# Estimation Errors in Input-Output Tables and Prediction Errors in Computable General Equilibrium Analysis

Topic: CGE Applications to Handle Complex Data Issues
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Input-output (IO) tables are one type of data essential for constructing the social accounting matrices (SAM) used in computable general equilibrium (CGE) modeling. They also give CGE models attractive features as a multi-sectoral model describing details of industrial activities useful for empirical policy analysis, such as trade, environment, and tax policies. However, the availability of IO tables is often limited, because IO tables with such details are costly to construct. Such low availability of IO tables forces CGE modelers to use IO tables that are several years old and often update IO tables themselves with simpler methods of a non-survey method and fewer data than those employed by professional statisticians. It is often concerned that the updated IO tables and therefore results of CGE studies with them might not be reliable enough for empirical studies.

We used 1995-2000-2005 linked IO tables for Japan to examine estimation errors of updated IO tables and the resulting prediction errors in CGE analysis developed with updated IO tables. As we usually have no true IO tables for the target year and therefore need to estimate them, we cannot evaluate estimation errors of updated IO tables without comparing the updated ones with true ones. However, using the linked IO tables covering three different years enables us to make this comparison.

Our experiments showed that IO tables estimated with more detailed and recent data contained smaller estimation errors and led to smaller quantitative prediction errors in CGE analysis. Despite the quantitative prediction errors, prediction was found to be qualitatively correct. As for the performance of updating techniques of IO tables, a cross-entropy method often outperformed a least-squares method in IO estimation with only aggregate data for the target year but did not necessarily outperform the least-squares method in CGE prediction.