

Study on value-added exposure estimates to assess spillovers and competitiveness

Topic: Input-Output Theory and Methodology (10)

Author: Simone Maria Grabner

Co-Authors: Robert STEHRER

1. Research Question

This study addresses a critical gap in the practical application of Multi-Country Input-Output (MC IO) frameworks for macroeconomic surveillance: the temporal lag and valuation constraints of official datasets. Standard MC IO tables are typically released with a two-year hiatus and are predominantly available in current prices. These limitations impede the accuracy of the Macroeconomic Imbalance Procedure (MIP) by obscuring real-term structural shifts during periods of high price volatility. The research investigates whether an iterative balancing framework can successfully project these tables forward and derive chain-linked volume measures to provide a more accurate, real-time assessment of international spillovers and competitiveness.

2. Method Used

The methodology extends the 'Euro method'—an iterative proportional fitting procedure—to the multidimensional structure of the Eurostat/FIGARO framework. To achieve temporal alignment, the study integrates official GDP growth forecasts into the Leontief system, ensuring internal consistency across intermediate and final demand blocks. Simultaneously, a deflation module is developed to convert nominal flows into constant prices. This approach utilises national GDP deflators within an iterative 'Euro method' to generate MC IO tables in chain-linked volumes, thereby preserving the identities of value-added components across borders while accounting for relative price changes.

3. Data Used

The analysis is based on the Eurostat/FIGARO Multi-Country Input-Output Tables, covering 46 countries and 64 industries (NACE Rev. 2) for the period 2010–2022. This includes detailed blocks for intermediate flows, value added, and five categories of final demand. For the forecasting and deflation modules, the study utilizes official GDP growth forecasts and national GDP deflators.

4. Novelty of the Research

The scientific novelty lies in the methodological application of the 'Euro method' from a single-country context to a harmonised multi-country environment. By providing a systematic approach to update and deflate international trade matrices, this research transforms static, ex-post indicators into a dynamic, forward-looking analytical suite. This facilitates a sophisticated analysis of Global Value Chain (GVC) participation through the derivation of GVC-adjusted Real Effective Exchange Rates (REERs). Unlike traditional measures, these adjusted REERs account for complex forward and backward linkages, offering a more nuanced understanding of how external shocks and exchange rate fluctuations propagate through global production networks.