

EU KLEMS



EU KLEMS GROWTH AND PRODUCTIVITY ACCOUNTS

Version 1.0

PART 2: Sources by country

March 2007

Prepared by

Marcel Timmer, Ton van Moergastel, Edwin Stuivenwold,
Gerard Ypma
(Groningen Growth and Development Centre)

and

Mary O'Mahony and Mari Kangasniemi
(National Institute of Economic and Social Research)

On behalf of the EU KLEMS consortium (see next page)

This project is funded by the European Commission, Research Directorate General as part of the 6th Framework Programme, Priority 8, "Policy Support and Anticipating Scientific and Technological Needs".

EU KLEMS consortium

01	<i>Rijksuniversiteit Groningen</i>
01	Bart van Ark
01	Marcel Timmer
01	Gerard Ypma
01	Edwin Stuivenwold
01	Lourens Broersma
01	Ton van Moergastel
01	Robert Inklaar
01	Bart Los
01	Carolina Castaldi
02	<i>National Institute of Economic and Social Research</i>
02	Mary O'Mahony
02	Catherine Robinson
02	Nicholas Oulton
02	Ana Rincon
02	Anna Soo
02	Mari Kangasniemi
02	Peter Loveridge
02	Michela Vecchi
04	<i>Centre d'études prospectives et d'informations internationales</i>
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04	Michel Fouquin
04	Anita Wolfl
05	<i>Centre for Economic and Business Research</i>
05	Svend Hougaard Jensen
05	Anders Sorenson
05	Thomas V. Pedersen
05	Martin Junge
05	Esben Anton Schultz
05	Mickey Jan Pedersen
06	<i>CPB Netherlands Bureau for Economic Policy Analysis and Statistics Netherlands</i>
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06	Ate Nieuwenhuis
06	Paul de Jongh
06	Rutger Hoekstra
06	Gerrit Zijlmans
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07	<i>Deutsches Institut für Wirtschaftsforschung e.V. Berlin</i>
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07	Martin Gornig
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08	Chantal Kegels
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08	Luc Avonds
08	Bernadette Biatour
08	Bernard Klaus Michel
08	Koen Hendrickx
09	<i>Istituto di Studi e Analisi Economica and ISTAT</i>
09	Carlo Milana
09	Antonella Baldassarini
09	Germana Bottone

09	Suzanna Mantegazza
09	Cecilia Jona-Lasinio
10	<i>Instituto Valenciano De Investigaciones Economicas, S.A.</i>
10	Matilde Mas
10	Javier Quesada
10	Ezequiel Uriel
10	Lorenzo Serrano
10	Fransisco Perez
11	<i>Helsingin kauppakorkeakoulu (Helsinki School of Economics) and Statistics Finland</i>
11	Matti Pohjola
11	Pirkko Aulin-Ahmavaara
11	Antti Pasanen
12	<i>Austrian Institute of Economic Research</i>
12	Michael Peneder
12	Karl Aiginger
12	Martin Falk
12	Serguei Kaniovski
12	Kurt Kratena
12	Marcus Scheiblecker
13	<i>The Vienna Institute for International Economic Studies</i>
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13	Sebastian Leitner
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14	Eric Bartelsman
14	Karin Bouwmeester
14	Hans Quene
15	<i>The Conference Board Europe and Dale Jorgenson and associates</i>
15	Eileen Ring
15	Dale Jorgenson
15	Mun Ho
15	Jon Samuels
16	<i>University of Konstanz</i>
16	Jorg Beutel
17	<i>University of Birmingham</i>
17	Mary O'Mahony
18	<i>Pellervo Economic Research Institute</i>
18	Jukka Jalava
19	<i>Japan</i>
19	Kioji Fukao
19	Tsutomu Miyagawa
19	<i>Korea</i>
19	Hak Kil Pyo
20	<i>Statistics Lucembourg</i>
20	John Haas
20	Charles-Henri DiMaria
20	Julien Ciccone
20	<i>Statistics Sweden</i>
20	Tomas Skyttesvall
20	Hans-Olof Hagen

Introduction

This document gives an overview of the sources and methods used for constructing the EU KLEMS database. It has been set up on a country-by-country basis, classified by workpackage. Each country section starts with sources for inter-industry accounts, followed by Labour accounts (including labour composition) and Capital accounts.

All sheets have been prepared by the consortium partners in cooperation with the Groningen Growth and Development Centre. The statistical institutes of Sweden and Luxembourg have also contributed to this document. Wiiw has delivered the sources for the Czech Republic, Hungary, Poland, Slovak Republic and Slovenia. The Pellervo Research Institute did take care of the sections for the Baltic countries. For all other countries, the sources have been constructed by the Groningen Growth and Development Centre at the University of Groningen. Any errors or omissions are entirely the responsibility of the National Institute for Economic and Social Research and the Groningen Growth and Development Centre. All suggestions, comments and requests for additional information can be directed to euklems@eco.rug.nl.

Please note that the methods and comments only describe the deviations from normal procedures. These procedures have been described in part 1 of this document: Methodology. PART 1 also includes the list of industry and variable codes. Additional information can be obtained from the EU KLEMS consortium management (euklems@eco.rug.nl) or from the specific consortium partners.

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Austria

WP1: Inter-industry Accounts

1. NA data

- Nominal
 - **Sources:** Time series data from Statistics Austria/National Accounts at NACE 2-digit (60).
 - **Comments:**
 - In order to end up with the EU KLEMS Industry list extra detail (Eurostat SBS database) has been added for 22, 24, 31-33 and 74 for value added and compensation.
 - To be able to calculate EU aggregates for the whole period 1970-2004, the period 1970-1976 has been filled by applying the trend of current GDP from the OECD National Accounts to all variables in current prices.
 - Data below the level of industry C is confidential and is not shown in the datafile.
- Volume
 - **Sources:** Time series data from Statistics Austria/National Accounts at NACE 2-digit (60).
 - **Comments:**
 - To be able to calculate EU aggregates for the whole period 1970-2004, the period 1970-1976 has been filled by applying the trend of constant GDP from the OECD National Accounts to all variables in constant prices.
 - As for current prices extra detail was added, an assumption has to be made for extra detail in constant prices. Aggregated price deflators are assumed to be identical for more disaggregate industries.
 - Data below the level of industry C is confidential and is not shown in the data file.

2. SUT data

- Nominal
 - **Sources:** IOT and SUT data from Statistics Austria, interpolated for the period 1988 – 2004. *Use tables, 1988 – 2004:* Starting point of the use tables data set were the official input-output tables 1990, 1995, 2000 and 2001 as well as the supply-use tables for 1997 and 1999. As the input-output table 1990 had been elaborated in a different classification and under the concept of ESA 1979, it has only been used for some plausibility checking. The interpolation methodology started by inserting the missing years (1996, 1998) and in a second step enlarging the full time series 1995 – 2001 to 1988 – 2004. The most important conceptual problem that had to be solved in the time series 1995 - 2001 was the treatment of FISIM. All Austrian input-output tables treat FISIM as a separate activity (column) in the use table. That had to be distributed to all activities according to the new ESA

guidelines. The revision of FISIM treatment in Austrian national accounts also led to a considerable decrease in the output of FISIM (and the banking sector). It was not possible to allocate this difference to any single buying industry, so FISIM has been redistributed to intermediate and final demand (proportionally to total demand in each industry or final demand component) and the difference to the new commodity output from the supply table (s. below) has been accounted for in a column vector "statistical difference (including inventories and stock changes)". The use tables 1995 – 2001 had to be adjusted to the total intermediate demand by industries from national accounts. Again upcoming imbalances on the commodity side have been attributed to the "statistical difference" vector. The interpolation methodology consisted of two main tasks: (i) interpolation of the final demand vectors and (ii) inserting first guesses for the single cells. On that result RAS has been applied for balancing. The methodology for (i) and (ii) has been put forward in detail in Kratena (2005). It turned out that RAS converged very rapidly after about ten iterations. The result was a time series for use tables at purchaser prices from 1988 to 2004 where total demand equals total supply at purchaser prices (s. below) and intermediate demand by industry equals the corresponding number from national accounts. Valuation matrices which can be used to transform the price concept for intermediate and final consumption from purchaser's to basic prices are only available for the "full" input-output years 1995, 2000 and 2001. There has been some experimenting with interpolation of these matrices. All statistical sources stem from Statistics Austria. *Supply tables, 1988 – 2004*: The starting point for the interpolation of supply tables was again the 1995 to 2001 time series (after inserting 1996 and 1998) of input-output and supply/use tables. A methodology to interpolate the main diagonal elements of the domestic supply matrix as described in Kratena (2005) represents the core of the task. The supply tables were adjusted to the industry output numbers from national accounts. Due to the revision of FISIM treatment this mainly resulted in a drop of the commodity output of banking services. The margin columns (trade and transport) had also to be adjusted (proportionally) in order to sum up to zero. Imports were taken from trade statistics. Documentation on methodology: Kurt Kratena (2005), Intrapolating SUT with Bi-proportional Methods (<http://www.euklems.net/workpackages.html>)

- **Comments:**
- Volume
 - **Sources:** Deflation of nominal SUT with output price deflators from Statistics Austria and import price deflators from WIFO (calculated from disaggregated trade data via unit value indices). Documentation on methodology: Kurt Kratena (2005), Deflation of Supply and Use Tables (<http://www.euklems.net/workpackages.html>).
 - **Comments:** Differences in the sum of deflated intermediate inputs by industry of SUT in volumes compared to NA data are small and have

been left open (no column adjustment of SUT in volumes to NA data has been carried out).

WP2: Labour Accounts

1. Employment

- **Sources:** (i) Time series data from Statistics Austria/National Accounts at NACE 2 – digit level including data for 60 industries for the period 1976-2004, (ii) data for the period 1970-1975 are based on own calculations using individual labour force data ("Mikrozensus"), Census of Population 1971 as well as the annual industry statistics ("Industriestatistik")¹, and (iii) employment data from the Austrian social security records that are available at the four digit NACE level for the period 1975-2004.
- **Comments:** Employment based on NA data is measured as number of jobs ("Beschäftigungsverhältnisse"). Splitting up to EUK 72 is carried out by using employment weights from the Austrian social security records ("Beschäftigungsdaten des Hauptverbands der Österreichischen Sozialversicherungsträger"). Note that employment based on social security records as well as on the population census are measured as head counts. These data covers all employees in the Austrian private sector and all non-tenured public sector workers. Data are in general very reliable, as the firms are legally obliged to report correct figures. However, it is known that self-employed workers and civil servants are underreported.
-Data below the level of industry C is confidential and is not shown in the data file.

2. Hours

- **Sources:** (i) time series data from Statistics Austria/National Accounts at NACE 2 – digit level including data for 60 industries for the period 1995-2004 and (ii) hours worked for earlier years (i.e. the period 1970-1994) are calculated using individual labour force data ("Mikrozensus").
- **Comments:** Splitting up to EUK 72 is carried out by assuming that the ratio of total hours per person employed (measured as jobs in full-time equivalents) is similar within a given two digit industry. Then we multiply the ratio of total hours per person employed (measured in full-time equivalents) with the number of all persons employed based on EUKLEMS industry classification. We multiply average weekly hours per person employed based on microcensus data by 52 weeks and the number of person employed based on national accounts data to obtain average annual hours.
-Data below the level of industry C is confidential and is not shown in the data file.

¹ Österreichisches Statistisches Zentralamt Industriestatistik 1970-1976, 2. Teil, Wien 1972-1978.

3. Labour composition

- Employment

- **Sources:** Information on employment of different skill types, age classes and gender at the industry level is calculated using individual microcensus data for the period 1980-2003 and individual Census of Population data for the year 1991 and 2001.
- **Comments:** University qualifications include workers with a college/university degree and technical/polytechnical degree and workers with postgraduate courses. Intermediate qualifications include: (i) vocational middle schools (BMS) that start after the 8th school year, and studies continue for between one and four years, (ii) completed upper level of Gymnasium (AHS), (iii) vocational higher schools (BHS) also starts after the 8th school year and may be completed in five years with the university entry exam. Vocational higher schools include, for example, the commercial academies (HAK) as well as the higher technical institutes (HTL). No formal qualifications include primary education. Employment data based on the Census of population are used as control totals for employment by age groups and skills. These data are interpolated using micro census data. However, due to the small sample size there is a large variance in the evolution of employment of university graduates by age and skill level across industries. Therefore, we use census of population data as control totals for the year 1991 and 2001 and interpolations based on the employment by three skill groups rather than by nine skill/age groups.
-Labour composition is available at the level of 15 industries. For lower levels we assumed the same composition as the higher aggregate.

- Compensation

- **Sources:** Information on earnings and wages for different skill types as well as age classes at the industry level is calculated using microcensus data for the period 1997. Time series data on wages for different skill levels are drawn from the wage and salary statistics. For some industries (NACE 65-93) we draw data from the database of collective wage agreements.

Comments: Wage data based in microcensus are interpolated using the wage and salary statistics. The wage and salary statistics contains earnings for different groups of white collar workers (measured as monthly earnings) as well as wage for different groups of blue collar workers (measured as hourly wages). Note that wage and earnings data based on the wage and salary statistics refers to full-time workers' wages. Finally, in order to get a composite wage index for the three skill groups we use the törnqvist index.

-Labour composition is available at the level of 15 industries. For lower levels we assumed the same composition as the higher aggregate.

WP3: Capital Accounts

- **Main sources for GFCF**

The main sources are published sources by Statistics Austria
ESA 1995 PI6 assets by A60 sectors for 1976-2004 (current prices, constant 1995 prices).

I/O GFCF matrices for 1995 and 2000 (current prices)

Other sources WIFO estimates.

- **Methods (for estimating industry * asset)**

We take annual data on Gross Fixed Capital Formation (GFCF) published by Statistics Austria for the period of 1976 to 2004 according to ESA 1995 (P6 Asset classification-NACE A60). These data are available at current prices and as chain-linked volume indices. In ESA 1995, IT and CT assets are contained in Metal Products and Machinery (PI 62 or AN.11132) while software is available separately. We use the share of *Office, Accounting and Computing Machinery* (CPA 30) and the share of *Radio, Television and Communication Equipment and Apparatus* (CPA 32) in *Metal Products and Machinery* (CPA 28 to CPA 33 and 36) from capital formation matrices (commodity by industry) as approximations to the shares of IT and CT assets in PI 62 of the National Accounts.² Capital formation matrices are available at the 2 digit level at current prices for 1995, 1997, 1999, 2000 and 2001. EUKLEMS *Other machinery and equipment* is a residual category computed by subtracting IT and CT from PI 62 of the National Accounts.

We use cubic interpolation to fill the shares for 1996 and 1998. In some sectors these shares were either missing or implausible. This was the case with IT in sectors 02, 05 and 13, and CT in sectors 02, 05, 13, 16, 18, 23, 30, 35, 37, 41, 61 and 73, most of which are small sectors. For them we compute the shares using the elasticities of investment in IT and CT with respect to investment in Software and Machinery and Equipment estimated by sector using the US-BEA data for the time period between 1984 and 2003 at current prices.³ We also use the same elasticities to extrapolate the shares between 1976 and 1994 and 2004.

To meet the EUKLEMS industry classification, we disaggregate several 2 digit industries into their 3 digit constituents or aggregates thereof. Statistics Austria published Leistungs- und Strukturstatistik (formally Leistungs- und Strukturhebung), which includes investment by 3 digit industries in essentially the PI6 assets for the years 1997, 1998, 2000, 2001, 2002 and 2003. We use this information to compute the shares of the required 3 digit sectors. We applied the shares of 1997 to all preceding years and used the shares of 2003 for 2004.

² The use of shares is appealing because of the discrepancy between Metal Products and Machinery in the I/O Tables and PI 62 of the National Accounts.

³ This required converting US data from NAICS 2003 to NACE revision 3. Estimated elasticities are available upon request.

In order to get ICT assets by EUKLEMS industry, since we have no information by assets at the 3 digit level, we split each asset using the share of total investment of the 3 digit sector (or an aggregate of several 3 digit sectors) in the respective 2 digit sector. These shares vary by sectors and years. Alternatively, one could use the RAS technique to interpolate the ICT by 3 digit sector matrices using comparable matrices for another country, say Germany.

Building infrastructure is available separately for all years and sectors and is separated from non-residential buildings. We have compiled these data from a multitude of national sources, including balance-sheets of the post, railways and road-construction agencies, according to a WIFO definition of infrastructure (a publication is forthcoming, albeit in German).

Since we have no price indices for the ICT assets except Software for which a volume index is available, the US-BEA deflator has been used.

- ***Initial capital stock***
For 1975 for PI6, net capital stock. Breakdown of nominal stock of PI62, on the basis of shares of IT, CT and Omach in average nominal investment in 1976 and 1977.
- ***Comments:*** As for WP1 the data for NACE Industry 11 was put in with NACE Industry 13, this has also been done for WP3.

Belgium

WP1: Inter-industry Accounts

1. NA data

- Nominal
 - **Sources:** unpublished data from the Institute of National Accounts (INA), own calculations Federal Planning Bureau Belgium and GGDC calculations.
 - **Comments:** -Data respect the 2006 revision of the national accounts (NA), release date 30 Sept 2006
-The following EUK72-industries could only be obtained through splitting with weights calculated based on structural business statistics material: 313, 31x, 321, 322, 323, 331t3, 334t5, 351, 352, 35x, 40x, 402, 70imp and 70x. There are specific weights for each year (except 2004 where 2003 weights have been used). The same weights have been used for current and constant prices. Note that these weights have been calculated on the basis of the old version of the NA.
-Intermediate inputs in current has been calculated as the difference between value added and gross output.
-For the period 1970-1994, for value added and components of value added the initial data in the A31-industry-classification has been split using older non-revised NA data for the same period in order to obtain 64 of the 72 EUK-industries.
-Weights for the 1970-1994 period are based on 1995 data for the remaining EUK72-industries could not be obtained separately (these were again 313, 31x, 321, 322, 323, 331t3, 334t5, 351, 352, 35x, 40x, 402, 70imp and 70x).
-To calculate gross output and intermediate inputs for the 1970-1994 period we have assumed the 1995 value added-gross output ratio constant for the period 1970-1994. Intermediate inputs is again the difference between gross output and value added.
- Volume
 - **Sources:** unpublished data from the Institute of National Accounts (INA), own calculations Federal Planning Bureau Belgium and GGDC calculations.
 - **Comments:**
-Data respect the 2006 revision of the national accounts (NA), release date 30 Sept 2006
-As for current prices extra detail was added, an assumption has to be made to add detail at the same level of disaggregation in constant prices. Aggregate price deflators are assumed to be identical for more disaggregate industries.
-Constant price base year: 2000.

-Intermediate inputs in constant prices have been calculated as the difference between value added and gross output⁴.

-Have used value added deflator to deflate gross output and intermediate inputs, by lack of separate deflators.

2. SUT data

- Nominal

- **Sources:** Unpublished data from the National Bank of Belgium (NBB) completed with own calculations Federal Planning Bureau Belgium (1995, 1997, 1999, 2000-2), own calculations Federal Planning Bureau Belgium (1996,1998)

- **Comments:** - Data respect the 2006 revision of the national accounts (NA), i.e. they have been made compatible with both major revisions of 2005 and 2006, latest modification to the data Dec 2006

- All tables are compatible with NA totals

- The following EUK72-industries could only be obtained through splitting with weights calculated based on structural business statistics material: 313, 31x, 321, 322, 323, 331t3, 334t5, 351, 352, 35x, 40x, 402, 70imp and 70x. There are specific weights for each year for output by product. For inputs by product weights for 1995 and 2000 have been used for all years. Note that these weights have been calculated on the basis of the old version of the NA.

- NA-revision of 2005 taken into account by means of manual revisions (supply table and make matrix) and specific data received from the NBB

- Method for generating missing years (1996 and 1998): proportional interpolation of supply table, final demand data provided by NBB, RAS interpolation for intermediate input matrix.

- Volume

- **Sources:** Own calculations Federal Planning Bureau Belgium based on price data from the National Bank of Belgium (NBB)

- **Comments:**-own calculations Federal Planning Bureau Belgium based on price data from the National Bank of Belgium (NBB)

- All tables are compatible with NA totals

- Same product and industry weights as in current prices

- Separate domestic and imported price indices per product

- Deflation according to assumption of same price in all uses

- Base year: 2000

⁴ gross output and value added have first been converted to previous year prices, based on these figures intermediate inputs at previous year prices can be calculated, these can then be used to calculate intermediate inputs in 2000 prices

WP2: Labour Accounts

1. Employment

- **Sources:** (i) Employees: Data since 1995 are based on published national accounts⁵ (A31 industry level, 1995-2004), unpublished national accounts (A60plus industry level, 1995-2004) and unpublished social security micro-data (RSZ/ONSS and RSZPPO/ONSSAPL; 1997-2004). Retropolations are mainly based on published Ministry of Labour data and FPB series, (ii) Self-employed: Data for the period 1995-2004 have been collected from published national accounts⁶ (A31 industry level, 1995-2004), unpublished national accounts (A60plus industry level) and VAT statistics. Retropolations are mainly based on published Ministry of Labour data.
- **Methods:** (i) Employees: Published NA data at 31 industry level have been further split into 60 industries and into additional EUKLEMS industries 221, 22X, 244, 24X, 741T4, 745T8, 91T2 and 923T7 by means of unpublished national account sources (period 1995-2004) and into additional EUKLEMS industries 313, 31X, 321, 322, 323, 331T3, 334T5, 351, 353, 35X, 402 and 40X by means of share indicators obtained from social security data (period 1997-2004).

