

A consolidated European Union and Euro Area supply-use system and input-output tables

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Abstract (English)

The paper will present the methods and data related to the first dissemination of consolidated European Supply and Use tables, Input-Output tables: EU27 and Euro Area tables. The project has been conducted by Eurostat and the Joint Research Centre's IPTS of the European Commission with additional support of the University of Groningen. The tables produced are supply tables at basic prices; use tables at basic prices (broken down into uses of domestic production and imports) and symmetric input-output tables. The supply and use tables at basic prices refer at least to the years 2000 to 2006. As a regular annual process 2007 consolidated tables should be available as well at the time of the presentation. The process is based on primary data source transmitted by Member States through the official ESA95 and on additional data provided by the National Statistical Institutes (NSI), e.g. valuation matrices and use tables at basic prices. The project leads to a regular compilation of such tables by Eurostat.

Keywords: European Economic consolidated accounts, supply-use system, input-output tables.

Topic: 01 Construction and adjustment of input-output tables.

Resumen (español)

Este artículo presenta los métodos y bases de datos relacionados con la primera publicación de unas Tablas de Origen y Destino y Tablas Input-Output consolidadas para la Unión Europea y para la zona Euro. Este proyecto ha sido llevado a cabo por Eurostat y el Instituto de Prospectiva Tecnológica del Centro Común de Investigación de la Comisión Europea con el apoyo adicional de la Universidad de Groningen. Las tablas producidas son tablas de origen a precios básicos; tablas de destino a precios básicos (separadas en consumos domésticos e importaciones) y tablas input-output simétricas. Las tablas de origen y destino a precios básicos se refieren al periodo 2000-2006. A partir de un procedimiento ya de producción estadística anual, los resultados para el 2007 deberán estar a punto de ser publicados al momento de la presentación. El proceso se ha basado en fuentes estadísticas de primera mano proporcionadas por los Estados Miembros a través del SEC-95 y por datos adicionales que de forma confidencial algunos países han cedido solo con este objetivo, como por ejemplo: matrices de valoración y tablas de destino a precios básicos. El proyecto conducirá a una compilación regular por parte de los servicios estadísticos de Eurostat de las Tablas de Origen-Destino y Tablas Input-Output consolidadas para la UE y la zona Euro.

Palabras clave: Cuentas Económicas consolidadas Europeas, sistema de origen y destino, tablas input-output.

Área temática: Construcción y ajuste de tablas input-output.

1. Estimation of missing national supply and use tables in basic prices

The objective of the joint research project was to compile different consolidated European tables on an annual frequency from years 2000 to 2006:

- Supply table at basic prices with a transformation to purchaser's prices;
- Use table at basic prices broken down into domestic and imports uses;
- Symmetric product-by-product input-output table broken down into domestic and imports uses.

The consolidated European Supply and Use tables are based on the national data. As the official transmission program includes only Use tables at purchaser's prices, Eurostat asked the National Statistical Institutes (NSI) for their support and received relevant data on top of the official transmission, i.e. valuation matrices and/or Use tables at basic prices.

The aggregated European symmetric Input-Output tables are calculated from the consolidated and aggregated Supply and Use tables, not as an aggregation procedure of the national symmetric Input-Output tables (see Rueda-Cantuche et al., 2009 for an example of the latter approach). Eventually, they have been constructed assuming the industry technology assumption (see Eurostat 2008 pp. 347-357).

The entire project focuses on tables at current prices only. The use of an average exchange rate to convert national currency units in Euro might not be representative in the cases where the time variance of exchange rates is significant. This aspect will deserve further attention, e.g. by using purchasing power parities.

1.1 Valuation of tables: purchaser's prices and basic prices

The official transmission program requires supply tables at basic prices on the one hand (with a transformation to purchaser's prices) and use tables at purchaser's prices on the other hand. The valuation of the two tables does not coincide.

The definitions of the different valuation are given in the European System of Accounts (ESA95), paragraphs 3.48 and 3.06.

(3.48) The **basic price** is the price receivable by the producers from the purchaser for a unit of a good or service produced as output, minus any tax payable (see point 4.27) on that unit as a consequence of its production or sale (i.e. taxes on products), plus any subsidy receivable on that unit as a consequence of its production or sale (i.e. subsidies on products). It excludes any transport charges invoiced separately by the producer. It includes any transport margins charged by the producer on the same invoice, even when they are included as a separate item on the invoice.

(3.06) At the time of purchase, the **purchaser's price** is the price the purchaser actually pays for the products; including any taxes less subsidies on the products (but excluding deductible taxes like VAT on the products); including any transport charges paid separately by the purchaser to take delivery at the required time and place; after deductions for any discounts for bulk or off-peak-purchases from standard prices or

charges; excluding interest or services charges added under credit arrangements; excluding any extra charges incurred as a result of failing to pay within the period stated at the time the purchases were made.

Thus the relationshipⁱ between the different prices can be summarized as follows:

(1) Purchaser's prices (excluding any deductible VAT)

- trade and transport margins
- non-deductible VAT
- taxes on products
- + subsidies on products
- = Basic prices

The trade and transport margins and the taxes less subsidies on products matrices are called valuation matrices. For the purpose of construction of symmetric Input Output Tables, both Supply and Use tables should be measured in basic prices. The Use table at basic prices can be calculated as the difference from the Use table at purchaser's prices and the valuation matrices.

However, the information on valuation matrices and/or Use tables at basic prices is incomplete. For some countries, we relied on supplied data from either the official transmission programme or from a voluntary basis. For other countries, we defined a set of "itineraries" with the aim to estimate the missing Use tables at basic prices.

1.2 Data situation

Eurostat has benefited from data that was not part of the official data transmission program from member states. The tables used in this project are listed in Table 1.

Place Table 1 here

The aim of this step (chapter 2) is to get for every country the set of tables: SUP, USEbp, USEdom, USEimp. From the single country estimations, the next step (chapter 3) will be to aggregate the data at European level. For this purpose, the Use tables for imports have been split for every country between imports from extra-EU27 and intra-EU27. For countries within the euro area, two other Use tables have been estimated: use tables for imports intra euro area and use tables for imports extra euro area.

Place Figure 1 here

Depending on the availability of those tables at the national level, countries have been grouped into 5 different situations (see Figure 1 and the Annex 1 for full details):

- Excellent data situation (E)
- Good data situation (G)
- Satisfactory data situation (S)
- Incomplete data situation (I)
- No data available (N)

For the 5-yearly data transmission including symmetric Input-Output Tables in 2000 and 2005, the data situation is much better. As of December 2010, the data situation for the period 2000-2006 is shown in the Annex 1.

1.2.1 Excellent data situation

In this case, all the necessary tables (either provided by the official data transmission or on a voluntary basis) are available for every year. This does not mean that we may not need to make some further estimations and checking, e.g. the distinction between imports and domestic uses when we are given only the use table (total) at basic prices. Indeed, we only checked the consistency of the supplied tables, especially the use table at basic prices in comparison to the result of deducting the trade and transport margins and taxes less subsidies matrix from the use table at purchasers' prices (see equation (1)). The schema presented below (Figure 2) summarises the approach:

Place Figure 2 here

1.2.2 Good data situation

The Supply and Use tables (at purchaser's prices) are available. The symmetric (domestic and import) Input-Output tables (product-by-product or industry-by-industry) at basic prices are available. Generally speaking, from the Use table at purchasers' prices we obtain the value added components, which remain unchanged when converting the Use table from purchasers' prices into basic prices.

