

Edge Clustering for Supply Chain Networks

Topic: Methodological aspects of input-output analysis

Author: Keiichiro Kanemoto

Co-Authors: Tesshu Hanaka

The companies are seriously concerned at the environmental risk in their supply chains as well as their production. Interindustry collaboration is essential to reduce supply chain emissions. However, the supply chains continue infinitely and an enormous number of companies are involved in the supply chains. Some studies suggest structural path analysis (SPA) for finding environmentally important supply chains, but the identified paths cover a relatively small amount of emissions. In addition, node clustering could suggest how an industry team up with other industries for reducing environmental risk. In node clustering, however, the industry could engage in only one industrial collaboration due to grouping industries. This is inconvenient for some industries like the electricity generation industry because these industries produce goods and services for almost all industries or use many kinds of goods and services for their production. Here, we suggest a new clustering approach, called edge clustering, for input-output analysis. The concept of edge clustering is to group transactions rather than industries, and therefore an industry could belong to more than two clusters. The new approach helps the companies to find collaborators for lowering the environmental risk in supply chain networks.