liaoning to get out of the economic downturn, but also accelerate the depth adjustment and upgrading of Liaoning’s industrial structure.

According to Wang and Wang’s dissertation, the equipment manufacturing industry in Liaoning province has formed a complete system, part of the industry has a competitive advantage and comparative advantage, but the development of equipment manufacturing industry in Liaoning has been declining, promoting the Liaoning equipment manufacturing industry “going out”, in order to adapt to the trend of international capacity cooperation, is the inevitable choice [1]. “Belt and Road Initiative” strategy has brought new opportunities for the growth of equipment manufacturing industry in Liaoning province, the transportation equipment manufacturing industry is the dominant industry in Liaoning and Belt and Road Initiative along the country having a huge market demand, can take this opportunity to further into the international market, so as to realize their own development and improvement [2-4]. Some scholars in the study of Liaoning province, high-end

equipment manufacturing industry in the international production cooperation path, believe that the construction of industrial parks, foreign mergers and acquisitions of overseas enterprises and undertaking foreign high-end manufacturing project is an important way to strengthen the international cooperation ability in Liaoning province [5-8].

Starting from the perspective of international capacity cooperation, firstly analyze the current situation of Liaoning province equipment manufacturing industry international capacity cooperation, then based on analyzing the current situation of the development of the equipment manufacturing industry in Liaoning province, expound the equipment manufacturing industry in Liaoning province, the competitive advantages and disadvantages and challenges and opportunities, to advise Liaoning province on the development of the equipment manufacturing industry and the revitalization of the old industrial base in the northeast.

2. The Present Situation of International Capacity Cooperation of the Equipment Manufacturing Industry in Liaoning Province.

2.1. Export of equipment manufacturing industry in Liaoning. As the pillar industry of Liaoning, the equipment manufacturing industry is very large, which is an important way to increase revenue and solve the employment problems. It is also an important source of export tax. Since 2012, Liaoning industry enterprises are of a certain scale whose export delivery value was above 135 billion yuan. And the equipment manufacturing industry accounts for 40%-50% of these enterprises. In 2014, Liaoning's exports amounted to \$59 billion, of which 1/5 came from the equipment manufacturing industry.

After 2014 Liaoning announced all the equipment manufacturing industry export delivery value, 2014 general equipment manufacturing industry export value of 22 billion 570 million yuan, special equipment manufacturing industry export value of 26 billion 170 million yuan, an increase of 3.8% and 11% respectively.

To the export situation around the city, the equipment manufacturing industry still has the main difference in Shenyang and Dalian, more than 60% of the export manufacturing equipment are completed in two, and more than 90% of the foreign trade is conducted in processing trade and general trade way.

2.2. The main export direction of the countries along Belt and Road Initiative and the Asia Pacific region. In the first half of 2015, Liaoning province exports of the top five countries are the United States 19 billion 304 million yuan, Japan 25 billion 64 million yuan, 10 billion 445 million yuan of Singapore, South Korea 14 billion 586 million yuan and Vietnam 10 billion 415 million yuan, total exports of five to 79 billion 815 million yuan, accounting for 49.40% of total exports. Exports to the 47 onshore Silk Road Economic Belt country were 19 billion 640 million yuan, total exports of 32 countries in the maritime silk road were 47 billion 119 million yuan, a total of 66 billion 759 million yuan, accounting for 41.32% of total exports.

2.3. The situation of foreign investment in the equipment manufacturing industry in Liaoning. Since 2012, Liaoning non-financial foreign direct investment stock continues to expand the scale, accounting for the proportion of basic stability, the scale is in the top ten, although each year the flow rate fluctuation is relatively large, it needs to be further improved.

The equipment manufacturing industry plays an important role in the foreign investment in Liaoning province. As of 2014, Liaoning province's equipment manufacturing industry has a total investment of 24 billion 400 million yuan, accounting for Liaoning province, the total foreign actual investment 27%, foreign investment in equipment manufacturing project 413, distributed in 114 different countries and regions, the total number of 24% investment enterprises.

