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Export Performance Evaluation of Listed Chinese Automobile Manufacturing Companies

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Abstract— *Based on the export trade practices of 15 listed automobile manufacturing enterprises in China from 2011 to 2020, an export performance evaluation index system composed of export business structure and export business capability of listed automobile manufacturing companies was constructed. It is found that the export performance of China's listed automobile manufacturing companies generally decreased first and then increased, and reached the highest point in 2019. Among them, the export performance of listed companies of fuel vehicle manufacturing is significantly higher than that of listed companies of new energy vehicle manufacturing.*

Keywords— *Motor vehicle, listed company, export performance.*

I. INTRODUCTION

With the deepening development of reform and opening up, China's automobile export scale shows a straight upward trend, with the export volume increasing from 26,000 in 2001 to 1.08 million in 2020, with an average annual growth rate of 20.48%. According to statistics from the China Association of Automobile Manufacturers, China's automobile exports exceeded 2 million units for the first time in 2021, a direct doubling from the previous year and a breakthrough that has been hovering around 1 million units for many years. However, since 2010, the growth rate of the completed vehicle export volume of our country slows down. After reaching the peak of 1 million in 2012, the completed vehicle export volume has grown negatively for four consecutive years. At present, the market demand of emerging countries is shrinking, the competition of international automobile truckload market is becoming increasingly fierce, the influence of negative factors such as the rise of trade protectionism, the automobile truckload export situation of China is grim. The paper accurately evaluates the export performance of Chinese automobile truckload manufacturing listed company and puts forward the corresponding countermeasures for promoting the enterprise export performance, which has a significant effect on obtaining a greater international discourse power for Chinese automobile truckload manufacturing listed company.

In this paper, starting from the connotation and definition of export enterprise level performance, to export performance related theory and the viewpoint of scholars at home and abroad for the selection of evaluation index basis, from the export business structure and export business of two dimensions to build China's auto vehicle manufacturing listed companies export performance evaluation index system, using the method of entropy weights for each indicator to determine, To measure the export performance of China's listed automobile manufacturing companies.

II. LITERATURE REVIEW

2.1 Connotation of export performance

Performance in economic research refers to the benefits and results obtained after participating in economic activities and conducting management, that is, the final benefits and results of an economic management activity. The related researches on the definition of export performance have not formed a unified understanding. Most scholars believe that export performance is a multi-level concept, so composite indicators are usually used in the research. Diamantopoulos and Karen (1988) believe that export performance refers to the result of export behavior of an organization or group under specific environmental conditions. Cavusigil & Zoul (1994) believe that export performance is the realization of strategic and economic goals of enterprises. An enterprise is usually engaged in export behavior with a certain purpose, such as business strategy, such as opening up new markets, gaining a foothold in foreign markets, competitive reaction; And economic benefits, such as costs, sales and profits. Radulovich(2008) defined export performance as the earnings obtained by enterprises in export operations, including financial and non-financial performance.

2.2 Evaluation of export performance

Based on the review of existing studies, the evaluation of export performance by domestic and foreign scholars can be divided into three dimensions: First, financial performance. Since the measurement of financial performance requires simple data and simple measurement methods, most studies select such indicators as proxy variables for export performance. Choi and Mueller (1992) take export sales, export density, export profit and export intensity as the main financial indicators. Su Jiaming (1998) believed that financial indicators should include profit rate and return on assets. Second, strategic performance. Zou (1998) pays attention to export competitiveness, international status, return on investment and the degree of achieving strategic goals. Rose & Shoham (2002) measured strategic indicators mainly through objective evaluation and subjective evaluation. Fan Xiaoping (2004) introduced employee satisfaction into export performance evaluation system to measure the importance of strategic development. Third, market performance is generally measured by market share and market share. Zhou Lu (2008) and Li Wei (2013) both conducted empirical research from the perspective of export share through questionnaires, and believed that market orientation has a significant positive correlation with export performance.

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III. Construction of Export Performance Evaluation Index System

3.1 Determination of evaluation index

This paper will start from the connotation and definition of export performance at the enterprise level, that is, the economic and non-economic benefits obtained by enterprises in export activities. For the sake of objectivity, this paper intends to use only objective financial data of enterprises to evaluate the export performance level of enterprises, mainly including export income, cost and profit. Based on the relevant theories of export performance and the opinions of domestic and foreign scholars, the export business structure and capability of Chinese automobile enterprises are taken as the first level indicators to construct the export performance evaluation system.

(1) Export business structure. The export business structure mainly includes the proportion of export business cost and the proportion of export business income, which reflect the proportion of export business in the total business of the company. Because the automobile industry belongs to the high-end manufacturing industry, its export business structure includes the export cost and income, which reflect the export management scale and ability of the automobile truckload manufacturing listed enterprise in our country. The higher proportion of export cost and export income, it indicates the larger scale of the company's export business.