Next, from the symmetric Input-Output table (only if it is of the product-by-product type), we can obtain the final demand values, which are the same as those of the symmetric Input-Output table since the conversion from Use table at basic prices into symmetric ones does not imply any change in the values of the final demand categories. Subsequently, only the intermediate part of the Use table at basic prices is actually unknown.

However, the following itineraries deal with adjustments in both intermediate and final uses since margins and net taxes on products are rarely available for intermediate and final uses separately. Therefore, the resulting Use table at basic prices will only be a first draft, which will have to be balanced once the correct values for the final demand are imposed (recall that this is true only for product-by-product Input-Output tables).

To estimate the Use tables for imports and domestic uses, we will generally distribute the product based import column vector (IMP) of the Supply table on a

proportional basis using the row shares of the estimated total Use table at basic prices (USEbp final). Another option would be to use the Reverse Model A from the symmetric Input-Output table of imports based on the domestic product technology assumption. However, this assumption might be considered too strong since it would imply that all imports were to be produced with one single technology assumption independently of the country of origin.

As well, another option could be to take the structure of a previous known Use table of imports, which we think it would give the best empirical results but unfortunately, their availability is generally scarce. A second best option would be to use the row structures of the symmetric Input-Output table of imports. By difference, the domestic use table at basic prices is then derived from deducting the use table of imports to the use table of total uses.

Up to three different options will be evaluated here for the estimation of the intermediate part of the Use table at basic prices:

1. **Itinerary 2**; assuming that the symmetric Input-Output table has been constructed only using the product technology assumption (see Eurostat 2008 Manual of Supply, Use and Input-Output Tables, pp.347-357), we derive the Use table at basic prices directly from the Supply table and the symmetric Input-Output table.

Place Figure 3 here

The mathematical expression can be found in the cited Eurostat 2008 Manual on p. 352 (Reverse Model A) and will always provide non-negative values. Doing so, there is no need to compute valuation matrices.

For the distinction between domestic and import uses either we may reverse the domestic and imported symmetric Input-Output tables separately or assume other kind of information to split the total uses at basic prices into domestic and imports intermediate (and final demand) uses.

2. **Itinerary 3**; Compile the trade and transport margins matrix by row-wise allocating the corresponding column vector of the Supply table. The structures are taken either from the Use table at purchasers' prices or from available distribution margin matrices of other years. Next, the estimation of the taxes less subsidies is the main issue. In order to do so, we can use two different approaches:

o Reverse Model A (Eurostat 2008 Manual, p. 352); by applying the product technology assumption we can derive a use table at basic prices as in Itinerary 2 and then, by difference calculate the taxes less subsidies matrix. Unfortunately, the empirical practice does not provide good evidence that this method works properly provided that statistical offices can construct symmetric input-output tables in many different ways. Although, information from countries on the methods they use to compile the input-output table may optimise the model to use (see other methods in the Eurostat 2008 Manual, pp. 347-357).

Place Figure 4 here

○ Use the same structure of taxes less subsidies matrices of another year or similar country; this initial matrix will have to be balanced using the Double RASⁱⁱ (D-RAS) method (modified RAS that allows negative elements not only within the matrix but also in the row and column totals) against the new column benchmark of the corresponding Supply table. Nonetheless, the symmetric Input-Output table (if it is of the industry-by-industry type) also can provide a benchmark for the row totals. In other case, one could suppose the same benchmark as well but taking into account that the rows are on a product basis rather than on an industry basis, which induces to some additional error. For the sake of simplicity, Figure 4 will only reflect this option.

The empirical evidence shows that the use of an existing structure of a previous year is the option that performs best. For the sake of simplicity, Figure 4 will only reflect the second option. Once the valuation matrices have been estimated separately then, the Use table at basic prices is calculated as in equation (1). The encircled numbers refer to the step-wise procedure by which (1) trade and transport margins are estimated; (2) the taxes less subsidies are calculated on the basis of SIOT information or a previous net taxes on products structure; (3) final demand and value added are extracted from the SIOT and the Use table at purchasers' prices; and (4) the intermediate part of the draft Use table at basic prices is balanced.

3. **Itinerary 4**; this approach needs to have a use table at basic prices of a previous year or of a similar country together with a use table at purchasers' prices. Then, by deducting the use table at basic prices from the use table at purchasers' prices, one could obtain the official joint matrix of the two valuation matrices merged, which will be adjusted to the benchmark year using the D-RAS method.

Place Figure 5 here

In this case, the question shall be reduced to separate margins from net taxes on products so subsequently, one has to compile first the trade and transport margins matrix by row-wise distributing the corresponding column vector of the Supply table (encircled 1 in Figure 5) and afterwards, calculate the taxes less subsidies by difference with respect to the balanced joint matrix of valuation tables (encircled 2 in Figure 5). Sometimes you may get more reliable information on structures of taxes less subsidies and operate the other way round. Finally, value added and final demand are imposed from the SIOT and the Use table at purchasers' prices, respectively (encircled 3 in Figure 5).

An empirical test was carried out for the Czech Republic for 2007. The three itineraries were tested using in itinerary 2 an existing taxes less subsidies matrix (2006). The results confirmed that the use of the Reverse Model A (itinerary 2) should be abandoned provided the uncertainty and variability of the methods used by national statistical offices. The overall difference with respect to the other two itineraries amounts to 5.6% of the total intermediate inputs while the overall difference between itinerary 3 and itinerary 4 was only about 0.7%. In addition, we ran another test for Austria (2005) and found that the best method (the one that provided the closest results to the official tables) was itinerary 3 using both benchmarks provided by the Supply table (column) and the symmetric Input-Output table (row). This result is independent of the type of Input-Output table that we may dispose of.

1.2.3 Satisfactory data situation

This case is merely the same as the 1.2.2 Good data situation but without the distinction between domestic and import uses in the symmetric Input-Output table. Only the Supply and Use tables (the latter at purchaser's prices) and the symmetric Input-Output table (total) at basic prices (SIOT) are available.

Place Figure 6 here

The procedure to follow can be Itinerary 2, 3 or 4 (in Figure 6, we chose Itinerary 4 as an example) but adding a preliminary step to decompose the SIOT table into the Input-Output table for imports and for domestic uses. The black thin arrows that are going from the SIOT box to the SIOTimp and SIOTdom boxes (see Figure 5) would now turn into bright green ones to show that these tables will have to be estimated previously and do not come from statistical sources any more.

Information from the external trade statistics and balance of payments statistics should be used as much as possible to estimate SIOT dom and SIOT imp. The column vector of imports coming from the Supply table also can be used as benchmark. Adjustments procedures using bi-proportional adjustments can be made if necessary.

1.2.4 Incomplete data situation

Only Supply and Use tables at purchaser's prices are availableⁱⁱⁱ. Itineraries 3 and 4 can be used for the calculation of the Use tables at basic prices (see Figures 7 and 8).