TABLE 1. Non-financial foreign direct investment in Liaoning from 2012 to 2015

unit: million

Particular year	At the end of each stock			At the end of each flow		
	Scale	Total in proportion	Ranking	Scale	Total in proportion	Ranking
2012	695281	1.6%	7	276260	3.55%	5
2013	773117	1.42%	7	129499	1.40%	7
2014	925619	1.24%	7	147902	1.38%	8
2015	1131945	1.21%	8	212204	1.75%	10

Data source: "2015 China Statistics Bulletin on foreign direct investment"

3. Development Status of Equipment Manufacturing Industry in Liaoning Province. The equipment manufacturing industry in Liaoning province has formed a complete industrial system, in the development process of more than half a century, the equipment manufacturing industry has a profound impact on the economic development of Liaoning, has a unique competitive advantage and comparative advantage, and has become the most important pillar industry in the economic development of Liaoning.

3.1. Great support of huge volume for Liaoning's economy. As of 2013, the number of equipment manufacturing enterprises above the scale in Liaoning accounts for 34% of the total number of industrial enterprises in the province, accounting for 5851. Total industrial output value accounted for the province's industrial enterprises above the scale of the total industrial output value of 32%, 1 trillion and 700 billion yuan; total assets accounted for more than the province's industrial enterprises 33.6%, 1 trillion and 300 billion yuan.

In 2016, Liaoning province equipment manufacturing industrial added value accounted for the province's industrial added value of industrial enterprises 34.1%, compared to 2013 and 2015 respectively increased by 2.6 percentage points and 1.8 percentage points, a total profit of 53 billion 182 million yuan.

3.2. The high-tech industry has made obvious progress, and the proportion is rising steadily. In 2016, the progress of high-end equipment manufacturing industry in Liaoning is relatively obvious, accounting for 17.2% of the total equipment manufacturing industry. The automobile manufacturing industry achieved a main business income of 237.499 billion yuan and the auto production reached 1.132 million. In promoting innovative projects, the province has a total of 294 provincial-level technology centers and 22 state-level enterprise technology centers. At the same time, it has secured 45.148 million yuan in major science and technology funds for high-end CNC machine tools and basic manufacturing equipment. It has effectively promoted the innovation and development of ten high-tech industries including advanced rail transit equipment and aerospace equipment.

3.3. The key enterprises have developed well and the market activity has improved. The equipment manufacturing industry in Liaoning province since the first five year plan started, it is through reform and opening-up by leaps and bounds, basic international cooperation in capacity and ability to participate in international competition. Anshan Iron and Steel Group, Shenyang North heavy industry group and Dalian machine tool group Liaoning equipment manufacturing industry leader, is to go in for multinational companies in China the forefront of foreign investment.

With the 2016 equipment manufacturing market activity promotion, development of key enterprises in Liaoning good situation, performance improved significantly. Shenyang locomotive factory, Dalian rubber, marine oil accumulated orders respectively compared

to the same period increased by 74%, 53% and 54%. In addition, the cumulative orders Anshan, Shengu's other key enterprises have achieved varying degrees of growth. This shows that the market is active in the promotion.

3.4. Industrial system is complete in range, but there is a wide gap in the scale of different industries. Seen in Figure 1, in 2015, more than the size of Liaoning equipment manufacturing industry to achieve the main business revenue totaled 1 trillion and 84 billion 690 million yuan, accounting for more than 1/5 of the automobile manufacturing industry and general equipment manufacturing industry, were 273 billion 499 million yuan and 225 billion 909 million yuan respectively, accounting for 25.21% and 20.83%; and the instrument manufacturing industry and metal products, machinery and equipment repair industry accounted for only the 1.48% and 0.35%; other industries were accounted for about 10%-14%.

