Expanding Eurostatâ€™s FIGARO MRIO database: industry disaggregation, and environmental and labour extensions

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Despite the existence of various MRIO databases, the policy uptake of the results is limited. Multi-database comparisons have reported relevant differences in the monetary structure, extensions and footprint results of the main MRIO databases. In order to overcome some of these problems, some countries have combined official data produced by their national statistical offices with existing MRIO databases to decrease their country uncertainty of the results, while at the same time increasing their acceptability for policy uses. Despite these exceptions, countries still lack MRIO databases consistent with their national statistics.

While the OECD and Eurostat have produced their own â€˜officialâ€™ MRIO databases (namely ICIO and FIGARO), these still lack sufficient sectoral detail and environmental and social extensions to more accurately represent environmental footprints. For instance, having a single agricultural sector is problematic when calculating carbon footprints because the emission profiles of the underlying products are very different.

Against this background, the European Commissionâ€™s Joint Research Centre (JRC) funded a project to build a high-resolution MRIO database based on Eurostatâ€™s FIGARO database, which was to include energy, air emission and labour extensions. The main novelty of FIGARO-e (or FIGARO extended) is that is largely consistent with official statistics, thereby substantially increasing its potential use in policy. This first version of the database covers the year 2015, and represents 46 countries (plus a rest of the world region), 176 industries and 213 products. It includes a labour extension split by gender and skill, two energy extensions and four extensions for greenhouse (GHG) gas emissions (carbon dioxide, methane, nitrous oxide and fluorinated gases).

The methodology followed and the main features of the database can be summarised as follows:
â€¢ The original FIGARO MRIO database, which represents 64 products and 64 industries has been disaggregated to 176 industries and 213 products using the industry and product structures of EXIOBASE v3.8.2.
â€¢ The labour accounts represent the number of persons engaged (thousands) using data from the OECD TiVA indicators and EXIOBASE v3.8.2. The data is split by gender and skill (one version based on education and another one based on occupation). The allocation to the disaggregated industry classification has used labour splits from the EXIOBASE labour accounts.
â€¢ The energy accounts provide information on primary energy supply and net energy use. The are based on the energy balances from the International Energy Agency, which are bridged to the residence principle. Then, the energy supply and use data is allocated to the disaggregated industry and final consumption categories based on information from the FIGARO-e monetary MRIO data.
â€¢ The GHG emissions from combustion processes are calculated based on the energy data (and emission factors) and allocated to industries and final consumption categories based on information from the FIGARO-e MRIO database. The emissions from non-combustion processes originate from a disaggregated version of the EDGAR database. The data from European countries is then benchmarked to the official GHG emission accounts from Eurostat, which are given in a 64-industry resolution.

As shown above, the resulting database is largely consistent with official statistics and dataset from

well-established international institutions. Thus, FIGARO-e represents another step towards the institutionalisation of MRIO database production.

FIGARO-e will be integrated into the JRCâ€™s Trade-SCAN tool, a user-friendly modelling interface developed by the JRC for the calculation of global value chains indicators. The new features will benefit the analysis of the environmental and labour effects of globalisation and the impact assessments of the new EU Green Deal related policies as well as the Environmental taxation policy of the EU.