Sources for National Supply and Use Table Input files

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1. Introduction

In this document we provide extensive background information on the data sources used in the construction of the national supply and use tables (SUTs) published in the World Input-Output Database (WIOD) on April 16, 2012. The description of the complete construction process of the World Input Output Database is given in Timmer et al. (2012) *The World Input-Output Database (WIOD): Contents, Sources and Methods*. In the WIOD National SUTs are the basic building blocks. Typically, SUTs are only available for a limited set of years (e.g. every 5 year) \(^1\) and once released by the national statistical institute revisions are rare. This compromises the consistency and comparability of these tables over time as statistical systems develop, new methodologies and accounting rules are used, classification schemes change and new data becomes available. These revisions can be substantial especially at a detailed industry level. By benchmarking the SUTs on consistent time series from the National Accounting System (NAS), tables can be linked over time in a meaningful way. We combine NAS data and national SUTs and derive time-series of SUTs using the methodology outlined in Temurshoev and Timmer (2011). \(^2\) In this document we describe in more detail the various steps that have been taken in the process. We start out with outlining the general approach. Next we discuss on a country-by-country basis the various national SUT sources used, the adjustments that had to be made to make them internationally comparable and the time-series data from the NAS that has been used to extrapolate the national SUTs through time.

2. General approach

In Figure 1 a schematic representation of a national SUT is given. Compared to an Input-Output table (IOT), the SUT contains additional information on the domestic origin of products. In addition to the imports, the supply columns in the left-hand side of the table indicate the value of each product produced by domestic industries. The upper rows of the SUT indicate the use of each product. Note that a SUT is not necessarily square with the number of industries equal to the number of products, as it does not require that each industry produces one unique product only. A SUT must obey two basic accounting identities: for each product total supply must equal total use, and for each industry the total value of inputs (including intermediate products, labour and capital) must equal total output value.

Supply of products can either be from domestic production or from imports. Let \(S\) denote supply and \(M\) imports, subscripts \(i\) and \(j\) denote products and industries and superscripts \(D\) and \(M\) denote domestically produced and imported products respectively. Then total supply for each product \(i\) is given by the summation of domestic supply and imports:

1. Though recently, most countries in the European Union have moved to the publication of annual SUTs.
\[ S_i = \sum_j S_{i,j}^D + M_i \]  

(1)

Total use \((U)\) is given be the summation of final domestic use \((F)\), exports \((E)\) and intermediate use \((I)\) such that

\[ U_i = F_i + E_i + \sum_j I_{i,j} \]  

(2)

The identity of supply and use is then given by

\[ F_i + E_i + \sum_j I_{i,j} = \sum_j S_{i,j}^D + M_i \quad \forall i \]  

(3)

The second accounting identity can be written as follows

\[ \sum_j S_{i,j}^D = VA_j + \sum_j I_{i,j} \quad \forall j \]  

(4)

This identity indicates that for each industry the total value of output (at left hand side) is equal to the total value of inputs (right hand side). The latter is given by the sum of value added \((VA)\) and intermediate use of products.

**Figure 1 Schematic outline of National Supply-Use table**

<table>
<thead>
<tr>
<th>Product</th>
<th>Supply Product</th>
<th>Intermediate use Industry</th>
<th>Final use</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industry</td>
<td>Domestic supply ((S^D))</td>
<td>Intermediate use ((I))</td>
<td>Domestic final use ((F))</td>
<td>Exports ((E))</td>
</tr>
<tr>
<td>Rest of World</td>
<td>Imports ((M))</td>
<td>Value added ((VA))</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total supply by product ((S))</td>
<td>Total input by industry</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Two types of data are being used in the process, namely national accounts statistics (NAS) and national supply-use tables (SUTs). Importantly, this data must be publicly available such that users of the WIOT are able to trace the steps made in the construction process. Moreover, official published data is more reliable as checking and validation procedures at National Statistical Institutes (NSIs) are more thorough than for data that is ad-hoc generated for specific research purposes. The data is being harmonised in terms of industry- and product-classifications both across time and across countries. The WIOD
classification list has 59 products and 35 industries based on the CPA and NACE rev 1 (ISIC rev 2) classifications. The product and industry lists are given in Appendix Tables 1 and 2. This level of detail has been chosen on the basis of initial data-availability exploration and ensures a maximum of detail without the need for additional information that is not generated in the system of national accounts. The 35-industry list is identical to the list used in the EUKLEMS database with an additional breakdown of the transport sector as these industries are important in linking trade across countries and in the transformation to alternative price concepts (from purchasers’ to basic prices, see below).³ Hence WIOD can be easily linked to additional variables on investment, labour and productivity provided in the WIOD Socio-Economic Accounts and the EU KLEMS database. The product list is based on the level of detail typically found in SUTs produced by European NSIs, following Eurostat regulations and is more detailed than the industry list. It is well-known that non-survey methods to split up a use table into imported and domestic, such as used in WIOD (see below), are best applied at a high level of product detail.

To arrive at a common classification, correspondence tables have been made for each national SUT bridging the level of detail and classifications in the country to the WIOD classification. This involved aggregation and sometimes disaggregation based on additional detailed data. While for most European countries this was relatively straightforward, tables for non-EU countries proved more difficult. National SUTs were also checked for consistency and adjusted to common concepts (e.g. regarding the treatment of FISIM and purchases abroad). Undisclosed cells due to confidentiality concerns were imputed based on additional information.

National SUTs are only infrequently available and are often not harmonised over time. Therefore they are benchmarked on consistent time-series from the NAS in a second step. From the NAS data time series on gross output and value added by industry, total imports and total exports and final use by use category are taken. This data is used to generate time series of SUTs using the so-called SUT-RAS method (Temurshoev and Timmer 2011).⁴ This method is akin to the well-known bi-proportional updating method for input-output tables known as the RAS-technique. This technique has been adapted for updating SUTs.

Time series of SUTs are derived for two price concepts: basic prices and purchasers’ prices. Basic price tables reflect the costs of all elements inherent in production borne by the producer, whereas purchasers’ price tables reflect the amount paid by the purchaser. The difference between the two is the trade and transportation margins and net taxes. Both price concepts have their use for analysis depending on the type of research question. Supply tables are always at basic prices and often have additional information on margins and net taxes by product. The use table is typically at a purchasers’ price basis and hence needs to be transformed to a basic price table, although for some countries only producer price tables were available. The difference between the basic and purchasers’ price tables is given in the so-called valuation matrices (Eurostat 2008, Chapter 6). These matrices are typically not available from public data sources and hence need to be estimated. This estimation in described in more detail in Timmer et al. (2012) The World Input-Output Database (WIOD): Contents, Sources and Methods.

Below we discuss the basic data sources and adjustments needed on a country-by-country basis.

³ In addition, in WIOD the EUKLEMS industry 17-19 is split into textiles and wearing apparel (17-18) and footwear (19) because of the large amount of international trade in these industries.
3. Data Sources and methods for the European countries

General Sources and methods for European countries

*SUTs*

The official benchmark supply and use tables for the European countries are taken from EUROSTAT. The EUROSTAT tables provide data at the level of 59 industries and 59 products, and are used directly with a minimum of adjustments. The product group classification is the same as the one employed within the WIOD project. The industry columns are aggregated to match the WIOD 35-industry classification. USE tables are denoted in purchasers’ prices unless otherwise indicated for the country. One major adjustment is the treatment of ‘financial intermediation services indirectly measured’ (FISIM). Especially in older EUROSTAT tables, FISIM is not allocated by using industry and is recorded in a separate column in the USE-table, pertaining to product row 65. Whenever this is the case these totals are distributed over the using industries using industry Value Added (VA) shares as weights.

The years for which tables are available from Eurostat and used for WIOT differ from country to country. In Appendix Table X an overview is given.