However, the absence of symmetric Input-Output tables is crucial for the final calculations in two ways. Firstly, the choice between the two itineraries will depend on the availability of:

- previous years' valuation matrices;
- previous years' Use tables at purchaser's prices;
- previous years' Use tables at basic prices;
- previous years' Use tables of imports at basic prices;
- previous years' symmetric Input-Output tables;
- all these tables for a neighbouring and/or similar country.

The results can be eventually adjusted using bi-proportionality methods.

Secondly, the split of Use table at basic prices between imports and domestic uses is made using as much information as possible (external trade data and balance of payments data) and/or allocating row-wise the import vector (IMP) coming from the supply table.

Place Figures 7 and 8 here

1.2.5 No data available

Any useful information from previous years must be used. However, if the affected country might not significantly impact the European totals, a neighbouring/similar country could be used.

Whenever no data on Supply and Use tables (the latter at purchasers' prices) were available for one certain year, the project opted for an updating procedure to expand the time series of annual Supply and Use tables and Input-Output tables. To this purpose, the project followed a modified version of the so called Euro method^{iv}, which uses official macroeconomic forecasts as exogenous input for the iterative processes. While the standard Euro method was oriented to symmetric Input-Output tables, the modified version is actually oriented to updating Supply and Use tables. The projection method avoids the shortcomings of other projection methods like the RAS procedure, the model of double proportional patterns, the Lagrange method, the least squares method and the minimization approach (see Eurostat, 2008 for details on the methods). The Euro method corresponds to the basic idea of the RAS approach but avoids its standard shortcomings. Concerning the data availability to make the projections, it may happen not all sets of tables will be in stock but only sectoral data at the level of A31 classification will be available for one single year. Hence, not only data on final demand and gross value added by sectors will have to be broken down into the A60 classification by using reasonable assumptions but data from other years will have to be projected using these estimations.

Place Figure 9 here

1.2.6 Overview of methods

Finally, Table 2 shows for each country and year the kind of situation we have faced for the compilation of the full time series of Supply and Use tables at basic prices for the EU27 Member States. The Tables in the Annex 1 provide the details. Table 2 evidently shows that the years 2000 and 2005 are notably much richer in information than the years in between, mainly because of the official transmission of the symmetric Input-Output tables on a five-year basis.

Place Table 2 here

2. Towards the consolidated EU27 and Euro Area SUT tables

The output of the steps described in 1.1 and 1.2 is a simple aggregation of the national Supply and Use tables at basic prices for each year. This simple aggregation was done for the EU27 and the EMU17.

As a final step in the whole process, it was foreseen to adjust the simply-aggregated SUTs that minor bi-proportional adjustments should be made to the final consolidated EU27 and euro area tables in order to meet those updated industry totals provided by the ESA Sector Accounts but only if the deviations would be greater than 1%.

Table 3 shows main GDP components and compares the numbers published under the ESA Sector Accounts with the numbers as in the SUTs. Fortunately, the differences are below 1% and it was decided to not further adjust the SUTs.

Place Table 3 here

The simply-aggregated SUTs require further processing; in particular the trade has to be corrected as intra-EU trade becomes ordinary domestic inter-industry flows. The processing steps from the simply-aggregated to the fully consolidated SUTs are described in the next chapter.

Acknowledgements

This paper is part of a Eurostat report that combined the results of two projects commissioned by Eurostat. The first project has been conducted by Eurostat C.2 with support of the Joint Research Centre's Institute for Prospective Technical Studies (JRC-IPTS) and the Konstanz University of Applied Sciences. That work has been focussing on creating consolidated Supply and Use Tables (SUTs) for the aggregated European Union (EU27) and the euro area (EMU17) and it is the main focus of this paper. The second project has been commissioned by Eurostat E.7 and performed by a consortium consisting of the Netherlands Organisation for Applied Scientific Research (TNO), the Centre of Environmental Sciences of Leiden University (CML), the Norwegian University of Science and Technology (NTNU), and University of Groningen (RuG) and consisted in creating and analysing the subsequently estimated consolidated European environmentally extended Input Output tables.

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Annex 1: Data availability for years 2000-2006

The following tables give an overview of the availability of various SUT and IOT and related tables at Eurostat for each EU member state, for a specific year.

Year 2000	Country	SUP	USEpp	SIOT	SIOTdom	SIOTimp	USEbp	Usedom	Useimp	TTM	TLS	Situation
AT	Austria	X	X	X	X	X	X	X	X	X	X	E
BE	Belgium	X	X	X	X	X	X	X	X	X	X	E
BG	Bulgaria	X	X									I
CY	Cyprus	X	X									I
CZ	Czech Republic	X	X	X								S
DK	Denmark	X	X	X	X	X	X			X	X	E
EE	Estonia	X	X	X	X	X	X	X	X	X	X	E
FI	Finland	X	X	X	X	X	X	X	X			E
FR	France	X	X	X	X	X						G
DE	Germany	X	X	X	X	X	X	X	X	X	X	E
GR	Greece	X	X	X	X	X						G
HU	Hungary	X	X	X	X	X	X	X	X			E
IE	Ireland	X	X	X	X	X	X					G
IT	Italy	X	X	X	X	X	X	X	X	X	X	E
LV	Latvia											N
LT	Lithuania	X	X	X	X	X	X	X	X	X	X	E
LU	Luxembourg	X	X	X			X			X	X	E
MT	Malta	X	X									I
NL	Netherlands	X	X	X	X	X	X	X	X	X	X	E
PL	Poland	X	X	X	X	X						G
PT	Portugal	X	X				X			X	X	E
RO	Romania	X	X	X	X	X	X			X	X	E
SK	Slovakia	X	X	X	X	X	X	X	X	X	X	E
SI	Slovenia	X	X	X	X	X	X	X	X			E
ES	Spain	X	X	X	X	X	X	X	X			E
SE	Sweden	X	X	X	X	X						G
UK	United Kingdom	X	X									I

Year 2001	Country	SUP	USEpp	SIOT	SIOTdom	SIOTimp	USEbp	Usedom	Useimp	TTM	TLS	Situation
AT	Austria	X	X				X	X	X	X	X	E
BE	Belgium	X	X				X	X	X	X	X	E
BG	Bulgaria	X	X									I
CY	Cyprus											N
CZ	Czech Republic	X	X									I
DK	Denmark	X	X	X	X	X	X			X	X	E
EE	Estonia	X	X				X	X	X	X	X	E
FI	Finland	X	X	X	X	X	X	X	X			E
FR	France	X	X	X	X	X						G
DE	Germany	X	X	X	X	X	X	X	X	X	X	E
GR	Greece	X	X									N
HU	Hungary	X	X									N
IE	Ireland	X	X									I
IT	Italy	X	X				X	X	X	X	X	E
LV	Latvia											N
LT	Lithuania	X	X									I
LU	Luxembourg	X	X	X			X			X	X	E
MT	Malta	X	X									I
NL	Netherlands	X	X	X	X	X	X	X	X	X	X	E
PL	Poland	X	X									I
PT	Portugal	X	X									I
RO	Romania											N
SK	Slovakia	X	X									I
SI	Slovenia	X	X	X	X	X	X	X	X			E
ES	Spain	X	X				X	X	X			E
SE	Sweden	X	X									I
UK	United Kingdom	X	X									I