(2) Export business capability. Export business capacity mainly includes export contribution rate and export profit rate. The export contribution rate index refers to the proportion of the export volume of an enterprise's products in the total export volume of a certain country, reflecting the position of the enterprise in the domestic export market. The higher the proportion, the stronger the export competitiveness of the enterprise's products. Export profit rate reflects the profitability of export business. The higher the ratio is, the higher the profit level of export business will be.

TABLE 1. Export performance evaluation index system of enterprises

Export performance evaluation index system of listed Chinese automobile manufacturing companies		
Level indicators	Secondary indicators	Indicators show
Export Business Structure	Export business cost proportion	Cost of export business/Total cost of main business
	Share of revenue from export business	Export business income/Total business income
Export business capacity	Export profit rate	(Export revenue - Export cost)/Export cost
	Export contribution rate	Export revenue/total export of the industry

3.2 Determination of evaluation weight

When determining the index weight of the constructed export performance evaluation system, scholars often use subjective weighting method and objective weighting method. Subjective weighting methods include analytic hierarchy process (AHP), expert scoring method, etc. The advantage of this kind of method is that it can improve or reduce the role of some indicators according to the actual situation, so that the evaluation results are more consistent with expectations. The disadvantage is that this kind of method is greatly affected by subjective factors, and it is not easy to operate in practical application. Objective weighting methods include principal component analysis and factor analysis. This method determines the weight of indicators according to the relationship between indicators or the degree of change of indicators, avoiding the arbitrariness of subjective weighting methods. After comprehensive comparison of the above methods, in order to avoid the deviation caused by subjective factors and make the evaluation results more scientific, this paper adopts the entropy method with strong objectivity and authenticity to calculate the index weight of the enterprise export performance evaluation system. It is found that the export business structure, especially the proportion of export business income, is an important index to evaluate the export performance of enterprises. Secondly, the export capability, especially the export contribution rate, plays an important role in the export performance evaluation of enterprises.

TABLE 2. Weight analysis of export performance evaluation index system

Export performance evaluation index system of listed Chinese automobile manufacturing companies		
Level indicators	Secondary indicators	Indicators show
Export Business Structure（0.5132）	Export business cost proportion（0.4990）	Cost of export business/Total cost of main business
	Share of revenue from export business（0.5010）	Export business income/Total business income
Export business capacity（0.4868）	Export profit rate（0.2508）	(Export revenue - Export cost)/Export cost
	Contribution rate of export（0.7492）	Export revenue/total export of the industry

IV. Export Performance Evaluation Of Listed Chinese Automobile Manufacturing Companies

4.1 Sample Selection

In order to make the data processing results more targeted and reasonable, companies with the same main business are selected as the evaluation samples. Firstly, through the classification of the market center of Sina financial network, the two categories of "commercial vehicle" and "passenger vehicle" were selected from the retrieval catalog of Shenwan secondary classification standard, and 22 listed automobile manufacturing companies under this classification were selected as alternative research objects. This paper studies the vehicle manufacturing listed companies export performance, the time dimension of the single sample data are not sufficient to support research, according to the availability and integrity of data, combined with China's automobile vehicle manufacturing listed companies export process, considering the selection from 2011 to 2020 of 22 auto vehicle manufacturing listed companies as the research object. The selected 22 initial research objects were screened according to the following two principles:

(1) To eliminate the listed companies with ST or ST* during the study period to avoid the impact of abnormal financial data on the evaluation results;

(2) Eliminate the listed companies whose annual reports and social responsibility reports disclose incomplete data of the research indicators of this paper.

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The index data used to calculate the export performance of enterprises are from the GTA database. After removing some unqualified samples according to the above two principles, 15 A-share listed enterprises of automobile manufacturing were selected as the final research objects of this paper.

4.2 Export performance analysis of listed Chinese automobile manufacturing companies

From 2011 to 2020, the export performance of China's listed automobile manufacturing companies decreased first and then increased. Among them, from 2011 to 2015, the export performance of China's listed automobile manufacturing companies showed small fluctuations and slow decline, and the export performance index reached the lowest point of 0.163 in 2015. From 2011 to 2015, global economic weakness, overseas automobile vehicle market competition intensified, Chinese automobile vehicle manufacturing listed company export is restricted. From 2015 to 2019, the export performance of China's listed automobile manufacturing enterprises rebounded significantly, and reached the highest point of 0.199 in 2019, an increase of nearly 22.96% compared with 2015. The main reasons are: first, the global economic situation is getting better, the local auto consumption demand is gradually recovering; Second, domestic automobile enterprises are constantly improving the competitiveness of their own products and stepping up their overseas layout. In 2020, the COVID-19 epidemic continued to spread, the global economy was in a state of shutdown, and the trade friction between China and the United States was heating up, making China's automobile export faced unprecedented difficulties. Compared with 2019, the export performance of China's listed automobile manufacturing companies in this year decreased to a certain extent.