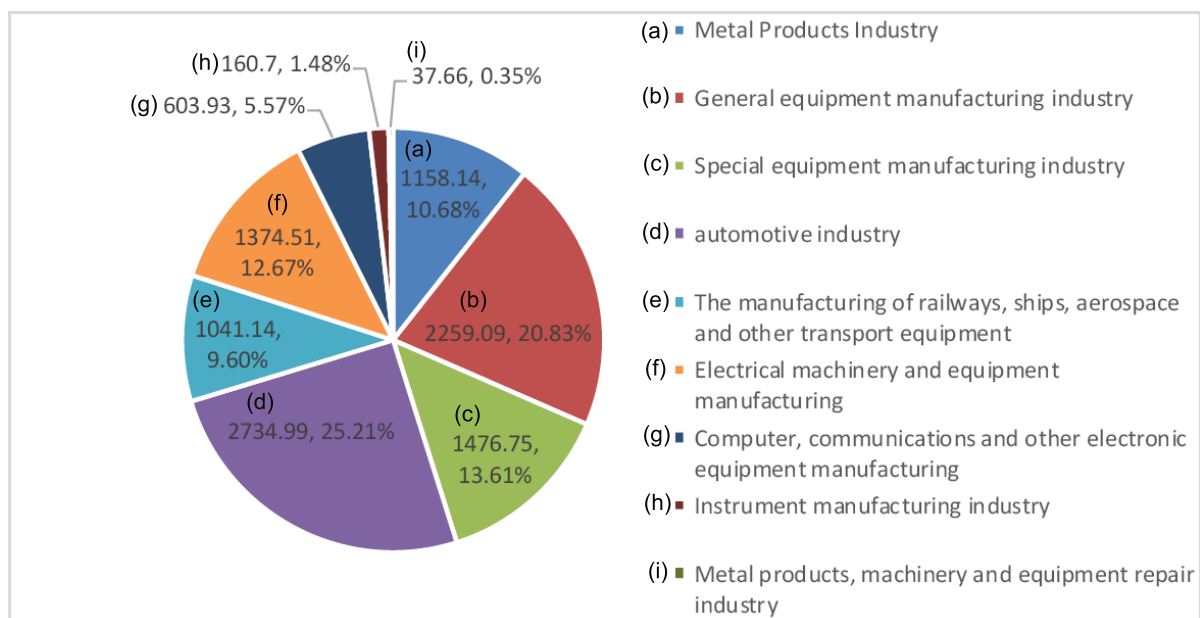


FIGURE 1. 2015 Liaoning equipment manufacturing business income (100 million yuan)

3.5. The development slows down and the bottleneck is becoming more and more obvious. According to Figure 2 we can draw such a conclusion, the main consideration in the index of 2015 in Liaoning equipment manufacturing industry has been under the national average in 2014, and the main business income, profits, taxes and value-added taxes paid should be the main index fell 470 billion 752 million yuan, 40 billion 494 million yuan, 57 billion 914 million yuan and 11 billion 611 million yuan; the main business revenue fell year-on-year about 30.26%, profits fell by about 43.23%, profits fell by about 39.70%. Value added tax payable fell 35.01%. The situation is not optimistic.

4. The Competitive Advantage and Opportunity of the Equipment Manufacturing Industry in Liaoning.

4.1. It has a complete industrial system and good industrial base. In the long development process of equipment manufacturing industry in Liaoning province to form a complete set of equipment and technology of the electronic information industry support, including textile and garment industry, metallurgy, light industry, manufacturing industry, coal industry, aerospace industry, equipment manufacturing industrial system, has a deep industrial base. At present, domestic equipment can produce more than 200 species, while