The data at 60 industry level has been calculated back to 1974 using published Ministry of Labour (ML) data (available at 3 digits of NACE70 and at 4 digits of NACE Rev. 1; situation as of June 30 each year), which are also mainly based on social security primary sources. The industry classification scheme changed over time, but an overlapping year of social security information for 1992 allowed the construction of indicator series at the NACE rev.1 A60 level throughout for the period 1974-1999. Total salaried employment as of June 30 was obtained bottom up, by aggregating the industry data. For the period 1980-1994, quarterly data from the social security sources were available at 7 industries level; these were used to interpolate the June 30 series and derive employment in yearly averages at 7 industries level. Then, the A60 detail in yearly averages for the period 1980-1994 was obtained through application of the June 30 share indicators. Finally, pre-1980 series in yearly averages were obtained by applying June 30 growth rates throughout. This methodology anticipates the official revised NA long term employment series (period 1980-2004; 7 industries level) that will become available shortly.

The split of the A60 industries into EUKLEMS industries (respectively for 1974-1994 and for 1974-1996) has also been done through the ML

⁵ The primary sources for salaried employment in the national accounts are social security micro data. Social security bodies provide for an almost complete coverage of salaried employment. A limited number of additions/corrections are made to the social security data, notably to account for underground activities.

⁶ Social security data are the main source for the total number of self-employed in the national accounts. VAT statistics are the primary source for the distribution by industry. For self-employed not subject to TVA declaration, data are taken from the social security body, or in the case of (unpaid) family workers that assist the self-employed (roughly 10% of total self employed) from the Labour Force Survey.

Employment Source and/or the underlying social security data themselves. In this case, however, data were obtained top-down by using indicators for shares in the A60 aggregates. Constant 1993 shares were used prior to 1993 in one instance (split of 321+323), where matching changing classifications directly was not possible.

Data before 1974 have been based on FPB sources, which contain employment series according to a pre-NACE70 industry classification (ultimately also based on social security data). It was possible to match these data to NACE Rev.1 for 27 aggregate industries. A further split of these 27 industries into A60 and EUKLEMS industries has been done by applying constant 1974 shares throughout.

(ii) Self-employed: Published NA data at 31 industry level have been further split into 60 industries and into additional EUKLEMS industries 221, 22X, 244, 24X, 741T4, 745T8, 91T2 and 923T7 by means of unpublished national account sources (period 1995-2004) and into additional EUKLEMS industries 313, 31X, 321, 322, 323, 331T3, 334T5, 351, 353, 35X, 402 and 40X by means of share indicators obtained from unpublished VAT statistics (period 1995-2004).

Data for all NACE A60 industries have been worked back to 1970 using the ML source (available at 2 digits of NACE70 and at 2 digits of NACE Rev. 1; situation as of June 30 each year). This was done top-down. First, indicators at the economy-wide level by type (self-employed proper, administrators, family workers) have been used. Then, administrators have been allocated to NACE 74 (current NA practice) and share indicators have been used to split the remaining types into A60 industries. The ML data are mainly based on VAT-statistics and complemented with social security statistics, census data and LFS data for self-employed not subject to VAT declaration. To guarantee the continuity of series across changes in industry classification, average adjacent growth rates had to be used in 1993. Moreover, the ML series for self-employed contained a split of 'administrators' according to industry of use, whereas current NA practice allocates this entire category (estimated at 15% of total non-salaried employment in 1995 and at 26% of total non-salaried employment in 2004) to NACE 741T4. Since information concerning the ML split of administrators seems to have been lost for the period prior to 1994, it has been necessary to make a re-estimate of this split in order to adjust the ML series and finally obtain indicator series net of administrators. Again, this way of working anticipates the methodology that will be used for the official revision of the NA long term employment series (period 1980-2004; 7 industries level) that will become available shortly.

As for the split into EUKLEMS industries prior to 1995, sources are scarce, and ad hoc methods have been used. Methods used are based on assuming that EUKLEMS industry shares in A60 aggregates for self-employed follow the same evolution as the shares for salaried employment. In the case of business services, first 'administrators' are extracted and allocated entirely to 741T4. Second, the remainder is split between 741T4 and 745T8 using constant 1995

shares throughout, because here the evolution of shares for employees has been influenced disproportionately by the development of interim labour.

- **Comments:**-All salaried and non-salaried employment series refer to head counts by principal occupation; no secondary activities are included whatsoever. All employment series respect the latest vintage of the National Accounts (September 2006).

2. Hours

- **Sources:** Data since 1995 are based on published national accounts⁷ (A31 industry level, 1995-2004), unpublished national accounts (A60plus industry level, 1995-2004) and unpublished social security data (RSZ/ONSS and RSZPPO/ONSSAPL; 1997-2004). Retropolations are based on a mix of NIS industrial statistics (monthly hours paid for blue collar workers; available from 1980 onwards at NACE A31 for manufacturing and construction), the LFS (weekly hours usually worked in the principal activity; available since 1983 at NACE A60) or FBP data for conventional yearly working time (available at A60 industry level for the period 1975-2002).
- **Methods:** Published NA hours data at A31 industry level have been further split into 60 industries and into additional EUKLEMS industries 221, 22X, 244, 24X, 741T4, 745T8, 91T2 and 923T7 by means of unpublished national account sources (period 1995-2004) and into additional EUKLEMS industries 313, 31X, 321, 322, 323, 331T3, 334T5, 351, 353, 35X, 402 and 40X by means of share indicators obtained from unpublished social security data (period 1997-2004). For the latter EUKLEMS industries, it has been assumed that for the period 1995-1996 the evolution of hours worked per person for each of the sub-industries is equal to the evolution of hours per person for the relevant A60 aggregate, allowing for composition effects.

Retropolation (1970-1994) of average hours worked per employee by industry has been based on a mix of indicators, derived from NIS industrial statistics (monthly hours paid for blue collar workers; available from 1980 onwards at NACE A31 for manufacturing and construction), the LFS (weekly hours usually worked in the principal activity; available since 1983 at NACE A60) or FBP data for conventional yearly working time (available since 1975 at NACE A60 for the market sector and since 1970 for 7 aggregate market sector industries), in that order of preference. Since the conventional working time series refer to full time employment, it has been necessary to construct time series for full time equivalent (FTE) employment in the process. Hence, a 1997-2004 benchmark for the number of FTE per person by industry has been constructed via social security data; these industry series have been worked back to 1983 by means of the LFS. Prior to 1983, currently only economy-

⁷ Hours in the national accounts include hours in secondary activities and are almost exclusively based on social security (ONSS) micro data. For part-time employees, the social security records include information on hours paid and on hours 'usually worked' by a comparable full-time worker. For full-time employees, they give information on the number of days paid by the employer. Holidays are subtracted from hours and days paid and for full-time employees the information on hours usually worked is used to estimate (annual) hours worked.

wide figures on the evolution of part-time work are available, collected from a mix of LFS and census sources, allowing for an economy-wide estimate of the evolution of the number of FTE per person. Industry-specific trend retropolations of the evolution of FTE per person have been calibrated so as to respect this aggregate estimate.

All resulting indicator series for average hours worked per person at the most detailed industry level have been smoothed (by means of a Hodrick Prescott Filter) and then recalibrated to respect the gross evolutions in 10 aggregate industries. Even so, in a number of instances a hypothesis of equal evolution for a certain industry detail had to be applied; this is notably the case for the period previous to 1975 and for all EUKLEMS industry detail over and above NACE A60 previous to 1995. For government administration (NACE 75) as well as for education (NACE 80), prior to 1983 the evolution in average hours per FTE from the health and social work industry is used as indicator series. For household services, total hours prior to 1995 have been worked back through an indicator series based on deflation of the wage bill by a price index for one hours' service.

- **Comments:** Hours data include secondary activities and aim at measuring effective hours worked; they respect the latest vintage of the National Accounts (September/October 2006). Data are corrected for calendar effects throughout. They are presented as average hours worked per person (the latter to be interpreted as head counts by main occupation).

3. Labour composition

- Employment
 - **Sources:** (i) Employees: The split by gender and age class per industry is based on unpublished social security data (RSZ/ONSS and RSZPPO/ONSSAPL) for the period 1997-2004, while published Ministry of Labour data (gender) and LFS data (age) were used as the main sources before 1997. The LFS is the main data source for the split by skill levels throughout, confining our time series for labour composition to the period 1986-2004. (ii) Self-employed: LFS data were used as the main source for the distribution of self-employed people per industry by gender, age class and educational level (1986-2004). However, published social security data (RSVZ/INASTI) were used as control totals for the economy-wide split by age and gender from 1999 onwards and published Ministry of Labour data were used for the distribution by gender per industry previous to 1999.
 - **Methods:** For employees, the split by gender and age class for the period 1997-2004 is based on social security data (RSZ/ONSS and RSZPPO/ONSSAPL). In the process, maximal coherence with national accounts control totals for employment by industry was obtained by allocating firms at micro level to the same industries as in the national accounts. Furthermore, specific groups of employees that are not accurately represented in the social security data (e.g. students, undeclared household workers) have been dealt with in a way that

respects as much as possible the estimation methods used for the (national accounts-based) control totals by industry.

The additional split by educational attainment was done at a very detailed industry level for the period 1999-2004 using ordered and nested logit regression techniques applied on individual LFS data. The purpose of these regression techniques is twofold: increasing the robustness of the LFS data at a detailed industry level and smoothing the development in time by eliminating undesirable noise from the survey data. The final results for the split by skill level are not only influenced by the regression techniques, but also by the weights given by the gender information, type of workers and age class generated for each industry using administrative data. Finally those results were aggregated at the minimum EUKLEMS industry level, with respect for the national accounts totals.

For self-employed, a similar econometric approach has been used for the entire split by gender, age and skill level per industry for the period 1999-2004, the RSVZ / INASTI administrative data merely providing economy-wide control totals for the split by age and gender.

For the retropolation of these data at minimum EUKLEMS industry level for the period 1986-1998 a top down approach was applied. First, the split by gender was taken back in time by means of Ministry of Labour data (period 1986-1996 for employees and period 1986-1998 for self-employed). Next, (Hodrick Prescott) smoothed LFS data were used for the retropolation of the split by age class, for employees as well as for self employed. Due to small sample size problems, for a number of minimum EUKLEMS industries common share indicators taken from a more aggregated industry level had to be used. Finally, for the retropolation of the further split by skill level, a similar approach was used as for the subdivision by age class.

- **Comments:** The detailed methodology and results for the split of employees and self-employed by gender, age class and skill level for the period 1999-2004 will be described in a forthcoming FPB Working Paper: 'Kwalitatieve werkgelegenheidsdata voor België, een SAM aanpak voor de periode 1999-2005', V. Bresseleers, K. Hendrickx, B. Hertveldt, B. Van den Cruyce, J. Wera (only available in Dutch). The methodology is based on data that are yearly available and hence has been designed to permit yearly updates.
-Labour composition is available at the level of 15 industries. For lower levels we assumed the same composition as the higher aggregate.
- Compensation
 - **Sources:** Unpublished social security data (RSZ/ONSS and RSPPO/ONSSAPL) were used for the split by gender and age class. Micro-data from the Structure of Earnings Survey and the LFS are the

sources for the distribution by skill level (restricted to the period 2000-2003).

- **Methods:** A top down approach has been followed for the split of total compensation by gender, age class and skill level per industry. First, compensation data have been subdivided by gender and age class per industry, using social security data (RSZ/ONSS and RSZPPO/ONSSAPL). As was the case for the employment data, the coherence with national accounts control totals by industry was maximally guaranteed by allocating firms to the same industries as in the national accounts and by mimicking where possible the NA estimation techniques for employee categories that are not well apprehended in the administrative sources.

Finally, the further split of compensation by skill level per minimum EUKLEMS industry level is based on wage information obtained from the Structure of Earning Survey (NACE_A17 industries C, D, E, F, G, H, I, J and K) and the LFS survey (NACE_A17 industries A, B, L, M, N, O and P). Gross survey data are smoothed by using three year moving averages, currently restricting our time series to the period 2000-2003. For each industry, wages per head by educational level, gender and age are obtained from the survey data. They are applied to our previous head counts estimates for employees and the resulting wage bills are proportionately rescaled to comply with the social-security based control totals for compensation by gender and age. Consequently, what is taken from the survey data is a hypothesis for relative compensation per head by educational attainment within each age/gender combination.

It must be noted that the Structure of Earnings data refer to average gross wages per person (excluding employers' social security contributions) and not to total labour compensation, which forces us to assume equal implicit rates of employers' social security contributions by educational attainment. The primary LFS data refer to net wages, but we have been able to make a rough correction in order to obtain gross wages, the same concept as in the Structure of Earnings Survey.

- **Comments:** -Labour composition is available at the level of 15 industries. For lower levels we assumed the same composition as the higher aggregate.
-For Labour quality the composition shares in wages of 2000 have been applied to wages in the whole period 1986-2000. For 2004 the composition shares of 2003 have been used. We have assumed relative wages per group to stay the same as in 2000, combining these wages with the yearly employees data (see above) results in the compensation data for the period 1985-1999.

WP3: Capital Accounts

- **Main sources for GFCF**

Data on investment are consistent with the National Accounts. We have from the National Bank of Belgium revised data on investment crossing 7 assets and 29 industries from 2001 to 2004 and revised data either by asset, either by industry from 1995 to 2000. We also have non-revised crossed data from 1970 to 2003 (from 1853 in constant prices).

- **Methods (for estimating industry * asset)**

With a RAS-procedure, we calculated crossed data consistent with the revised total investment, from 1995 to 2000 (in constant and current prices). For the 1970-1994 period, we estimated data by asset and data by industry in current prices, by using the annual growth rates of non-revised data and extra information from the National Bank. Then, we estimated data crossing 29 industries and 6 assets⁸ with the application of the RAS-procedure. To obtain data in constant prices, we used the price indices of non-revised data. For the period before 1970, we reinterpolated real series with the growth rates of non-revised data by asset and by industry.

In Belgium, the National Accounts distinguish only one type of ICT asset (software) from 1995. So it is necessary to construct investment series in IT and communications equipment and, before 1995, in software.

a) Construction of macro investment series in IT and communications equipment

The method used for the construction of investment expenditure on IT and communications equipment is identical. Macroeconomic investment series are obtained indirectly, starting from the condition that domestic supply equals domestic use:

$$Q_{it} + M_{it} - X_{it} + W_{it} + (T_{it} - S_{it}) = CJ_{it} + C_{it} + I_{it} + DS_{it}$$

With Q_{it} , M_{it} and X_{it} respectively standing for domestic production, imports and exports of the asset (domestic supply); W_{it} , $(T_{it} - S_{it})$ standing for margins and net taxes (accounting for the fact that total supply is measured at basic prices whereas use is measured at acquisition prices); CJ_{it} , C_{it} , I_{it} and DS_{it} denoting intermediate consumption, final consumption, investment and change in stocks (domestic use).

We have revised investment series by SUT products for the period 1995-2004. Consequently, for these years, we can estimate IT and communications equipment investment.

⁸ Official data on software are available from 1995.

For the period before 1995, estimates of IT and communications equipment investment were calculated by adjusting domestic supply by the amount of investment per euro of domestic supply in 1995:

$$I_{it} = \frac{I_{i,1995}}{Q_{i,1995} + M_{i,1995} - X_{i,1995}} (Q_{it} + M_{it} - X_{it})$$

The foreign trade data used to approximate ICT investment came from the NBB (period 1995-2004). We used the growth rates of data from the OECD International Trade in Commodities Statistics (ITCS) to construct series from 1961 onwards. Domestic production data come from the NIS (Prodcom) for the period 1995-2004 and are retropolated using the growth rates of imports.

b) Construction of industry level investment series in IT and communications equipment

The only years for which data on ICT investment are available by industry are 1995, 2000, 2001 and 2002. We have indeed non-revised SUT investment tables for these years. We applied the RAS-procedure to make these investment matrices compatible with the revised data. To construct investment series by industry for the other years, we calculated the share of IT equipment investment in total investment in product Pi2 (Metal products and machinery) and the share of communications equipment investment in investment in Pi2 for these years. Then, we multiplied the shares for 1995 by the investment in Pi2 for the years from 1970 to 1994 and the shares for 2002 by the investment in Pi2 for the years from 2003 to 2004. Finally, we “normalised” the estimations by industry in order that the sum of the industries corresponds to the macro estimation. For the years between 1995 and 2000, ICT investments are based on a linear estimation of the shares of ICT investment in product Pi2.

c) Construction of macro investment series in software

Revised data on software investment cover the period 1995-2004 and are available by industry.

To retropolate software series, we cannot use the methodology that we applied for IT and communications equipment because no trade data are available for this asset. We used the average growth rate over the period 1961-1994 of the ratio between software and hardware investment in US (data from BEA) and the growth of the calculated IT hardware series in Belgium.

d) Construction of industry level investment series in software

Software investment series on the period 1970-1994 was divided by industry according to the same distribution as in 1995. A correction had to be applied in order that the software investment does not exceed the investment in Pi6 (other products) which contains investment in software on the period 1970-1994.

e) Estimation of ICT investment series in constant prices

The ICT investment series are constructed in nominal terms. Since no hedonic price indices are available for ICT assets in Belgium, we used the US hedonic price indices to calculate ICT investment series in constant prices. The method that we applied is proposed by Schreyer (2001).

The ICT price index for Belgium is calculated as follows:

$\Delta \tilde{p}_{ICT}^B = \Delta p_{OTH}^B + (\Delta p_{ICT}^{US} - \Delta p_{OTH}^{US})$, with \tilde{p}_{ICT}^B the logarithm of the “harmonized” price index of ICT goods in Belgium.

In order to make the harmonized price index of ICT goods in Belgium independent of the overall price levels in both countries, the price index of non-ICT capital goods in Belgium is corrected by the price index differential of US ICT and non-ICT investment goods.

However, the drawback of this method is that the price indices of non-ICT capital goods in Belgium and in US are not available and must be approximated by a price deflator of private fixed investment that combines price indices of both ICT and non-ICT investment goods.

- **Definition of ICT assets**

We used the definitions of OECD (2005)⁹:

IT equipment (CPA):

300 Office, accounting and computing machinery

321 Electronic valves and tubes and other electronic components

332 Instruments and appliances for measuring, checking, testing, navigating and other purposes, except industrial process control equipment

333 Industrial process control equipment

Communications equipment (CPA):

313 Insulated wires and cable

322 Television and radio transmitters and apparatus for line telephony and line telegraphy

323 Television and radio receivers, sound and video recording or reproducing apparatus and associated goods

- **Initial capital stock:**

The investment data has been retropolated until 1839. We have non-revised crossing data from 1853 to 2003 for the 29 sectors and 6/7 products at constant prices (from the National Bank) and we have used these data to retropolate the revised data. The data have breaks for the two war periods (fall of investments and then recovery after the war). These have not been smoothed.

⁹ Working Party on Indicators for the Information Society, Guide to measuring the Information Society, DSTI/ICCP/IIS(2005)6/FINAL, November 2005.

- **Weights:**
Belgian Investment series are published at the A31 industry-level, but we have weights to pass on to the EUK72-industries for the period 1995-2004 from data by SUT industry and from SUT investment matrices.

Despite the detail of 122 industries that is available in SUT investment matrices, several EUK72 industries cannot be estimated: 313, 31x, 321, 322, 323, 331t3, 334t5, 351, 353, 35x, 40x, 402, 70 imp and 70x.

- **Comments:**
Due to confidentiality reasons, no investment and capital stock crossing industries and products are available in the database. Data on capital services is to be put in the analytical part of the database.

The capital compensation (gross operating surplus plus capital part of mixed income (CAP)) used in the computation of the capital services is not directly available in Belgium. The mixed income of self-employed, which is available over the period 1995-2004, has to be decomposed into labour and capital components. Labour compensation for self-employed person is estimated by assuming that the compensation per self-employed person is equal to the compensation per employee in equivalent full time. A limit is however imposed by industry: the estimated labour compensation for self-employed cannot exceed the mixed income. For the period before 1995, the capital compensation is estimated by using the average rate of the ratio CAP/ (Value added - compensation of employees) over the period 1995-2004 and data on value added and compensation of employees over the period 1970-1994.

Shares of IT and Non-ICT assets and volume indices for capital services, IT capital services and non-IT capital services have been kept constant at lower levels for industries G, I and K.

Cyprus

WP1: Inter-industry Accounts

1. NA data

- Nominal
 - **Sources:** For 1995-2004 current value Gross Output (GO), Value Added (VA) and Intermediate Inputs (II) have been taken from the National Accounts (NA). These are at the A60 level and were received from Statistics Cyprus. Compensation (and Value added, see Comments) has been taken from Eurostat National Accounts, this was only available at the A17 level.
 - **Comments:** On basis of Eurostat NA data, Compensation-Value Added ratios have been calculated at the A17 level. These ratios have been applied at the more detailed A60 Value Added data from the Cyprus National Account to arrive at estimates for Compensation at the A60 level (ratios have been assumed the same for sub-industries as for an aggregate industry). For a couple of instances VA turns negative, Compensation would then be negative as well. In these cases the GO trend has been applied to the last positive Compensation value to arrive at a reasonable Compensation figure.

Extra detail, when needed, has been based on either Eurostat SBS data (some detail for NACE 3-digit manufacturing industries and Business Services (NACE 74)).

- Volume
 - **Sources:** Statistics Cyprus could not (yet) deliver constant price series for GO, VA and II. Value Added (VA) deflators have been calculated on the basis of Eurostat A17 National Accounts data. Combined with the nominal figures this led to the required volume data.
 - **Comments:** When extra detail was needed prices from higher aggregates have been used, combined with the nominal figures this led to the required volume data. Also only deflator data for value added was available, so this deflator has been applied to Gross Output and Intermediate Inputs as well.

2. SUT data

- Nominal
 - **Sources:** Not available.
 - **Comments:**
- Volume
 - **Sources:** Not available.
 - **Comments:**

WP2: Labour Accounts

1. Employment

- **Sources:** 1995-2004 data for Total Persons Engaged has been based on National Accounts data from Statistics Cyprus, this data is at the A17 level. Eurostat National Accounts has Employees and Persons engaged data from 2000-2005. Extra detail has mostly been added on basis of Eurostat SBS data. However some Compensation data (see above) has also been used to add detail (for those industries where the Eurostat SBS has not data).
- **Methods:** 2005 Persons engaged data (from the Cyprus NA data) has been extrapolated from 2004 with the trend from Eurostat NA Persons engaged data. The 2000-2005 ratios of Employees over Persons engaged have been applied to the 2000-2005 Persons engaged data. This results in Employees (and thus, as a residual, Self-employed) data. For the period 1995-1999 the trends of Persons engaged data have been applied to the 2000 Employees data (assuming the Employees-Persons engaged ratio constant for those years).

