

Trade reconciliation in MR EE IO – the approaches in EXIOPOL and CREEA

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 Author: Arnold Tukker

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Arnold Tukker^{1,2,3}

1 Centre of Environmental Sciences (CML), Leiden University

2 Netherlands Organisation for Applied Scientific Research, Delft, Netherlands

3 Norwegian University of Science and Technology, Industrial Ecology Program, Trondheim, Norway

Abstract for a talk in the proposed Trade reconciliation session. More authors to be added in final paper

Abstract

TNO, CML, NTNU, Wirtschaftsuniversität Wien and others created the Global MR EE IO EXIOBASE. A key problem in MR EE IO construction is the reconciliation of trade data and trade data in individual SUT/IOT tables. The EXIOPOL and CREEA projects have developed two approaches to deal with this issue.

The EXIOPOL project used a method developed by Maaïke Bouwmeester and Jan Oosterhaven of RU Groningen which they summarized in Tukker et al. (2013) as follows. Using trade shares from trade statistics, the harmonized import use tables are spatially disaggregated into bilateral import use tables that specify the country of origin. In this way, per country, 42 bilateral import matrices are obtained. When considering the group of matrices with the same country of origin, the summation over the sectors and countries of destination should equal the exports as reported by the country of origin. There is however asymmetry caused by trade and transport margins, taxes less subsidies and statistical errors. First the total exports are re-scaled to match the overall total of the imports. The difference between the original export column and the re-scaled column is entered in the final table as a discrepancy column in order to maintain the original accounting identities. This discrepancy column does not distort the input coefficients of the ultimate IO model, which would have been the case if the total imports would have been re-scaled. Second, the information contained in the product structure of the exports vector is used to bi-proportionally adjust the import matrices to make them structurally consistent with the export data. The adjustment of the import matrices is favored over adjusting the export data as the latter are in the desired valuation. The difference between the original import table and the adjusted import table gives a crude estimation of the trade and transport margins involved in international trade. The information on origin and destination of the inputs used in production as recorded in the bilateral import use tables can be combined with the national supply tables to obtain an import-based Multi-Regional SUT.

One of the drawbacks of the method above, is that trade and transport margins are estimated from the difference between the implicit exports and the exports in a country SUT. In the context of the CREEA project, TNO developed an alternative approach that roughly works as follows:

- The import vector in country SUT is disaggregated into a matrix indicating country of origin, using trade shares from trade statistics. This is similar as above.
- For each bilateral trade flow, transport and insurance margins are estimated using international transport databases. Numbers should match imports and exports of transport and insurance services. This allows moving from imports in c.i.f. to imports in f.o.b. prices.
- The difference between implicit exports (f.o.b.) and exports in the SUT is calculated, both for all products together at global level, and per product in our database. We hence see which % mismatch exists between imports and exports for total trade, and for trade per product.

- We have two options to deal with the mismatch at product level:
 - Not using the RoW as 'dump' of the differences, but to move the differences to changes in inventories, or showing them explicitly in a 'statistical error' column
 - Use the RoW to absorb most of the differences. Since in extensive MR EE IOs the RoW is relatively small (5% of global GDP), this solution is however not always possible since it would distort the
- To come to a harmonized bilateral trade matrix, we use an optimization routine that allows slack in the trade shares (and in which we may vary the extent to which we use the RoW as 'dump'). In this way, we make sure that trade shares are adapted in such a way that the mismatch at product level is minimized for each country.

The talk will in any case explain the two approaches in detail. If project budgets allows this, we may also show some practical examples of the differences in results the different methods give.