

WP 6 Methodological research related to the database

Work package number	WP 6			Start date or starting events:	Month 1		
Work package title	Methodological research related to the database						
Activity Type	RTD						
Beneficiary number	1	2	6				
Person-months per beneficiary	10	10	6				

Objectives

Constructing a large database as the one proposed in this project, involves a lot of estimation. This is due to the fact that some of the data are simply not available or incomplete. Another factor that plays a role is that some data are known with greater reliability than other data, and some are even known exactly (the so-called superior data). Also, even in an ideal world, IO tables cannot be measured but are a construct (i.e. a model) themselves. This is because the crucial assumption in the IO table of a one-to-one correspondence between product and industry does not hold in real life, e.g. due to joint production and by-products. All of these aspects require profound methodological research in order to arrive at the “best” possible procedure to construct the world IO database.

In its turn, the availability of the world IO database offers the unique opportunity of checking the extent to which the “true” answer (as obtained from using the full, maximum-information database) differs from the “estimated” answers (as obtained from using various shortcuts). From a methodological viewpoint, this addresses a fundamental question. Namely, whether (and why) constructing such a database is worth the effort. Typically, attempts to answer this question are not undertaken once the database is built, while the answer cannot be given as long as the database has not been built.

Description of work

Task 6.1: aspects related to the construction of national IO tables from SUTs (beneficiaries 2 and 6 are most heavily involved)

1. Analysis of the (dis)advantages of using product-by-product versus industry-by-industry type of IO tables. Relevant questions in this respect are: which types of tables are to be used for what type of analysis? Is it possible to switch between the two types of tables using bridge matrices? Is it possible to perform policy analysis using SUTs directly, instead of through IO tables?
2. Addressing the choice of method to use for constructing IO tables from SUTs. The most widely used methods are the product-technology model and the fixed product sales structure model, but a wide range of alternative models have been proposed. The merits and demerits of the available methods will be investigated and an attempt will be undertaken to answer the question “what method to use under what circumstances?”

Task 6.2: aspects dealing with linking the tables across space and time, and making projections (the task is mainly carried out by beneficiaries 2 and 6)

3. Analysis of methods to harmonize IO tables, which requires using international prices. Next to the question whether the SUTs should be valued in basic prices or in purchasers’ prices (what are the advantages of each, what type to use when, how can they be linked?), the issue of making the prices internationally consistent needs to be dealt with. For example, a relevant issue is whether for example purchasing power parity (PPP) indexes should be used or not.
4. Analysis of methods to construct IO tables in constant prices. Various methods are available, of which “double deflation” is the best known. For some countries, tables in constant prices are readily available, but typically they are in prices of the previous year. The question in that case is how the information from the chained indexes can be best used. Also in some cases partial information may be available in constant prices. The aim is to arrive at a full overview of which method to use under what circumstances (in terms of available information).
5. Projection of the entire WIOD database up to the year 2010. Many of the underlying annual statistics in this project become available with a relatively short time lag (e.g. approximately 1 year for the trade data, 2 years for the IEAs energy statistics). However, the time delay required by National Statistical Institutes (NSIs) to publish SUTs and IO tables is typically significantly longer. This general unavailability of very recent IO data has been frequently perceived as a limitation of the adequacy of using IO techniques for impact analysis. This holds in particular when IO is applied to themes related to rapidly evolving conditions (e.g. the strong growth of China and other Asian economies, or recent EU enlargements). In this subtask, we will project the entire upper-tier of WIOD up to the year 2010 by means of a robust updating technique, such as the EURO method (see Eurostat Input-Output Manual, 2007 revision). Simple test case-studies will be conducted on the updated database in order to demonstrate the potential applicability. For instance, we will calculate environmental performance scores for different countries and for different years and analyze the effects of the EU enlargement on the environmental performance of the new member states.

Task 6.3: fundamental aspects related to the use of the database for empirical analyses and model building (beneficiary 1 is most heavily involved)

6. Sensitivity analysis with respect to types of IO tables used in empirical work. Although inter-country tables contain, in principle, more information than so-called multi-country tables, how much will be left of the advantage of using inter-country tables in the case of limited data availability? And how do the manifold ways to estimate inter-country tables compare, in the case of limited data availability?
7. Analysis of the effects of aggregation and disaggregation. In the WIOD database, a limited number of classifications for groups of countries with similar detail will be used when linking the SUTs. A consequence of this is that there are several options when models are built or when impact analyses are done. These options involve mixes of aggregation and disaggregation. The question is: To what extent do the results depend on the chosen approach?
8. Sensitivity analysis with respect to the use of either current prices or constant prices. When comparing changes over time, one can take the table in constant prices as the starting point of an IO model or the table in current prices. The results of the two approaches can be “translated” into each other, but will be different. The aim is to explore these differences (their cause and extent) and to develop refined “translation mechanisms” for model outcomes.

Deliverables

- D6.1 (month of delivery: 6): Report on advantages and disadvantages of types of IO tables (product-by-product or industry-by-industry)
- D6.2 (month of delivery: 12): Reports on methods for constructing IO tables from SUTs and on price aspects of harmonization of IO tables across countries
- D6.3 (month of delivery: 18): Reports on: methodologies to convert IO tables expressed in current prices into constant-price tables, on projections of WIOD data for 2010 and the methodology to arrive at such projections and on the sensitivity of model results to choosing a method to link national IO tables, for various degrees of data availability
- D6.4 (month of delivery: 24): Report on the effects on model results of choosing particular aggregation levels in view of data availability and report on the sensitivity of model results to the choice for tables expressed in either current or constant prices.