As the data delivered by Statistics Cyprus was very aggregated by nature, a lot of extra detail needed to be added. This was mainly done on basis of Eurostat SBS data. However this SBS data does not cover Agriculture, forestry and fishing (NACE 01-05), Financial Intermediation (NACE 65-67) and Other Community, social and personal services (NACE 90-93). Detail in these industries has been added on the basis of Compensation data from the National Accounts (this assumed the compensation per employee is constant over sub-industries).

- **Comments:** The availability of the Eurostat SBS data varies over industries, when data between 2 years is missing, they have been intrapolated. If the Eurostat SBS has no data for a certain period, shares have been assumed the same as the closest year available.

2. Hours

- **Sources:** Hours worked data is based on Total Hours worked (by Persons engaged and Employees) and Employment (Persons engaged and Employees) data from Eurostat NA for the period 2000-2005.
- **Methods:** 1995-1999 average hours worked have been assumed the same as average hours worked in 2000.
- **Comments:**

3. Labour composition

- Employment (or hours)
 - **Sources:** Not Available
 - **Methods:** Not Available
 - **Comments:** Not Available
- Compensation

- **Sources:** Not Available
- **Methods:** Not Available
- **Comments:** Not Available

WP3: Capital Accounts

- **Main sources for GFCF** : Not Available
- **Methods:** (for estimating industry * asset)
- **Definition of ICT assets**
- **Initial capital stock**
- **Weights**
- **Comments**

Czech Republic

WP1: Inter-industry Accounts

1. NA data

- Nominal
 - **Sources:** -Data are provided by the Czech National Statistical Institute (CZ NSI) at the NACE rev. 1 2-digit (60 industries) level.
 - Data delivered include time series (1995-2004) on gross output and gross value added at basic prices, intermediate input at purchaser prices as well as components of gross value added at current prices. Data on mixed income have been delivered as well for this period.
 - All data cover the period 1995-2004.
 - Data are FISIM-adjusted according to ESA'95 requirements
 - **Comments:** -Data for industry NACE 99 (Extra-territorial organizations and bodies) have not been included and are set to 0 by wiiw.
 - Weights for 3-digit industries in EUKLEMS classification have been calculated using SBS data (Structural Business Statistics) from Eurostat covering the period 1995-2003. Missing data in these series have been imputed by various methods, mainly linear interpolation and calculation of trends. The respective variables have further been smoothed using 3-year moving averages. Table 1 presents the SBS indicators used for calculations of weights for the respective indicators. To satisfy adding-up restrictions of components we calculated the weights for gross value added as a residual in a first step. To satisfy adding-up restrictions of gross value added and intermediate input the latter shares have been calculated as residuals.
 - For industry NACE 92 (Recreational, cultural and sporting activities) employment shares (delivered by NSI at the 3-digit level) have been used as weights.
 - Weights for 2004 are set equal to 2003 except for weights for value added and intermediate inputs, which have been adjusted to satisfy adding-up constraints.

Table 1 – Data for calculation of weights

EUKLEMS	
code	SBS indicator
GObas	12120 Production value Calculated using data from GObas
Iipur	and VAbas 12140 Value added at basic prices
VAbas	(adjusted)
Comp	13310 Personnel costs

For the time being variables like GOS and Net Taxes on production have not been disaggregated beyond the level as received from the Czech National Statistical Institute.

- Volume
 - **Sources:** -Data are provided by the CZ NSI at the NACE rev. 1 2-digit (60 industries) level.
 - Data delivered include time series (1995-2004) on gross output, intermediate input and gross value added at constant previous-year prices.
 - All data cover the period 1995-2004.
 - Data are FISIM-adjusted according to ESA'95 requirements
 - **Comments:** -Data for industry NACE 99 (Extra-territorial organizations and bodies) have not been included and are set to 0 by wiiw.
 - Weights for 3-digit industries in EUKLEMS classification have been calculated using SBS data covering the period 1995-2003. Missing data in these series have been imputed by various methods, mainly linear interpolation and calculation of trends; the respective variables have further been smoothed using 3-year moving averages. For gross output and gross value added we used the weights calculated for the nominal series. To satisfy adding-up restrictions of gross value added and intermediate inputs the latter shares have again been calculated as residuals.
 - For industry NACE 92 (Recreational, cultural and sporting activities) employment shares (delivered by NSI at the 3-digit level) have been used as weights.
 - Weights for 2004 are set equal to 2003 except for weights for intermediate inputs, which have been adjusted to satisfy adding-up constraints.

2. SUT data

- Nominal
 - **Sources:**-Data are provided by the CZ NSI at the NACE rev. 1 2-digit (60 industries level) and the CPA 2-digit (60 products) level.
 - From the set of SUT provided, only the use table at purchaser prices have been used further on.
 - The period covered is 1995-2004.
 - Use tables are FISIM-adjusted according to ESA'95 requirements.
 - Use tables are balanced with NA.
 - **Comments:** -Data for industry NACE 99 (Extra-territorial organizations and bodies) have not been included and are set to 0 by wiiw.
- Volume
 - **Sources:** -Data are provided by the CZ NSI at the NACE rev. 1 2-digit (60 industries) level and the CPA 2-digit (60 products) level at constant previous year prices

-From the set of SUT provided, only the use table at purchaser prices have been used further on.

-The period covered is 1996-2004, based on constant previous year prices.

-Use tables are FISIM-adjusted according to ESA '95 requirements.

-Use tables are balanced with NA.

- **Comments:** -Data for industry NACE 99 (Extra-territorial organizations and bodies) have not been included and are set to 0 by wiiw.

-The use table for 1995 was constructed by wiiw using shares of the current use table 1995 and applying these shares to the intermediate input data at constant previous-year prices taken from NA.

WP2: Labour Accounts

1. Employment

- **Sources:** -Data are provided by the Czech National Statistical Institute (CZ NSI) at the NACE rev. 1 2-digit (60 industries) level; a further breakdown of industries according to EUKLEMS classification was delivered as well.

-The data delivered include time series (1995-2004) for employed persons, employees and self-employed in persons.

-The period covered is 1995-2004.

- **Methods:** The employment data (in persons) are National Accounts data delivered by CZ NSI. The NA data are constructed by CZ NSI in the following way: The data are mainly based on two sources: Business Statistics from annual statistical surveys, conducted largely at the enterprise level; and the Labour Force Sample Survey. The major data source on employment is the Business Statistics. The data on employment obtained from Business Statistics are further adjusted by CZ NSI in order to take into account producers not reporting, illegal work etc. Data on persons are recounted after adjustments. The shares of main and second jobs from Business Statistics are available for employees. The self-employed persons are surveyed only in their main activity, so only methodological and exhaustiveness-adjustments are recounted to persons. In the data source there are data on the average number of registered employees and the number of working owners of companies and cooperating members of households, for whom the business is their main economic activity (persons).

Data on the self-employed were multiplied by the LFS ratio of the full-time equivalent to the number of jobs of self-employed persons. These ratios are generated at the 17 industries level. In addition, units with less than 19 employees were not included in the Business Statistics 2001 surveys in NACE A. Therefore, estimates of employees and self-employed were based on the extrapolation of figures of the previous year

- **Comments:** The following adjustments have been made by wiiw:
 - Data on total employment, employees, self-employees (i.e. persons) have been delivered at the EUKLEMS 72 industries level for 1995-2004 by CZ NSI; this information has been used to calculate weights for the 3-digit industries.
 - In some years no such detailed data have been provided for industries NACE 31 and 33. In these cases we used SBS (Structural Business Statistics) indicator 16110 (Number of persons employed) taken from Eurostat to calculate weights and set the weights for 2004 equal to the weights for 2003.
 - Employee figures in NACE sector P have been increased, assuming that all employees have their main job in this sector.

2. Hours

- **Sources:** -Data are provided by CZ NSI at the NACE rev. 1 2-digit (60 industries) level.
 - The data delivered include time series (1995-2004) on annual hours worked per industry for employed persons, employees and self-employed.
 - The period covered is 1995-2004.
- **Methods:-** The source of the National accounts hours worked data delivered by CZ NSI is the Labour force survey
 - The following adjustments have been made by wiiw:
 - Hours worked have been calculated using total annual hours per industry divided by the number of employed persons (employees, self-employed).
 - Since no information is available at the 3-digit level, it is assumed that hours worked per person in 3-digit industries equal those at the 2-digit level.

3. Labour composition

- **Employment**
 - **Sources:** -Data are taken from Eurostat Labour force survey data, 2nd quarter of each year, at the NACE rev. 1 2-digit (60 industries) level.
 - The data provided include time series on employed persons, employees and self-employed broken down by industries, gender, age groups (five year cohorts) and educational groups (high, medium and low according to the ISCED 1-digit classification).
 - The period covered is 1998-2005.
 - **Methods:-**
 - **Comments:** -For the specific requirements of the project the following adjustments have been made by wiiw:
 - Data not including information on industry have been allocated within sex, age and educational categories using available industry shares.
 - Data not including information on education were allocated to the lowest educational category.
 - Missing data for one year have been calculated by linear interpolation.
 - Data at the beginning (1998) or end of the period (2005) have been calculated applying the shares of the respective categories of the following (1999) or previous year (2004), respectively.

-The composition shares in employment of 1998 have been applied to employment in 1995-1997 as well.

-Labour composition is available at the level of 15 industries. For lower levels we assumed the same composition as the higher aggregate.

- Compensation

- **Sources:**-Data are provided by CZ NSI at the NACE rev. 1 1-digit level (17 industries except A+B: agriculture and forestry, available only as an aggregate, no information on industry Q).

-Data include information on gross monthly earnings of employees by educational attainment level (six national educational categories which have been allocated to the ISCED 1-digit categories highly, medium- and low-educated), age (ten year age cohorts), and gender.

-The period covered is 1996-2004.

- **Methods:** Data are based on the Structural Earnings Survey (SES) data (gross monthly earnings of employees).

- **Comments:** For the specific requirements of the EUKLEMS project the following adjustments have been made by wiiw.

-In case information on educational attainment level were missing, these have been allocated to the upper secondary educational group because of similar wage levels.

-The original SES data are available with cross-classifications by industries and age groups, by industries and education groups as well as by industries and gender, respectively. wiiw used the ratios of highly, medium- and low-educated to total employed by industry to calculate educational breakdowns for each age group in each industry. In a second step the ratios of male and female wages to total wages in industries have been used to estimate the further split-up by gender.

-Since SES data are only available at the NACE rev. 1 1-digit level (17 industries) wiiw used additional data on 'Average monthly gross wages and salaries of employees' from the CZ NSI to split up wages in manufacturing industries (D) as well as industry NACE I (Transport, storage and communications).

-In case of missing or suppressed wage data for educational or age groups in specific industries, wiiw estimated these values with the help of ratios of wages of similar educational groups, age groups or industries to the total wage of industries, age groups or educational groups.

-For the period 1996-1998 data on wages split up by educational attainment groups were not available. Therefore the wage structure by industry and education of the year 1999 was applied to 1996-1998.

-For the period 1996-2000 data on wages split up by gender were not available. Therefore the structure of wages by gender of 2001 was used for 1996-2000.

-Labour composition is available at the level of 15 industries. For lower levels we assumed the same composition as the higher aggregate.

-The composition shares in wages of 1996 have been applied to wages in 1995 as well.

WP3: Capital Accounts

- ***Main sources for GFCF***
 - Data on GFCF have been delivered by the Czech National Statistical Institute (CZ NSI) at the NACE rev. 1 2-digit (60 industries) level for all required EUKLEMS asset types except IT and CT (and consequently other machinery and equipment (OMach)) at current and constant previous-year prices for the period 1995-2004; values for NACE industries 95 (Private households with employed persons) and 99 (Extra-territorial organizations and bodies) are zero.
 - For asset types IT and CT provisional shares of current GFCF have been provided.
 - Data cover the period 1995-2004.
- ***Methods (for estimating industry * asset)***

Gross fixed capital formation on asset types IT, CT and OMach have been calculated by applying the (provisional) shares delivered by CZ NSI. Unusually high shares of IT and CT in NACE industries 64-67 for 2002-2004 and NACE industry J in 2001 have been replaced with average shares over the total period.
- ***Definition of ICT assets***

CZ NSI has provided provisional data on the share of IT and CT components in GFCF at current prices over the period 1995-2003. IT corresponds to CPA code 30 (Office machinery and computers) and CT corresponds to CPA code 32 (Electronic equipment and apparatus).
- ***Initial capital stock***
 - Data on Gross capital stock (GCS) and Net capital stock (NCS) have been delivered by the Czech National Statistical Office at the NACE rev. 1 2-digit level for all required EUKLEMS asset types except IT and CT (and consequently OMach) at current and previous-year prices for the period 1995-2004; values for NACE industries 95 (Private households with employed persons) and 99 (Extra-territorial organizations and bodies) are zero.
 - Capital stock data for EUKLEMS asset types IT, CT and OMach are not separately available (only EUKLEMS asset type Mach which corresponds to AN.11132 Other Machinery and equipment). We calculated a ‘hypothetical’ capital stock using the average shares of GFCF data on IT, CT, and OMach over 1995-2004 (i.e. implicitly assuming that the structure of GFCF by industry remained constant) and the depreciation rates as outlined in Part I using the PIM method (100 iterations). From this hypothetical capital stock we calculated the shares of the three asset types in the stock of asset type Mach which we used as a proxy for the gross capital stocks of IT, CT and OMach in 1995 at current prices (the first year for which data are available). From 1995 onwards we calculated the stock using the data on GFCF and the depreciation rates as outlined in Part I using PIM. From the resulting stock data we again

calculated shares of asset types by industry, which then have been applied to the original stock data on asset type Mach.

-The same shares have been used to calculate gross and net capital stocks at current and previous-year prices of IT, CT, and OMach for 1995-2004

- ***IT deflator:***

The national IT-deflator does not seem to be quality adjusted. The IT-deflator for the US from the BEA has been used, adjusted for economy wide differences between Czech Republic and the U.S.

Denmark

WP1: Inter-industry Accounts

1. NA data

- Nominal
 - **Sources:** Data from Statistics Denmark and own calculations. 1970-2005: based on official statistics in www.statistikbanken.dk. Intermediate inputs based on official symmetric IO-tables in www.dst.dk/inputoutput.
 - **Comments:** -EUKLEMS industry aggregated from 130 industries 1970-2003. Weights are taken from Eurostat SBS for NACE industry 31, 32, and 33.
 - Intermediate inputs aggregated to 3 products: Energy, materials and services. Energy is defined as input from 'Energy and Gas'. Services is defined as EUKLEMS 'wholesale and retail trade' and higher (NACE G-Q).
 - National Accounts series contained aggregates of some industries (F, 73, M, 92) for the last three years in the cells for single industries, this has been resolved by applying the trend of the aggregate to the specific industries (for all variables in WP1 and 2).
 - Value added has been calculated as the difference between Gross output and Intermediate inputs.
 - GOS is residually calculated for 2004-2005.
- Volume
 - **Sources:** Data from Statistics Denmark and own calculations. 1970-2005: based on official statistics in www.statistikbanken.dk. Intermediate inputs based on official symmetric IO-tables in www.dst.dk/inputoutput.
 - **Comments:** -EUKLEMS industry aggregated from 130 industries 1970-2003. Weights (in nominal values) are taken from Eurostat SBS for NACE industry 31, 32, and 33.
 - Intermediate inputs aggregated to 3 products: Energy, materials and services. Energy is defined as input from 'Energy and Gas'. Services is defined as EUKLEMS 'wholesale and retail trade' and higher (NACE G-Q).

2. SUT data

- Nominal
 - **Sources:** 1970-2005 I-O tables from Statistics Denmark and own calculations.
 - **Comments:** -Aggregation of more than 2500 products to 72 CPA corresponding to EUKLEMS industry classification.
 - EUKLEMS industries have been aggregated from 130 industries.

- Volume
 - **Sources:** 1970-2005 I-O tables from Statistics Denmark and own calculations.
 - **Comments:** -Aggregation of more than 2500 products to 72 CPA corresponding to EUKLEMS industry classification.
-EUKLEMS industries have been aggregated from 130 industries.

WP2: Labour Accounts

1. Employment

- **Sources:** Data from National Accounts Division in Statistics Denmark. Available in www.statistikbanken.dk.
- **Methods:** -Employment refers to number of persons employed or self-employed.
-Advantage of using NA data is consistency with WP1 and WP3.
- **Comments:**-EUKLEMS industry aggregated from 130 industries. Weights for NACE 31, 32 and 33 are taken from Eurostat SBS.

2. Hours

- **Sources:** Data from National Accounts Division in Statistics Denmark. Available in www.statistikbanken.dk.
- **Methods:**-Hours refers to actual number hours worked including paid and unpaid overtime.
- **Comments:** -EUKLEMS industry aggregated from 130 industries. Weights for NACE 31, 32 and 33 are taken from Eurostat SBS.

3. Labour composition

- Employment
 - **Sources:** Administrative data from 1980-2003
 - **Methods:** -Problems with definition of labour compared to National Accounts: Labour compensation is earnings without employer provided pensions (and imputed pensions for civil servants). Labour compensation lacks informal economy measures and info on cross border commuting. National Accounts moves around employment across industries to get the SNA95 definition of industry this does not apply in administrative data. Therefore adjustment of number of persons employed to NA by industry. Ad hoc adjustment equally across all demographic groups to NA numbers. For labour compensation adjustment to NA numbers also made. Hence labour compensation and employment includes indirectly pensions and imputed pensions, informal economy and cross border commuting.

- **Comments:** -Employment is ultimo November status. But see comment on adjustment to NA above.
- **Compensation**
 - **Sources:** Administrative data from 1980-2003
 - **Methods:** -Labour compensation is yearly earnings excl. employer provided pensions and imputed civil servant pensions.
-Problems with definition of labour compared to NA: Labour compensation is earnings without employer provided pensions (and imputed pensions for civil servants). Labour compensation lacks informal economy measures and info on cross border commuting. Na moves around employment across industries to get the SNA95 definition of industry this does not apply in administrative data. Therefore adjustment of number of persons employed to NA by industry. An Ad hoc adjustment has been applied equally across all demographic groups to NA numbers. For labour compensation an adjustment to NA numbers has also been made. Hence labour compensation and employment includes indirectly pensions and imputed pensions, informal economy and cross border commuting.

WP3: Capital Accounts

- **Main sources for GFCF**
 - Internal statistics from the National Accounts Division for 1966 – 2003. The internal data from 1993 and onwards are considered good enough for publication on some aggregate asset types. But data before 1993 are estimated and only used to construct net and gross capital stock. Approximately 800 asset types each year are distinguished, though fewer for the early years.
 - Official statistics from Statistics Denmark in www.statistikbanken.dk. Aggregate investment series 1966-2005.
- **Methods (for estimating industry * asset)**
 - Capital formation matrices have been used to construct investment series. Asset type can be constructed from the approximately 800 products on infrastructure, residential structures, other non-residential structures, software, computing equipment, communication equipment, and other machinery and equipment.
 - Transport is not part of capital formation matrices and current and constant price series are backed out from net capital stock by industry.
 - Products of Agriculture and Forestry are identical to the aggregate investment series in Statistics Denmark, Breeding Stock, and relates only to NACE A.
 - Other intangibles are also from the aggregate statistics. Exploration drilling is included in Extraction of Crude petroleum and natural gas and services and art work in other recreational activities.
 - Consistency between NA aggregates and GFCF by industry and asset type before 1990 is undertaken in constant prices. Reason: A revision in the aggregate series, which has not been undertaken in the capital formation matrices, made this necessary. The aggregate investment series is not

completely compatible with EUKLEMS asset groups and aggregation, adjustment and disaggregate was applied with constant weights from pre-adjustment series to disaggregate.

- **Definition of ICT assets**
 - Computing equipment (2000): CPA numbers for products in this category: 2465, 3001, 3002, 3130, 3210, 3220, 3230, 3310, 3320, 3340.
 - Communication equipment (2000): CPA numbers for products in this category: 3220, 3230, 3320.
- **Initial capital stock:**

Statistics Denmark publishes capital stock on 5 types by 52 industries in 1970: Machinery and equipment, Buildings, Structure, Transport, Other. At the aggregate level we have (in addition): Products of agriculture and forestry (breeding stock), Exploration drilling, Art work, Residential structures, Software. We have split Machinery and equipment in computing, communication and other machinery and equipment by accumulated investment from 1966 to 1969. We have split Buildings and structures in residential structures, infrastructure and other non-residential structures by accumulated investment from 1966 to 1969, which is likely to be misleading due to very long asset lives.
- **IT deflator:**

The national IT-deflator does not seem to be quality adjusted. The IT-deflator for the US from the BEA has been used, adjusted for economy wide differences between Denmark and the U.S.
- **Weights:**

EUKLEMS industries are aggregated from 52 industries.
- **Comments:**

Investment in Communication equipment in 1973 was negative in constant prices but positive in current prices for all industries. We removed minus-sign in constant price series.

Estonia

WP1: Inter-industry Accounts

1. NA data

- Nominal
 - **Sources:** Statistics Estonia
 - Years 2000-2004 are from current national account based on revision realised 13.9.2006. Years 1995-1999 are chained from 2000 based on changes from national account before revision.
 - National account series on A17 industry classification, weights for A60 from supply and use tables (1997, 2000-2002, 1995-1996 uses 1997 weights and 2003-2004 uses 2002 weights, weights for 1998-1999 are interpolated). Additional disaggregation to EUKLEMS industries is based on Eurostat Structural business statistics (SBS).
 - **Comments:** -Intermediate inputs have been calculated as the difference between Gross Output and Value added. Net taxes and subsidies is the residual of Value added minus Compensation and Gross Operating Surplus.
- Volume
 - **Sources:** Statistics Estonia
 - National account series on A17 industry classification. Series on more detailed industry level are based on price indices from A17 and current price series for detailed industries. All sub-industries are discounted with same A17 level price indices
 - **Comments:** -For missing detail we apply the same indices as the higher aggregate.