*External Time-series*

External Time-series for National Accounts (NA) output data by industry are taken from either EUROSTAT or OECD’s STructural ANalysis (STAN) Database. This is indicated in the country specific notes. For some countries price information is only available for Value Added (VA) and not for Gross Output (GO) and Intermediate Inputs (II). In this case we assume a single deflation procedure and apply the VA-price index to both GO and II. This is noted in the country notes. Time series for aggregate NA data by expenditure categories stem from OECD National Accounts data or EUROSTAT, depending on the country.
Country specific sources and methods for European countries

Austria

SUTs

Official tables for the years 1995, 1997, 1999-2007 are used. FISIM is included separately in the official tables prior to 2001. Margins in product 66 are reallocated to products 50-52 and 60-63.

External Time-series

External NA output data by industry are taken from the STAN database. NA data by expenditure are taken from OECD.

Belgium

SUTs

Official tables for the years 1995, 1997, 1999-2007 are used. FISIM is included separately in the official tables prior to 2001.

External Time-series

External NA output data by industry are taken from the STAN database. NA data by expenditure are taken from OECD.

Bulgaria

SUTs

Official tables for the years 2000-2004 are used. For the calculation of the time series SUTs margins are calculated over total use, including exports.

External Time-series

External NA output data by industry and the aggregate NA data by expenditure are taken from EUROSTAT. In cases where industry detail is missing, the distribution of VA is used to split aggregate industry data. For industry aggregates 50t52, 60t64 and 70t74 there is no industry detail available. Therefore the industry distribution is based on the VA shares from EUROSTAT Structural Business Statistics (SBS). For 2007, 2008 and 2009 the shares are set equal to 2007. GO data is extrapolated from 2007 onwards by using the VA growth rates at the aggregate 6 branch level from EUROSTAT. VA is deflated with the gross output deflator.
Cyprus

SUTs
For Cyprus no EUROSTAT official tables are available. Therefore the official tables from Greece in 2001 are used. For the calculation of the time series SUTs margins are calculated over exports for this country.

External Time-series
External NA output data by industry and the aggregate NA data by expenditure are taken from EUROSTAT. VA is deflated with the gross output deflator.

Czech Republic

SUTs
Official tables for the years 1995-2007 are used.

External Time-series
External NA output data by industry are taken from the STAN database. NA data by expenditure are taken from OECD.

Denmark

SUTs
Official tables for the years 1996, 2000-2007 are used. FISIM is included separately in the official tables prior to 2001. Small negatives in the 2007 official tables have been set to a small positive number.

External Time-series
External NA output data by industry are taken from the STAN database. NA data by expenditure are taken from OECD.

Estonia

SUTs
Official tables for the years 1997, 2000-2007 are used. FISIM is included separately in the official tables for 1997.
**External Time-series**

External NA output data by industry are taken from the STAN database. NA data by expenditure are taken from OECD. VA is deflated with the gross output deflator.

**Finnland**

*SUTs*

Official tables for the years 1995-2007 are used.

**France**

*SUTs*

Official tables for the years 1995, 1997, 1999-2007 are used. Some adjustments are made to remove negative values from the 1997 tables. The official tables for 1997 include very small negative values for products 37 and 91 for final consumption expenditures by households. The negative value for product 91 is moved to product 92 for the same industry. Furthermore for product 91, final consumption expenditure is adjusted to balance the row totals. For product 92 this is done with changes in inventories and valuables. For product 37, all small negative elements in the row of the supply and use table are set to zero. For 2000-2002 secondary raw materials has an entry for net tax only. In all other years the row is zero throughout. This net tax is added to basic metals (product 27).

**External Time-series**

External NA output data by industry are taken from EUROSTAT. NA data by expenditure are taken from OECD. In the EUROSTAT industry data no data for GO is available prior to 1999, therefore VA/GO ratios in 1999 are used to estimate GO data for this period. VA is deflated with the gross output deflator.

**Germany**

*SUTs*

Official tables for the years 1995, 1997-2007 are used. FISIM is included separately in the official tables prior to 2000. In the supply tables there is a negative value for trade in transport margins in product group 40, Electrical energy, gas, steam and hot water. This amount is added to products 50, 51, 52, 60, and 61, using the original values of total trade and transport margins in these groups as shares. Row-wise the margins are subtracted from the industry values for product group 40 and added to the industries in
product groups 50, 51, 52, 60 and 61, to ensure that the row totals remain the same. In the use tables adjustments (row 60 to 63) changes in inventories and valuables are reallocated to exports. Totals have also been adjusted. In the supply table for 1995 the reported value for purchases on the domestic territory by non-residents is manually moved to cif/fob adjustment. We believe this to have been a mistake in the original EUROSTAT tables. Exports of product 66 in 2001 are negative in the official table. This value is replaced by 1.

**External Time-series**

External NA output data by industry are taken from the STAN database. NA data by expenditure are taken from OECD. STAN does not have fully detailed deflators for the manufacturing sector; therefore the VA and GO deflators from EU KLEMS are used for this sector for the period 1995-2003. For the period 2004-2009 producer price index data are used from the Statistisches Budesamt. The II deflator is implicitly calculated as follows:

\[
dP_I = dP_{GO} \frac{GO}{II} - P_{VA} \frac{VA}{II}
\]

Where \(dX\) denotes the logarithmic growth rate and \(\bar{X}\) denotes a period average. Data for 2009 is available for industry aggregates only, so the growth rates the aggregate industries are used to estimate data for detailed industries.

**Greece**

**SUTs**

Official tables for the years 1995, 1997-2009 are used. For the calculation of the time series SUTs margins are calculated over exports for this country. Negative numbers in the intermediate block are set to zero, and moved to inventories and taxes on production.

**External Time-series**

External NA output data by industry are taken from the STAN database. NA data by expenditure are taken from OECD. Hours worked by employees were estimated for the period 1995-2000 by assuming a fixed ratio of employees to self-employed. Final consumption expenditure of households in the economic territory and Final consumption expenditure of non-resident households in the economic territory are not available in the OECD national accounts prior to 2000. Estimates have been made using the shares in 2000.

**Hungary**

**SUTs**

Official tables for the years 1998, 1999, 2002-2007 are used. For the calculation of the time series SUTs margins are calculated over exports for this country.
**External Time-series**

External NA output data by industry are taken from the STAN database. NA data by expenditure are taken from OECD. VA is deflated with the gross output deflator.

**Ireland**

*SUTs*

Official tables for the years 2001-2007 are used. For Ireland the benchmark SUTs are adjusted to include a split of industries 36t37 and 23. In the official tables these industries are grouped. We use the Gross Output shares from the EU KLEMS database for both GO and II. Since these GO data are at basic prices we apply a tax rate derived from the data in the official supply tables by taking the product TXSP values over the industry GO values and applying it to the total GO for the aggregate of industries 23 and 36t37 from STAN. The resulting taxes are added to the EU KLEMS GO data of industry 23 only. From these adjusted data industry shares are calculated which are used to split the STAN industry data.

**External Time-series**

External NA output data by industry are taken from the STAN database. NA data by expenditure are taken from OECD. For 2008 and 2009 no GO data is available, therefore GO/VA ratios of 2007 are used to estimate GO. The same method is applied, using the ratio of 2000, to estimate missing industry GO data prior to 2000. In STAN there is no decomposition available for the transport and storage sector, industry 60t63, for any of the variables. Therefore Value Added shares from EU KLEMS are used for all variables. In STAN there is very limited price information available, only for VA and for aggregate industries. Price developments at the aggregate level are used to estimate the development at the detailed industry level. VA is deflated with the gross output deflator.

**Italy**

*SUTs*

Official tables for the years 1995-2007 are used. Margins in product 74 for the period 1996-2005 are moved to net taxes.

**External Time-series**

External NA output data by industry are taken from the STAN database. NA data by expenditure are taken from OECD. The breakdown of Final consumption of households is normalized to match the totals from the most recent NA data for 2008 and 2009. The Gross Output and Intermediate input deflator for 2009 are based on the growth of the total economy deflator.
Latvia

**SUTs**

Official tables for the years 1996 and 1998 are used. Small negative numbers in final expenditure are set to zero, and added to one single product with a high value. For the calculation of the time series SUTs margins are calculated over exports for this country.