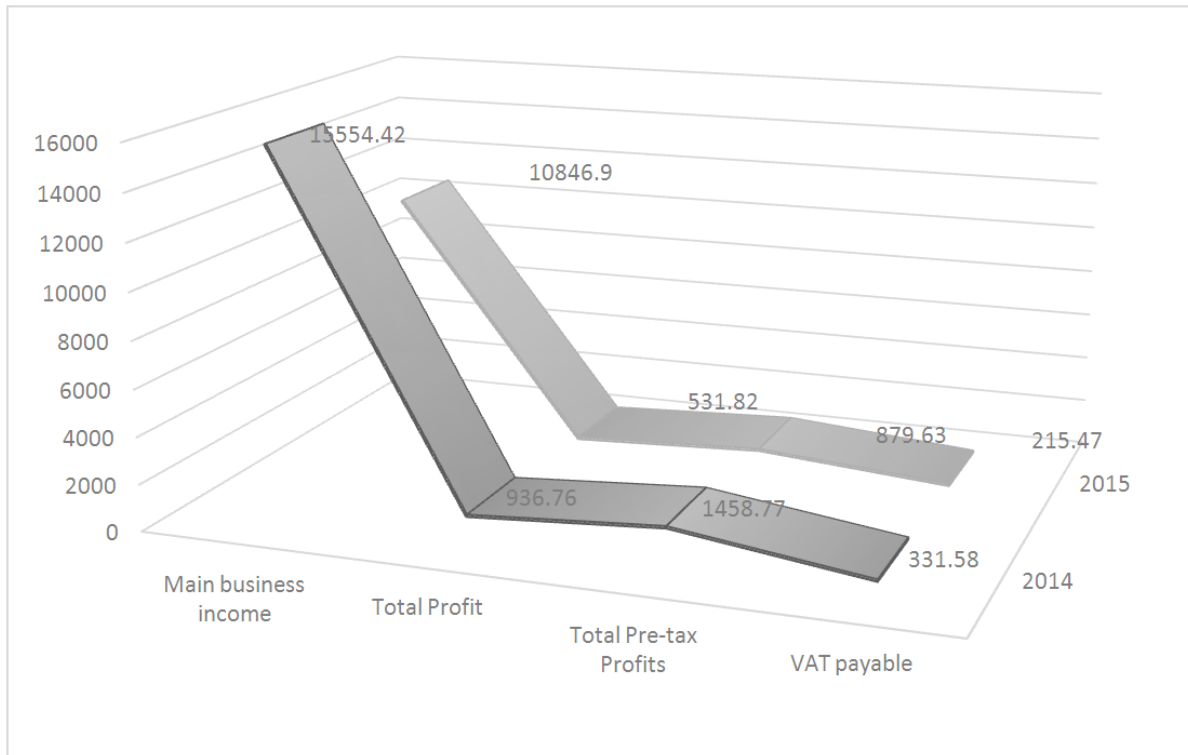


FIGURE 2. 2014-2015 years of equipment manufacturing industry in Liaoning province, the main economic index comparison (100 million yuan)

Liaoning province can produce more than 170 kinds of products, it can be said that the vast majority of equipment products can be produced in Liaoning province, including railway locomotives, ships, large CNC machine tools and bearings and other advantages of the industry in the domestic first-class level.

4.2. It has a large number of domestic same industry leading enterprises. SBW as the domestic blower industry leader, the introduction of foreign technology research and development of compressor in all indexes of way ahead on the international level, the market share of more than 50%, is one of the representative enterprises in Liaoning in a dominant position; Dalian machine tool group, production in the field of combination machine tools and automatic line, is also ranked in the forefront of the country, similar to the enterprises in Liaoning province, there are many, such as the Dalian heavy industry group, Shenyang aircraft industry group, Anshan Iron and Steel Group, between different enterprises, these enterprises for manufacturing design and development and production and between the upstream and downstream industry chain link provide a good condition. Shenyang economic zone has a good development in the regional division of labor and resource allocation and other aspects, the development of Dalian is relying on the ocean engineering and large-scale equipment manufacturing industry, industrial cluster has formed with its own characteristics of the other.

4.3. It has the obvious geographical advantages. Relying on the unique geographical location, only one coastal province in the northeast, Liaoning has with the regional advantages to develop into the northeast transportation hub, the northeast's "core region", with the support of relevant national policies, Liaoning province will become a new round of economic development of an important growth point. Liaoning province is close to South Korea and Japan, it can be said that Liaoning province's geographical location is richly endowed by nature, with the gradual establishment of the coastal port city, the inland city core infrastructure and investment environment will be further improved and

the development of the equipment manufacturing industry in Liaoning, Bohai will rely on the geographical advantage of the Yellow Sea, Liaoning by the “five first” economy with the wind, to occupy a more favorable position in the new round of the wave of international cooperation in capacity.

4.4. It has the strong support for “Belt and Road Initiative” and other national policy. Premier Li Keqiang pointed out that “Belt and Road Initiative” policy is China’s equipment manufacturing industry to go abroad, into the international market, an important opportunity to participate in the international capacity cooperation, the provinces should be combined with their own competitive advantage, accelerate the China equipment manufacturing industry pace of “going out”, the “Chinese manufacturing 2025” in key areas of technology roadmap and “the 13th Five-Year plan” and other related policies will become the equipment manufacturing industry in Liaoning province, “going out” in the process of strong backing.

