

Is it sufficient to apply transport data as a proxy for actual trade data in a SCGE model?

Topic: CGE and econometric input-output modelling 2

Author: Wiljar Gudmund Hansen

The demand for freight transport is a derived demand from the production and consumption activities in the economy. The amounts of goods moved from one point to another are dependent upon factors like the performance and spatial structure of the economy, regulatory decisions taken by the policymakers, technological innovation, climatic influences, etc. National transport modelling systems provide policymakers with impacts analysis of regulatory- or physical changes in the transport system, and are widely used both in the development of national transport plans and as a basis for scenario analysis for researchers.

In the analysis of the demand for freight transport we usually separate between two different zone-pair matrices for goods movements: trade- and transport zone pair matrices. Production / Consumption (P/C) zone-pair matrices establishes trade links between production sites and intermediate or final consumption of goods, and are usually constructed from commodity flow surveys (CFS) or from in-depth surveys of logistical structures. Origin / Destination (O/D) matrices represent the physical transport movements of the P/C trade flows. Transport zone pair matrices are usually established from mode-specific count data and other available statistics.

Observed changes in the two flow matrices have different origins. While changes in the trade patterns are influenced by external changes to the transport sectors, changes in the physical transport movements are strongly influenced by internal changes in the transport sector. Although it is the P/C matrix of trade that is of interest in spatial I/O and SCGE models, most models, due to a lack of alternative, apply transport data or synthetic trade data as a proxy for actual trade data. The purpose of this article is to apply and analyze trade-, transport- and synthetic trade data in a SCGE modelling setting in order to investigate whether it is sufficient to apply transport- or synthetic trade data, or if actual trade data are required. Transport data are available for most regions and countries making this a frequently used data source. Commodity flow surveys, on the other hand, are expensive and time consuming to conduct, making trade data less available for transport demand modelling.