2. SUT data

- Nominal
 - **Sources:** Statistics Estonia, data available at the NACE A60 level.
 - **Comments:**
- Volume
 - **Sources:** -
 - **Comments:** Constant use tables are not available.

WP2: Labour Accounts

1. Employment

- **Sources:** Statistics Estonia, Labour Force Survey, data available at the NACE A17 level.

- **Methods:** -For WP2 we added detail on basis of the Eurostat SBS database for most industries. As detail in WP1 was not based on Eurostat SBS data, we first calculated ratio's of compensation over employees based on Eurostat SBS data. Combining these ratio's with the detailed data for compensation (from WP1) gives us employees data, which we can use to calculate consistent shares.
-For Agriculture (NACE 01-05), Mining (NACE 10-14) and Financial Intermediation (NACE 65-67) no Eurostat SBS data was available, therefore we have used Compensation data as weights (assuming the same compensation per employee in sub-industries as in aggregates).

2. Hours

- **Sources:** Statistics Estonia, Labour Force Survey, data available at the NACE A17 level.
- **Methods:** -Hours for total employment are assumed to be equal to hours for employees.
-Average hours worked per person of aggregate industries have been assumed the same for more detailed industries.

3. Labour composition

- Employment (or hours)
 - **Sources:** -
 - **Methods:** -
 - **Comments:** Labour quality is not available.
- Compensation
 - **Sources:** -
 - **Methods:** -
 - **Comments:** Labour quality is not available.

WP3: Capital Accounts

- **Main sources for GFCF**
Series are too short to incorporate in the database.
- **Methods: (for estimating industry * asset)**
-
- **Definition of ICT assets**
-

Finland

WP1: Inter-industry Accounts

1. NA data

- Nominal
 - **Sources:** Statistics Finland's annual National Accounts data, that conform to ESA95, for 1975-2004 has been revised in 2006. The data for 1970-1974 originally published in the 1980s according to SNA68 under the heading Finnish National Accounts 80 (FNA80) has not been revised.
 - **Comments:** The industry constraints for gross output and intermediate consumption are at great enough detail (99 industries) for the years 1975-1994. Independent estimates for imports and final uses with a breakdown either to products or to classification by purpose/asset, and there are time series for taxes and subsidies on products by product for the time period 1975-1994.
 - For 1970-1974 there are data only according to SNA68.
 - FISIM allocated to industries 1970-2004.
 - Eurostat SBS data has been used for compensation (1995-2004) and value added (2004) for industries 21, 24, 31-33, 74. As detail in WP2 (see below) is not based on Eurostat SBS data, we first calculated ratio's of compensation over employees based on Eurostat SBS data. Combining this ratio's with the detailed data for employees (from WP2) gives us compensation data, which we can use to calculate consistent shares.
 - GOS has been calculated as the residual of value added, compensation and taxes.
- Volume
 - **Sources:** Statistics Finland's annual National Accounts data, that conform to ESA95, for 1975-2004 has been revised in 2006. The data for 1970-1974 originally published in the 1980s according to SNA68 under the heading Finnish National Accounts 80 (FNA80) has not been revised.
 - **Comments:** The industry constraints for gross output and intermediate consumption are at great enough detail (99 industries) for the years 1975-1994. Independent estimates for imports and final uses with a breakdown either to products or to classification by purpose/asset, and there are time series for taxes and subsidies on products by product for the time period 1975-1994.
 - For 1970-1974 there are data only according to SNA68.
 - FISIM allocated to industries 1970-2004.

2. SUT data

- Nominal
 - **Sources:** Statistics Finland supply and use tables are compiled in three parts:
 - 1970-1974 there are data only according to SNA68. Data includes gross output and intermediate consumption by industry (about 30 industries), and totals for imports, exports, investments, final consumption and changes in stocks. The data has been converted from Finnish marks to euros and scaled up using the 1975 as the reference year. Splitting up to EUKLEMS 60 industry level from 1975 industry structure and breakdown to goods has been executed using 1975 distributions.
 - 1975-1994 the NA industry constraints have been split to products or to classification by purpose/asset using years 1975, 1980, 1985 and 1990 as reference years. This is done first for supply and then for the use tables. The final SUT we obtain after balancing the SUT with manual balancing and RAS algorithm.
 - 1995-2004 annual supply and use tables compiled in Statistics Finland aggregated to the EUKLEMS72 industry level.
 - **Comments:**
 - Current price SUT consistent with NA series (1975-2004)
 - A detailed description can be found from Toivola, S. and A. Pasanen (2005), [Compilation of the Finnish Inter-industry Accounts for 1970-1994](#), Statistics Finland
- Volume
 - **Sources:** Statistics Finland supply and use tables are compiled in three parts:
 - 1970-1974 there are data only according to SNA68. Data includes gross output and intermediate consumption by industry (about 30 industries), and totals for imports, exports, investments, final consumption and changes in stocks. The data has been converted from Finnish marks to euros and scaled up using the 1975 as the reference year. Splitting up to EUKLEMS60 industry level from 1975 industry structure and breakdown to goods has been executed using 1975 distributions.
 - 1975-1994 the NA industry constraints have been split to products or to classification by purpose/asset using years 1975, 1980, 1985 and 1990 as reference years. This is done first for supply and then for the use tables. The final SUT we obtain after balancing the SUT with manual balancing and RAS algorithm.
 - 1995-2004 annual supply and use tables compiled in Statistics Finland aggregated to the EUKLEMS72 industry level.
 - **Comments:**
 - Constant price SUT differ from NA series (1975-2000), because for EUKLEMS the SUT have been double deflated with implicit price indexes from NA. The differences by industry are small.

- Constant price SUT consistent with NA series (2001 onwards)
- A detailed description can be found from Toivola, S. and A. Pasanen (2005), [Compilation of the Finnish Inter-industry Accounts for 1970-1994](#), Statistics Finland

WP2: Labour Accounts

1. Employment

- **Sources:** The data is from Statistics Finland's Official National Accounts. The main data sources used by Statistics Finland are the Labour Force Survey, the Business Register, the Structural Business Statistics and some separate industry level sources. The data is adjusted by Statistics Finland so that information on employment, average earnings and the wage sum is synchronized. The data is organized in three blocks: years 1970-1974, years 1975-1994 and years 1995-2004.

1970-1974:

The data was obtained from Statistics Finland/National Accounts. They were originally published in the 1980s according to SNA68 under the heading Finnish National Accounts 80 (FNA80)¹⁰. Annual changes from these series were used to take the latest SNA93 based series¹¹ backwards from year 1975 level and the resulting numbers constitute the actual EUKLEMS data. These calculations were made separately for employees and self-employed (in 100 persons) at the EUKLEMS60 industry level. The data for industry 16 (manufacture of tobacco products) are confidential and are estimated from aggregate figures for both employment and hours for all time periods.

1975-1994:

These are unpublished data obtained from Statistics Finland/National Accounts. The data were published at a more aggregate level in 13.7.2006 by National Accounts (i.e. it is the currently valid SNA93 based National Accounts series). Data presented separately for employees and self-employed (in 100 persons) at the EUKLEMS60 industry level.

1995-2004:

These data are based on a source similar to that used for the 1975-1994 block. Furthermore, the three digit industry level data breakdowns for the industries that are included in more aggregated industries in EUKLEMS60 for the years 1995-2004 were received at special request from Finnish National Accounts (senior statistician Raili Broas). This level of detail is not included in their general in-house national accounts database. For industries 921-922 and 923-927 these data were only obtained for year 2003 (senior statistician Henry Takala; the same structure was assumed to apply also in years 1995-2002 and 2004).

¹⁰ The 80 stands for 1980, which was the base year for constant price calculations. Not relevant for WP2 purposes.

¹¹ Series published on 13.7.2006.

- **Methods:** Employment covers all persons – both employees and self-employed – engaged in some productive activity that falls within the production boundary of the system. Employees are defined as all persons who, by agreement, work for another resident institutional unit and receive remuneration. Self-employed persons are defined as persons who are the sole owners, or joint owners, of the unincorporated enterprises in which they work, excluding those unincorporated enterprises that are classified as quasi-corporations. Self-employed persons are classified here if they are not also in a paid employment which constitutes their principal activity: in that latter case they are classified under employees.

The more detailed data for 1995-2004 was also used to construct the weights to disaggregate EUKLEMS 60 industries into EUKLEMS 72 in the earlier data. For each three digit industry, its share of the corresponding two digit industry was calculated. This was done for the sums of employment figures over the whole period, and the same weights are applied for all years prior to 1995.

2. Hours

- **Sources:** The data is from Statistics Finland's Official National Accounts. The main data source is the Labour Force Survey. The data is adjusted by Statistics Finland so that information on hours worked, average earnings and the wage sum is synchronized. The data is also organized in three blocks: years 1970-1974, years 1975-1994 and years 1995-2004.

1970-1974:

The data was obtained from Statistics Finland/National Accounts. Data originally published in the 1980s according to SNA68 under the heading Finnish National Accounts 80 (FNA80). As for employment, instead of including the original figures as such, annual changes were used to take the data backwards to 1970 from 1975 level. These calculations were made separately for employees and self-employed (total hours in 100,000 hours) at the EUKLEMS60 industry level.

1975-1994:

The data are unpublished figures obtained from Statistics Finland/National Accounts. The corresponding data were published at a more aggregate level in 13.7.2006 by National Accounts (i.e. it is the currently valid SNA93 based National Accounts series). Data presented separately for employees and self-employed (in 100,000 hours) at the EUKLEMS60 industry level.

1995-2004:

Unpublished data obtained from Statistics Finland/National Accounts. Data published at a more aggregate level in 13.7.2006 by National Accounts (i.e. it is the currently valid SNA93 based National Accounts series). Calculations made separately for employees and self-employed (in 100,000 hours) at the EUKLEMS72 industry level. Split into EUKLEMS 72 from EUKLEMS 60 was based on a procedure similar to that used in the case of employment data. Also the weights to disaggregate the earlier data into EUKLEMS 72

classification were calculated by using the same procedure as for the employment weights but instead of employment figures total hours were used in the calculations.

- **Methods:** Total hours worked represent the aggregate number of hours actually worked as an employee or self-employed during the accounting period, when their output is within the production boundary.

3. Labour composition

- Employment (or hours)
 - **Sources:** Data ordered from Statistics Finland's longitudinal census file.
 - **Methods:** Data received for years 1970, 1975, 1980, 1985, 1987-2004 on number of employees by industry, gender, age and education. The intermediate years were interpolated (number of employees directly interpolated and wages interpolated using average wages per head multiplied by heads)
 - **Comments:** Data has been split up in:
 - Fifteen industry groups: agriculture, hunting, forestry and fishing / other production / consumer manufacturing / intermediate manufacturing / investment manufacturing / construction / distributive trade / transport/communications / financial intermediation / real estate and business activities / public administration / education / health / community social and personal services)
 - Two gender groups (male / female)
 - Three age groups (15-29 / 30-49 / 50->)
 - Six education groups (lower secondary or unknown (i.e., completed compulsory 9 years of schooling (possibly with optional extra 10th year) or educational level unknown) / upper secondary level with matriculation examination / upper secondary level without matriculation / first stage of tertiary BA (i.e., tertiary level degrees up to and including bachelor's degrees) / first stage of tertiary MA (master's degrees) / second stage of tertiary (licentiate's and PhD's degrees).
 - Labour composition is available at the level of 15 industries. For lower levels we assumed the same composition as the higher aggregate.
- Compensation
 - **Sources:** Data ordered from Statistics Finland's longitudinal census file.
 - **Methods:** Data received for years 1970, 1975, 1980, 1985, 1987-2004 on wages in euro by industry, gender, age and education. The intermediate years were interpolated (number of employees directly

interpolated and wages interpolated using average wages per head multiplied by heads).

- **Comments:** Labour composition is available at the level of 15 industries. For lower levels we assumed the same composition as the higher aggregate.

WP3: Capital Accounts

- **Main sources for GFCF**

Unpublished data from Statistics Finland and own calculations. The data is from Statistics Finland's Official National Accounts. The data is organized in three blocks: years 1970-1974, years 1975-1994 and years 1995-2004.

- **Methods: (for estimating industry * asset)**

Unpublished data obtained from Statistics Finland/National Accounts. Data presented in current and constant (2000=100) prices in million euros in 13 different asset types at the EUKLEMS60 industry level in 1970-74 and 1975-94 and at the EUKLEMS72 industry level in 1995-2003. Industry 16 Manufacture of tobacco products confidential (estimated from aggregate figures). Series on dwellings, non-residential buildings, civil engineering and other structures and transport equipment directly from Statistics Finland's capital stock calculations in current and constant (2000=100) prices.

A breakdown of machinery & equipment into hardware, communications equipment and other machinery and equipment was not available from Statistics Finland. To obtain data on nominal hardware and communications equipment investment, the detailed annual supply and use tables of Statistics Finland for the years 1995-2003 was used (the ratio of year 2003 of hardware, communications equipment and other machinery & equipment to total machinery & equipment was assumed for year 2004). Of the grand total of almost 1000 goods and services those pertaining to hardware and communications equipment were delineated. These investment series are for the whole economy only and do not contain a breakdown by industry. The aggregate hardware investment was broken down by industry using the average 1970-2004 US it-equipment to software ratio. The aggregate communications equipment investment was broken down by industry using the average 1995-2004 US communications equipment to other machinery plus communications equipment plus it-equipment ratio. Other machinery & equipment investment by industry was the residual after deducting from total machinery & equipment the hardware and communications equipment investment by industry. The remaining other machinery and equipment investment were constrained to a minimum of 5 per cent of the original total machinery and equipment investments by industry. Where the minimum was not met other machinery and equipment investments were added until the minimum was reached (these manual additions were deducted from the respective communications equipment investment; hence the communications equipment total did not remain the same as the one originally computed from the supply and use tables).

The following task was to compute hardware and communications equipment investment in current prices for 1970-94. A series on DL Electrical and optical investment goods by commodity in 1970-1995 was obtained on special request from Statistics Finland's National Accounts (senior statistician Sami Toivola). All of DL investment goods are not hardware & communications equipment. In 1995 the ratio between the genuine hardware & communications equipment investments (calculated as described above) to total DL investments was 65%. This ratio was applied to the DL investment series in 1970-1994 to obtain the hardware and communications equipment investment in these years for the whole economy. The same procedure as described above was used to break the hardware and communications equipment down by industry (except that for communications equipment the average US ratio for the years 1975-1995 was used for the years 1975-1994 and the ratio for 1970-1975 for the years 1970-1974).

The methodology for constructing hardware and communications equipment deflators utilized is broadly that of Schreyer (2000). I.e., the annual changes in the BEA's price index for private non-ICT fixed investments were contrasted with the annual changes in the BEA's price indexes for computers and communication equipment, respectively. The series thus obtained were first smoothed using the Hodrick-Prescott (1997) filter, after which they were multiplied with the implicit Finnish aggregate investment deflator to obtain the Finnish quality adjusted deflators. The result is that these constant price figures differ from the Statistics Finland figures.

Investment series on cultivated assets in current and constant prices in 1975-2004 obtained directly from Statistics Finland. The cultivated assets in the years 1970-74 estimated so that the annual changes in the current price series on investment commodity A Products of agriculture, hunting and forestry, which was obtained on special request from Statistics Finland's National Accounts, was used on the year 1975 cultivated assets current price figure to extrapolate backwards. Similarly, the annual changes in the constant price series on investment commodity A Products of agriculture, hunting and forestry, was used on the year 1975 cultivated assets constant price figure to extrapolate backwards.

Investment series on mineral exploration in 1975-2004 in current and constant prices obtained directly from Statistics Finland. The mineral exploration in the years 1970-74 estimated so that the year 1975 mineral explorations cultivated assets constant price figure was extrapolated backwards using the annual change in the constant price series value added series in the SNA68 based Finnish National Accounts 80 (FNA80)¹². The price index for 1970-74 was calculated from the Average Earnings Index for all employees and the current price figures were obtained by multiplying the volume figures with the price index.

¹² The 80 stands for 1980 which was the base year for constant price calculations.

Investment series on computer software in 1975-2005 in current and constant prices obtained directly from Statistics Finland. Investment series in constant prices in 1970-74 obtained directly from Statistics Finland's capital stock calculations. The price index for 1970-74 was calculated as a weighted average of the Average Earnings Index for all employees (weight 50/100) and total Import Price Index (weight 50/100) and the current price figures were obtained by multiplying the volume figures with the thus compiled price index.

Investment series on entertainment, literary or artistic originals in 1975-2004 in current and constant prices obtained directly from Statistics Finland. Investment series in constant prices in 1970-74 obtained directly from Statistics Finland's capital stock calculations. The price index for 1970-74 was calculated from the Average Earnings Index for all employees and the current price figures were obtained by multiplying the volume figures with the price index.

Investment series for improvement of land in 1975-2004 in current and constant prices obtained directly from Statistics Finland. Investment series in current and constant prices in 1970-74 obtained directly from Statistics Finland's capital stock calculations.

Investment series for cost of ownership transfer in 1975-2004 in current and constant prices obtained directly from Statistics Finland. Investment series in current prices in 1970-74 were extrapolated backwards by using change in value series of investments in improvement of land. Constant price series rounded to zero.

- ***Definition of ICT assets***

Hardware was defined as CPA 30.02 Computers and other information processing equipment. Communications equipment was defined as: CPA 31.3 Insulated wire and cable; CPA 32.1 Electronic valves and tubes and other electronic components; CPA 32.2 Television and radio transmitters; apparatus for line telephony and telegraphy; CPA 32.3 Television and radio receivers; sound or video recording or reproducing apparatus and associated goods.

- ***Initial capital stock***

The constant (2000=100) price net capital stocks for the year 1970 were calculated with a geometric rate of depreciation. Stocks were calculated for: Dwellings (0.012 annual depreciation rate), non-residential buildings (0.025 annual depreciation rate), civil engineering and other structures (0.025 annual depreciation rate), transport equipment (0.25 annual depreciation rate), hardware (0.315 annual depreciation rate), communications equipment (0.11 annual depreciation rate), other machinery & equipment (0.13 annual depreciation rate), mineral exploration (0.33 annual depreciation rate), computer software (0.315 annual depreciation rate) and entertainment, literary or artistic originals (0.33 annual depreciation rate). Aggregate stocks by type of asset for year 1970 were broken down by industry using the ratio of investments by industry to total investments in year 1970.

- **Weights**

Years 1995-2004:

The data for year 1998 from the publication Statistics on the Structure of Industry and Construction 1998, Finnish Official Statistics Manufacturing 2000:4 was used to obtain a breakdown for industries 221 and 222&223; 244 and 241&242&243&245&246&247; 313 and 311&312&314&315&316; 321 and 322 and 323; 331-333 and 334-335; 402 and 401&403, which was used for the years 1995-2004. The breakdown for 351 and 353 and 352&354&355 was obtained directly from Statistics Finland's capital stock calculations. The data for the breakdown for industry 921-922 and 923-927 received upon special request from FNA. Unfortunately data only for the year 2003 obtained. This year's structure was assumed to apply also in years 1995-2002 and 2004.

France

WP1: Inter-industry Accounts

1. NA data

- Nominal
 - **Sources:** INSEE:
 - 1999-2004: Full data coverage (VA, GO, VA-components) for the detailed G-level, i.e., 116 branches. These are revised data with 2000 as base year, published (partly only until 2003)
 - 1992-2002: Full data coverage for the detailed G-level, however pre-revision data with 1995 as base year, published data
 - 1978-2002: Time series on the less detailed F-level (40 branches), revised data with 2000 as base year, published data
 - Data for the period 1970-1978 has been estimated by applying the trends of historical national accounts (Base 80), unpublished data.
 - **Comments:** In general, we tried to use and exploit as far as possible the available data. The steps undertaken to retropolate are as follows:
In general we applied a “fractioned” RAS-procedure.
 1. We calculated shares of each detailed industry (G-level) in its upper hierarchy industry group (F-level) on the basis of the 1995 data (for the years 1990-1999) and computed the annual growth rates of these shares.

The decision to calculate growth rates instead of the actual levels of the shares is due to data issues: in the most recent revision process by INSEE, time series were not only re-referenced to the new base year 2000. INSEE used also to a much larger degree as this was the case in earlier revisions individual data to construct their national accounts. As a consequence, shares of G-level industries in F-level industry groups calculated in the 1995 data can no longer be assumed to stay the same or very similar after revision. There are, however, reasons to assume that the annual changes in these shares do not change drastically with the revision.
 2. We used these growth rates to create an index of shares of individual G-level industries in their F-level aggregates. In some cases, we assumed the share of 1998 to be the same as the one of 1999 in the revised 2000-base year time series, in order to smooth the break in this index between 1998 and 1999 due to the use of pre- and post-revision data.
 3. For the years before 1990, no information was available on the shares of G-level industries in their F-level groups. In these cases, we created smooth time series of annual growth rates by G-level industries, using a 10 years moving average of the annual growth rates between 1990 and 2004. For some industries, we had to change slightly the smoothing procedure in order to prevent extreme developments of shares over time. Like this, we had finally an index of shares from 1978 to 2004.

4. We applied the index to the revised F-level values (base year 2000) for the years 1978-1998.
5. As these values are constructed values, however, the F-level sums of G-level values did not equal the F-level totals for which we had the revised data with 2000 as base year. We got rid of the differences within an iterative procedure: in each iteration, we attributed the differences between F-level sums and respective totals to the G-level values of the previous iteration by using again the constructed shares of G-level industries in their F-level industry groups. We did as many iterations as necessary such that the F-level and total sums were equal to the F-level totals and the overall total. This is equivalent to applying a fractioned RAS-procedure.
6. We aggregated the G-level series to the EUKLEMS industry detail and calculated intermediate inputs by industry as difference between GO and VA. By comparing the data with the existing INSEE-data we tested the consistency of the time series.
7. As regards labour compensation, we retroplated the time series of compensation of employees as for the variables above. We then computed the compensation for total employment by assuming that the compensation per employee would be applicable to independent workers also.
8. As regards the final labour and capital share, we retroplated the net taxes in the same procedure as above. We then computed the gross operating surplus as the difference between retroplated value added, compensation of employees/total employment and net taxes.