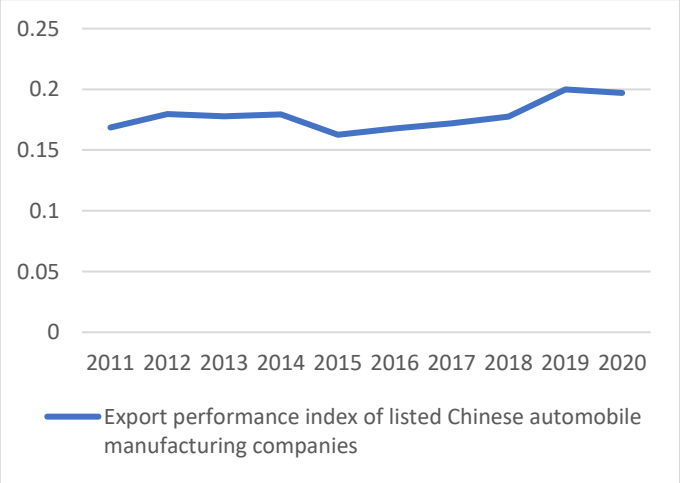

Fig. 1. Weight analysis of export performance evaluation index system
Data source: calculated by the authors

4.3 Differences in export performance of different types of enterprises

The export performance of listed companies of fuel automobile manufacturing is basically consistent with the overall performance trend, while the export performance of listed companies of new energy automobile manufacturing is always in a low state. Compared with the listed companies of new energy automobile manufacturing, the listed companies of fuel automobile manufacturing have been established for a longer time. Generally, according to the learning curve, the longer the survival time of the enterprise, the more perfect the management system, production experience and R&D system of the enterprise, which is conducive to promoting the improvement of the export performance of the enterprise. On the other hand, the fuel vehicle technology of Chinese automobile enterprises is relatively mature, and the core technology of Chinese new energy vehicles still needs to be broken through, and the key parts are also faced with a "choking" problem. For power batteries, the research and development efforts of high specific energy batteries, high safety batteries and long life batteries are still required. In the motor system, there is still a gap between the key technologies such as high efficiency and high density drive motor system and the international advanced level. Because the export performance of new energy vehicle enterprises will be lower than that of fuel vehicle enterprises.

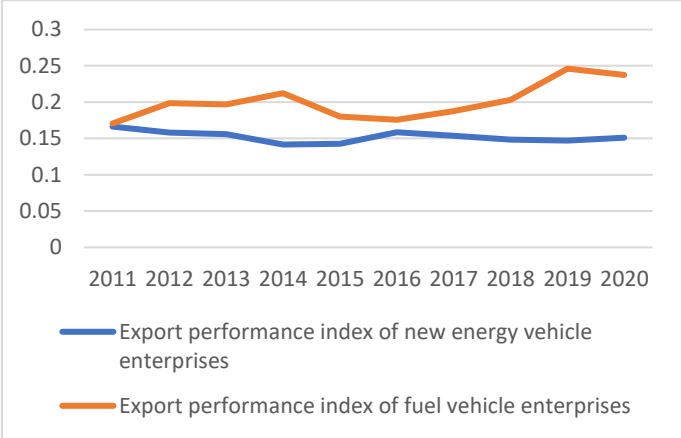

Fig. 2. Changes in export performance of new energy and fuel vehicle enterprises
Data source: calculated by the authors

V. SUGGESTIONS

5.1 Increase cooperation with other countries and promote scientific and technological innovation among enterprises

The listed companies of automobile manufacturing should strengthen foreign cooperation and enhance the ability of scientific and technological innovation. Innovation is the source of enterprise economic development. Research and development personnel have a great impact on the direction and efficiency of enterprise innovation, and at present, the research and development personnel of China's listed automobile manufacturing companies are in short supply. Therefore, the listed companies of automobile manufacturing can cooperate with universities and colleges to build a high-level innovation platform for industry-university-research cooperation, strengthen the application and training of scientific research achievements, and attract high-quality talents to work in the enterprises by establishing scientific innovation cooperation platforms and laboratories. At the same time, learning foreign advanced technology, advanced productivity, accumulation of

international investment experience, reduce the risk of international trade.

5.2 Strong independent innovation, focus on the reform of internal management

More than 60% in the automotive manufacturing listed companies in China belong to private enterprises, private enterprises relative to state-owned enterprises has more vitality and innovation consciousness, reflect on the international market is more sensitive, so private enterprises should improve their own ability to innovate, so actively develop new products, develop new markets, in order to have a place in the international market. However, most state-owned enterprises are large old automobile enterprises with rigid internal management system. Therefore, more attention should be paid to the reform of internal management mechanism and the improvement of enterprise management ability, so as to enhance the international competitiveness of state-owned enterprises.

5.3 Expand the scale of enterprises and enhance industry concentration

China's listed automobile manufacturing companies can expand the scale of enterprises and improve the industry concentration through mergers and acquisitions. On the one hand, it can reduce the small and medium-sized enterprises difficult to form a large scale operation. On the other hand, improve the utilization rate of resources, eliminate backward production capacity, realize industrial integration, reduce internal disorderly competition, and improve the export performance of enterprises.

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