Research on the Effect of China's Foreign Trade and Foreign Direct Investment on Carbon Emission Reduction under the Background of Carbon Peak

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Abstract: With the deepening of economic globalization and China's comprehensive and deep integration into the international division of labor, enterprises occupy more international market share and win greater development opportunities. China's import and export trade has entered a stage of rapid growth, and export trade has developed into a decisive factor in promoting China's economic growth. Under the restriction of carbon peak, however, the problem of carbon emissions brought about by carbon-intensive manufactured goods in the export trade has brought great challenges to China. On this basis, it is suggested that China should seize the opportunity of foreign trade development, promote the transformation and upgrading of domestic and import and export trade industrial systems, integrate domestic technological innovation with international cutting-edge technology, reasonably guide the industrial flow of foreign investment by foreign-funded enterprises, make good use of the advantages of foreign trade, and strive to achieve carbon emission reduction.

Keywords*:* Foreign Trade; Foreign Direct Investment; Carbon Emission Reduction

1. Preface

However, the trade growth model of China's industrial system includes more resource-and energy-intensive industries, resulting in high energy consumption per unit economic benefit and large carbon emissions [21]. Under this extensive foreign trade structure, the development of China's foreign trade is facing serious environmental pollution problems. With the development of foreign trade, China has paid a huge ecological environment sacrifice. Therefore, whether we can coordinate the contradiction between economic development and ecological environment is related to the sustainable development of China's economy. Faced with such a grim reality under the constraint of the carbon peaking target, China proposed to the world in 2015 a nationally determined contribution target to reduce CO2 emissions per unit of GDP by 60%-65% in 2030 compared with 2005[21].

2. Impact of foreign trade development on carbon emission levels

The relationship between economic development and environmental protection can be described as a double-edged sword. The development of economic activities will cause environmental pollution to a certain extent, and the improvement of economic level has to rely on the expansion of international trade (Shi Jinfang et al., 2020) [1].

Scholars who support the "trade benefit hypothesis" argue that the development of foreign trade can effectively reduce environmental pollution caused by carbon emissions (Li Weihe et al., 2014) [2]. Not only that, foreign trade will also play its spatial spillover effect to reduce carbon emissions in local and surrounding areas (Yan Jinling et al., 2021) [3]. At the same time, some studies have shown that the further development of foreign trade will reduce China's carbon emissions to a certain extent, and every 1% increase in foreign trade will reduce carbon emissions by 2.28%. Then the establishment of the "trade benefit hypothesis" has been verified, and it can be concluded that the decline of carbon emission intensity in various sectors of Chinese industry benefits from

trade openness (Xu Yuan et al., 2016) [4].

However, scholars who support the "bottom line race hypothesis" believe that the openness of foreign trade will contribute to the intensity of carbon emissions, resulting in increasing CO2 emissions (Xu Yudong et al., 2016) [5], and the greater the volume of foreign trade exports, the greater the country's carbon emissions (Atici,2012) [6]. In addition, from the perspective of trade dependence and trade mode, China's import and export trade will increase carbon emissions. Among them, the increase in carbon emissions of export trade is larger than that of import trade, and the increase of carbon emissions of import and export trade in the eastern region is smaller than that in the central and western regions; the impact of general trade and processing trade on China's carbon emissions shows an expanding effect, and the carbon emission effect of the former is less than that of the latter (Sun Jinyan et al., 2016) [7].

Therefore, China's exports to "Belt and Road Initiative" countries show a curve of first promoting and then restraining the growth of carbon emissions (Shi Jinfang, 2020) [1]; moreover, in the short term, the increase in export volume is conducive to reducing carbon emissions; in the long run, there is no obvious relationship between exports and carbon emissions (Wang Shanshan and Qu Xiaoe, 2012) [8].

3. Impact of FDI on Carbon Emission Levels

Scholars who support the "pollution haven" hypothesis believe that developed countries will transfer high pollution energy consumption and low value-added industries to developing countries, thus reducing the cost of pollution control [7]; however, this will cause environmental pollution and is not conducive to carbon emission reduction (COLE et al.,2006; et al., 2015) [9-10]. Whether based on the micro level or macro level of Chinese industry, studies have concluded that the increase in foreign direct investment is not conducive to the realization of carbon emission reduction (Fan Dan, 2015; Li Bin et al., 2016) [11-12]. Moreover, the impact of foreign direct investment on carbon emissions between developed and developing countries is quite different, because it will increase carbon emissions in developing countries, but has no significant impact on carbon emissions in developed countries (Hoffman et al.,2005) [13]. However, scholars who support the "pollution halo" hypothesis believe that foreign enterprises have an impact on the environment through the comprehensive effects of structure, scale and technology, and improve environmental quality (GROSSMAN et al.,1995;SUNG et al.,2018) through demonstration effects [14-15]. In addition, existing studies based on the macro level of Chinese cities conclude that FDI can achieve carbon emission reduction through demonstration effects, spillover effects and competitive effects (Li et al., 2017) [16]. In the process of increasing long-term investment by foreign enterprises, and with the increasing intensity of China's environmental regulations, the final economic performance and environmental performance will usher in a win-win situation. (Shenglan Li et al., 2014; Weidong Huo et al., 2019) [17-18].

Academia also studies the non-linear relationship between the host country environment of foreign direct investment based on the threshold effect, which mainly depends on industrial structure, human capital, factor endowment, marketization process and trade opening, as well as institutional factors such as government intervention (DOYTCH et al.,2016; Yang Shidi et al. 2017).

4. Policy Recommendations

According to the results of this empirical study, the following suggestions are put forward:

The first is to increase the level of opening to the outside world and give full play to the role of foreign trade in promoting carbon emission reduction. China should increase research and development of emerging technology products such as high energy efficiency and high added value, and build a high-end industrial chain for export products, forming a green, low-carbon and high-level trade chain system.

The second is to actively guide the efficient and rational allocation of foreign capital and improve the investment structure. As most of the foreign investment in Europe and the United States flows to the tertiary industry with high added value and low pollution emissions, more such funds should be introduced in policy to gradually eliminate industries with low economic energy consumption efficiency.

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