Year 2002	Country	SUP	USEpp	SIOT	SIOTdom	SIOTimp	USEbp	Usedom	Useimp	TTM	TLS	Situation
AT	Austria	X	X				X	X	X	X	X	E
BE	Belgium	X	X				X	X	X	X	X	E
BG	Bulgaria	X	X							X	X	E
CY	Cyprus											N
CZ	Czech Republic	X	X									I
DK	Denmark	X	X	X	X	X	X			X	X	E
EE	Estonia	X	X				X	X	X	X	X	E
FI	Finland	X	X	X	X	X	X	X	X			E
FR	France	X	X	X	X	X						G
DE	Germany	X	X	X	X	X	X	X	X	X	X	E
GR	Greece	X	X									I
HU	Hungary	X	X									I
IE	Ireland	X	X									I
IT	Italy	X	X				X	X	X	X	X	E
LV	Latvia											N
LT	Lithuania	X	X									I
LU	Luxembourg	X	X	X			X			X	X	E
MT	Malta											N
NL	Netherlands	X	X	X	X	X	X	X	X	X	X	E
PL	Poland	X	X									I
PT	Portugal	X	X									I
RO	Romania											N
SK	Slovakia	X	X									I
SI	Slovenia	X	X				X	X	X			E
ES	Spain	X	X				X	X	X			E
SE	Sweden	X	X									I
UK	United Kingdom	X	X									I

Year 2003	Country	SUP	USEpp	SIOT	SIOTdom	SIOTimp	USEbp	Usedom	Useimp	TTM	TLS	Situation
AT	Austria	X	X				X	X	X	X	X	E
BE	Belgium	X	X				X	X	X	X	X	E
BG	Bulgaria	X	X							X	X	E
CY	Cyprus											N
CZ	Czech Republic	X	X									I
DK	Denmark	X	X	X	X	X	X			X	X	E
EE	Estonia	X	X				X	X	X	X	X	E
FI	Finland	X	X	X	X	X	X	X	X			E
FR	France	X	X	X	X	X						G
DE	Germany	X	X	X	X	X	X	X	X	X	X	E
GR	Greece	X	X									I
HU	Hungary	X	X									I
IE	Ireland	X	X									I
IT	Italy	X	X				X	X	X	X	X	E
LV	Latvia											N
LT	Lithuania	X	X									I
LU	Luxembourg	X	X	X			X			X	X	E
MT	Malta											N
NL	Netherlands	X	X	X	X	X	X	X	X	X	X	E
PL	Poland	X	X									I
PT	Portugal	X	X									I
RO	Romania	X	X	X	X	X						E
SK	Slovakia	X	X									I
SI	Slovenia	X	X				X	X	X			E
ES	Spain	X	X				X	X	X			E
SE	Sweden	X	X									I
UK	United Kingdom	X	X									I

Year 2004	Country	SUP	USEpp	SIOT	SIOTdom	SIOTimp	USEbp	Usedom	Useimp	TTM	TLS	Situation
AT	Austria	X	X				X	X	X	X	X	E
BE	Belgium	X	X				X	X	X	X	X	E
BG	Bulgaria	X	X									I
CY	Cyprus											N
CZ	Czech Republic	X	X									I
DK	Denmark	X	X	X	X	X	X			X	X	E
EE	Estonia	X	X				X	X	X	X	X	E
FI	Finland	X	X	X	X	X	X	X	X			E
FR	France	X	X	X	X	X						G
DE	Germany	X	X	X	X	X	X	X	X	X	X	E
GR	Greece	X	X									I
HU	Hungary	X	X									I
IE	Ireland	X	X									I
IT	Italy	X	X				X	X	X	X	X	E
LV	Latvia	X	X									I
LT	Lithuania	X	X									I
LU	Luxembourg	X	X	X			X			X	X	E
MT	Malta											N
NL	Netherlands	X	X	X	X	X	X	X	X	X	X	E
PL	Poland	X	X									I
PT	Portugal	X	X									I
RO	Romania	X	X	X	X	X				X	X	E
SK	Slovakia	X	X									I
SI	Slovenia	X	X									I
ES	Spain	X	X				X	X	X			E
SE	Sweden	X	X									I
UK	United Kingdom	X	X							X	X	E

Year 2005	Country	SUP	USEpp	SIOT	SIOTdom	SIOTimp	USEbp	Usedom	Useimp	TTM	TLS	Situation
AT	Austria	X	X	X	X	X	X	X	X	X	X	E
BE	Belgium	X	X	X	X	X	X	X	X	X	X	E
BG	Bulgaria											N
CY	Cyprus											N
CZ	Czech Republic	X	X	X	X	X	X	X	X			E
DK	Denmark	X	X	X	X	X	X			X	X	E
EE	Estonia	X	X	X	X	X	X	X	X	X	X	E
FI	Finland	X	X	X	X	X	X	X	X			E
FR	France	X	X	X	X	X						G
DE	Germany	X	X	X	X	X	X	X	X	X	X	E
GR	Greece	X	X	X	X	X						G
HU	Hungary	X	X	X	X	X	X	X	X			E
IE	Ireland	X	X	X	X	X						G
IT	Italy	X	X	X	X	X	X	X	X	X	X	E
LV	Latvia											N
LT	Lithuania	X	X	X	X	X		X				G
LU	Luxembourg	X	X	X			X			X	X	E
MT	Malta											N
NL	Netherlands	X	X	X	X	X	X	X	X	X	X	E
PL	Poland	X	X	X	X	X						G
PT	Portugal	X	X	X	X	X	X			X	X	E
RO	Romania	X	X	X	X	X	X			X	X	E
SK	Slovakia	X	X	X	X	X	X	X	X	X	X	E
SI	Slovenia	X	X	X	X	X	X	X	X			E
ES	Spain	X	X	X	X	X						G
SE	Sweden	X	X	X	X	X						G
UK	United Kingdom	X	X							X	X	E

Year 2006	Country	SUP	USEpp	SIOT	SIOTdom	SIOTimp	USEbp	Usedom	Useimp	TTM	TLS	Situation
AT	Austria	X	X				X	X	X	X	X	E
BE	Belgium											N
BG	Bulgaria											N
CY	Cyprus											N
CZ	Czech Republic	X	X				X	X	X			E
DK	Denmark	X	X	X	X	X	X			X	X	E
EE	Estonia	X	X				X	X	X	X	X	E
FI	Finland	X	X	X	X	X	X	X	X			E
FR	France	X	X	X	X	X						G
DE	Germany	X	X	X	X	X	X	X	X	X	X	E
GR	Greece	X	X									I
HU	Hungary	X	X									I
IE	Ireland	X	X									I
IT	Italy	X	X				X	X	X	X	X	E
LV	Latvia											N
LT	Lithuania	X	X									I
LU	Luxembourg	X	X	X			X			X	X	E
MT	Malta											N
NL	Netherlands	X	X	X	X	X	X	X	X	X	X	E
PL	Poland	X	X									I
PT	Portugal	X	X									I
RO	Romania	X	X	X	X	X				X	X	E
SK	Slovakia	X	X									I
SI	Slovenia	X	X									I
ES	Spain	X	X				X	X	X			E
SE	Sweden	X	X									I
UK	United Kingdom	X	X							X	X	E

