

Study on Multi-objective Optimization of Export Commodity Structure Based on Non-competitive Input-Output Analysis

Topic: Bias and estimation methods in input-output tables

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After 30 years of reform and opening-up, China's total foreign trade volume has grown from 20.6 billion U.S. dollars in 1978 to 2.5 trillion U.S. dollars in 2008, but in the meantime it has also paid huge costs of energy shortage and environmental pollution for this. So it is helpful and significant to analyze the effects of export on the economy, employment, energy and environment in a comprehensive way, to optimize the export structure by coordinating the conflict among the four aspects so as to heighten China's international competitiveness and to promote the sustainable development of its foreign trade.

The first part of this paper sets up the principles of optimizing export structure aiming at the effects of the export on economy, employment, energy and environment, and then establishes a multi-objective programming model. Finally, it obtains the optimized export structures under different trade patterns on the basis of China's non-competitive input-output table capturing processing trade for 2002.

It is worth mentioning that this paper applies the non-competitive input-output model capturing processing exports to optimize the export structure to differentiate the effects of different trade patterns, which is more helpful to clarify the direction of structure optimization.

The main conclusions are as follows.

First, the results by the multi-objective model show that it can improve the comprehensive effects of export by increasing the export ratio of the sectors of higher value-added and employment and of lower energy consumption and pollution and at the same time by reducing that of those of the contrary characteristics.

Second, for the two trade patterns of processing export and non-processing export, the positive effects on economy and employment of the latter is larger than the former, and the negative effects on energy and pollution are also bigger than the former. But on the whole, the optimization results show that we should reduce the ratio of the processing export and increase that of the latter accordingly.