-Extra detail for 2 industries, NACE 22 and 31, was needed for the period 1995-2004. For 1996-2004 we used Eurostat SBS data. For 1995 we used trends of 1995-1996 shares of the OECD Structural Statistics for Industry and Services (SSIS) database.

- Volume

- **Sources:** INSEE:

- 1999-2004: Full data coverage (VA, GO) for the detailed G-level, i.e., 116 branches. These are revised data with 2000 as base year, published data for VA

- 1992-2002: Full data coverage for the detailed G-level, however pre-revision data with 1995 as base year, published data

- 1978-2002: Time series on the less detailed F-level (40 branches), revised data with 2000 as base year, published data

- Data for the period 1970-1978 has been estimated by applying the trends of historical national accounts (Base 80) unpublished data.

- **Comments:**

In the case of constant price time series, the retroplation process started by computing volume time series that were available in chained prices with base year 2000 or 1995 to volume time series at previous

year prices. Afterwards, individual cells could be aggregated, thus, shares could be constructed similar to the way described above for time series in current prices.

2. SUT data

- Nominal
 - **Sources:** INSEE, National Accounts, base 2000, IO tables at F-level for the period 1978-2004.
 - **Comments:** As there were problems getting long time series of SUTs, we decided to use the INSEE IO tables. We assumed the EMS distribution of the IO tables is comparable with the distribution in the SUTs. For the period where there are SUTs and IO tables, the shares seem to be comparable at the EMS level. A problem with the IO tables is the level of detail. To aggregate to EMS, the F-level data is not detailed enough. We have assumed EMS distribution for sub-industries to be the same as for more aggregate industries.

- Volume
 - **Sources:** INSEE, National Accounts, base 2000, nominal IO tables at F-level for the period 1978-2004 and gross output deflators from the most recent INSEE National Accounts for the period 1978-2004.
 - **Comments:** The IO tables used for the nominal EMS distribution were not available at constant prices. We therefore decided to deflate the IO tables ourselves. For that purpose we calculated gross output deflators at the F-level. These deflators are applied per product (so for each industry the same deflator is used). As with the nominal IO tables, to aggregate to EMS, the F-level data is not detailed enough. We have assumed EMS distribution for sub-industries to be the same as for more aggregate industries.

WP2: Labour Accounts

1. Employment

- **Sources:** INSEE
- 1990-2004: round 2000
- 1998-2004: Published data for total numbers engaged and employees, NES classification, G-level, 116 industries.
 - 1990-2004: Published data for total numbers engaged and employees, NES classification, F-level, 40 industries.
 - 1990-2004: Unpublished data for employment (self-employed, employees, total), NES classification, G-level, 116 industries.
- 1978-1990:
- Unpublished data for total numbers engaged and employees, NES classification, F-level, 40 industries, extrapolation backwards in the round 2000 database.

- Published data for total numbers engaged and employees, NES classification, F-level, 40 industries, round 1995.

1970-1977: round 1980

- Published data for total numbers engaged and employees, NAP-90.

- **Methods:** 69 EUKLEMS industries could be reconstituted from the French classification NES.

1990-2004:

- Assumed to be consistent as it is provided by INSEE in a disaggregated classification.

1978-89:

- Disaggregation in 69 industries by using growth rates of the upper industry.
- Exceptions: EUKLEMS industries for which a split-up of various NES industries were needed. For example, employment of industry 32 can be sourced in three NES industries (see comments below).

1970-77:

- Use of growth rates of employment from the available databases applied to total employment and employees series,
- Self-employed obtained by subtracting employees from total employment.
- For the gas industry (EUK402) we used the growth rate of the electricity industry (EUK40x).

- **Comments:**

-Exception: in the manufacturing sector, for industries 24 to 33 and 36 to 37 (FC3, FC4, FE2, FE3, FF4, FF5, FF6 of the NES classification), the shares of the EUKLEMS industries were obtained (in order to keep consistency with the INSEE F-level) by:

-Calculating the difference in the share of the EUK industry in the INSEE industry at the upper level in 1990 up to 1995,

-Applying a five-year moving average to the difference in shares in the INSEE industries from 1990 back to 1978,

-Calculating the shares from 1978 to 1989 by using the retroplated difference in shares,

-Applying the shares to the INSEE F-level (upper level) from 1978 to 1989.

-For Industry 40 (gas distribution) some adjustments have been made with the employee trend of Base 80 data, because trend was too volatile. Number of self-employed has been set to 0 for the period 70-77.

-For detail in NACE 22 and 31 (at the 3-digit level) Eurostat SBS data has been used again.

2. Hours

- **Sources:** INSEE:

1990-2004: Round 2000

- Published data for average hours of employees, NES classification, E-level, 16 industries.
- Unpublished data for total hours, NES classification, F-level, 40 industries (self-employed, employees, unregistered work, total).

1978-1989: Round 1995

- Published data for average hours of employees, NES classification 40 industries.
- Unpublished data for total hours worked, NES classification 40 industries (self-employed, employees, total).

1976-1977: Round 1980

- Weekly hours for 40 industries, NAP-40 classification,

1970-1977: Round 1980

- Average hours worked, 4 industries.

- **Methods:** 69 EUKLEMS industries could be reconstituted from the French NES classification.

-Unregistered work was not accounted for.

-Average hours result from total hours worked divided by employment (by employment type).

1990-2004:

- Round 2000 assumed to be consistent as it is provided by INSEE in a disaggregated classification.

1978-89:

- For self-employed, it was assumed that the average hours worked by self-employed were the same as for the total (employees + self-employed).

1970-77:

- It was assumed that average hours worked by employees were the same as for total employment.

- **Comments:**

3. Labour composition

- Employment (or hours)

- **Sources:** Labour force surveys: 1982-1989, 1990-2002, 2003, 2004.

- **Methods:**

1. all people working full time were short listed (employees, self-employed, family helps),
2. a filter was set: those working full-time and earning less than 80% of the minimum wage were removed from the database,
3. when the sector was not indicated, the related observations were removed from the database,
4. blanks were filled in for education types missing with the rate of growth of the same category of the aggregate sector.

Sectors 01-05, 45 : growth rate of the whole economy by year, gender, age and education,
 sectors 15-37: growth rate of the manufacturing sector by year, gender, age and education,
 sectors 50-99: growth rate of the service sector by year, gender, age and education.

5. For categories where the frequency was quite low (<25), some interpolation was necessary. Interpolation between two years (for example, if the 1984 data between 1983 & 1985 were inconsistent then a linear interpolation is carried out).

6. There was a serious break of series in 1990 and 2003. For small frequencies, it was decided to take the aggregate sector growth rate if the data were too inconsistent. When data were too scarce over the whole series, then numbers were set to zeros.

7. Two sets of data were provided: one with total employment and the other one with employees only. The difference is self-employed including business managers and family helps.

- **Comments:**-The methodology of the survey has changed with the new 2003 survey as now people are interviewed every quarter (6 interviews with 2 visits and two telephone calls).

-A weight variable has been used: when summed over the employed, it gives the total civil employment in the economy. However, as certain numbers were removed from the database (part-time, false low-wages, too low frequencies over the time series), employment in the LFS is not totally employment given in the NA.

- Labour composition is available at the level of 15 industries. For lower levels we assumed the same composition as the higher aggregate.

- Compensation

- **Sources:** Labour force surveys: 1982-1989, 1990-2002, 2003, 2004.

- **Methods:** See employment

Average gross wages & compensation were obtained by dividing total gross wages and total compensation by employment (So, the average variables are weighted by employment).

- **Comments:** -Net wages are transformed into gross wages by using employee & employer's social contributions taking into account :

-To be a top executive or not as social contributions are different according to SS ceilings,

-The rebates on employers' contributions on low wages up to 1,3 times the minimum wage according to years.

-In some sectors as agriculture or the extractive industries, few people are educated in the two first education categories. Moreover, the extractive industries are a declining industry in France.

- Labour composition is available at the level of 15 industries. For lower levels we assumed the same composition as the higher aggregate.

WP3: Capital Accounts

- **Main sources for GFCF**
INSEE for national accounts; SESSI (Ministry of Industry) and INSEE for business surveys.
-1978-2005: base year 2000, F level of the French classification NES (40 industries), unpublished data
-1970-1977: extrapolation backwards in F with base year 1995 data, (2004 unpublished version),
-1959-1969: extrapolation backwards in F with the data base year 1995, INSEE (2002 unpublished version).

- **Methods: (for estimating industry * asset)**
EUKLEMS 69 industries (no disaggregation in 22 and 31, no 99), 11 assets.
Disaggregation into 69 industries using the investment shares in value of the business surveys from 1984 (1982 for services) to 2003 (2002 for services).
2004-05: same ratios as 2003.

- **Definition of ICT assets**

ICT Assets are an integrated part of the French national accounts. A list of all assets can be found below:

OPAN1114	Agricultural assets
OPAN111329	Other machinery equipment
OPAN11122	Other structures
OPAN11121	Non residential buildings
OPAN1121	Mining and oil drilling
OPAN1111	Residential buildings
OPAN1122	Software
OPAN111322	Communication equipment
OPAN111321	Computer equipment
OPAN11131	Transport equipment
OPAN1123	Artworks

- **Initial capital stock**
We used historical Gross Fixed Capital Formation series for infrastructure, non-residential buildings, communication equipment, Non-IT machinery and transport equipment for the period 1846-1959. Capital stocks have been built up from these long series.
- **Weights**
See above (business surveys).
- **Comments**
-Industry 37: share given in business surveys from 1998 to 2003. Extrapolation backwards with the difference in shares between 1998 and 1999 (i.e. 0,0094 point). Zero reached in 1991, then zero for this industry from 1959 to 1991, industries 71, 72, 741t4, 745t8: share in business surveys for services

from 1982 to 2003, extrapolated for years 1998, 2000, 2003. From 1959 to 1981, same share as in 1982

-Industries 01, 02, 05: breakdown according to shares in value added in value; from 1990 to 2003: INSEE then from 1978 to 1989: extrapolation of VA carried out by CEPII. Share of 1978 kept constant from 1959 to 1977,

-Industries 01, 02, 05, 15, 16, 60, 61, 62, 63, 921t2, 923t7: breakdown according to shares in value added in value; from 1990 to 2003: INSEE then from 1978 to 1989: extrapolation of VA carried out by CEPII. Share of 1978 kept constant from 1959 to 1977.

-The price deflator for asset 8 in industry 11 was extreme, therefore we applied the deflator of industry 12 before 1979.

Germany

WP1: Inter-industry Accounts

1. NA data

- Nominal

- **Sources:**

Time-series from 1991 to 2004 are published by the National Accounts in line with the Revision 2005 (DESTATIS, 2006b) in an A60 industry breakdown for the following variables:

- Gross production,
- Intermediate input,
- Value-added, including the following components of value added: Labour compensation, Taxes minus subsidies, Depreciation, Net operating surplus including mixed income.

Furthermore, time-series from 1991 to 2004 in line with Revision 2005 are published for the following components of final use at current prices and as volume indices in a commodity breakdown, corresponding in general with A60: Private consumption, Exports, GFCF, for the most important 19 equipment goods and five different buildings categories.

In addition, Imports are published as time-series in a commodity breakdown corresponding with A60.

- **Comments:**

To get time-series of final use by commodity for the analytical module of EUKLEMS, estimates had to be made for the commodity breakdown of governmental consumption, consumption of NPISH, and inventory changes. In general, the respective relations of the use tables based on earlier revisions supplied by DESTATIS have been applied and adapted to the totals of the National Accounts Revision 2005. A similar procedure has been applied for this minor part of GFCF, for which a breakdown by commodities is not available in the National Accounts.

The expression EUKLEMS sub industries is standing for these industries which go beyond the A60 NACE classification level.

Sub industries for the analytical module of EU KLEMS have only been estimated for manufacturing, using the annual cost structure survey for Germany to calculate the breakdown of the higher-level industries into EUKLEMS sub industries for gross production, value added and the components of value added.

In addition, for the use tables, separate estimates have been made for the totals of intermediate inputs of energy, material and services. Before 1995, estimates are based on the shares in the industry of the higher-level for 1995. For 2004, estimates are preliminary.

Intermediate inputs (in current prices) have been calculated as Gross output minus value added. Industry 74 has been split up with Census data from the Eurostat SBS database for value added and compensation.

- Volume

- **Sources:**

Volume indices in line with Revision 2005 are published for

- Gross production,
- Intermediate input,
- Value-added.

Only value-added is published in an A60 industry breakdown. In general, value added is deflated by a double deflation approach. Gross production and intermediate input volume indices are published for 17 industries. Estimates in an A60 breakdown have been made available by DESTATIS.

Furthermore, volume indices from 1991 to 2004 are published for the following components of final use in a commodity breakdown, corresponding in general with A60: Private consumption, Exports, GFCF, for the most important 19 equipment goods and five different buildings categories.

In addition, volume indices for Imports are published as time-series in a commodity breakdown corresponding with A60.

- **Comments:**

National Accounts supply information on volume indices based on the previous year deflation concept. For the analytical module of EUKLEMS, presently DIW could only make estimates at constant 2000 prices. Volume indices taken from the National Accounts at the lowest available level have been applied to calculate time-series of implicit price indices. Implicit price indices for final use in a commodity breakdown corresponding to A60 have been taken from the National Accounts.

To evaluate time-series of final use by commodity at constant prices, estimates had to be made for the price development by commodity for governmental consumption, consumption of NPISH and inventory changes. The resulting estimates at constant prices have been adapted to the totals of the National Accounts, converted from volume indices to constant price values. A similar procedure has been applied for this minor part of GFCF, for which a breakdown of volume indices by commodity is not available in the National Accounts.

In addition, for the use tables, separate estimates have been made for the totals of intermediate inputs of energy, material and services. Before 1995, estimates are based on the shares in the industry of the higher-level for 1995. For 2004, estimates are preliminary.

Deflators for sub industries have been taken from the respective higher-level industries.

Intermediate inputs (in constant prices) have been calculated as a residual consistent with value added and gross output.

2. SUT data

- Nominal

- **Sources:** Supply and use tables supplied by Destatis:
 - Revision 2005 (DESTATIS, 2005d-f): 2000-2002.
 - Revision 2000 (DESTATIS, 2001,2004b): 1995, 1997-2000.
 - Pre-revision 2000 (DESTATIS, 2002a-b): Input-output tables for 1991-2000.

All tables are at least in an A60 industry breakdown or of more detail. However, concordances with the additional EUKLEMS sub-industries are only possible for selected industries.

- **Comments:**

- **A1) Preliminary use tables**

Using the information of the existing pre-revision input-output tables, preliminary tables for intermediate use have been estimated for 1991 to 1994 and 1996. These preliminary tables have been adapted to the Revision 2005 concepts by using cell wise correction factors, calculated from the respective use tables for 2000

- **A2) Preliminary supply tables**

Preliminary supply tables for 1991 to 1994, and 1996 have been calculated by extrapolation and interpolation of the existing ones supplied by DESTATIS. Subsequently, these tables have been adapted to the Revision 2005 concepts by using cell wise correction factors calculated from the respective tables for 2000. For 1991 to 1999, separate matrices for taxes, subsidies, trade margins (wholesale, retail, others) have been calculated, applying cell wise the available relations for 2000. The results for taxes minus subsidies and for total trade margins have been adapted to the totals of the Revision 2000 tables.

- **A3) Final supply and use tables**

For the analytical module of EUKLEMS, preliminary estimates of the supply and use tables have been made consistent for gross production by commodity and for gross production, value-added, and intermediate input by industries, according to the most recent revision of the National Accounts (September 2006). Final use by commodity has been taken from the National Accounts. Imports by commodity have been taken from the National Accounts.

- **B) Years following 2001**

Tables 2002 to 2004 have been estimated, using the most recent revision of the National Accounts (September 2006) and the tables supplied by DESTATIS. Estimates for 2003 and 2004 are preliminary.

- Volume
 - **Sources:** Supply and use tables supplied by Destatis:
 - Revision 2005 (DESTATIS, 2005d-f): 2000-2002.
 - Revision 2000 (DESTATIS, 2001,2004b): 1995, 1997-2000.
 - Pre-revision 2000 (DESTATIS, 2002a-b): Input-output tables for 1991-2000.

All tables are at least in an A60 industry breakdown or of more detail. However, concordances with the additional EUKLEMS sub-industries are only possible for selected industries.
 - **Comments:** A preliminary estimate of intermediate use at constant prices has been calculated by applying a weighted average of the prices for imports and private consumption on the commodities in question. The resulting estimates for intermediate use at constant prices by industry have been corrected proportionally to correspond with the respective industry-specific estimates supplied by DESTATIS.

WP2: Labour Accounts

1. Employment

- **Sources:**

The employment estimates in the National Accounts give a consistent framework to provide employment figures in line with ESA'95. The labour input estimates are the result of an own subsystem in the National Accounts: Task force on employment estimates (experts from the Federal Statistical Office and other institutions). The Task Force works out information on “number of employees and self-employed” and “hours worked”. The estimates are based on a total of 45 separate surveys. The main sources are different surveys of specific industries. For example, the most comprehensive one is the survey on manufacturing.

Since the industry breakdown in the German National Accounts is not in line with the statistical roadmap in EUKLEMS, we used additional sources to fill the gaps.

 1. First, the Social Security Data (SSD): This register-based statistic involves information on more than 30 million employees.
 2. Second, data from DIW Berlin about the labour input (person and hours) in manufacturing.
 3. Third, estimates on the hours worked from the Institute for Employment Research of the Federal Employment Services (IAB, Nuremberg).

The benchmark figure of all DIW estimates are the original data from the National Accounts. We used the structural information from these additional sources to reach the industry breakdown of the 72-level of EUKLEMS.

- **Methods:**

For the period 1991–2004, the National Accounts are providing revised data on the number of employees based on the NACE A60 classification. In order

to reproduce the extended 72-EUKLEMS classification, additional time series have been collected from the SSD register, in particular on the service sector. The additional structural information in the estimates of employees is based on the number of employees; for the estimates on the self-employed this information is based on the number of enterprises.

- **Comments:** West Germany:
In the case of persons, the historical time series 1970-1991 for the territory of the former Federal Republic of Germany corresponds with the original data from the National Accounts. The sectoral degree of differentiation is presently significantly lower than with the data for Germany. Similar to the data for West Germany in WP 1 and WP 3, 31 industries are distinguished.

2. Hours

- **Sources:**
The employment estimates in the National Accounts give a consistent framework to provide employment figures in line with ESA'95. The labour input estimates are the result of an own subsystem in the National Accounts: Task force on employment estimates (experts from the Federal Statistical Office and other institutions). The Task Force works out information on “number of employees and self-employed” and “hours worked”. The estimates are based on a total of 45 separate surveys. The main sources are different surveys of specific industries. For example, the most comprehensive one is the survey on manufacturing.

Since the industry breakdown in the German National Accounts is not in line with the statistical roadmap in EUKLEMS, we used additional sources to fill the gaps.

1. First, the Social Security Data (SSD): This register-based statistic involves information on more than 30 million employees.
2. Second, data from DIW Berlin about the labour input (person and hours) in manufacturing.
3. Third, estimates on the hours worked from the Institute for Employment Research of the Federal Employment Services (IAB, Nuremberg).

The benchmark figure of all DIW estimates are the original data from the National Accounts. We used the structural information from these additional sources to reach the industry breakdown of the 72-level of EUKLEMS.

- **Methods:** For the years 2002–2004, the National Accounts provide data on the volume of labour input in hours worked, for 29 industries. For the period 1991–2001, there are 16 sectors. Regarding the manufacturing sector, the data were itemised and adapted onto the level of EUKLEMS — using time series of statistical indicators for manufacturing, produced by DIW Berlin. Estimates on the service sector are based on social security data. For certain years (1994; 2001), the volume of work was calculated using data on part-time employment. The value for the years between 1994 and 2001 was interpolated.

- **Comments:** West Germany:
In the case of hours worked we also used the benchmark figure of the National Accounts. For more structural information in line with ESA'95, we transposed historical information from the IAB, Nuremberg.
The sectoral degree of differentiation is presently significantly lower than with the data for Germany. Similar to the data for West Germany in WP 1 and WP 3, 31 industries are distinguished.

3. Labour composition

- Employment
 - **Sources:**
The estimates for the labour quality components of the employees in Germany are based on the income survey, social security data, and the Socio-Economic Panel Study (SOEP). The point of origin of the calculation is the income survey (salary and wage structure survey) of the year 2001. Based on micro data, the number of employees and the gross payroll in the industrial sectors C to K were identified—classified into various attributes such as education, age and sex. For the years 1992-2004, the SSD provided information on employees subject to social insurance contribution in all industrial sectors. However, with respect to information on salaries and wages there is a tendency of an upper limit changing in the course of the time. From the SOEP data on macroeconomic benchmark figures of all employees in the period 1992 till 2004 was acquired.
 - **Methods:**
For the base year 2001, data of the income survey for the missing economic sectors A, B and O was completed—by use of information from the SOEP and the SSD. At the same time the sectoral differentiation of the SSD data was upgraded to conform to EUKLEMS requirements.
Data on the tendencies of the changes in the development regarding the number of employees and the payroll provided by the SOEP and SSD was transferred on the starting year 2001. We nearly achieved the 'minimum' requirement for the qualification split and the industry breakdown in the period 1999–2004. However, for the period before (1992–1998) we had to reduce the split significantly. One reason was the adjustment of the systematic of economic sectors in the SSD. Less stable estimations for various age groups by the SOEP was another reason.
 - **Comments:** -Labour composition is available at the level of 14 industries. For lower levels we assumed the same composition as the higher aggregate.
-There was no age split available for the period 1991-1998. Therefore the age split-up of 1999 by education and gender has been kept constant for this period.