Annex 2: Data flowchart, general overview

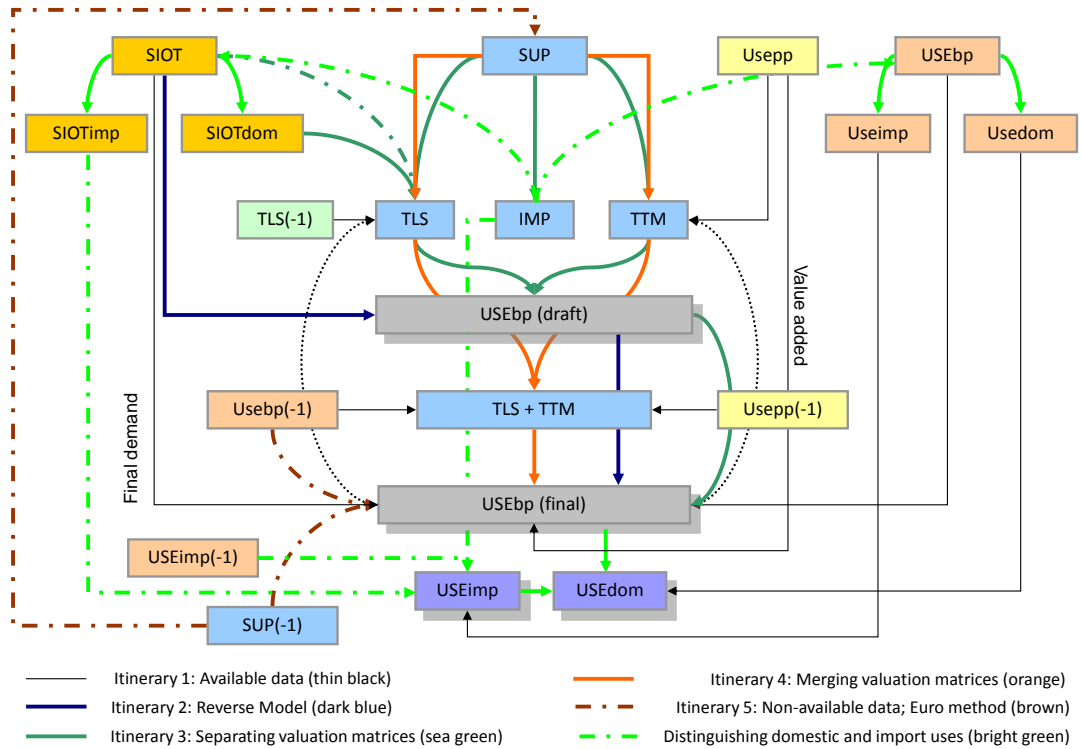


Table 1 List of tables of the project

Official tables	
SUP	Supply table at basic prices with a transformation into purchaser's prices (yearly)
USEpp	Use table at purchaser's prices (yearly)
SIOT	Symmetric input-output tables at basic prices product by product (5-yearly) except for Denmark, Finland and Netherlands, which are of the industry by industry type.
SIOTdom	Symmetric input-output table for domestic output at basic prices (product by product) (5-yearly) except for Denmark, Finland and Netherlands, which are of the industry by industry type.
SIOTimp	Symmetric input-output table for imports at basic prices (product by product) (5-yearly) except for Denmark, Finland and Netherlands, which are of the industry by industry type.
<i>Additional tables</i>	
USEbp	Use table at basic prices (table 1610)
USEdom	Use table for domestic output at basic prices (table 1611)
USEimp	Use table for imports at basic prices (table 1612)
TTM	Trade and transport margins matrix (table 1620)
TLS	Taxes less subsidies matrix (table 1630)
X(-1)	Table X for previous year

