

Time Lag Model for Input-Output Multiplier

Topic: 716B Methodological Aspects of IO Analysis (3)

Author: Xinru LI

Input-output technique has been widely used in many fields of national economy. At its core is the Leontief inverse matrix, namely input-output (I-O) multiplier. Most studies based on I-O multiplier neglect its time lag, leading to a misunderstanding that complete effect will be realized by one time immediately. The purpose of this paper is to build a time lag model for I-O multiplier. Time lag here comes from two sides: information transmission and production process. The former refers to time spent on microeconomic activities, such as finding source of goods and establishing orders. The latter is production time taken for the production of goods. In addition, we also take production lead-time into account. Using the power series expansion of Leontief inverse, it is well known that complete effect can be decomposed into direct effect and countless indirect effects. Under assumption of constant inventory, each effect corresponds to a time lag. We build a model to calculate average-weighted time lag of the complete effect. In empirical analysis, based on China's non-competitive I-O table that reflects processing trade in 2010, we calculate the average time lag of effect on domestic value added generated by each sector's export. The result shows that time lag of effect generated by processing export is shorter than that by non-processing export, which is meaningful for policy making.