- Compensation
 - **Sources:** The estimates for the labour quality components of the employees in Germany are based on the income survey, social security data, and the Socio-Economic Panel Study (SOEP). The point of origin of the calculation is the income survey (salary and wage structure survey) of the year 2001. Based on micro data, the number of employees and the gross payroll in the industrial sectors C to K were identified—classified into various attributes such as education, age and sex. For the years 1992-2004, the SSD provided information on employees subject to social insurance contribution in all industrial sectors. However, with respect to information on salaries and wages there is a tendency of an upper limit changing in the course of the time. From the SOEP data on macroeconomic benchmark figures of all employees in the period 1992 till 2004 was acquired.
 - **Methods:** For the base year 2001, data of the income survey for the missing economic sectors A, B and O was completed—by use of information from the SOEP and the SSD. At the same time the sectoral differentiation of the SSD data was upgraded to conform to EUKLEMS requirements.
Data on the tendencies of the changes in the development regarding the number of employees and the payroll provided by the SOEP and SSD was transferred on the starting year 2001. We nearly achieved the ‘minimum’ requirement for the qualification split and the industry breakdown in the period 1999–2004. However, for the period before (1992–1998) we had to reduce the split significantly. One reason was the adjustment of the systematic of economic sectors in the SSD. Less stable estimations for various age groups by the SOEP was another reason.
 - **Comments:** -Labour composition is available at the level of 14 industries. For lower levels we assumed the same composition as the higher aggregate.
-There was no age split available for the period 1991-1998. Therefore the age split-up of 1999 by education and gender has been kept constant for this period.

WP3: Capital Accounts

- **Main sources for GFCF**
Time series of new investment (ESA '95, 3.102) by industries are published in a NACE A60 industry classification for three types of assets: *Non residential buildings and structures, Dwellings, Machinery and equipment including Others*. *Others* is a shortcut for the sum of cultivated assets, mineral exploitation, software, literacy originals and transfer costs. *Dwellings* capital formation in the German National Accounts is defined to be exclusively made by industry 70.

Time series of GFCF by type of asset for the total economy are published for 10 categories of machinery and equipment, 3 categories of building and structures, two categories of others. Separate time series for IT assets (based on 68 different goods out of CPA 32) and CT assets (based on 41 different goods out of CPA 31) are published (DESTATIS, 2006). Benchmarks for the year 2000 for some of the components for *Others* could be taken from WP 1 and Destatis publication (DESTATIS, 2006). To separate soft fair from other intangibles time-series have been estimated assuming constant relations. (DESTATIS, 2004b; Braakman et al., 2003; Schulz, 2002; Frankford, 2000). Time series for net sales (ESA'95, 3.103) are published by type of asset for three categories of machinery and equipment. Additional estimates have to be made to calculate time series for all categories of assets considered in the estimates.

For 2000, an industry (A60) by type of asset (15 types) matrix, based on the Revision 2005 for new investment into machinery and equipment at current prices has been made available by the Federal Statistical Office (DESTATIS). An additional industry by type of asset matrix for 1995 for new investment into machinery and equipment at current prices, based on the Revision 2000 has been published (DESTATIS, 2003). Both matrices are based on a multiple of surveys. However, no survey is available with information on investment for industries by type of asset above the separation of buildings from equipment.

- ***Methods: (for estimating industry * asset)***

Machinery and equipment and others

For the analytical module of EU KLEMS body, the matrices for 1995 and 2000 have been complemented by information on software, transfer costs and mineral exploitation and subsequently been condensed to the 10 types of machinery and equipment for which time series are published. Based on these matrices, time series of industry by type of asset matrices for new investment at current prices have been estimated with the bi-proportional methodology MODOP (Holub/Tappeier, 1987) by interpolating and extrapolating.

Buildings and structures

No separate information for non-residential structures and infrastructure is available for industries in the National Accounts.

Net sales by industry and type of asset

Net sales are available only by type of asset at current prices and as volume indices. The totals have been proportionally distributed across industries for the individual types of asset used in the calculations. New acquisitions and net sales result in GFCF time series for EU KLEMS.

Deflation

Volume indices, based on chain-linked deflators are available for all types of asset and industries used in the calculations. However, no volume information is available for industry by type of asset matrices. For estimating these, or the corresponding deflators, as a general procedure, volume indices have been converted into values at constant prices on the lowest available level of

disaggregation. In the case of asset types, the aggregate volume indices for machinery and equipment (excluding vehicles) have been used, such that the residual *other machinery* at constant prices can be calculated by deducting IT and CT equipment at constant prices from the totals of machinery and equipment, excluding vehicles. In the German National Accounts, a considerable number of CT equipment goods as well as some other equipment goods are calculated with hedonic deflators (Linz, 2005; Linz/Behrmann/Becker, 2004; Linz/Dexheimer/Kathe, 2003; Behrmann/Kathe, 2004).

In general, the sums of deflated values by type of asset are not consistent with the sums of the deflated values for industries, except in the case of the previous -years comparison (DESTATIS, 2005c), based on chain-linked prices. Therefore, the deflated values for industries have been adapted proportionally on the sums by type of asset, applying a sequential year-by-year procedure. The reasoning behind this is that prices only exist for goods. Deflators for industries have to be seen as the compositional result of asset deflators and the composition by type of asset.

The estimates have been made at the lowest available level (19 asset types, 59 industries) in the National Accounts for Germany. The results have been aggregated to eight asset categories for EU KLEMS.

EU KLEMS sub industries

The expression EU KLEMS sub industries is standing for these industries, which go beyond the A60 NACE classification level. For their analytical module of EU KLEMS, GFCF series for additional EU KLEMS sub industries have only been estimated for manufacturing, using the annual investment survey for Germany. Before 1995, estimates are based on the shares in the industry of the higher level for 1995. For 2004, estimates are preliminary. The composition by type of asset for the EU KLEMS sub industries has been taken from the industry of the higher level.

Available time series for GFCF by asset type				
Asset type	EU KLEMS	CPA	AN	Comments
Tangible fixed assets			111	National Accounts
Dwellings	1		1111	
Non residential buildings and structures structures			1112	
Public buildings	2	ex 45	ex 11121	
Public infrastructure	2		ex 11122	
Non-public buildings	2		ex 11121	
Non-public infrastructure	2		ex 11122	
Machinery and equipment (excl. Vehicles)			11132	
Computing equipment	5	ex 30		
Communications equipment	4	ex 32		
Others				
Fabricated metal products	6	ex 28		
Machinery and equipment n.e.c.	6	ex 29		
Electrical machinery and apparatus n.e.c.	6	ex 31		
Medical, precision and optical instruments, etc.	6	ex 33		
Other equipment	6	ex 17-27		
Transport equipment			11131	
Motor vehicles, trailers and semi-trailers	3	ex 34		
Other transport equipment	3	ex 35		
Cultivated assets	7	ex 1-5	1114	
Intangibles			112	
Software	8		1122	
Other intangible fixed assets	7		1121,3,9	
1 NA benchmarks available. -				
				DIW Estimate ¹

- **Definition of ICT assets**

The following tables contain the CPA classification numbers for those investment goods, which are classified either as CT or IT assets.

- **Initial capital stock**
See West Germany

CT assets

CPA	Description
3001 1	Automatic typewriters and word-processing machines, calculators
3001 2	Photo-copying apparatus
3001 9, 3002 9	Installation services of office machinery
3002 1 1, 2	Analogue or hybrid automatic data processing machines
3002 1 3	Digital automatic data processing machines,
3002 1 4	Input or output units,
3002 1 5	Storage units
3002 1 6	Other units of automatic data processing machines n.e.c.
3002 1 7	Parts and accessories of computing machines

IT assets

CPA	Description
3210	Electronic parts
3220 1, 3, 9	Parts of electrical telephonic or telegraphic apparatus.
3220 2 0 200	Electrical apparatus for line telephony or line telegraphy
3220 2 0 400	Parts of electrical telephonic or telegraphic app
3220 2 0 500	Industrial services for television and radio transmitters; apparatus for line telephony and telegraphy
3220 2 0 ang	Installation, maintenance and repair services for transmitter
3230 2	Television receivers monitors etc.
3230 3	tape recorders etc
3230 4	Microphones Loudspeakers etc electric amplifierer, reception apperatus
3230 5	Sound and video equipment
3230 9	Installation, maintenance and repair services for radio & television

- **Weights**
- **Comments**
 We did break up investments and capital stock in asset 7 (sonstige anlagen) manually into 3 different assets:
 -Data for Industry 1 is now asset number 7 (Agri).
 -Data for Industry 16, 17 and 65 is classified to asset number 10 (Other intangibles).
 -Data for the other industries went to asset 9 (Other tangible products)

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Greece

WP1: Inter-industry Accounts

1. NA data

- Nominal
 - **Sources:**

For the period 1995-2003 National Accounts (NA) data has been used. This data was available at the A60 level. 2004 data for WP1 has been based on NA data we received for the period 2000-2005. This data is only available at the A31 level.
 - **Comments:** Extra detail has been based on either Eurostat SBS data (detail for 3-digit manufacturing industries) or the 2001 Census (for detail in "Other business services", NACE 74, 2001 employees data only). 2003-2004 growth rates of the A31 level-data have been applied to more detailed industries where needed.
- Volume
 - **Sources:**

For the period 1995-2003 National Accounts (NA) data has been used. This data was available at the A60 level. 2004 data for WP1 has been based on NA data we received for the period 2000-2005. This data is only available at the A31 level.
 - **Comments:**

When extra detail was needed prices from higher aggregates have been used, combined with the nominal figures this led to the required volume data. 2003-2004 growth rates of the A31 level-data have been applied to more detailed industries where needed.

2. SUT data

- Nominal
 - **Sources:**

For 1995-1999 Supply and Use tables are available from Eurostat. These tables are at the A60 detail level.
 - **Comments:** -
- Volume
 - **Sources:**

For 1995-1999 Supply and Use tables are available from Eurostat. These tables are at the A60 detail level.
 - **Comments:** -

WP2: Labour Accounts

1. Employment

- **Sources:**
For the period 1995-2003 National Accounts (NA) data has been used. This data was available at the A60 level. 2004 data for WP2 has been based on NA data we received for the period 2000-2005. This data is only available at the A31 level.
- **Methods:**
Extra detail for the Persons engaged and Employees data has been based on either Eurostat SBS data (detail for 3-digit manufacturing industries) or the 2001 Census (for detail in "Other business services", NACE 74, 2001 employees data only). 2003-2004 growth rates of the A31 level-data have been applied to more detailed industries where needed.
- **Comments:**

2. Hours

- **Sources:**
The National Accounts data only contained Hours worked by Persons engaged (EMP), this is available at the A31 level. The 2000-2005 National Accounts data also has hours worked data for Employees at the A31 level.
- **Methods:**
To calculate Hours worked by Employees, the ratio of total hours worked by employees over persons engaged has been calculated for the period 2000-2003 and applied to total hours worked from the 1995-2003 data. This results in Total Hours worked for employees for the period 2000-2003. For the period 1995-1999 the trend of Total Hours worked by Persons engaged has been applied to the 2000 total hours worked by employees data. 2003-2004 growth rates of the 2000-2005 A31 level-data have been applied to the 2003 data from the 1995-2003 NA data.
- **Comments:**
As the Hours worked data (for Persons engaged) was only available at the A31 level, average hours has been calculated at the A31 level. For more detailed industries, the closest higher aggregate average hours worked has been used.

3. Labour composition

- Employment (or hours)
 - **Sources:** Not Available
 - **Methods:** -
 - **Comments:-**
- Compensation
 - **Sources:** Not Available
 - **Methods:** -
 - **Comments:** -

WP3: Capital Accounts

- *Main sources for GFCF* : Not Available
- *Methods: (for estimating industry * asset)*
- *Definition of ICT assets*
- *Initial capital stock*
- *Weights*
- *Comments*

Hungary

WP1: Inter-industry Accounts

1. NA data

- Nominal
 - **Sources:** -Data are provided by the Hungarian National Statistical Institute (HU NSI) at the NACE rev. 1 2-digit (60 industries) level.
 - Data delivered include time series on gross output and gross value added at basic prices, intermediate input at purchaser prices as well as components of gross value added at current prices. It is not possible to split gross operating surplus into net operating surplus and consumption of fixed capital.
 - NACE industries 12 (Mining of uranium and thorium ores) and 13 (Mining of metal ores) are reported together. Both are allocated to NACE 13 in the EUKLEMS database.
 - Data on mixed income have been delivered for the period 1992-2004.
 - Data on gross output, value added and intermediate inputs cover the period 1991-2004; data on gross value added components start in 1992.
 - Data on nominal series show two methodological breaks, in 1995 and 2000.
 - Data are FISIM-adjusted by HU NSI according to ESA'95 requirements from 2000 onwards.
 - **Comments:** -For both break years 1995 and 2000 HU NSI provided double indications according to the old and new methodology. wiiw recalculated the periods before the breaks using the corresponding ratios. After these break eliminations the values of industries have been adjusted so that the sum over industries equals gross value added and output, respectively. This implies that original growth rates by industries are slightly different from original data.
 - In a second step wiiw calculated FISIM-adjusted data for the period 1991-1999 (for the period 2000-2004 data are FISIM-adjusted by NSI). For this we applied the ratio of FISIM-adjusted to non-FISIM-adjusted time series of the average 2000-2002 to the values in period 1991-1999. The corresponding differences have been allocated to 'gross operating surplus'.
 - For 1991-1992 industry NACE 67 (Activities auxiliary to financial intermediation) in the original data is included in industries NACE 65 (Financial intermediation, except insurance and pension funding) and NACE 66 (Insurance and pension funding, except compulsory social security). wiiw has recalculated the data applying the trend of shares in group J (Financial intermediation). Consequently, this reduced the values in industries NACE 65 and 66.
 - Data for industries NACE 95 (Private households with employed persons) and NACE 99 (Extra-territorial organizations and bodies) have not been included and are set to 0 by wiiw.
 - Weights for 3-digit industries in EUKLEMS classification have been calculated using SBS data (Structural Business Statistics) of Eurostat covering the period 1995-2003. Missing data in these series have been

imputed by various methods, mainly linear interpolation and calculation of trends; the respective variables have further been smoothed using 3-year moving averages. Table 1 presents the SBS indicators used for calculations of weights. To satisfy adding-up restrictions of components we calculated the weights for gross value added as a residual in a first step. To satisfy adding-up restrictions of gross output and value added intermediate inputs have been calculated as residual.

-NACE industries 12 (Mining of uranium and thorium ores) and 13 (Mining of metal ores) are reported together. Both are allocated to NACE 13 in the EUKLEMS database.

-Weights for industry NACE 92 (Recreational, cultural and sporting activities) are not available.

-Weights for the period 1991-1994 are set equal to weights for 1995 and weights for 2004 are set equal to weights for 2003.

Table 1 – Data for calculation of weights

EUKLEMS	
code	SBS indicator
GObas	12120 Production value
Iipur	Calculated using data from GObas and VAbas
VAbas	12140 Value added at basic prices (adjusted)
Comp	13310 Personnel costs

For the time being variables like GOS and Net Taxes on production have not been disaggregated beyond the level as received from the Hungarian National Statistical Institute.

- Volume
 - **Sources:** -Data are provided by HU NSI at the NACE rev. 1 2-digit (60 industry) level.
 - Data delivered include time series on gross output, intermediate input and gross value added at various constant-price periods (1991, 1995, 1998, and 2000).
 - Data series show two methodological breaks, in 1995 and 2000. For these years a double indication is provided.
 - NACE industries 12 (Mining of uranium and thorium ores) and 13 (Mining of metal ores) are reported together.
 - All data cover the period 1991-2004.
 - Data are FISIM-adjusted by HU NSI according to ESA'95 requirements from 2000 onwards.
 - **Comments:** -Initial constant-price data are provided at four different price bases: 1991-1995 at constant prices 1991; 1995-1998 at constant prices 1995; 1998-2000 at constant prices 1998; and 2000-2004 at constant prices 2000. Data for 1991-2004 are recalculated to constant

prices 2000 by wiiw. Additionally two methodological breaks had to be considered in 1995 and 2000 for which we had double indications (same procedure as for nominal data). After break elimination and construction of constant 2000 price series, the resulting difference between total gross value added and value added summed up over industries was much higher compared to that at current prices and therefore – after adjustments to total levels – the growth rates of each industry changed slightly more than in the case of current prices.

-In a second step wiiw calculated FISIM-adjusted data for the period 1991-1999 (for the period 2000-2004 data are FISIM-adjusted by NSI). For this we applied the ratio of FISIM-adjusted to non-FISIM-adjusted time series of the average 2000-2002 to the values in period 1991-1999.

-Data for industries NACE 95 (Private households with employed persons) and NACE 99 (Extra-territorial organizations and bodies) are not included and set to 0 by wiiw.

-Weights for 3-digit industries in EUKLEMS classification have been calculated using SBS data covering the period 1995-2003. Missing data in these series have been imputed by various methods, mainly linear interpolation and calculation of trends; the respective variables have further been smoothed using 3-year moving averages. Table 2 presents the SBS indicators used for the calculation of weights. For gross output and value added we used the weights calculated for the nominal series. To satisfy adding-up restrictions of value added and intermediate input the latter was calculated as residual.

-NACE industries 12 (Mining of uranium and thorium ores) and 13 (Mining of metal ores) are reported together. Both are allocated to NACE 13 in the EUKLEMS database.

-Weights for industry NACE 92 (Recreational, cultural and sporting activities) are not available.

-Weights for the period 1991-1994 are set equal to weights for 1995 and weights for 2004 are set equal to weights for 2003.

Table 2 – Data for calculation of weights

EUKLEMS	
code	SBS indicator
GObas	12120 Production value
IIpur	Calculated using data from GObas and VAbas
VAbas	12140 Value added at basic prices (adjusted)

2. SUT data

- Nominal

- **Sources:** -Data are provided by the Hungarian National Statistical Institute (HU NSI) at the NACE rev. 1 2-digit (60 industries) level and the CPA 2-digit (60 products) level.

- Use tables have been provided for 1998-2003. Year 2002 and 2003 were balanced with NA data and FISIM-adjusted. 1998 and 1999 have neither been balanced nor FISIM-adjusted. Use tables in 2000 and 2001 have been balanced with NA, but not FISIM-adjusted.
- From the set of SUT provided only use tables at purchaser prices have been used further on.
- NACE industries 12 (Mining of uranium and thorium ores) and 13 (Mining of metal ores) are reported together.
- **Comments:** -For the period 1998-2001 wiiw balanced and FISIM-adjusted the use tables by applying the shares from the originally provided use tables to the intermediate input data of NA (see above for construction of FISIM and break-adjusted time series).
- Use tables for the years 1995-1997 and 2004 have been constructed by applying trends of intermediate input shares based on the available use tables (1998-2002). These shares have been applied to the intermediate input data at current prices taken from NA which have been described above.
- Data for industries NACE 95 (Private households with employed persons) and NACE 99 (Extra-territorial organizations and bodies) have not been included and are set to 0 by wiiw.
- NACE industries 12 (Mining of uranium and thorium ores) and 13 (Mining of metal ores) are reported together. Both are allocated to NACE 13 in the EUKLEMS database.
- Volume
 - **Sources:** -Data are provided by the HU NSI at the NACE rev. 1 2-digit (60 industries) level and the CPA 2-digit (60 products) level.
 - Use tables are available for years 2000-2003 at constant previous-year prices.
 - From the set of SUT provided only use tables at purchaser prices have been used further on.
 - NACE industries 12 (Mining of uranium and thorium ores) and 13 (Mining of metal ores) are reported together.
 - **Comments:** -For the period 2000-2003 we achieved consistency with NA by applying shares of original use tables at constant previous-year prices to intermediate input data from NA (at constant prices 2000).
 - Use tables for 1995-1999 and 2004 have been constructed by wiiw applying shares from nominal use tables to intermediate input data from NA at constant prices 2000.
 - Data for industries NACE 95 (Private households with employed persons) and NACE 99 (Extra-territorial organizations and bodies) have not been included and are set to 0 by wiiw.
 - NACE industries 12 (Mining of uranium and thorium ores) and 13 (Mining of metal ores) are reported together. Both are allocated to NACE 13 in the EUKLEMS database.

WP2: Labour Accounts

1. Employment

- **Sources:** -National accounts data were provided by the Statistical Institute of Hungary (HU NSI) at the NACE rev. 1 1-digit level as well as CA-CB for mining and quarrying and DA-DN for manufacturing industries (30 industries).
-Labour force survey (LFS) data were provided by HU NSI at the NACE rev. 1 2-digit (60 industries) level.
-The NA data delivered include time series (1995-2005) for employed persons, employees and self-employed in persons.
-The LFS data delivered include time series (1992-2005) for employed persons, employees and self-employed in persons.
-The period covered is 1992-2005.
- **Methods:** The NA data are constructed by HU NSI in the following way: HU NSI only uses data from the Labour force survey (LFS) for calculating employment and hours data in National accounts. The LFS is a household survey that provides quarterly information on non-institutional population aged 15-74. The definitions used in the survey follow the ILO recommendations. The quarterly sample includes about 33,000 respondent households. Until 2001 all data published were adjusted on the basis of the extrapolated numbers of the 1990 census. From 2002 calculations are already made by using the numbers of the 2001 census; correction of data, even backward in time, is carried out on this new basis. However, re-weighted data for the period before 1998 are not available yet. The National accounts employment figures differ in only two respects from the LFS figures: (1) NA figures exclude workers working abroad while the Hungarian LFS database includes both domestic workers and those working abroad. The difference is about 10-20 thousand people. (2) The other difference is the lack of section Q (Extra-territorial organizations and bodies) in NA figures according to the application of the domestic concept, while the LFS-reported data include section Q.
- **Comments:** The following adjustments have been made by wiiw:
-Official National accounts data at the NACE rev. 1 30 industries level for total employed, employees and self-employed have been split up by using shares calculated from LFS data which are available at the NACE rev. 1 2-digit (60 industries) level. A break in LFS employment figures (due to the census 2001) in 1998 has been eliminated. The shares of industries NACE 10-14, 34-35, 36-37, 40-41, 60-64 have been smoothed by 3-year moving averages. The levels for 1992-1994 were calculated with LFS growth rates at the NACE rev. 1 2-digit (60 industries) level.
-The weights for employed, employees and self-employed have been constructed using Eurostat Structural Business Statistics (SBS) indicator 16110 (Number of persons employed). Weights for 1992-1994 are set equal to weights for 1995. Weights for 2004-2005 are set equal to weights for 2003.

