

Research on the Factors Influencing the Export of High-Tech Products in Jiangsu Province

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Abstract: Since the reform and opening up, the export of high-tech products in Jiangsu Province has increased year by year. Discussing the factors influencing the export of high-tech products in Jiangsu Province is helpful to provide suggestions for improving the export trade quality of high-tech products in Jiangsu Province. Based on the relevant data of Jiangsu Province from 2002 to 2020, the impact of R&D investment, human capital investment, technological innovation, and FDI on the export volume of high-tech products in Jiangsu Province is analyzed. The study found that the development of export trade of high-tech products in Jiangsu Province mainly benefits from R&D investment and human capital investment. There are problems such as insufficient independent product innovation ability and unreasonable use of the technical effects brought about by FDI. It is suggested that Jiangsu Province should pay attention to the technological innovation mechanism and make rational use of the technical effects brought by FDI.

Keywords: Jiangsu Province; High-Tech Products; Export; Multiple Regression Model

1. Introduction

From 2002 to 2020, the export trade of high-tech products in Jiangsu Province showed a steady growth trend and gradually became a key growth point for its foreign trade. However, at the same time, the development of high-tech industries in Jiangsu Province has shown many problems, such as a lack of scientific researchers, dependence on imports of technical equipment, and insufficient optimization of product export structure [1-3]. Therefore, it is necessary to study the factors affecting the export of high-tech products in Jiangsu Province. This research can not only provide a certain response to improve the export trade of high-tech products in Jiangsu Province, but also provide relevant references for the export trade of high-tech products in China.

2. Literature review and theoretical assumptions

2.1 Literature review

Most of the research on the export trade of high-tech products in Jiangsu Province discusses its current situation and future trends. Mingjie, Zhu Shanshan and Li Gen [4] believe that enterprises in Jiangsu Province should further improve the digestive and absorption capacity of high and new technologies and encourage the government to increase capital investment in enterprises. Ma Hua [5] Through the analysis and study of the export situation of Yangzhou enterprises, he believes that Yangzhou high-tech enterprises lack R&D capabilities and that exported products add value. Low; Zhang Jinhua and Wang Songtao [6] believe that the types of products exported by enterprises in Jiangsu Province are too narrow and their products rely too much on foreign advanced equipment. To sum up, few studies pay attention to the factors affecting the export of high-tech products in Jiangsu Province, and this paper provides policy suggestions to improve the export trade of high-tech products in Jiangsu Province by studying their influencing factors.

2.2 Theoretical assumptions

Based on the viewpoint of "the government increases R&D investment to encourage enterprises to export trade" in endogenous growth theory ^[7], this paper assumes that H1: R&D investment has a positive correlation with the export of high-tech products in Jiangsu Province.

Based on the theory of human capital, "pay attention to the role of human capital, and believe that enterprises can obtain higher returns from the investment management of human capital ^[8]", this paper puts forward the assumption that H2: human capital investment has a positive correlation with the export of high-tech products in Jiangsu Province.

Based on the technology gap theory that "the innovation of technology in a country or region is conducive to the development of its export trade"^[9], this paper assumes that H3: technological innovation has a positive correlation with the export of high-tech products in Jiangsu Province.

Foreign direct investment can promote local capital accumulation and improve its factor productivity, thus driving local technological progress ^[10]. This article assumes that H4: foreign direct investment has a positive correlation with the export of high-tech products in Jiangsu Province.

3. Empirical research and design

3.1 Variable selection

Table 1 Variable Name and Definition.

Variable type	Variable name	Variable definition	Variable symbol
Interpreted variable	Export of high-tech products in Jiangsu Province	Exports of high-tech products in Jiangsu Province	Ln(EX)
Explain variables	R&D investment	Internal expenditure of research and development funds	Ln(RD)
	Human capital investment	Number of professional technicians	Ln(RDP)
	Technology innovation	Number of enterprise patent applications	Ln(TI)
	Foreign direct investment	Actual amount of foreign direct investment	Ln(FDI)
Control variables	Exchange rate	Average annual exchange rate	Ln(ER)
	Foreign trade dependence in Jiangsu Province	Total Foreign Trade Imports and Exports of Jiangsu Province/GDP	Ln(FRD)

3.2 Data sources

The variable data are all from the Jiangsu Statistical Yearbook 2002-2020. Among them, the data of EX, RD, RDP, TI, FDI and ER are directly from the Jiangsu Statistical Yearbook. FRD is calculated through the "Jiangsu Province Total Foreign Trade Imports and Exports/GDP" formula.

3.3 Regression model setting

Based on the research of previous literature and the above analysis, this study uses Eviews10.0 as an analysis tool to construct the following multiple regression models:

$$\text{Ln(EX)} = \beta_0 + \beta_1 \text{Ln(RD)} + \beta_2 \text{Ln(RDP)} + \beta_3 \text{Ln(TI)} + \beta_4 \text{Ln(FDI)} + \beta_5 \text{Ln(ER)} + \beta_6 \text{Ln(FRD)} + \delta \quad (1)$$

4. Analysis of empirical results

In this paper, the data is first multi-colinear, unit root test and co-integration test, and the data have all passed the test, so OLS regression is carried out.

Table 2 Measurement Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	18.7092	2.7417	6.8236	0.0000
Ln(RD)	1.1096	0.1040	10.6714	0.0000
Ln(RDP)	0.9305	0.2675	3.1142	0.0110
Ln(TI)	0.2349	0.0769	3.0543	0.0100
Ln(FDI)	0.1476	0.1014	4.4561	0.0410
Ln(ER)	-0.9153	0.3251	-2.8150	0.0156
Ln(FRD)	1.1087	0.0822	13.4834	0.0000
R-squared	0.9982	Mean dependent var		18.1235
Adjusted R-squared	0.9973	S.D. dependent var		0.8913
S.E. of regression	0.0463	Akaike info criterion		-3.0308
Sum squared resid	0.0257	Schwarz criterion		-2.6828
Log likelihood	35.7925	Hannan-Quinn criter.		-2.9719
F-statistic	1110.6550	Durbin-Watson stat		2.0102
Prob(F-statistic)	0.0000			

From Table 5, it can be seen that the impact of six factors on the export of high-tech products in Jiangsu Province is consistent with the research assumptions, and the model has passed the statistical test, indicating that the conclusion of this article is reliable.

5. Conclusions and policy recommendations

By analyzing the factors affecting the export of high-tech products in Jiangsu Province, this study found that: First, the development of export trade of high-tech products in Jiangsu Province mainly benefits from R&D investment and human capital investment; second, among the high-tech products exported by Jiangsu Province, the independent innovation ability of products is not outstanding enough, and the advantages of a large number of foreign direct investment are not fully utilized.

This article puts forward the following policy suggestions: First, attach importance to the role of R&D investment and human capital. Jiangsu Province should increase investment in R&D in high-tech industries and use the advantages of many universities in Jiangsu Province to promote the exchange and learning of scientific research talents, so as to improve the work efficiency of enterprises; second, improve the technological innovation mechanism, and make reasonable use of the technical effects brought by foreign direct investment. Jiangsu Province should further strengthen the awareness of intellectual property rights and improve the independent innovation ability of enterprises. In addition, Jiangsu Province should also encourage enterprises to learn the advanced

technology of other countries to the maximum extent.

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