Assessment of Guangdong Carbon Emission Trading With AIM/CGE Model

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Abstract: This study purposes to analyze economic impact of Carbon Emission Trading policy in Guangdong with a two-region dynamic CGE model. To explore the effects of energy efficiency and carbon constraint instruments separately, two scenarios are developed: SAV (with less stringent carbon constraint) and LCE (with stringent carbon constraint). The assumed emissions reduction target is 33% and 40% per unit of GDP compared with the 2010 level by 2020 for SAV and LCE. In total, five cases are considered, including one reference case, two cases without carbon emission trading and two cases with carbon emission trading. The simulation results show that: for cases with carbon constraints, there exists a carbon price. More stringent carbon constraint will cause higher carbon price and GDP loss; for cases with trading or not, implementing carbon trade could reduce the abatement costs of trading sectors and decrease the GDP loss. Moreover, the GDP loss is small but emissions reduction is high, and it is a positive implication from economic perspective regarding climate change.

Keywords: Carbon Emission Trading ; CGE model ; Climate Change; Carbon price

(1) overview

Guangdong contributes over 11% of China’s GDP and consumes 8% (19.6 million tons of coal equivalents) of China’s energy in 2007. Guangdong has committed to reduce its carbon intensity per unit of GDP by 19.5% in 2015 from 2010 level and decided to implement carbon emission trading system across industry sectors. At the first stage, four sectors are selected for emission trading, including power, cement, oil refinery ,iron and steel sectors which contribute to 58% of total CO2 emissions in Guangdong.