2. Hours

- **Sources:** -National accounts data were provided by the Statistical Institute of Hungary (HU NSI) at the NACE rev. 1 1-digit level as well as CA-CB for mining and quarrying and DA-DN for manufacturing industries (30 industries level).
 - Labour force survey (LFS) data were provided by HU NSI at the NACE rev. 1 2-digit (60 industries) level.
 - The NA data delivered include time series (1995-2005) on hours worked per industry for employed persons, employees and self-employed.
 - The LFS data delivered include time series (1992-2005) per industry for employed persons only.
 - The period covered is 1992-2005.

- **Methods:** The NA hours worked data are originally based on LFS data.

- **Comments:** For the specific requirements of the project the following adjustments have been made by wiiw.
 - The original NA hours worked data were provided at the 30 industries level (see above). Hours per employee and hours per self-employed in NACE 60 divisions are set equal to the corresponding NACE 30 industries. Consequently total hours worked per person employed is a weighted average of employees and self-employed hours worked.
 - Further calculations of hours worked per person in 1992-1994 (total employed) have been necessary: Total hours worked per employed were calculated with growth rates of original LFS-NACE 60 total hours worked figures. Since no original hours worked figures are available for employees and self-employed for the period 1992-1994, and a number of estimations have been unreliable, separate data for hours worked per employee and self-employed could not be delivered for this period.
 - Total hours worked per employed person in NACE 12 in 1996 was replaced by linear interpolation.
 - We assume throughout that average hours worked per person in 3-digit industries equal those at the 2-digit level.

3. Labour composition

- **Employment (or hours)**
 - **Sources:** -Data are taken from Eurostat Labour force survey data, 2nd quarter of each year.
 - The data delivered include time series on employed persons, employees and self-employed, broken down by industries, gender, age groups and educational groups.
 - The period covered is 1998-2005.

 - **Methods:-**

 - **Comments:** The following adjustments have been made by wiiw:
 - Data not including information on industry have been allocated within sex, age and educational categories using available industry shares.
 - Data not including information on education were allocated to the lowest educational category.

- Missing data for one year have been calculated by linear interpolation.
- Data at the beginning (1998) or end of the period (2005) have been calculated applying the shares of the respective categories of the following (1999) or previous year (2004), respectively.
- The composition shares in employment of 1998 have been applied to employment in 1995-1997 as well.
- Labour composition is available at the level of 15 industries. For lower levels we assumed the same composition as the higher aggregate.

- Compensation

- **Sources:** -Data are provided from CZ HU at the NACE rev. 1 2-digit (60 industries) level.
 - Data include information on gross monthly earnings of employees by educational attainment level (high, medium and low according to the ISCED 1-digit classification), age group (15-29, 30-49, 50+) and gender.
 - Data are provided for the years 1996, 1998, 2000, 2002 and 2004.
- **Methods:** Data are based on the Structural Earnings Survey (SES) data (gross monthly earnings of employees).
- **Comments:** For the specific requirements of the project the following adjustments have been made by wiiw:
 - The original SES data were available with cross-classifications by industries, age groups, educational groups and gender at the NACE rev. 1 2-digit (60 industries) level. Wage data at EUKLEMS 15 industries (minimum) level were calculated as weighted averages of corresponding 60 industries level data.
 - The original SES data were available for the years 1996, 1998, 2000, 2002 and 2004. In-between years have been calculated by linear interpolation.
 - Labour composition is available at the level of 15 industries. For lower levels we assumed the same composition as the higher aggregate.
 - The composition shares in wages of 1996 have been applied to wages in 1995 as well.

WP3: Capital Accounts

- **Main sources for GFCF**

- Data on GFCF have been delivered by the Hungarian National Statistical Institute (HU NSI) at the NACE rev. 1 2-digit (60 industries) level.
- NACE industry 95 (Private households with employed persons) and 99 (Extra-territorial organizations and bodies) are missing.
- NACE industry 12 (Mining of uranium and thorium ores) and 13 (Mining of metal ores) are reported together.
- The breakdown by asset types includes Dwellings (RStruc), Other buildings and structures (OCon), Transport equipment (TraEq), Machinery and

equipment (Mach), Cultivated assets (OGFCFT), Computer Software (Soft) and Other Intangibles (OGFCFI). Of these, Transport equipment and Machinery and equipment are reported together over the period 1995-1998.

-The same asset types are available for data at constant 2000 prices for the period 2000-2004.

-GFCF at constant 2000 prices at the total economy level are available for the period 1995-1999 by asset type; however, Transport equipment and Machinery and equipment are reported together.

-GFCF is reported according to the ESA'95 methodology. The main source for GFCF is investment data (about 90%).

- **Methods: (for estimating industry * asset)**

-Data at constant 2000 prices are missing for the period 1995-1999. Data over the period 2000-2004 are given originally by HU NSI. 1995-1999 has been estimated by wiiw using the following method: original total GFCF data by asset types in real terms have been used to construct time series at constant 2000 prices. The implicit deflator (2000 = 100) of each asset type has been applied to all industries. One has to note one caveat: Separate deflators for Transport equipment and Machinery and equipment are not available. This means that we applied the same deflators for EUKLEMS asset types IT, CT and OMach.

-Data on IT and CT (and consequently OMach) were not available in the original data. These have been estimated using the following method: In the data on capital stocks, for the period 2000-2004 information on the stock of 'Machinery with short service life' (depreciation time of approximately five years) is reported which can be interpreted as IT assets (according to information of HU NSI). From these data we calculated hypothetical GFCF data (by 'inverse PIM'). This enabled us to calculate shares of GFCF of IT on the one hand and OMach together with CT on the other hand. The latter have been split into OMach and CT by applying average shares calculated from data on the Czech Republic and Slovenia. This resulted in shares of IT, CT and OMach in Mach by industry. The arithmetic mean over the four years has been applied to the GFCF data on Mach by industry. Finally, we used GFCF data from the available use tables (CPA30 and CPA32, respectively) to adjust the (total) level of IT and CT investments. For the years 1995-1997 and 2004 use tables are not available. In these cases we estimated the total investment in CPA30 and CPA32 by using the shares of IT and CT in Mach in 2002 and 1998, respectively. For NACE industries 1 (Agriculture), 2 (Forestry), and 5 (Fishing) capital stock data for 'Machinery with short service life' are zero. Here we applied averages of GFCF in IT from CZ and SI to calculate the corresponding data for Hungary. The same shares have been applied to current and constant price data.

-Asset type Transport equipment by industry has been estimated for the period 1995-1998 using shares of arithmetic averages of the corresponding shares over 1999-2001.

-NACE industries 95 and 99 have not been included and set to 0 by wiiw; industry NACE 12 was interpreted as being included in NACE 13 (see comments on weights below).

- **Definition of ICT assets**
Data on IT and CT asset have been calculated as described above (see second point of 1.2 Methods). For totals we used GFCF data from the available use tables (CPA30 and CPA32, respectively) to adjust the (total) level of IT and CT investments.
- **IT deflator:**
The national IT-deflator does not seem to be quality adjusted. The IT-deflator for the US from the BEA has been used, adjusted for economy wide differences between Hungary and the U.S.
- **Initial capital stock**
 - Data on Gross capital stock (GCS) and Net capital stock (NCS) have been delivered by the HU NSI at the NACE rev. 1 2-digit (60 industries) level for the period 2000-2004.
 - NACE industry 12 (Mining of uranium and thorium ores) and 13 (Mining of metal ores) are reported together.
 - NACE industries 95 (Private households with employed persons) and 99 (Extra-territorial organizations and bodies) are missing.
 - The asset types available are Dwellings (RSTruc) (for industries NACE 1 (Agriculture) and 5 (Fishing) reported together), Other buildings and structures (OCon), Machinery with long service life (OMach + CT), Machinery with short service life (IT), Transport equipment (TraEq), Cultivated assets (OGFCFT), and Computer software (Soft). Asset type Other intangibles (OGFCFI) is not included.
 - The data are reported according to the ESA'95 methodology.
 - These data are available at current and constant 2000 prices.
 - NACE industries 95 and 99 have not been included and are set to 0 by wiiw; industry NACE 12 was interpreted as being included in NACE 13 (see comments on weights below).
 - Industry NACE 5 (Fishing) was originally included in NACE 1 (Agriculture). wiiw has split industry 5 from 1 by using the shares of GFCF.
 - Data on gross and net capital stock are only available for asset types 'Machinery with short service life', which refers to an average service life of about five years, and 'Machinery with long service life'. We calculated a 'hypothetical' capital stock using the average shares of GFCF data on IT, CT, and OMach over 1995-2004 (i.e. implicitly assumed that the structure of GFCF by industry remained constant) and the depreciation rates as outlined in Part I using the PIM method (using 100 iterations). From this hypothetical capital stock we calculated the shares of CT and OMach in 'Machinery with long service life' which we used as a proxy to calculate the stocks of CT and OMach in 2000 (the first year for which data are available). From 2000 onwards we calculated the stock using the data on GFCF and the depreciation rates as outlined in Part I using PIM. From the resulting stock data we again calculated shares of asset types by industry which then have been applied to the original stock data on OMach+CT (i.e. 'Machinery with long service life'). The IT capital stock in 2000 was estimated by using GFCF data and applying PIM method and depreciation rates as outlined in Part I.
 - The same shares have been applied to gross and net capital stock at current and constant prices.

Table 1 – Data for calculation of weights

EUKLEMS	
asset type	SBS indicator
RStruc	15130 Gross investment in existing buildings and structures
OCon	15130 Gross investment in existing buildings and structures
TraEq	15150 Gross investment in machinery and equipment
IT	15150 Gross investment in machinery and equipment
CT	15150 Gross investment in machinery and equipment
OMach	15150 Gross investment in machinery and equipment
OGFCFT	15110 Gross investment in tangible goods
Soft	15110 Gross investment in tangible goods
OGFCFI	15110 Gross investment in tangible goods

Ireland

WP1: Inter-industry Accounts

1. NA data

- Nominal
 - **Sources:** For value added and compensation for the period 1995-2004 OECD National Accounts (NA) data has been used. This data was available at the A31 level. For value added and compensation for the period 1990-1995 OECD National Accounts (NA) data has been used. This data was available at the A17 level. For the pre-1990 period more aggregated OECD NA data (various issues) were used.
 - **Comments:** Extra detail for the period 1995-2004 was mostly based on Eurostat SBS data, with the exception of detail in Agriculture (based on GGDC Agricultural Database, July 2005 version, value added shares have also been applied to the compensation data) and Financial Intermediation (detail based on Eurostat Labour Force Survey data, so both value added and compensation have been disaggregated with employees-shares). For Manufacturing for the period 1980-1995 extra detail was mostly added on basis of the Census of Industrial Production (various issues, Statistical Office, Ireland). For the period 1970-1980 Manufacturing shares from 1980 have been assumed constant, by lack of more detailed data. For the detail needed in Services 1995 shares have been assumed constant in the period before 1995, by lack of more detailed data. Detail in Industries 90-93 (NACE group O) has been based on UK shares, by lack of Irish detailed data. Gross output has been estimated with the help of gross output-value added ratios from the UK. Intermediate inputs has been calculated as the difference between gross output and value added.
- Volume
 - **Sources:** Value added deflators have been calculated on the basis of a number of sources. For the period 1980-2004 the following sources were used: for Agriculture the GGDC Agricultural Database, July 2005 version, for Manufacturing the Statistical Abstract, Central Statistical Office, Ireland, various issues and for Services we have used data from the OECD NA Final expenditure of households. For the pre-1980 period very aggregated current and constant value added data from the National Accounts, Central Statistical Office, Ireland has been used to calculate deflators.
 - **Comments:** When extra detail was needed prices from higher aggregates have been used, combined with the nominal figures this led to the required volume data. The deflators for the period 1970-1980 were linked to the deflators of the 1980-2004 period. Gross output and intermediate inputs have been deflated with value added deflators, by lack of gross output or intermediate input deflators.

2. SUT data

- Nominal
 - **Sources:**
Not available
 - **Comments:**
- Volume
 - **Sources:**
Not available
 - **Comments:**

WP2: Labour Accounts

1. Employment

- **Sources:** For the period 1998-2004 OECD National Accounts (NA) data has been used. This data was available at the A31 level. For the period 1995-1998 OECD National Accounts (NA) data has been used. This data was available at the A17 level. For the pre-1995 period aggregated Labour Force Survey data (various issues) were used.
- **Methods:** The pre-1998 and the pre-1995 data have been linked to the 1998 and the 1995 data respectively. Extra detail for the period 1995-2004 was mostly based on Eurostat SBS employees data, with the exception of detail in Agriculture (based on GGDC Agricultural Database, July 2005 version, employees shares have also been applied to the persons engaged data) and Financial Intermediation (detail based on Eurostat Labour Force Survey data, so both persons engaged and employees have been disaggregated with employees-shares). For Manufacturing for the period 1980- 1995 extra detail was mostly added on basis of the Census of Industrial Production (various issues, Statistical Office, Ireland). For the period 1970-1980 Manufacturing shares from 1980 have been assumed constant, by lack of more detailed data. For the detail needed in Services 1995 shares have been assumed constant in the period before 1995, by lack of more detailed data.
- **Comments:** Detail in Industries 90-93 (NACE group O) has been based on UK shares, by lack of Irish detailed data.

2. Hours

- **Sources:** Hours worked have been based on a combination of 3 sources. First, for Manufacturing there was pretty detailed 1996-2004 data from the Eurostat Structural Business Statistics (SBS). Second, International Labour Organisation (ILO) has data on hours worked for broad sectors for 1997-2004. And finally, for years where there was no Eurostat or ILO data, we have extrapolated the data using Total Economy Database hours from the GGDC (January 2007).

- **Methods:** Ratios of the ILO broad sectors over the manufacturing sector have been calculated. These ratios have been applied to the Total Manufacturing figures from Eurostat. For the years before 1997 the trend of the Total Economy average hours worked has been applied to all industries.
- **Comments:** As the average hours worked data was only available at a broad sector level (besides manufacturing that is), average hours have been calculated at that broad sector level. For more detailed industries, the closest higher aggregate average hours worked has been used. The same average hours worked have been used for persons engaged and for employees.

3. Labour composition

- Employment (or hours)
 - **Sources:** Not Available
 - **Methods:** Not Available
 - **Comments:** Not Available
- Compensation
 - **Sources:** Not Available
 - **Methods:** Not Available
 - **Comments:** Not Available

WP3: Capital Accounts

- **Main sources for GFCF** : Not Available
- **Methods:** (for estimating industry * asset)
- **Definition of ICT assets**
- **Initial capital stock**
- **Weights**
- **Comments**

Italy

WP1: Inter-industry Accounts

1. NA data

- Nominal
 - **Sources:** -ISTAT, National Accounts, Gross Output, Value Added, Intermediate Inputs, Compensation, Social premiums, Wages and Net taxes at current prices for 30 industries for the period 1970-1992.
-ISTAT, National Accounts, Gross Output, Value Added, Intermediate Inputs, Compensation, Social premiums, Wages and Net taxes at current prices for 59 industries for the period 1992-2005.
 - **Comments:** II and VA adjusted for FISIM by ISTAT in the new NA data.
-For both periods extra detail had to be added. Detail for NACE 01 and NACE 02 has been added on the basis of value added data from the detailed USE tables (1992-2005, see below), for the years before 1992 shares have been assumed constant. For the period 1995-2004 for the following NACE industries: 15-16, 22x and 22.1, 31-33, 61-63 and 70-74 detail has been added on the basis of Eurostat SBS data. For the Manufacturing industries, in the period 1985-1995 extra detail where needed has been added on the basis of Eurostat Long time series database (this database covers enterprises with 20 persons employed and more). For Services industries, where extra detail was needed, 1995 shares have been assumed constant.
- Volume
 - **Sources:** -ISTAT, National Accounts, Gross Output, Value Added and Intermediate Inputs constant prices for 30 industries for the period 1970-1992.
-ISTAT, National Accounts, Gross Output, Value Added and Intermediate Inputs at constant prices for 59 industries for the period 1992-2005
 - **Comments:** II and VA adjusted for FISIM by ISTAT in the new NA data.
-As for current prices extra detail was added, an assumption has to be made to add detail at the same level of disaggregation in constant prices. Aggregate price deflators are assumed to be identical for more disaggregate industries.

2. SUT data

- Nominal
 - **Sources:** -Prepared by ISAE on basis of basic data underlying construction of NA by ISTAT. The following tables have been provided by the National Accounts division of ISTAT as basic statistics on which Italy's NA are constructed as follows:

-Total use of intermediate inputs at current prices at the level of disaggregation of 30 branches classified according to NACE, rev. 1 for the period 1970-2004.

-Symmetric input-output tables of the use of domestically produced and imported intermediate inputs at current prices for the years 1973, 1975, 1978, 1980, 1982, 1985, 1988, 1990, at the level of disaggregation of 44 branches classified according to ESA79 – Ateco81 (NACE).

-A transposition matrix needed to transform the 44x44 IOT's defined according to the ESA79-Ateco 81 into 30x30 IOT's defined according to NACE Rev. 1.

-The original data provided by ISTAT have been processed and integrated with other data at ISAE. The following steps have been followed in order to obtain annual IOT's evaluated at current prices.

-Symmetric IOT's have been produced for each year at current prices for the whole period. This required the estimation of the missing IOT's for the years 1970, 1971, 1972, 1974, 1976, 1977, 1979, 1981, 1983, 1984, 1986, 1987, 1989, and 1991. The method used was that of the interpolation of the input-output ratios (coefficients) valued at current prices using those of the available IOT's of the adjacent years.

-The IOT's at current prices for the years before 1992 have been transformed into 30x30 IOT's classified according to the NACE Rev. 1 nomenclature.

-SUT tables at current prices with a breakdown at 60 industries and 60 commodities for all years of the period 1992-2004.

-From 1992 to 2004 official annual ISTAT tables available at A60 have been disaggregated by ISAE at 72 EUKLEMS industries and 101 commodities.

- **Comments:** -Consistent with the NA
 - Intermediate input breakdown based on industry x industry IOTs, not SUTs
 - The IO tables at 30 branches from 1970 to 1991 are being updated on the basis of the new NA data.

- Volume

- **Sources:** -Prepared by ISAE on basis of basic data underlying construction of NA by ISTAT. The following tables have been provided by the National Accounts division of ISTAT as basic statistics on which Italy's NA are constructed as follows:
 - Total use of intermediate inputs at constant prices at the level of disaggregation of 30 branches classified according to NACE, rev. 1 for the period 1970-2004.
 - A transposition matrix needed to transform the 44x44 IOT's defined according to the ESA79-Ateco 81 into 30x30 IOT's defined according to NACE Rev. 1.
 - The original data provided by ISTAT have been processed and integrated with other data at ISAE. The following steps have been followed in order to obtain annual IOT's evaluated at constant prices.

-Symmetric IOT's have been produced for each year at current prices for the whole period. This required the estimation of the missing IOT's for the years 1970, 1971, 1972, 1974, 1976, 1977, 1979, 1981, 1983, 1984, 1986, 1987, 1989, and 1991. The method used was that of the interpolation of the input-output ratios (coefficients) valued at current prices using those of the available IOT's of the adjacent years.

-All the IOT's from 1970 to 1991 have been deflated using the deflators of the domestically produced and imported intermediate inputs available from previous empirical studies (Heimler-Milana, 1982, Mastrantonio, 1993, Bank of Italy, 1991).

-The IOT's at constant prices for the years before 1992 have been transformed into 30x30 IOT's classified according to the NACE Rev. 1 nomenclature.

-SUT tables at constant prices with a breakdown at 60 industries and 60 commodities for all years of the period 1992-2004.

-From 1992 to 2004 official annual ISTAT tables available at A60 have been disaggregated by ISAE at 72 EUKLEMS industries and 101 commodities.

- **Comments:** -Consistent with the NA
 - Intermediate input breakdown based on industry x industry IOTs, not SUTs
 - The IO tables at 30 branches from 1970 to 1991 are being updated on the basis of the new NA data.

WP2: Labour Accounts

1. Employment

- **Sources:** The starting data were those published by ISTAT at level of 30 branches regarding (i) the number of workers and (ii) the standard (full-time equivalent) units of labour for the period 1970-2004. ISTAT has also provided us with unpublished data on the numbers of workers at the level of 59 branches for the period 1991-2004.
- **Methods:** The unpublished data on the numbers of workers has been used as starting point. Series at A30 level have been linked to this series in 1991.
- **Comments:** For both periods extra detail had to be added. Detail for NACE 01 and NACE 02 has been added on the basis of value added data from the detailed USE tables (1992-2005, see above), for the years before 1992 shares have been assumed constant. For the period 1995-2004 for the following NACE industries: 15-16, 22x and 22.1, 31-33, 61-63 and 70-74 detail has been added on the basis of Eurostat SBS data. For the Manufacturing industries, in the period 1985-1995 extra detail where needed has been added on the basis of Eurostat Long time series database (this database covers enterprises with 20 persons employed and more). For Services industries, where extra detail was needed, 1995 shares have been assumed constant.

