

## **A non-linear input-output model for measuring the employment effect of changes in final demand: an approach based on the employment elasticity**

Topic: Input-output applied to social issues II

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Abstract: The employment effect of changes in final demand has always attracted the attention of researchers. For example, many papers are trying to calculate the impact of the decrease in China's export due to the U.S. sub-prime crisis on China's employment. Among many measurement methods, researchers prefer to use the input-output model to measure the employment effects of changes in final demand. The input-output technology can reflect the interdependence among industries in national economic system comprehensively and systematically. Compared with other methods, input-output method has an unparalleled advantage in measuring total impact of changes in final demand on employment. However, classical input-output model always assumes that the relationship between the output of various sectors and its employment is linear. According to economic theory, employment is more sticky than output, which makes employment doesn't change linearly with the output, but has the obvious non-linear relationship with the output. So, the linear model will overestimate the employment effects of the changes in final demand. To solve the problem, this paper designs econometric models to estimate employment elasticity by sector and introduce the results into the input-output model to get a partial non-linear input-output model. Based on this input-output model with non-linear output-employment relationship, an empirical research has been done by using the 2007 input-output table in China and the data on China's employment from 2002 to 2009 to analyze the impact of the decrease in China's export due to the U.S. sub-prime crisis on China's Employment. Comparing with the IO model with linear output-employment relationship, the new model got the much smaller employment effect.