**External Time-series**

External NA output data by industry and the aggregate NA data by expenditure are taken from EUROSTAT. For the split of industries 61 and 62 VA shares from the EU KLEMS March 2011 update are used. Only aggregate price information is available for the manufacturing sector. No detailed information on the distribution over industries 61 and 62 is available for any of the variables; therefore VA shares from the EU KLEMS March 2011 update are used for all variables.

Lithuania

**SUTs**

Official tables for the years 2003-2005 are used. For the calculation of the time series SUTs margins are calculated over exports for this country. Products/industries 15, 16 and 23, 25 are grouped in the official tables. These are split using GO shares from the external industry data.

**External Time-series**

External NA output data by industry and the aggregate NA data by expenditure are taken from EUROSTAT. The industry data is inconsistent with the aggregate for manufacturing. The difference is allocated to industry 23 since data for this industry is missing. VA is deflated with the gross output deflator.

Luxembourg

**SUTs**

Official tables for the years 1995-2006 are used. In the official tables some elements are confidential. Estimations are made using a GRAS procedure. Some very small margins in product 40 were moved to net taxes, for the years 1997, 1998, 2000, and 2001. Margins for product 13 in 2000-2002 and 2006 are moved to net taxes.

**External Time-series**

External NA output data by industry are taken from the STAN database. NA data by expenditure are taken from OECD. VA is deflated with the gross output deflator.
Malta

**SUTs**

Official tables for the years 2000 and 2001 are used. For the calculation of the time series SUTs, margins are calculated over exports for this country. FISIM is included separately in the official tables. For a number of products, such as product 2 in the 2000 table and products 35 and 92 in the 2001 table, margins are moved to net taxes.

**External Time-series**

External NA output data by industry and the aggregate NA data by expenditure are taken from EUROSTAT. No price information is available in EUROSTAT. Therefore the VA deflators from the EU KLEMS March 2011 update are used. The growth of the UN total economy VA deflator is used to estimate price deflators for the years 2008 and 2009. VA is deflated with the gross output deflator.

Netherlands

**SUTs**

Official tables for the years 1995-2007 are used. FISIM is included separately in the official tables prior to 2001. Margins in crude petroleum and computer services are added to taxes. For product 30 there are margins on exports. In this case 80% of total margins are reallocated to industry 30t33 on the product row. This 80% is the approximate proportion of exports in total USE, so that additional margins are calculated over this fraction of exports in total use. In 2001 and 2002 total supply was zero in wholesale trade, but taxes are, although very small, positive in the official table. These are set to zero.

**External Time-series**

External NA output data by industry are taken from the STAN database. NA data by expenditure are taken from OECD. In STAN no price information is available for GO and II. Therefore data on price developments has been used from the EU KLEMS March 2011 updated database. Deflators are updated to include data for 2008 and 2009 by using data from the Dutch Central Bureau of Statistics (CBS). Growth rates are used to link the CBS data to the EU KLEMS data.

Poland

**SUTs**

Official tables for the years 1996-2007 are used. Product and industries 11 and 13 as well as 61 and 62 have been split in the official tables using GO shares from the external input data.
External Time-series

External NA output data by industry and the aggregate NA data by expenditure are taken from EUROSTAT. There is no decomposition available of industry aggregates 50t52 and 70t74, therefore VA shares from the EU KLEMS March 2011 update are used to estimate data for the detailed industries. From 2006 onwards industry detail is missing. Growth patterns of the aggregate industries are used to estimate data for the detailed industries. There is no decomposition available for the compensation of employees (COMP) in manufacturing. Therefore COMP/VA ratios of the aggregate are used to estimate values for detailed industries. In the EUROSTAT data there are values for II in industry P. To make output values consistent with the concepts for the other European countries GO is set equal to VA in this industry. There is no detailed price information for manufacturing industries. VA is deflated with the gross output deflator.

Portugal

SUTs

Official tables for the years 1995-2006 are used. FISIM is included separately in the official tables prior to 2000.

External Time-series

External NA output data by industry are taken from EUROSTAT. NA data by expenditure are taken from OECD. Industry detail is missing for 50t52, 60t64 and 70t74. VA shares are used from the EU KLEMS database March 2011 update. Shares are assumed constant after 2006. Missing industry detail for GO is estimated by applying GO/VA ratios and normalizing on industry aggregate totals at the 6 branch level which are available in EUROSTAT. No GO data is available after 2007 therefore VA growth rates are used to estimate these values. For VA data for 2008 and 2009 is only available at the 6 branch level from EUROSTAT. The growth rates of these industry aggregates are applied to the underlying detailed industries. VA is deflated with the gross output deflator.

Romania

SUTs

Official tables for the years 2000, 2003-2006 are used. Margins in fisheries are added to taxes on products and metal ores margins are added to taxes. For the calculation of the time series SUTs, margins are calculated over exports for this country.

External Time-series

External NA output data by industry and the aggregate NA data by expenditure are taken from EUROSTAT. Data for all variables for 2009 is only available for aggregates; estimates for detailed industries are made by using the growth rates of the aggregate industries.
Slovak Republic

*SUTs*
Official tables for the years 1995-2007 are used. FISIM is included separately in the official tables prior to 2000. For 2008 an artificial table is used where products 15 and 16 are grouped. This is done to avoid negatives in the USE tables at basic prices of the SUTRAS output which is caused by a mismatch between the externally given industry data and the official table. Negatives in the 2007 supply table are set to 1.

*External Time-series*
External NA output data by industry are taken from the STAN database. NA data by expenditure are taken from OECD. VA is deflated with the gross output deflator.

Slovenia

*SUTs*
Official tables for the years 2000-2007 are used. FISIM is included separately in the official tables for 2000 and 2001.

*External Time-series*
External NA output data by industry are taken from the STAN database. NA data by expenditure are taken from EUROSTAT. There is no price information for II and GO prior to 2000. Therefore growth of the Value Added deflator was used for this period to update the GO and II deflator.

Spain

*SUTs*
Official tables for the years 1995-2007 are used. FISIM is included separately in the official tables up to 1999. Margins in product 92 for 2004-2006 are moved to net taxes.

*External Time-series*
External NA output data by industry are taken from the STAN database. NA data by expenditure are taken from OECD. STAN does not provide GO data for 2008 and 2009, therefore VA/GO ratios are used to estimate these data. II data is derived implicitly by subtracting VA from GO. VA is deflated with the gross output deflator.
Sweden

*SUTs*

Official tables for the years 1995-2007 are used. Several products and industries have been grouped in the official tables. These are split using GO shares from the external time series data. Negatives in the USE table for 2004 and 2005 are set to zero.

*External Time-series*

External NA output data by industry are taken from the STAN database. NA data by expenditure are taken from OECD. No GO data for 2009 is available in STAN, but there is VA data available, so GO data is estimated based on GO/VA ratios for 2008. The GO and II deflators for 2009 are extrapolated using the growth of the VA deflator.

United Kingdom

*SUTs*

Official tables for the years 1995-2008 are used. FISIM is included separately in the official tables up to 2003. The official supply tables contain confidential elements in the supply tables. A GRAS procedure is used to distribute the unallocated row and column totals over these elements. For 2000 and 2001 there are negative margins in product 11, these are distributed over the row and other margins categories. For CPA row 51 the official USE tables at purchasers’ prices are zero for all industries which caused an imbalance between the supply and use table at basic prices. To correct for this we adjust the official tables by putting in the value 0.1 in the USE tables for industry/product 51.

