Investigating alternative approaches to harmonise MRIO data

Topic: World input-output modeling and databases II
Author: Arne Geschke
Co-Authors: Keiichiro Kanemoto, Richard Wood

Over the last years, a small number of global MRIO databases were developed as a first attempt at applying an input-output framework to the entire global economy at a high sector detail. These databases have been constructed along different philosophies. Some have been constructed to include as much detail as possible, whereas others have been constructed to principally rely on validated statistical data. In all cases, data from various sources is used to the construction of the MRIO database. In order to adhere to basic economic principles, these data must be harmonised in order to be used within the same MRIO database. We attempt to investigate the differences that alternate harmonisation procedures can have on the subsequent use of a MRIO database. This study compares two of the global MRIO database: EXIOBASE and Eora.

This comparison focuses on trying to unravel the effect of the different approaches that were taken to develop the databases by doing a number of runs with the AISHA tool, which houses the mathematical methods that were used for the generation of the Eora database. We use differing levels of commonality of input data to the AISHA tool. Both databases were analysed from a number of perspectives, including analysing distance measures across harmonised and unharmonised data, and uncertainty measures of final results using standard Leontief footprint calculations.

At the IIOA conference in 2013, the authors presented the methodology that was taken in this study. However, final results were not available at the time. This presentation will focus on the results. We conclude that the reliability and robustness of an MRIO database largely depends on the level of detail and reliability of the underlying raw data, and we make recommendations for the generations for the future development of large MRIO databases based on our findings.