Figure 1 Data situation in EU27 for years 2000 to 2006

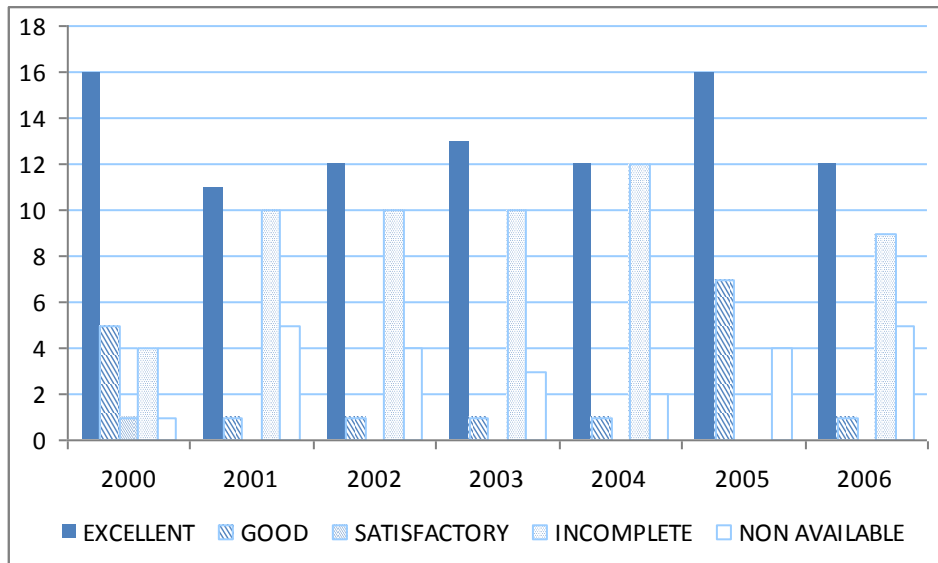


Figure 2. Data flowchart – Excellent data situation – Itinerary 1

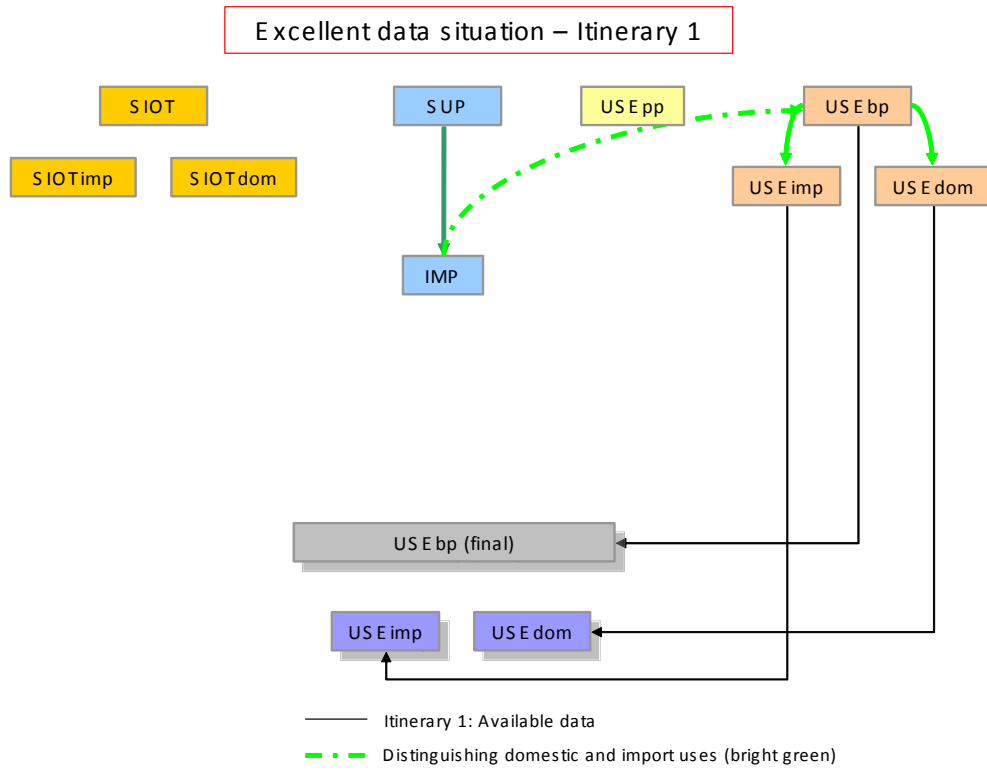


Figure 3. Data flowchart - Good data situation – Itinerary 2

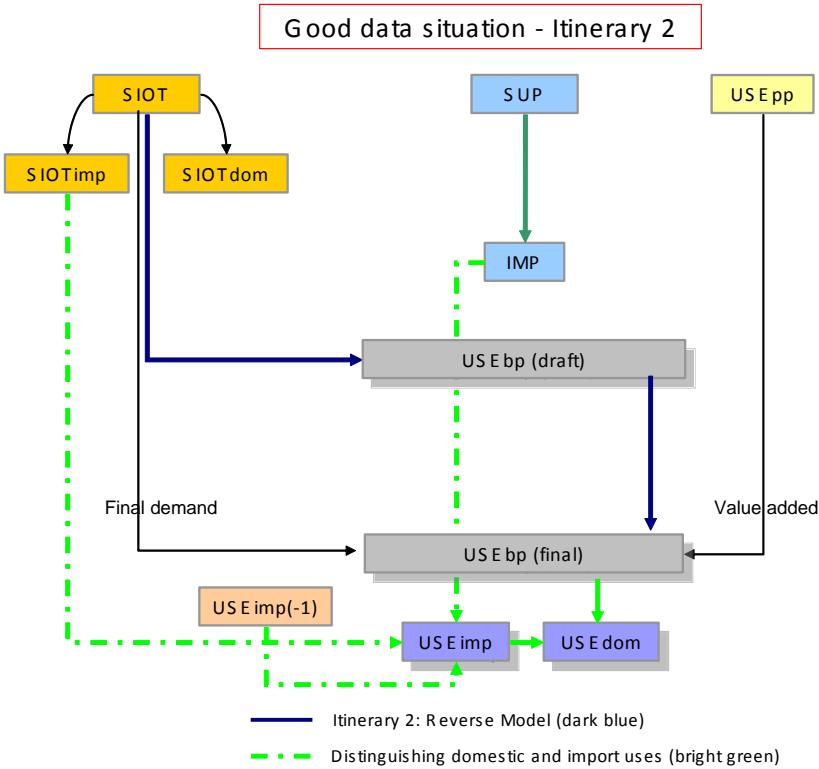


Figure 4. Data flowchart - Good data situation – Itinerary 3

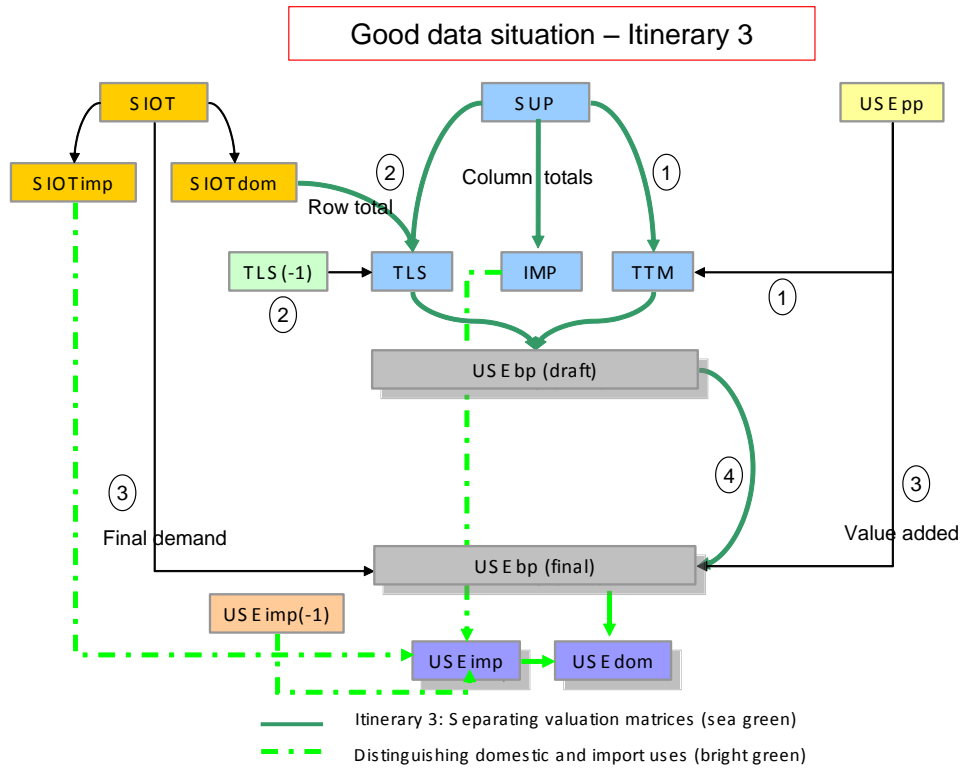