*External Time-series*

External NA output data by industry are taken from EUROSTAT. NA data by expenditure are taken from OECD. VA data after 2005 is only available at the 6 branch level in EUROSTAT. GO data is not available after 2005 and is estimated using VA/GO ratios. Values for detailed industries are estimated using the growth rates of the aggregate industries. No split of the aggregate industries 50t52, 60t64 and 70t74 is available in EUROSTAT. Therefore EU KLEMS VA data from the March 2011 update are used as shares to estimate values at the detailed industry level for all variables. Only limited price information is available in STAN. Therefore the GO and VA industry deflators from the EU KLEMS database are used for the period 1995-2007. For the period 2008-2009 the GO and VA deflators are updated with the growth of the EUROSTAT VA deflators at the six branch level. The II deflator is implicitly calculated as follows:

\[
dP_H = dP_{GO} \frac{\bar{GO}}{\bar{II}} - dP_{VA} \frac{\bar{VA}}{\bar{II}}
\]

Where \(dX\) denotes the logarithmic growth rate and \(\bar{X}\) denotes a period average.
4. Non-European countries

Australia

SUTs
Supply and Use tables for Australia are provided by the Australian Bureau of Statistics for the years 1996, 2003, and 2004.

SUTs are available at purchasers’ prices, except for 1996 which is at basic prices. Tables for 1996 are at basic prices, but a convergence to purchasers’ prices is provided. We used this information to convert the table to purchasers’ prices for consistency with the tables for 2003 and 2004. The detailed SUTs offer enough product detail for the WIOD product classification for 2003 and 2004. For 1996, we used output shares from 2003 to split up those products for which insufficient detail is provided. These products are 10 and 11; 29 and 30; 32 and 33; 71 -73. A detailed set of industries is presented as well. However, for some industries (17t19, 29t33, 50t52, and 70t74) we had to use output and value added shares from the KLEMS database for Australia to split up these industries. For intermediate input use, we used value added shares. For supply, we used gross output shares. For the export of product 10 (coal) from 2007 to 2008 there is a huge jump of over 100 percent in the trade data (UN Comtrade). Only for this year and this product we used the change in the total export of goods instead to smooth the series because SUTRAS did not converge otherwise. Direct purchases abroad by residents and purchases on the domestic territory by non-residents are not reported in the supply and use tables. However, they are provided in the OECD national accounts and therefore included in the generation of time series SUTs to ensure consistency with the national accounts.

External Time-series
Series of output and inputs at the industry level for extrapolation of SUTs are from the Australia KLEMS database (as part of the EU KLEMS project). Output, deflators, and intermediate input data until 2007 are available in EU KLEMS. For 2008-2009, we used trends in GDP by industry from the Australian Bureau of Statistics. Additional national accounts series, such as total imports and total exports, and changes in inventories and valuables, are from the OECD national accounts. Output and value added deflators at the WIOD-industry level are from the Australia KLEMS database. For 2008-2009 we used GDP deflators from the Australian Bureau of Statistics.

Brazil

SUTs
Annual Supply and Use tables for Brazil are available from the Brazilian Institute of Geography and Statistics (IBGE) for the period 1995-2008. These tables are available in current prices for the period 1995-2008 and in previous year prices for the period 2001-2008.

SUTs for 1995-2008 have the year 2000 as the reference year. SUTs with reference year 2000 match with the national accounts reference year 2000. Tables for 1995-1999 are at the 80 product by 43 industry level, whereas tables for 2000-2008 are at the 110 product by 55 industry level. Supply and use tables are valued
at purchasers’ prices. Total trade, and total transport margins by product as well as taxes less subsidies on products are available. For generating time-series SUTs, we use the structure from the tables for 2000-2008, because these tables provide more detail as compared to the tables for the period from 1995 to 1999 (e.g. offering much more information on secondary production in the supply table). Combining the 1995-1999 tables with the 2000-2008 tables would produce structural breaks in the series (in particular in the intermediate input block, and for secondary production in the supply table). However, we do use information provided in the tables for 1995-1999, in particular national accounts data on value added and gross output, as well as tax rates by product. SUTs for 1995-2008 have the year 2000 as the reference year. SUTs with reference year 2000 match with the national accounts reference year 2000. Supply and Use tables for the period before 1995 have the year 1985 as the reference year. Industry concordance with CNAE (1.0), the national industry classification system, is fairly straightforward due to detailed concordance tables by the statistical office. However, we had to use output or value added shares from annual firm-level surveys (the Pesquisa Anual de Servicos and the Pesquisa Anual de Comercio) to split up the industries 50t52, and 60t64&71t74&O. For intermediate input use, we used intermediate input shares. For supply, we used gross output shares.

External Time-series

Time-series of output and intermediate inputs, both in current and constant prices, are from the national accounts, available at IBGE. Additional national accounts series, such as total imports and total exports, and changes in inventories and valuables, are taken from the national accounts as well, except data for 2009 which is only available in the UN national accounts statistics. Direct purchases abroad by residents and purchases on the domestic territory by non-residents are not reported. Time-series of imports and exports for 1995-1999 are obtained by extrapolating trends by product from the UN COMTRADE database. The same is done for 2009. There is no gross output data available for 2009 yet. We used the growth rates in GDP by broad sectors from the UN national account statistics to extrapolate from 2008 to 2009. Due to the extrapolation of series before 2000 and after 2008, a slight discrepancy arises between total supply and total use (close to zero before 2000, but 0.9 per cent of total supply for 2009). The difference is redistributed across consumption expenditure categories.

Canada

SUTs

Annual time-series of input-output tables for the years 1997-2006 are taken from Statistic Canada. These tables are quite detailed consisting of 435 products and 116 industries. Nevertheless, we still had to make some adjustments to construct a consistent supply-use table. There were small discrepancies between published sum across industries/products and published totals for some industries/products. Some of the discrepancy seems to be due to lack of reported totals in some disaggregate products/industries, while they have reported non-zero values in specific industries/products. Therefore, whenever, the reported value is smaller than the sum across industries/products, we use the sum across industries and ignore the reported total. The missing cells even after this adjustment are imputed by RAS procedure. There is an item unallocated exports and imports, which is not included in our tables. It is a very small number, though.
**External Time-series**

The time-series data on output and value added are taken from EU KLEMS March 2008 release, which is available for years 1995-2004. For 2005 and 2006 these are extrapolated using growth rates from annual SUTs. For years after 2006, for which we have not used the SUT tables, the time-series is generated using broad sector growth rates from OECD, and assuming a constant industry distribution as in 2006.

In order to split some industries, for which only aggregates were available in EU KLEMS (e.g. 17t19 and 60t63), GDP shares from National Accounts are used. Taxes less subsidies on products are computed using the tax rate (taxes on products/value added at basic prices) from OECD, applied to EU KLEMS value added at basic prices. These taxes are then added to Gross Value added at basic prices to obtain value added at purchase prices, which is then disaggregated into expenditure components using respective shares from OECD data. Time-series of margins are constructed using margin/output ratios from SUTs applied to external output data in industries 50, 51, 52, 60, 61, 62 and 63. While doing this, for years after 2006, we use 2006 ratios, and for years before 1997, we use 1997 ratios.

**China**

**SUTs**


We take the input-output tables as the starting point for two reasons. First, limited detail in the supply and use tables makes a good concordance with the 35 industry World KLEMS difficult. The input-output tables are, on the contrary, much more detailed and allow a better match. Second, the NBS considers its input-output tables of higher quality than the published supply and use tables. From the published supply tables, we use the secondary production information (only available for industry: mining, manufacturing industries, and public utilities) in constructing the supply block. Row and column totals in the supply block are from the IOTs, but the distribution is obtained from the official supply table from the NBS. The procedure to obtain consistency with the row and column totals is the so-called RAS-procedure.

Tables for 1997 use the Chinese Standard Industrial Classification (CSIC) 1994. Tables for 2002 and 2007 use the CSIC 2002. Differences in classification between CSIC 1994 and CSIC 2002 are small. Industry concordance with the international industry classification system, is provided in the concordance table (see appendix). No detail is available in the input-output tables to split up 50t52. We use sales data from the China First Economic Census 2004 to split up 50t52 into wholesale (51) and retail (52) trade. Product 67 (Services auxiliary to financial intermediation) is included in product 65 (Financial intermediation services, except insurance and pension funding services). Product 71 (Renting services of machinery and equipment without operator and of personal and household goods; for 1997 only) and product 72 (Computer and related services) are included in product 73 (Research and development services).

