ANALYSIS OF FOREIGN FINAL DEMAND'S INDUCED EFFECT ON CHINA'S CARBON EMISSIONS

Hao Xiao, School of Economics and Trade,Hunan University, Phone:18684852601,E-mail: xh_26@126.com
Yani Chen, School of Economics and Trade,Hunan University, Phone:15200813826, E-mail: 1191649149@qq.com

Overview

Different from carbon emissions research on traditional perspective, this paper uses the World Input-Output Table(WIOT) database and each country's carbon emissions database, based on the inter-regional input-output model, to analysis the induced effect by foreign final demand on carbon emissions in China between 1996-2009 from the perspective of global production value chain. It also uses the structural decomposition analysis model (SDA) to decompose the carbon emissions induced by each foreign final demand into the weighted contribution of three driving factors, that is the effect of changes in each country's final demand, economic and technical effect and carbon emission coefficient effect, in an attempt to propose suggestions that can promote China to adjust the low carbon economic in production structure and trade structure.

This paper is organized as follows: After the introduction, the second section gives a brief overview about the related literature. The third section addresses the theoretical model and the data sources used in this paper. In section four we use the carbon emissions induced coefficient to study the carbon emissions in China induced by foreign final demand, analysis the different induced effect of all the countries in the world on China's carbon emissions. Section five decompose the carbon emissions in China, analysis the power source and its evolution process of carbon emissions in China under the perspective of foreign final demand. Finally, according to the conclusions of this paper, we discuss the prospect of China's low-carbon economy development in the future and the policy of energy saving and emission reduction.

Methods

GIRIO(Global International Input-Output), SDA(Structural Decomposition Analysis)

Results

First, carbon export in China mainly used to meet the foreign final consumption, the final demand has evoked different characteristics on carbon emission in China, and the induced amount present a whole stable growth trend year by year. From the country, final demand from US and EU contribute most to China's output, and relatively speaking, the induced effects of South Korea, Japan and other East Asian countries are not significant.
Second, China's carbon emissions growth path induced by the foreign final demand is roughly the same, but there are still some bias. The foreign final demand and the change of economic and technology are the biggest contributors to China's carbon emission rise, while the coefficient of carbon emissions is the leading factor of decrease in China's carbon emission.

Conclusions

China is processing trade country and carbon emissions country, exists serious carbon trade imbalance problem. Reducing the carbon emissions implied in export will help our country to achieve energy-saving emission reduction targets, fulfill its international commitments. Therefore, we should optimize the export structure and enhance the intensity of energy saving and emission reduction in order to transform the trade mode for high value-added and friendly environment mode. At the same time, technology progress is always the most direct and favorable policies and measures to control carbon emissions, So we should actively introduce, digest and absorb the international advanced production technology and the carbon emission reduction technology to improve the efficiency of energy utilization.

References

Dietzenbacher, E. and Los, B(1998):" Structural Decomposition Techniques: Sense and Sensitivity," ,Economic Systems Research, , 307-323

Shui,B.,Harriss,R.C.(2006):"The role of CO2 embodiment in US-China trade,", Energy Policy,(34):4063-4068

Koopman,R, Wang Z., and Wei S.(2008):" How much of Chinese Exports is Really Made in China? Assessing Domestic Value added with Processing Trade is Pervasive,", NBER Working Paper,2008,NO14109

Bin Su,B.W.Ang(2011):"Multi-region input-output analysis of CO2 emissions embodied in trade: The feedback effects,", Ecological Economics, 71(2011)42-53

Ming Xu, Ran Li, John C.Crittenden(2011):"CO2 emissions embodied in China's exports from 2002 to 2008: A structural decomposition analysis,", Energy Policy, 39(2011)7381-7388

Wang, Z., Wei, S. J., and Zhu, K.(2013);"Quantifying International Production Sharing at the Bilateral and Sector Level, ",no. w19677. National Bureau of Economic Research

Jiang Xuemei, Liu Yifang(2013):"Research on the Pattern Change of Carbon Emission Embodied in International Trade and Its Determinants,", Statistical Research, 2013, 30(9):29-36

Lu Wanbo, Qiu Tingting, Du Lei(2013):"A Study on Influence Factors of Carbon Emissions under Different Economic Growth Stages in China,",Economic Research Journal

Yan Xu, Erik Dietzenbacher(2014):"A structural decomposition analysis of the emissions embodied in trade,", Ecological Economics ,101(2014)10-20