

The impacts of Carbon Tax on Chinese Economy: Based on a dynamic CGE Model

Topic: CGE and econometric input-output modelling 2

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In recent years, the situation of global warming is severely, According to IPCC report, as the most important greenhouse gas emission, carbon dioxide emission account for at least 60% in global greenhouse gases. And how to mitigate carbon dioxide emissions in response to climate change has brought the unprecedented challenges to human development, also it has become a hot research question in political, energy, economic, environmental and other fields in many countries. With the pressures of international climate change negotiations and the way of domestic economic developing, China as a big country of CO₂ emission, the situation of high pollution and high emissions need to change In the post-Kyoto era. In the five-Year plan Promulgated recently, china will implement carbon tax policy to reduce the carbon dioxide so as to realize the transformation of industrial structure. Carbon tax policy is considered as an effective economic means to reduce the Co₂ emissions, now we care about the question of how to approach the way of economic development with the Carbon tax, and what impacts on China's economy when using different carbon tax policy, which is very important for the quantitative analysis of our study.

Different carbon tax policy will have different impacts on employment, industrial competitiveness and other effects of china's economy, so the key issue of carbon tax research is implement the reasonable carbon tax system and a carbon tax return policy in China, then we can analysis the impacts of carbon tax on the country's macroeconomic, industrial structure and carbon dioxide emissions reduction potential. We can promote the energy conservation while minimum its negative impact on the economy.

In this paper, we characterizes a dynamic Computable General Equilibrium (CGE) model of the China economy, which is a major enhancement and extension of the earlier MONASH model, so as to analyze the effects of different carbon tax on China's real GDP, CO₂ emissions and output of various industries, energy structure and the industrial structure of results. we also compare impacts on china's macroeconomic 、dioxide emission reduction、our carbon emissions, energy-intensive industries, export-oriented sectors by different scenarios and different carbon tax levels. In the end, we can choose the most suitable carbon tax mechanism for Chinese economy. The model will give a scientific prediction and evaluation from the view of dynamic points, and also the results can provide scientific data analysis and some policy recommendations on carbon tax policy implementation in the future.

Our CGE model is a dynamic Computable General Equilibrium (CGE) model of the China economy, which is a major enhancement and extension of the earlier MONASH model developed by the Center of Policy Studies which describes behaviors of economic agent and linkages between sectors of economy and between China and the rest of the world. The core part of our CGE model contains widely accepted economic theories such as consumer and producer optimum behavior. It include about 138 industry departments、three input factors(labor, capital, land) and six economy entities (enterprise、household、governments、investments、exports、stocks) and six basic modules (production module, demand module, distribution module, trade module, price module, dynamic module). There are about six energy production departments: Mining and Washing of Coal, Extraction of Petroleum, Extraction of Natural Gas, Processing of Petroleum and Nuclear Fuel, Coking, Production and Supply of Electric Power and Heat Power, Production and Distribution of Gas.