At the national bureau of statistics, the national accounts division is separate from the input-output division. Therefore, the information from the input-output tables is not consistent with the national accounts. The China IOTs have a column called errors. Personal correspondence indicated that if the error gets larger than five percent of total supply, the additional error is moved to changes in inventories and valuables. In the SUTs and IOTs, the tables are balanced using a variable called “Others” or Error. That is:
Intermediate Inputs + Final Demand + Error = Gross Output + Import. We distributed the error in each variable in the Final Demand Section using the share of each variable in the Final Demand. (Note: In some cases, the total Final Use (Final Demand) is zero or negative. For example, for the product “37” (secondary raw materials) for 1997, the Final Demand is zero. In such cases, we put the error in the variable “Changes in Inventory”.)

In the 2007 Input-output table, the export and import data exclude part of the goods for processing. Instead, only the value added that is being generated in the processing by Chinese firms is added to exports. The excluded goods for processing are related only to those goods that are directly provided by foreign firms (e.g. an Italian textile firm provides all the inputs and asks a Chinese firm to return the finished textile good). In an appendix table of the official NBS input-output publication (NBS, 2007), the excluded part is provided by product. The share of the excluded goods for processing is about 9 per cent (which is less than total imports for processing, because it is only that part directly provided by foreign firms). We added this excluded goods for processing back to exports and in the intermediate use block, which is possible because the same product detail is provided in the appendix table. For intermediate use, we knew the new row and column totals and applied the RAS procedure to obtain consistency in the intermediate use block. While at the aggregate, exports increase by about 7-9 per cent, at the product level the difference can be much larger. For example, imports of textiles increase by 40 per cent. Also, it is interesting to note that often the value added being generated by these types of export processing amounts to about 3 per cent of the export value.

Direct purchases abroad by residents and purchases on the domestic territory by non-residents are not reported.

External Time-series

Time series of output and intermediate inputs are from the China Industry Productivity (CIP) database. Additional national accounts series, such as total imports and total exports, and changes in inventories and valuables, are from the UN national accounts statistics.

For industry-level value added, the deflators are calculated using the nominal VA and real VA taken from the Chinese SNA. The industry value added implicit deflators are available for total economy, primary sector, manufacturing and mining, construction, transportation and storage and post, wholesale and retail trade, hotels and catering services, financial intermediation, real estate, and other tertiary sectors. For industry-level gross output, the value added deflators are used for primary and tertiary sectors and total economy. For mining, manufacturing, and construction, the Producer Price Indices (PPIs) are used. For primary and tertiary industries, the implicit value added deflators are used to deflate gross output. SUTs are deflated using the value added deflators (GDP deflator) for total economy and industry-level gross output deflators.

The GVO to GVA ratios are taken from the I-O Tables and Supply and Use Tables by industry for 1997, 2002, and 2007. For years for which the I-O Tables are not available, the GVO to GVA ratios are linearly interpolated. For 2008-2009, the 2007 GVO to GVA ratios are used.
India

SUTs

For India, we obtain three input-output tables (transaction tables and make matrices) for years 1998, 2003 and 2006 from the Central Statistical Organization (CSO). While the first two are benchmark tables, the last one is constructed by the CSO, using the 2003 benchmark table. In addition, separate tables on margins and taxes were also obtained from CSO for years 1998 and 2003. We also use data from Annual Survey of Industries (ASI) provided by the CSO for splitting some industries/products in the IO tables (see below).

Indian tables are available as absorption matrices (or input flow matrices) and make matrices (or output flow matrices). We consider the former as use tables, and the latter as supply tables. The 1998 table has 115 sectors/commodities, and the other two tables have 130 sectors. These sectors were aggregated to the WIOD industries and products, after a careful examination of each industry/product group, and by using concordance tables between IO sectors and National Industry Classifications (NIC) provided by the CSO. While doing this, we also had to split some products industries, which were accomplished using output shares from National Accounts, or Annual Survey of Industries (ASI). For 2006, we first imputed taxes on products, using the 2003 tax rates on each cell. These are then normalized using the reported total taxes for each industry. Margins for 2006 are constructed using margin/output ratios in 2003, and are then distributed across products/industries (only for products for which there were margins in 2003). Entries in the Indian tables are at factor cost, rather than the usual concepts of purchase price or basic price. No information on taxes on production is available and therefore, values at factor costs are considered as basic prices. And the use table at purchasers’ prices are calculated as factor Cost plus margins and taxes on products.

External Time-series

All time-series data on output and value added are taken from National Accounts Statistics back series 2008. For 2009, this has been updated using the growth rates from the 2011 National Accounts.

In most cases, we had a one-to-one correspondence between the WIOD industry classification and the Indian industry classification. However, in some cases, we had to split industries. Value added and intermediate inputs of industry trade have been split into sub-sectors 50, 51 and 52, using the value added shares provided by the CSO. In doing this, all non-departmental commercial undertakings in the public sector and private corporations and cooperatives are treated as 51, public sector departmental commercial undertakings and private sector repair of personal household are considered as 52, and maintenance of motor vehicles is considered 50. The value added split for these sectors was, however, available only since 1999 and therefore for years prior to 1999, we apply a constant 1999 share. Yet another problem was the non-availability of output in some sectors. In such cases, we use the output/value added ratio from IO tables, to impute output series. Time-series data on expenditure components of GDP are taken from the most recent version of the National Accounts, extrapolated backwards using the back-series data.

ASI is an annual survey conducted on all registered manufacturing (manufacturing plants employing 10 or more workers with power, and 20 or more workers without power)
**Indonesia**

*Input-Output tables*

Input-Output tables are from the national statistical office, Badan Pusat Statistik (BPS), for 1995, 2000, and 2005 at the 170+ level (commodity by commodity).

Tables are at purchasers’ prices. Tables at producer prices are available as well, but not used because of big errors in the intermediate use tables, which are not easy to resolve. Total trade margins, and total transport margins are available. Tables are on a detailed commodity-by-commodity basis (172 commodities in I-O table 1995, 175 in I-O table 2000, 175 in I-O table 2005). We aggregated the detailed commodity-by-commodity tables to commodity-by-industry tables following the WIOD product and industry list. At the industry level, we used value added and output shares to split up 50t52 into 51 and 52 (no shares are available for industry 50 and we set this to zero). At the product level, no detail is available to further distinguish 65t67, 71t74, and 90t95. Margins in product 10 and product 36 in the official tables are lowered by merging it with product 11 (for 1995 only, adjustment in margins and imports of these two products) and for product 36 with product 35 due to negative values for these products. Direct purchases abroad by residents and purchases on the domestic territory by non-residents are not reported.

**External Time-series**

Time series of output and inputs as well as additional national accounts series, such as total imports and total exports, and changes in inventories and valuables, are from the national accounts statistics available at BPS. Trade data between 1995 and 2000 are interpolated using aggregate growth rates (detailed product data show contradictory patterns, SUTRAS was not able to converge without this adjustment).

**Japan**

*Input-Output tables*

Annual Supply and Use tables for Japan are provided by the team working on the Japan Industry Productivity (JIP) database for the period 1995-2007. Detailed input-output tables are available from Ministry of Economy, Trade, and Industry (METI) for the years 1995, 2000, and 2005. These detailed input-output tables were used to split up several industries from the SUTs provided by the JIP database.

Tables are at producer prices. Tables are on a detailed 108 commodity-by-108 commodity basis. We aggregated the detailed commodity-by-commodity tables to commodity-by-industry tables following the WIOD product and industry list (see concordance tables). At the product level, no detail is available to further distinguish 10t14, and 17t18. We used the shares from the detailed input-output tables available at METI to split up these products. For years between 1995-2000 and 2000-2005 we interpolated the shares from the input-output tables.