Figure 5. Data flowchart - Good data situation – Itinerary 4

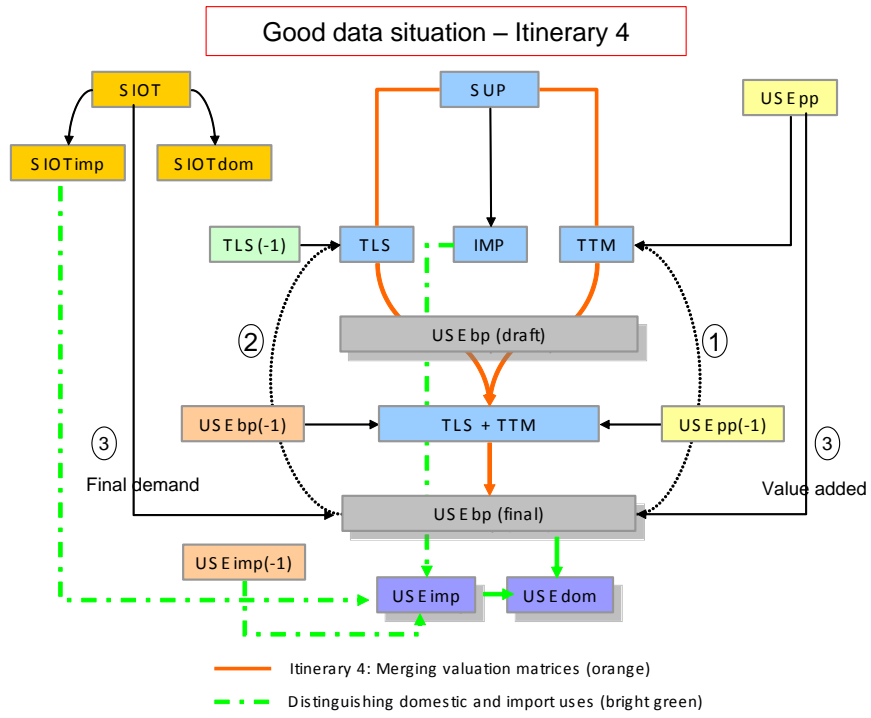


Figure 6. Data flowchart – Satisfactory data situation

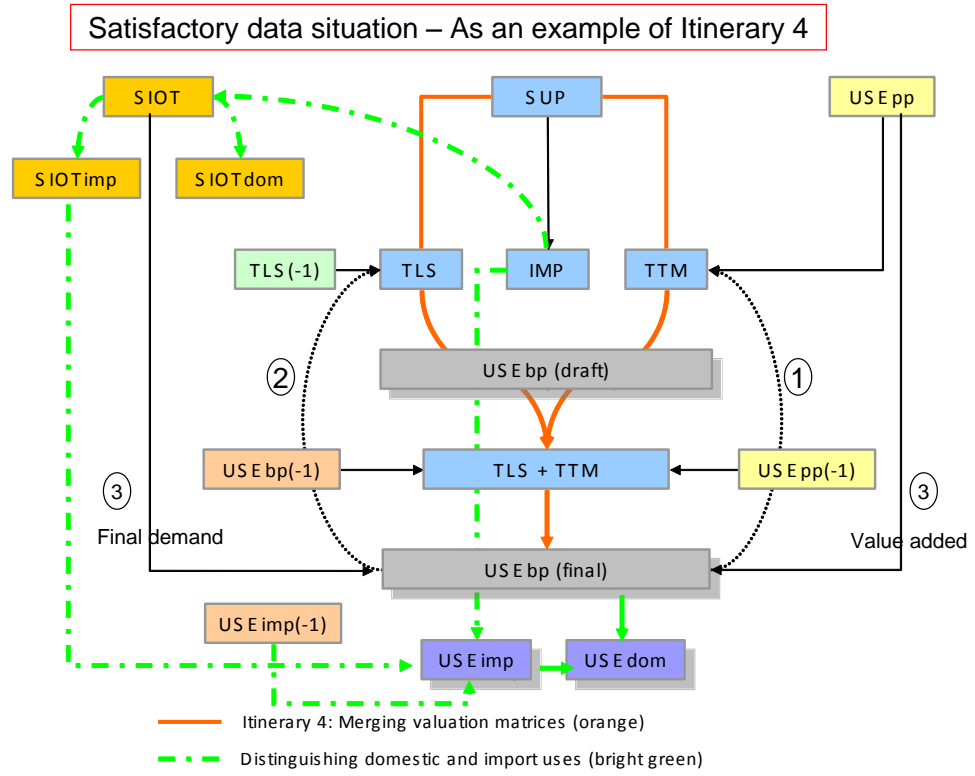


Figure 7. Data flowchart – Incomplete data situation (Itinerary 3)

Incomplete data situation – As an example of Itinerary 3

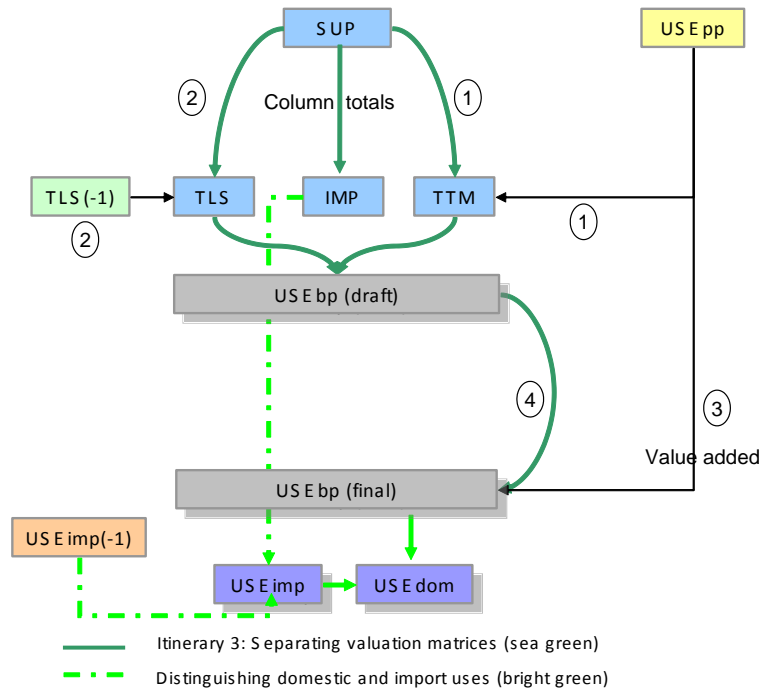


Figure 8. Data flowchart – Incomplete data situation (Itinerary 4)