5. The Competitive Disadvantage and Challenges of the Equipment Manufacturing Industry in Liaoning Province.

5.1. The development is restricted by factors such as weak technological innovation ability and poor innovation ability. In 2014, the research funding for equipment manufacturing industry in Liaoning province was 43.52 billion yuan, which was about one-third of that in Beijing and Shandong, and only about a quarter of that in Guangdong. It accounted for only 3.3% of the country’s total scientific research expenditure. There are 21032 items of equipment manufacturing industry in Liaoning, accounting for 17.2% of the country. The expenditure for the project is 17.536 billion yuan, which is 6% of the country. Both indicators can only be in the middle reaches of the country. In 2014, Liaoning large and medium-sized industrial enterprises a total of 4,468 patents were applied for, accounting for 2.3% of the country’s total, of which 1,596 were invention patents, accounting for 1.9% of the country’s total, and 2,761 patents were available, accounting for 1.77% of the country’s total. The above indicators all indicate that the development of Liaoning’s equipment manufacturing industry is severely constrained by factors such as weak technological innovation capabilities and weak innovation capabilities.

5.2. Based on labor intensive products with low added value, it can only be at the bottom of the global value chain. At present, the equipment manufacturing industry in Liaoning is still at the bottom of the global value chain, the reason is because the product is mainly relying on cheap labor and the production of labor-intensive products, although the focus of Liaoning equipment manufacturing industry has gradually shifted outwards in a positive trend, improve value-added products, improve the technological content of products, but if you want to be really bigger and stronger, to participate in the international capacity cooperation better, Liaoning still has a long way to go.

5.3. Professional talents, foreign languages, legal affairs and other talents are very short. The equipment manufacturing industry in the engineering and technical personnel occupies the dominant position, and engineering and technical personnel in Liaoning province, only 6.1% of the country, is in the middle level, and professional top technical talent is scarce. Because the cluster itself and the supporting facilities are not perfect, the cultivation of talents is problematic, and the industrial cluster is not attractive enough, it leads to keep local talent introducing foreign talent in the embarrassing situation, coupled with the efficiency of talent it is not high, actually causing a waste of talents in Liaoning’s talent problem broken. Participating in international cooperation and capacity, it needs to be more proficient in foreign languages, top talent financial and legal fields, which is the problem to be solved.

5.4. The fund investment insufficiency and the high investment risk. The characteristics of the equipment manufacturing industry determine its need of large upfront capital investment in the industry. In 2014, Liaoning province equipment manufacturing industry investment in fixed assets accounted for 13.91% of the total investment in fixed assets, and the same year the proportion of 22.26% in Jiangsu, the absolute value is 2.72 times of Liaoning province. The equipment manufacturing industry in the long investment cycle, high investment risk, the capacity to participate in international cooperation, the investment environment will be more complex, and will further increase the risk of investment.

6. Conclusions. According to the advantages, disadvantages, opportunities, and challenges of Liaoning's equipment manufacturing industry, the following conclusions can be drawn. The equipment manufacturing industry in Liaoning province has formed a complete industrial system, in the development process of more than half a century, the equipment manufacturing industry has a profound impact on the economic development of Liaoning. However, the development of equipment manufacturing industry in Liaoning has been declining. The equipment manufacturing industry in Liaoning province is an important source of export, exports of more than 60% manufacturing equipment are completed in Shenyang, Dalian, "Belt and Road Initiative" along the countries and the Asia Pacific region is the main direction of export. Liaoning province foreign investment level needs to be improved, promoting the Liaoning equipment manufacturing industry "going out", in order to adapt to the international trend of production cooperation, Liaoning is to promote the upgrading of equipment manufacturing industry inevitable choice. "Belt and Road Initiative" strategy promotes the equipment manufacturing industry in Liaoning province, and the international production cooperation has brought new opportunities for growth. How to improve the innovation ability, the training of professional and technical personnel, effectively dealing with financial risks is still a major challenge faced in the equipment manufacturing industry in Liaoning under the background of international capacity cooperation.

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