Supply tables are based on those from Cabinet Office, based on basic data from SNA. Note that re-exports are not included in the supply and use tables for Japan. Further detail in manufacturing from Censes of Manufacturing compiled at METI. Further detail for services sectors are from the 130 sector supply tables for 2000 and 2005 at METI. Imports of 55 (hotels and restaurants) and 92 (recreational services) should be recorded as direct purchases abroad by residents. Therefore, we moved values in the supply tables for 55...
and 92 to direct purchases abroad by residents. To assure consistency between supply and use, the values were deducted from final consumption expenditure by households in the use table for these products and added to the adjustment of final consumption expenditure (purchases abroad by residents).

In the supply tables, net taxes on products are not reported. However, the OECD NA data reports GDP at market prices (which include net taxes on products) for Japan. Therefore, in the current version there is a discrepancy between supply and use. However, most of the difference, about 80 per cent for most years, is due to a statistical discrepancy. Thus, we re-distributed this across the final consumption expenditure categories and the changes in inventories and valuables. Several small negative values for gross fixed capital formation were set to zero. In the use tables for 1997 to 2000 there were negative values for the intersection of product 10t14 and industry 52 and at the intersection with the Final consumption expenditure by households, which were set to zero. In the use tables for 2001 to 2007 more negative values were found, but all in product category 10t14, specifically at the intersection with industries 52, 61 through 70, the Final consumption expenditure by households and for some years the Final uses at producer prices. These values were all set to zero as well.

External Time-series

Time series of output and inputs for the extrapolation of SUTs are from the JIP database, except for 2008-2009 which is obtained using growth trends by industry from the OECD STAN database. Output and value added deflators at the WIOD-industry level are from the JIP database, except for 2008-2009 which is obtained using growth trends by industry from the OECD STAN database. Additional national accounts series, such as total imports and total exports, and changes in inventories and valuables, are from the OECD national accounts.

South Korea

SUTs

Detailed IO transaction tables have been downloaded from Bank of Korea Website. We use 3 IO transaction tables available for about 400X400 commodities (in 1995 there were 403, in 2000 there were 404 and in 2005 there were 403 commodities).

No separate supply and use tables were available and therefore, transaction tables are treated as use tables, and symmetric supply tables are generated by allocating detailed product output to source industry. For instance, all mining products are attributed to the mining industry. All the Korean tables are at producer prices, and we had no separate information on taxes and margins available. The only available information was taxes on imports, which are added to imports. However, we obtained separate tables on taxes from the Bank of Korea for 2005, which was nevertheless available only for a high aggregate industry/product classification. We derive a total tax rate for each product from this 2005 tax matrix (whenever a WIOD product is not available in this table, we use the nearest higher aggregate product group) to generate a tax rate matrix, which is then used to generate a tax matrix for all benchmark years. These taxes are subtracted from the intermediate block in the supply table (for imports the taxes are directly obtained from the benchmark tables) and thus, we generate a tax column in the supply table. This way, our intermediate block in the supply table is at basic prices. This however, necessitated an adjustment in the use table, in order to ensure consistency between industry output in the use table and supply table. We subtracted the
imputed value of total taxes in each industry from taxes on production, thereby reducing value added in the use table. There were a few negative entries in the original transaction table, in intermediary cells. This was predominantly the case for the product basic metals. These negative entries were set to zero in the intermediate block, and added to taxes on production and inventories to keep consistency with industry output in the supply table. Negatives in final consumption were moved to inventories.

**External Time-series**

All external data time-series data on value added, output, taxes on products and expenditure components of GDP, are taken from OECD. No margins have been computed, as the benchmark tables had no data on margins.

**Mexico**

**SUTs**

A supply and use table for 2003 was obtained from the National Institute of Statistics, Geography and Informatics.

The tables are provided at both basic and purchasers’ prices. Matrices with total trade margins, total transport margins, and taxes less subsidies on products are available. A table at producer prices was constructed based on the use table at basic prices and the matrix of taxes less subsidies. The table at producer prices was used to generate time-series SUTs in SUTRAS. The industry-by-industry tables were transformed into the WIOD product and industry list. Concordance to industries is fairly exact, but for some products concordance is imperfect (i.e. 15t16; 30,32,33; 34t35; 40t41). For these products, we used detailed output shares from the national accounts to split them up.

**External Time-series**

Time series of output and inputs for the extrapolation of SUTs are obtained from the national accounts. Output and value added deflators at the WIOD-industry level are from the national accounts, and all data series are easily matched with the WIOD industry classification.

**Russia**

**SUTs**

A Supply and Use table is obtained from an official publication of the Russian Federal State Statistical Service (Rosstat) for the year 1995.

The tables are at purchasers’ prices, with total trade margins, and total transport margins by product available. Official benchmark IOTs of 1995 were transformed from the old Soviet industrial classification OKONH (1976) to the classification of WIOD with official concordance tables OKONH – NACE 1.0. Concordance of products from the official IOT 1995 in OKONH matches with NACE 1.0. However, concordance of OKONH products/industries and WIOD products in some positions is conditional,
because information of exact correspondence between the obsolete Soviet industrial classification and the international classification NACE 1.0 is unavailable.

**External Time-series**

Time series of output and intermediate inputs for the extrapolation of SUTs are from Russia KLEMS (Timmer and Voskoboynikov, 2011). Additional national accounts series, such as total imports and total exports, and changes in inventories and valuables, are from the national accounts at Rosstat.

**Taiwan**

**SUTs**

We obtained 3 input-output tables (1996, 2001 and 2006) from Taiwan National Statistics. Table for 1996 had 160 commodities, the table for 2001 had 162 commodities and the table for 2006 had 166 commodities.

As in the case of Korea, Taiwan also provides only transaction tables. We consider them as USE tables and symmetric supply tables are generated by attributing the entire output to one industry. Transaction tables at purchasers’ price are aggregated to WIOD industries and products to get USE tables at purchasers’ prices. Total supply from the transaction table is distributed across industries, depending upon the source industry. For instance, all supply of mining products are attributed to the mining industry and so on. This is done at the maximum possible level of disaggregation (at which the original data is available) and resulted in a more or less symmetric Supply table. Original transaction tables are product by product matrices, and therefore, products on the columns are aggregated to WIOD industries, and products on the rows are aggregated to WIOD products. The sum of value added tax and net import duties is treated as taxes on products. The other taxes component from total indirect taxes is used as taxes on production. This is because, indirect taxes is defined to include 'Net Commodity Taxes', 'Net Import Duties', 'Value Added Taxes', and 'Other Taxes'. From this, we assume only other taxes can be considered as taxes on production. There was one sector which is called 'undistributed'. We include it in industry other manufacturing, 36-37, although the numbers were very small. Furthermore the original table had one column called scrap, which sums to zero when aggregated across products. A careful look at this suggests that it is part of the supply table, and does not exist in the table. Therefore, we added the scrap in the supply table to the undistributed category, while it is not included anywhere in the use category, to keep consistency. This, however, does not change the row totals, as the sum of scrap is zero. Also there was another item called ‘adjustment item’, which is allocated to other manufacturing in our classification. In the 2006 tables there were negative margins in product ‘post and courier services’, which is part of post and communication in the WIOD product classification. Therefore, we removed the margin from this product to other transport services (63) and adjusted the differences in the value added tax category. Similarly, public administration and wholesale trade products had no intermediary cells used by industries public administration and wholesale trade in the Use table. However, they had positive output, produced by these industries. This indicates that these industries produce these products, but do not use these

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6 It appears that the sum of [intermediate use + sum of final use] excluding scrap=Total USE=Total SUP. However, the sum of total domestic output + Imports + Margins + Tax + Scrap = Total SUP= Total USE.
products. In this case, we first aggregated the products 75 and 80 and 51 and 50, and then we disaggregate each of the cells using output shares from national accounts. In the product ‘crude petroleum’, margins were added to taxes as to keep margins zero, as the high taxes in this sector caused negatives in the basic price table. Total trade and transport margins are also available, along with product margins by industry for Taiwan.