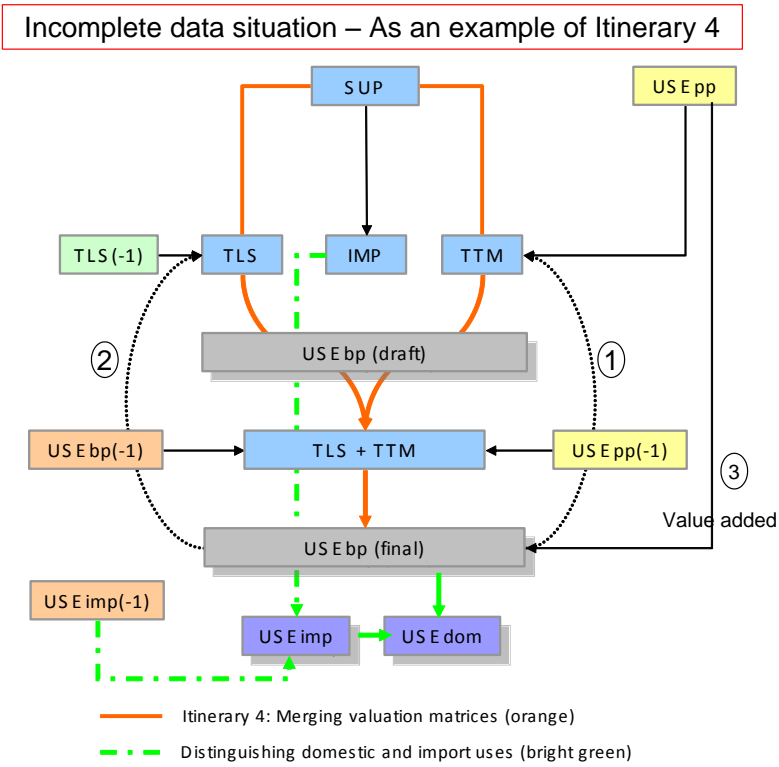


Figure 9. Data flowchart - no data available – Itinerary 5

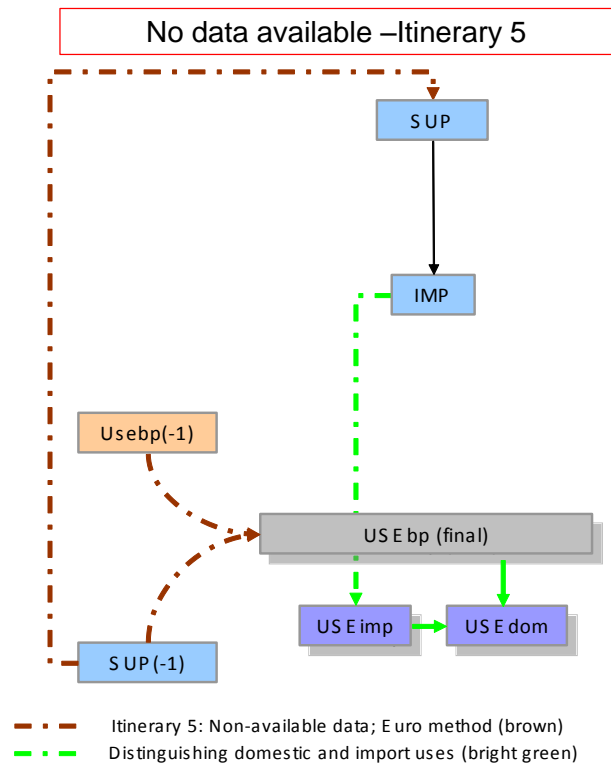


Table 2. Situation of countries

	Country	2000	2001	2002	2003	2004	2005	2006
AT	Austria	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent
BE	Belgium	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Non available
BG	Bulgaria	Incomplete	Incomplete	Excellent	Excellent	Incomplete	Non available	Non available
CY	Cyprus	Incomplete	Non available	Non available	Non available	Non available	Non available	Non available
CZ	Czech Republic	Satisfactory	Incomplete	Incomplete	Incomplete	Incomplete	Excellent	Excellent
DK	Denmark	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent
EE	Estonia	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent
FI	Finland	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent
FR	France	Good	Good	Good	Good	Good	Good	Good
DE	Germany	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent
GR	Greece	Good	Non available	Incomplete	Incomplete	Incomplete	Good	Incomplete
HU	Hungary	Excellent	Non available	Incomplete	Incomplete	Incomplete	Excellent	Incomplete
IE	Ireland	Good	Incomplete	Incomplete	Incomplete	Incomplete	Good	Incomplete
IT	Italy	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent
LV	Latvia	Non available	Non available	Non available	Non available	Incomplete	Non available	Non available
LT	Lithuania	Excellent	Incomplete	Incomplete	Incomplete	Incomplete	Good	Incomplete
LU	Luxembourg	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent
MT	Malta	Incomplete	Incomplete	Non available	Non available	Non available	Non available	Non available
NL	Netherlands	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent
PL	Poland	Good	Incomplete	Incomplete	Incomplete	Incomplete	Good	Incomplete
PT	Portugal	Excellent	Incomplete	Incomplete	Incomplete	Incomplete	Excellent	Incomplete
RO	Romania	Excellent	Non available	Non available	Excellent	Excellent	Excellent	Excellent
SK	Slovakia	Excellent	Incomplete	Incomplete	Incomplete	Incomplete	Excellent	Incomplete
SI	Slovenia	Excellent	Excellent	Excellent	Excellent	Incomplete	Excellent	Incomplete
ES	Spain	Excellent	Excellent	Excellent	Excellent	Excellent	Good	Excellent
SE	Sweden	Good	Incomplete	Incomplete	Incomplete	Incomplete	Good	Incomplete
UK	United Kingdom	Incomplete	Incomplete	Incomplete	Incomplete	Excellent	Excellent	Excellent

EXCELLENT	16	11	12	13	12	16	12
GOOD	5	1	1	1	1	7	1
SATISFACTORY	1	0	0	0	0	0	0
INCOMPLETE	4	10	10	10	12	0	9
NON AVAILABLE	1	5	4	3	2	4	5

Table 3. Comparison of main GDP-components – ESA Sector Accounts vs. Supply and Use Tables

	2006	2005	2004	2003	2002	2001	2000
Main GDP components as published in ESA sector accounts:	Millions of euro (from 1.1.1999)/Millions of ECU (up to 31.12.1998)						
Final consumption expenditure	9 199 232	8 771 623	8 386 687	8 020 172	7 859 215	7 556 104	7 233 714
Gross capital formation	2 468 392	2 237 722	2 118 725	1 984 488	1 951 882	1 969 818	1 964 378
Gross value added (at basic prices)	10 432 666	9 896 187	9 509 816	9 070 034	8 920 625	8 590 906	8 227 039
Taxes less subsidies on products	1 278 344	1 186 169	1 118 169	1 059 545	1 040 435	1 007 482	991 264
Main GDP components as in the Supply and Use Tables	Millions of euro (from 1.1.1999)/Millions of ECU (up to 31.12.1998)						
Final consumption expenditure (Use table)	9 204 513	8 775 816	8 394 892	8 003 635	7 852 421	7 549 982	7 230 534
Gross capital formation (Use table)	2 461 051	2 232 304	2 112 698	1 959 272	1 930 160	1 949 238	1 943 265
Value added at basic prices (Use table)	10 405 783	9 876 433	9 488 261	8 992 300	8 857 692	8 533 587	8 172 152
Taxes less subsidies on products (Use table)	1 269 538	1 181 920	1 112 290	1 059 603	1 033 491	1 001 957	992 721
Differences in %							
Final consumption expenditure	0.1%	0.0%	0.1%	-0.2%	-0.1%	-0.1%	0.0%
Gross capital formation	-0.3%	-0.2%	-0.3%	-1.3%	-1.1%	-1.0%	-1.1%
Value added at basic prices	-0.3%	-0.2%	-0.2%	-0.9%	-0.7%	-0.7%	-0.7%
Taxes less subsidies on products	-0.7%	-0.4%	-0.5%	0.0%	-0.7%	-0.5%	0.1%

ⁱ See Figure 4.3 Output valuation criteria of the Eurostat (2008) Manual of Supply, Use and Input-Output Tables, p 91.

ⁱⁱ The Double RAS method has been implemented and developed by the Joint Research Centre – IPTS. It basically leaves out the negative values to balance the remaining non-negative matrix. The GRAS method could not be used since it is not defined for dealing with negative row and/or column totals, as it occurs in the taxes less subsidies on products matrices.

ⁱⁱⁱ However, we will also consider “incomplete data situation” when only the symmetric input-output tables are available. In that case, previous years’ tables must be used as proxy of input and supply structures.

^{iv} See Eurostat (2008) Manual of Supply, Use and Input-Output Tables, §14.4.4 page 461. The method was originally developed by Beutel (2002).