*External Time-series*

All external time-series data are taken directly from detailed National Accounts data until 2008. For 2009, the data has been updated using growth rates from latest National Accounts, which is however, available only at a higher aggregate level for some sectors. Therefore, we use the growth rates from the latest data and apply to the previous series. There was huge jump in the wholesale trade export (from less than 1% of total use in 2001 benchmark to about 30% in 2006). In the external data, to avoid generating negative use tables, we have smoothed the export series using the aggregate NAS growth rate. Time series margins are estimated using interpolated margin/output ratios from benchmark input-output tables. Net taxes on production are calculated as the sum of VAT and import duties from NAS.

**Turkey**

*SUTs*

The Turkish Supply-and-Use Tables are obtained from Turkstat [website](http://example.com). We use two benchmark tables available for years 1996 and 2002 and one additional table available for 1998.

Tables for 1996 and 1998 were 98 * 98 sectors, while for 2002 it was 59 * 59 sectors. Supply and Use Tables are available in basic and purchasers’ prices respectively for 1998 and 2002, hence we aggregate products to WIOD products and industries to WIOD industries directly. Concordance was quite straightforward, as Turkish data was available in ISIC rev.3.1. Also 1998 and 2002 tables provide trade and transport margins, taxes on production and taxes on products separately. For 1996, the tables are available at producer prices and therefore, we have converted the supply tables to basic prices and use tables to purchasers’ prices. To generate basic price supply tables (producer price – taxes on products), we first generate total taxes on products using tax rates in 1998. These total taxes on products are distributed across industries using their output shares, in order to derive sectoral taxes. Similarly, for 1996 purchasers’ prices use tables are generated as producer price use tables + margins. Total (trade and transport) margins are computed using margin/output ratio in 1998 for trade (50, 51 and 52) and transport (60, 61, 62, 63) separately. Then this total margin is distributed across industries using industry share in total output for margin products. Subsequently, the total margin in each industry is distributed across products using the product share in total use (excluding margins products). This way we derive a complete matrix of margins for 1996. There were very tiny negative entries in final consumption of some products in 1996. They are all set to zero, and moved to inventories. The product secondary raw materials is clubbed with other manufacturing in 2002, because, this product was absent in earlier benchmark tables.
External Time-series

Time-series on sectoral GDP, output, and expenditure components of GDP are based on the latest version of National Accounts (2011) available from Turkstat. These data are available since 1998. Data on rest of the world adjustment (direct purchases abroad by residents and non-resident purchases in the domestic territory) are taken from OECD National Accounts.

For earlier years (prior to 1998), these are extrapolated using the growth rate of an earlier 1987 series. Therefore, there might be inconsistencies between the number in IO tables and time-series (mainly due to the significant upward revisions of recent Turkish NAS). Whenever sufficient disaggregation (to match with WIOD industry classification) is not available, we use distributions from other sources, such as annual business surveys, or IO tables. Expenditure components of GDP are sometimes complemented by OECD National accounts, in order to make adjustments for final consumption expenditure of resident households in the economic territory and abroad and final consumption expenditure of non-resident households in the economic territory. We use the shares of these components from OECD in total private consumption expenditure and apply these shares to Turkstat data to obtain consistent values for these components. We also deviate in our treatment of trade data for Turkey, from other countries. In most other countries (except in the US, where we use trade data from annual SUTs), product wise imports and exports are derived using WIIW trade data (the approach is discussed elsewhere and is therefore not explained separately in this document). However, in the case of Turkey, imports and exports by products in US$ are available from Turkstat trade data. Therefore, imports and exports by products are calculated using the product shares from trade data applied to total imports and exports data obtained from National Accounts. There was no trade data by products available in this database for 1995. Therefore, we use the distribution of 1996 and apply it to the total in 1995. Time series margins are estimated using interpolated margins/output ratios from the benchmark supply tables. For non-benchmark years, we use these ratios from other years (use 1996 ratio for 1995, average of 1996 and 1998 for 1997 and average of 1998 and 2002 for 1999 to 2001 and the ratio of 2002 for all years after 2002). These ratios are then applied to NAS output series of the relevant margin industry, to derive annual margins.

United States

SUTs

The Bureau of Economic Analysis (BEA) provides two benchmark supply and use tables for 1997 and 2002, and since 1998 it also provides annual time-series tables. While the annual time-series tables are updated and are largely consistent with National Accounts, the benchmark tables are not updated frequently. Therefore, we use BEA’s annual time-series tables for the years 1998-2009. All the tables we use are after redefinitions (‘Redefinitions’ pertain to the secondary products of a multi-product industry and modify the classification of industries from a NAICS to an I-O basis).

The benchmark tables are quite comprehensive, and are available in both producer prices as well as at purchasers’ prices. For instance, 1997 benchmark summary table had 132 sectors, while the annual tables had only 65 sectors. Therefore, we had to split some products and industries to get appropriate WIOD products and industries. This splitting has been done at a very detailed product/industry level, using interpolated shares from the benchmark tables in 1997 and 2002 for each cell in the case of use table. Then we compute the total output for the split sector/product from the use table, and the distribution of
this output is used to split the supply table. While the benchmark tables are available both in producer and purchasers’ prices, the annual tables are available only in producer prices. Therefore, all tables used for the US are in producer prices. There were negative entries in the intermediate blocks in some industries/products (e.g. product secondary raw materials, which includes scrap, had negative entries). These are set to zero, and are added to inventories and taxes on production to keep consistency. Imports in the original US tables were provided in the use tables as negative entries. These were moved into the supply table, after changing the sign. Still there were some negative entries for some products. These were due to the fact that the import tables in the SUTs were valued at their foreign port value, and hence they exclude any transport and insurance fees. However, the import values in import matrix were valued at their domestic port value and hence inclusive of all transportation and insurance services to import, plus customs duties. Since imports in SUTs are at foreign port value it may be considered as FOB, while imports in import table, which are domestic port value, may be considered as CIF. Therefore we use total imports from import tables. The difference between imports in the import table and in the supply table is then considered as CIF/FOB adjustment in the supply table. The resulting inconsistency between supply and use table are corrected by subtracting the difference from exports in the use table, where also we consider the same value as CIF/FOB adjustment. There was one product category ‘inventory valuation adjustment’ which is excluded from our data. This was very tiny though. Another product which the US tables had was non-comparable imports, which was combined with the rest of the world adjustment in the new version of annual tables. All non-comparable imports plus the rest of world adjustment (NROW) are added both in the supply and use tables to business services, but only in the intermediate block (see Yuskavage et al, 2006). In the supply table, the imports for the product other business services is taken as the sum of reported imports of business services and the sum of all intermediate uses of non-comparable imports in the use table. The entire value of non-comparable imports under the imports column in the supply table minus total intermediate use of non-comparable imports is considered as direct purchases abroad by residents under the import column. In the use table, the direct purchases abroad by residents are the same value as computed for the supply table; hence they are taken from there. In the use table, the entire non-comparable imports under the export column are considered as direct purchases by foreigners in the domestic territory under the export column. In the use table, the direct purchases by foreigners in the domestic territory are the same as the direct purchases in the domestic territory under the export column (but with a negative sign). The reported export values in the SUTs are exclusive of re-exports, while the National Accounts provide exports inclusive of re-exports. Therefore, we have imputed re-exports of each product and added these to the export column in the use table and to the import column in the supply table. Total export inclusive of re-export is calculated as $X_s = X_s^* [X_w / (X_w - RX_w)]$, where $X$

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7 Imports in the import matrix and SUTs were different in products metal ores; wholesale trade and commission trade services, except of motor vehicles and motorcycles; water transport services; air transport services; post and telecommunication services; and insurance and pension funding services, except compulsory social security services due to the following adjustments - NIPA gold adjustment, water freight, air freight, couriers and messengers, duties and marine insurance. A detailed look at the benchmark tables suggests that NIPA gold adjustment has been added to metal ores, duties to wholesale trade, water freight to water transport, air freight to air transport couriers and messages to post and telecommunications, and marine insurance to insurance products.

8 Non-comparable imports include expenditures on personal and business travel while abroad by U.S. residents, royalties and license fees paid to foreign residents, port expenditures abroad by U.S. air and water transportation providers, and payments by U.S. firms to their foreign affiliates or their foreign parents for unspecified financial, communications, business, professional, and technical services (see p.10 Yuskavage et al 2006). Robert E. Yuskavage, Erich H. Strassner, and Gabriel W. Medeiros, 2006 Outsourcing and Imported Services in BEA’s Industry Accounts
is total export including re-export, RX is re-exports, X* is total export excluding re-export, subscript w stands for WIIW trade data and s stands for SUT trade data.

External Time-series

No external data from National Accounts are used in the case of the US. Rather, all the data are taken from the annual SUTs provided by the BEA. Price deflators for GDP and output are taken from the EU KLEMS update.

Since the annual SUTs were available only since 1998, for years prior to 1998, we interpolate final private consumption, resident purchases abroad, non-resident purchases in the domestic territory, government consumption, gross fixed capital formation, inventories, exports and imports are calculated using NAS growth rates, applied to 1998 SUT values. While doing this, 1998 SUT exports and imports are raised to include re-exports. Exports of goods and services are separately calculated using their respective shares in NAS totals. GDP is then calculated as consumption plus capital formation plus exports minus imports, and is compared with the industry total value added calculated using EU KLEMS (market price value added) growth rates at industry level. Any difference is added to inventory changes. The cif/fob adjustment for 1995-97 is imputed using growth rates of goods imports.
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Note: All tables are at purchasers' prices unless otherwise indicated (PR stands for producer prices, FC for factor cost and BP for basic price), i stands for industry dimension and c for commodity. * Cyprus SUTs based on Greece.
Appendix Table 2 Products and rows in Use table

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<td>22</td>
<td>Printed matter and recorded media</td>
</tr>
<tr>
<td>17</td>
<td>23</td>
<td>Coke, refined petroleum products and nuclear fuels</td>
</tr>
<tr>
<td>18</td>
<td>24</td>
<td>Chemicals, chemical products and man-made fibres</td>
</tr>
<tr>
<td>19</td>
<td>25</td>
<td>Rubber and plastic products</td>
</tr>
<tr>
<td>20</td>
<td>26</td>
<td>Other non-metallic mineral products</td>
</tr>
<tr>
<td>21</td>
<td>27</td>
<td>Basic metals</td>
</tr>
<tr>
<td>22</td>
<td>28</td>
<td>Fabricated metal products, except machinery and equipment</td>
</tr>
<tr>
<td>23</td>
<td>29</td>
<td>Machinery and equipment n.e.c.</td>
</tr>
<tr>
<td>24</td>
<td>30</td>
<td>Office machinery and computers</td>
</tr>
<tr>
<td>25</td>
<td>31</td>
<td>Electrical machinery and apparatus n.e.c.</td>
</tr>
<tr>
<td>26</td>
<td>32</td>
<td>Radio, television and communication equipment and apparatus</td>
</tr>
<tr>
<td>27</td>
<td>33</td>
<td>Medical, precision and optical instruments, watches and clocks</td>
</tr>
<tr>
<td>28</td>
<td>34</td>
<td>Motor vehicles, trailers and semi-trailers</td>
</tr>
<tr>
<td>29</td>
<td>35</td>
<td>Other transport equipment</td>
</tr>
<tr>
<td>30</td>
<td>36</td>
<td>Furniture; other manufactured goods n.e.c.</td>
</tr>
<tr>
<td>31</td>
<td>37</td>
<td>Secondary raw materials</td>
</tr>
<tr>
<td>32</td>
<td>40</td>
<td>Electrical energy, gas, steam and hot water</td>
</tr>
<tr>
<td>33</td>
<td>41</td>
<td>Collected and purified water, distribution services of water</td>
</tr>
<tr>
<td>34</td>
<td>45</td>
<td>Construction work</td>
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### Appendix Table 2 Products and rows in Use table (continued)

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<thead>
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<tbody>
<tr>
<td>35</td>
<td>50</td>
<td>Trade, maintenance and repair services of motor vehicles and motorcycles; retail sale of a</td>
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<tr>
<td>36</td>
<td>51</td>
<td>Wholesale trade and commission trade services, except of motor vehicles and motorcycles</td>
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<tr>
<td>37</td>
<td>52</td>
<td>Retail trade services, except of motor vehicles and motorcycles; repair services of person</td>
</tr>
<tr>
<td>38</td>
<td>55</td>
<td>Hotel and restaurant services</td>
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<tr>
<td>39</td>
<td>60</td>
<td>Land transport; transport via pipeline services</td>
</tr>
<tr>
<td>40</td>
<td>61</td>
<td>Water transport services</td>
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<tr>
<td>41</td>
<td>62</td>
<td>Air transport services</td>
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<tr>
<td>42</td>
<td>63</td>
<td>Supporting and auxiliary transport services; travel agency services</td>
</tr>
<tr>
<td>43</td>
<td>64</td>
<td>Post and telecommunication services</td>
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<tr>
<td>44</td>
<td>65</td>
<td>Financial intermediation services, except insurance and pension funding services</td>
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<tr>
<td>45</td>
<td>66</td>
<td>Insurance and pension funding services, except compulsory social security services</td>
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<td>46</td>
<td>67</td>
<td>Services auxiliary to financial intermediation</td>
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<td>47</td>
<td>70</td>
<td>Real estate services</td>
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<tr>
<td>48</td>
<td>71</td>
<td>Renting services of machinery and equipment without operator and of personal and house</td>
</tr>
<tr>
<td>49</td>
<td>72</td>
<td>Computer and related services</td>
</tr>
<tr>
<td>50</td>
<td>73</td>
<td>Research and development services</td>
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<td>51</td>
<td>74</td>
<td>Other business services</td>
</tr>
<tr>
<td>52</td>
<td>75</td>
<td>Public administration and defence services; compulsory social security services</td>
</tr>
<tr>
<td>53</td>
<td>80</td>
<td>Education services</td>
</tr>
<tr>
<td>54</td>
<td>85</td>
<td>Health and social work services</td>
</tr>
<tr>
<td>55</td>
<td>90</td>
<td>Sewage and refuse disposal services, sanitation and similar services</td>
</tr>
<tr>
<td>56</td>
<td>91</td>
<td>Membership organisation services n.e.c.</td>
</tr>
<tr>
<td>57</td>
<td>92</td>
<td>Recreational, cultural and sporting services</td>
</tr>
<tr>
<td>58</td>
<td>93</td>
<td>Other services</td>
</tr>
<tr>
<td>59</td>
<td>95</td>
<td>Private households with employed persons</td>
</tr>
<tr>
<td>60</td>
<td></td>
<td>Total</td>
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<tr>
<td>61</td>
<td></td>
<td>Cif/ fob adjustments on exports</td>
</tr>
<tr>
<td>62</td>
<td></td>
<td>Direct purchases abroad by residents</td>
</tr>
<tr>
<td>63</td>
<td></td>
<td>Purchases on the domestic territory by non-residents</td>
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<tr>
<td>64</td>
<td></td>
<td><strong>Total intermediate consumption/final use at purchasers' prices</strong></td>
</tr>
<tr>
<td>65</td>
<td></td>
<td>Compensation of employees</td>
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<tr>
<td>66</td>
<td></td>
<td>Other net taxes on production</td>
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<tr>
<td>67</td>
<td></td>
<td>Operating surplus, gross</td>
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<tr>
<td>68</td>
<td></td>
<td><strong>Value added at basic prices</strong></td>
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<tr>
<td>69</td>
<td></td>
<td><strong>Output at basic prices</strong></td>
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