2. Hours

- **Sources:** The starting data were those published by ISTAT at level of 30 branches regarding the hours worked for the period 1993-2005.
- **Methods:** In particular, the official data on the hours worked for the period 1993-2005 have been estimated by ISTAT both for employees and self-employed people on the bases of the number of jobs corrected for overtime work derived from the Labour Force Survey. For the period 1970-1992, the hours worked have been estimated by correcting the standard units of labour for the annual hours worked for overtime.
- **Comments:** -Split ups of ISAE to 72 industries have not been carried out by using the weights obtained from the employment data concerning the standard units of labour and the Census of population.
-Data for the period 1970-1992 was aggregated from 72 to 30 industries. Trends of this period have been applied to the 1993-2005 data, to arrive at total hours worked for the whole 1970-2005 period for 30 branches. For more disaggregated industries the same number of hours worked as in a more aggregated industry have been assumed.

3. Labour composition

- Employment (or hours)
 - **Sources:** ISTAT employment data (see employment sources) and Census of population of 1971, 1981, 1991, and 2001.
 - **Methods:** Based on the detailed information derived from the Census of population of 1971, 1981, 1991, and 2001, it has been possible to extrapolate the employment shares across industries and characteristics back to 1970. These calculations were used to estimate the required data on the composition of labour input quantities at higher levels of disaggregation.
 - **Comments:**
- Compensation
 - **Sources:** The individual microdata of the Bank of Italy surveys on households income have been used from 1977 to 2004.
 - **Methods:** These data are originally reported net of taxes and social contributions and therefore they had to be transformed into levels gross of these two components. The resulting data for employees have been cross classified by gender, age, and education levels and were extrapolated to all the years of the period 1970-2004 for each of the 72 EUKLEMS industries.
 - **Comments:**

WP3: Capital Accounts

- **Main sources for GFCF**
-ISTAT National Accounts, unpublished data

The types of capital categories are the following:

1	Machines and Equipments (n.e.c.)	AN. 11132
2	Office machines	AN. 11132
3	Communication equipment	AN. 11132
4	Furniture	AN. 1114
5	Motor vehicles	AN. 11131
6	Other transportation equipment	AN. 11132
7	Structures	AN. 11121
8	Software	AN. 1122
9	Other services and non-tangibles	AN 1121+1122+1123

- **Methods: (for estimating industry * asset)**

- **Definition of ICT assets**

AN	Desc	CPA	eukinv	Desc
AN.11132	Other machinery and equipment	3001+3002	IT	Computing equipment
AN.11132	Other machinery and equipment	3220+3230	CT	Communications equipment
AN.1122	Computer software	72	Soft	Software

- **Initial capital stock**
Series start in 1870 for building and infrastructure and from 1952 for other assets.
- **IT deflator:**
The national IT-deflator does not seem to be quality adjusted. The IT-deflator for the US from the BEA has been used, adjusted for economy wide differences between Italy and the U.S.
- **Weights**
- **Comments**
-For 50-52, K and 60-64 the growth rates of capital services of higher aggregates have been applied.

Japan

WP1: Inter-industry Accounts

1. NA data

- Nominal
 - **Sources:**
 - Unpublished data from the Department of National Accounts, Economic and Social Research Institute, Cabinet Office
 - **Comments:**
 - For 2003-2004, we have nominal and real value added and gross output data for 82 sectors (based on 1993 SNA, the results of the 2000 benchmark revision, real values are in 2000 prices and weights for 2000). For 1980-2003, we have nominal and real value added and gross output data for 82 sectors (based on 1993 SNA, the results of the 1995 benchmark revision, real values are in 1995 prices and weights for 1995). For 1975-1980, we have nominal and real value added and gross output data for 82 sectors (based on 1968 SNA, the results of the 1990 benchmark revision, real values are in 1990 prices and weights for 1990). For 1973-1974, we have nominal and real value added and gross output data for 60 sectors (based on 1968 SNA, the results of the 1990 benchmark revision, real values are in 1990 prices and weights for 1990).
 - In order to adjust changes caused by benchmark revisions and to obtain volume data in 1995 prices, we linked the above series at 1980 and 2003. We used the data of 1980-2003 as our benchmark.
 - We converted our data into 41 EU KLEMS industries. The EUK72-industries 29 and 30 could only be obtained through splitting based on information in the IO Tables of Japan's Ministry of Internal Affairs and Communications (MIC; formerly, Management and Coordination Agency, MCA) and the Extended IO Tables of METI (formerly, Ministry of International Trade and Industry, MITI).
 - All the values of Japan's inter-industry accounts are measured at producer prices, not at basic prices.
 - Input of imputed bank services in each industry is not treated as intermediate input and included in value added in the data of the Department of National Accounts. We estimated input of imputed bank services in each industry and made adjustments using information in the IO Tables of the MIC and the Extended IO Tables published by METI.
 - The 41 industry classification of the Japanese data is not detailed enough for the EUKLEMS database. Extra detail has been added on basis of Report of Census of Manufacture, various issues. For value added and gross output (and therefore intermediate inputs) extra detail was based on value added weights. For compensation extra detail has been added on basis of employees shares (assuming compensation per employee in detailed industries is equal to compensation per

employee in more aggregate industries) from the Report of Census of Manufacture, various issues.

- Volume
 - **Sources:**
 - Unpublished data from the Department of National Accounts, Economic and Social Research Institute, Cabinet Office
 - **Comments:**
 - See Nominal.

2. SUT data

- Nominal
 - **Sources:**
 - Unpublished data from the Department of National Accounts, Economic and Social Research Institute, Cabinet Office
 - **Comments:**
 - We have nominal and real S tables for 1973-2004. The benchmark revision years and industry classifications are the same as those of the NA data. We linked total output series by industry and total output series by commodity at 1980 and 2003. We used the data for 1980-2003 from the results of the 1995 benchmark revision as our benchmark. For 1973-1979 and for 2004, we adjusted the S tables by the RAS method.
 - In the case of U tables, we only have nominal and real value added, gross output, and income shares. The benchmark revision years and industry classifications are the same as those of the NA data. We estimated U tables by multiplying the intermediate input ratio matrices (commodity by commodity) of the IO Tables of the MIC (MCA) and the Extended IO Tables of METI (MITI) by our S table for each year. There are some differences in the concepts and methods of compilation underlying the above-mentioned IO tables and the SNA statistics. In the IO tables for the early years, physical capital in the lease industry which is rented to other industries is treated as capital input in the customer industries and software investment is not included in investment. We adjusted these differences. We constructed converters to make adjustments for changes in industry classifications over time.
- Volume
 - **Sources:**
 - Unpublished data from the Department of National Accounts, Economic and Social Research Institute, Cabinet Office
 - **Comments:**
 - See Nominal

WP2: Labour Accounts

Data on the number of workers, hours worked, and labor compensation cross-classified by sex, age groups, and educational groups, are not readily available. We have therefore combined several data sources and used the RAS method as well as other procedures to compile them. Our data sources consist of both household surveys such as the *Population Census*, the *Employment Status Survey*, and the *Labour Force Survey*, and establishment surveys such as the *Establishment and Enterprise Census*, the *Monthly Labour Survey*, and the *Basic Survey on Wage Structure*.

When measuring the number of workers, household surveys and establishment surveys count multiple-job holders differently. While household surveys do not double-count workers even if they have a second job, establishment surveys do double-count these workers. In order to construct measures of labor input that are consistent with Japan's SNA, we adopt the practice of double-counting workers with a second job.

1. Employment

Sources: The benchmark source for the number of workers is the *Population Census*. Since the *Population Census* does not ask about second-jobs, we also use the *Employment Status Survey*, which asks households about household members' work status and whether they hold second jobs. As both of these surveys are conducted every five years, we estimate annual data for the number of workers based on the *Population Census* using the information from the annual *Labour Force Survey* and linearly interpolate the number of workers with second jobs provided by the *Employment Status Survey*.

To disaggregate the number of workers by finer industry classification, we rely on many different data sources: the *Statistical Yearbook of the Ministry of Agriculture, Forestry and Fisheries*, the *Statistical Survey on Farm Management and Economy* and other statistics for agriculture, the *Employment Table of the Input-Output Tables* for construction, the *Census of Manufactures for manufacturing*, and the *Establishment and Enterprise Census* for other industries.

To obtain information on workers' educational background, we rely on the *Basic Survey on Wage Structure*.

The number of workers counted and cross-classified as above is consistent with the employment numbers counted by Japan's SNA. However, when we add up our estimated numbers to the aggregated level of the SNA, there are small but almost constant discrepancies between them. To adjust for these discrepancies, we calculate adjustment coefficients and multiply our estimated numbers by them.

- **Methods:** For employees and self-employed extra detail has been added on basis of employees shares from the *Report of Census of Manufacture*, various issues.
- **Comments:-**

2. Hours

Sources: To measure the average hours worked by full-time wage and salary workers, we use the data from the *Monthly Labour Survey* as benchmark data. The data on average hours provided in the *Monthly Labour Survey* are the sum of both actual hours worked within scheduled hours and overtime hours worked. However, these data are available only for a low dimensional cross-classification (by one-digit industry and by sex). In order to obtain data on average hours worked by age group, educational attainment, and detailed industry classification, we use information from the *Basic Survey on Wage Structure*.

For the average hours worked by part-time workers, we use information on the average hours worked by female part-time workers from the *Basic Survey on Wage Structure*. Since these data are classified by relatively broadly defined industries, we assume that the average hours worked in the same broadly defined industry are not different. In addition, since we only have data on female part-time workers, we assume that the average number of hours worked by male part-time workers is the same as that for female part-time workers.

In order to measure the average hours worked by self-employed and unpaid family workers, we rely on information on the average hours worked by self-employed workers from the *Labour Force Survey*.

- **Methods:** Average hours worked in more detailed industries than the 41 industries as delivered have been assumed the same as average hours worked in a higher aggregate industry.
- **Comments:-**

3. Labour composition

- Employment (or hours)

Sources: As benchmark data for estimating labour compensation of full-time wage and salary workers, we use the *Monthly Labour Survey*. Since the *Monthly Labour Survey* data cover only wages and salaries actually paid, we adjust them using the *General Survey on Working Conditions* in order to obtain labour compensation including not only cash payments but also other labour expenses. We use the *Basic Survey on Wage Structure* to take differences in labour compensation by sex, age, educational attainment, and detailed industry classification into account.

For the labour compensation of part-time workers, we use data on female part-time workers from the *Basic Survey on Wage Structure*. We assume that labour compensation is the same for both sexes in the same industry.

In order to measure labour compensation of self-employed and unpaid family workers, we use information from the *Employment Status Survey* on self-employed workers' income, from which we deduct the part of their income that should be imputed to their capital.

- **Methods:** Labour composition is available at the level of 41 industries. For lower levels we assumed the same composition as the higher aggregate.
- **Comments:-**
- Compensation
 - **Sources:** See Employment
 - **Methods:** Labour composition is available at the level of 41 industries. For lower levels we assumed the same composition as the higher aggregate.
 - **Comments:-**

WP3: Capital Accounts

- **Main sources for GFCF :**
The main source for GFCF is the *Fixed Capital Formation Matrix* (FCFM) in the *Input-Output Tables*. However, capital formation data by industry in the FCFM is published only every five years. To construct annual capital formation data, we have to interpolate annual capital formation data for intervening years by using other surveys.
- **Methods: (for estimating data by industry and by asset)**
As mentioned above, we use the GFCF data provided in the FCFM. However, capital formation data by industry in FCFM is published only every five years. To construct annual capital formation data by industry and by asset, we have to interpolate annual capital formation data for intervening years by using other surveys. For the manufacturing sector, we use the *Census of Manufactures*, which is published annually. For the non-manufacturing sector, we construct the annual capital formation data by using industry-specific surveys and balance sheet data of public enterprises. Because these data are based on sample surveys and do not cover all establishments in each industry, we estimate annual capital formation series by industry by adjusting the annual capital formation by industry to the capital formation data in the FCFM. Because the FCFM data are activity-based data, we transform the activity-based data to industry-based data by using the V tables in the *National Accounts*. As for GFCF by asset, we construct annual capital formation data by using the commodity flow data in the *National Accounts*. To adjust our data to the classification used by the Bureau of Economic Analysis of the U.S., we construct GFCF data for 39 types of assets.
- **Definition of ICT assets:**
Following the guidelines of the OECD regarding information and communication capital, we select three assets as ICT assets from the 39 assets provided in the unpublished commodity flow data of the *National Accounts* and construct ICT capital formation. Thus, ICT assets include the following

items: (1) computing equipment, consisting of electric computing equipment (main parts) and electric computing equipment (accessory equipment); (2) communication equipment, consisting of wired communication equipment, radio communication equipment, and other communication equipment; and (3) software, consisting of custom software.

- ***Initial capital stock***

We construct the total value of benchmark stock in 1970 by the perpetual inventory method using the data in the *National Wealth Survey (NWS)* in 1955 and GFCF from 1956 to 1970. We break down this estimated capital stock by industry and asset and then take this net capital stock by industry and asset as the initial capital stock. When we break down the estimated capital stock by industry and asset, we use the share information for each industry and each asset in the 1970 *NWS* and the *Census of Manufacturers*.

- ***Weights :***

- ***Comments***

Our original capital account data includes GFCF by 109 industries and by 39 assets.

Latvia

WP1: Inter-industry Accounts

1. NA data

- Nominal
 - **Sources:** The Central Statistical Bureau of Latvia, National Accounts, delivered October 10th, 2006. This dataset contains gross output, intermediate inputs and value added together with breakdown of value added at current price by industry (A17 level) for the period 1995-2004.
 - **Comments:** -Extra detail has been added on the basis of the Eurostat SBS data. Eurostat SBS has data for the years 1997-2003. 1995 and 1996 pattern data has been assumed the same as the 1997 data. For Value Added and Compensation detail had to be added to NACE 65-67 and 90-93. Eurostat SBS does not have data for these industries, to add detail in these industries we have used Intermediate Inputs from the USE tables (only problem is that there are only USE tables for 1995-1997), 1998-2004 have been assumed the same as 1997.
-Compensation in NACE industry A has been split up with value added shares.
- Volume
 - **Sources:** The Central Statistical Bureau of Latvia, National Accounts, delivered October 10th, 2006. This dataset contains price indices (2000=100) for gross output, intermediate inputs and value added by industry (A17 level) for the period 1995-2004.
 - **Comments:** -Price deflators of higher aggregates have also been used at lower levels.

2. SUT data

- Nominal
 - **Sources:** The Central Statistical Bureau of Latvia
-Use tables for 1995, 1996 and 1997 in current prices.
 - **Comments:**
- Volume
 - **Sources:** Not available
 - **Comments:**

WP2: Labour Accounts

1. Employment

- **Sources:** The Central Statistical Bureau of Latvia, National accounts data. This dataset contains number of employees and self-employed for 1995-2004 at A17 level.
- **Methods:** -Extra detail has been added on the basis of the Eurostat SBS data. Eurostat SBS has data for the years 1997-2003. 1995 and 1996 pattern data has been assumed the same as the 1997 data. For Employees detail had to be added to NACE 65-67 and 90-93. Eurostat SBS does not have data for these industries, to add detail in these industries we have used Intermediate Inputs from the USE tables (only problem is that there are only USE tables for 1995-1997), 1998-2004 have been assumed the same as 1997. For Employees detail in Agriculture (NACE 01-02) has been added on the basis of Compensation (assuming the same compensation per employee in both branches)

2. Hours

- **Sources:** Eurostat National Accounts, hours for employees.
- **Methods:** -Only Hours worked for Employees were available in the Eurostat National Accounts data. As a crude assumption, these hours have been used for self-employed as well (with the side note that in some branches, like Agriculture, Fishing and Retail and Wholesale trade hours worked by Self-employed usually are much higher than Hours worked by Employees). As a result Average Hours worked for Total Employment are the same as Average hours for Employees and self-employed.

3. Labour composition

- Employment (or hours)
 - **Sources:** Not available
 - **Methods:**
 - **Comments:**
- Compensation
 - **Sources:** Not available
 - **Methods:**
 - **Comments:**

WP3: Capital Accounts

- *Main sources for GFCF:* Not available
- *Methods: (for estimating industry * asset)*
- *Definition of ICT assets*
- *Initial capital stock*
- *Weights*
- *Comments*

Lithuania

WP1: Inter-industry Accounts

1. NA data

- Nominal
 - **Sources:** Statistics Lithuania, National Accounts, delivered October 12th, 2006 and updated January 15th, 2007. This dataset contains gross output, intermediate inputs, value added, compensation of employees, gross operating surplus and taxes minus subsidies on production at current price by industry (at approximately EUKLEMS60 level) and year (1995-2005).

Comments: For a number of 3 digit industries (NACE 22.1 and 22.x, 22.4 and 24.x, 31.3 and 31.x, 32.1, 32.2 and 32.3, 33.1t3 and 33.4t5, and 74.1t4 and 74.5t8) detail was added on basis of Eurostat SBS data. For the time being variables like GOS and Net Taxes on production have not been disaggregated beyond the level as received from the Statistics Lithuania.

- Volume
 - **Sources:** Statistics Lithuania, National Accounts. This dataset contains chain-linked value added at 2000 prices by industry (at A31 level) for the period 1995-2004
 - **Comments:** -Gross Output and intermediate inputs in 2000 prices have been constructed using Value Added deflators.
-Price deflators of higher aggregates have also been used at lower levels.

2. SUT data

- Nominal
 - **Sources:** Not available
 - **Comments:**
- Volume
 - **Sources:** Not available
 - **Comments:**

WP2: Labour Accounts

1. Employment

- **Sources:** Statistics Lithuania, National Accounts. This dataset contains the number of employees at A31 level for 1995-2004, including series for self-employed.
- **Methods:** -

- **Comments:** -At the NACE 2 digit level extra detail has been added to the employees data with the help of the compensation data from WP1 (assuming the same compensation per employee in sub-industries as in more aggregate industries). Eurostat SBS data has been used for extra split ups in employees at the 3-digit NACE level (NACE 22.1 and 22.x, 22.4 and 24.x, 31.3 and 31.x, 32.1, 32.2 and 32.3, 33.1t3 and 33.4t5, and 74.1t4 and 74.5t8). First using the compensation data to split the A31 Employment data to the A60 level guarantees consistency across the different work- packages.
-The GGDC Agricultural database has been used for extra split ups in A (employees). Furthermore Estonian compensation shares were used for employment for J and O.
-Employment detail (at A31 level) for the period 1995-1997 for Mining and Manufacturing (NACE C and D) has been added with the help of Eurostat SBS data.

2. Hours

- **Sources:** Statistics Lithuania, National Accounts. This dataset contains the hours worked by employees at A31 level for 1995-2004, including series of hours for self-employed.
- **Methods:** - Hours worked by Employees (at A31 level) for the period 1995-1997 for Mining and Manufacturing (NACE C and D) have been calculated by assuming the same structure as in 1998. Hours for Self-employed have been calculated by taking the ratio of Self-employed over Employees and applying these to Total Hours worked by Employees. This was done because there were too large jumps in the self-employed hours we received. Hours worked for more detailed industries have been calculated by assuming the same average hours work in sub-industries as in the more aggregate industry.

3. Labour composition

- Employment (or hours)
 - **Sources:** Not available
 - **Methods:**
 - **Comments:**
- Compensation
 - **Sources:** Not available
 - **Methods:**
 - **Comments:**

WP3: Capital Accounts

- **Main sources for GFCF**
Not available
- **Methods: (for estimating industry * asset)**
- **Definition of ICT assets**

- *Initial capital stock*
- *Weights*

Luxembourg

WP1: Inter-industry Accounts

1. NA data

- Nominal
 - **Sources:** Data from Statec for value added in current prices for the period 1995-2004, delivered 14 July 2006.
 - For years before 1995, data is not official data, STATEC is not responsible for times series published calculated by the EUKLEMS consortium.
 - We have extrapolated the series before 1995 according to the following lines:
 - For the years 1985-1995 we have National Accounts data for Luxembourg. For these years, at NA level, there is separate GO, II and VA data (in both current and constant prices). For more detail we have used VA shares from the GGDC 60-industry database for the variables GO, II and VA.
 - For the years before 1985 we have used OECD National Accounts data (for VA and Comp). These data are highly aggregated.
 - **Comments:** -We have decided to assume NACE industries 16, 21, 22x, 30, 32.1, 32.2 and 34 to be zero and to merge the according data with other industries. These industries need to be filled for the EU KLEMS minimum requirements but cannot be provided separately by the statistical office for confidentiality reasons.
 - Compensation has been calculated by multiplying compensation per worker and number of employees.
 - Extra detail has been added to Gross output, value added and compensation for industry 33 with data from the Eurostat SBS database.
 - Please note that due to the fact that Luxembourg is a very small economy, exceptional events for major economic actors (such as big companies), may have strong effects on the statistical series which can even be perceptible at a very aggregated macroeconomic level. So “jumps” in the resulting series are not necessarily due to mistakes. .
 - STATEC (Statistics Luxembourg) would like to receive copies of papers or research based on their data (please provide feedback to john.haas@statec.etat.lu).
- Volume
 - **Sources:** data from Statec for value added in constant 2001 prices for the period 1995-2004, delivered 14 July 2006.
 - For years before 1995, data is not official data, the STATEC is not responsible for times series published calculated by the EUKLEMS consortium.-For the Luxembourg input for the EU Aggregates we have made estimations before 1995 with OECD National Accounts and the GGDC Total Economy database. We have extrapolated the series before 1995 according to the following lines:

For the years 1985-1995 we have National Accounts data for Luxembourg. For these years, at NA level, there is separate GO, II and VA data (in both current and constant prices). For more detail we have used VA shares from the GGDC 60-industry database for the variables GO, II and VA.

For the years before 1985 we have used OECD National Accounts data (for VA and Comp). These data are highly aggregated.

- **Comments:**

2. SUT data

- Nominal
 - **Sources:** Official Use and Supply tables at A60 level for the years 1995-2004.
 - **Comments:** This data contains intermediate consumptions by industry (56 industries) and product type (59 products) for the years 1995-2004 in current and constant prices.
- Volume
 - **Sources:** Official Use and Supply tables at A60 level for the years 1995-2004.
 - **Comments:** This data contains intermediate consumptions by industry (56 industries) and product type (59 products) for the years 1995-2004 in current and constant prices

WP2: Labour Accounts

1. Employment

- **Sources:** -Unpublished and unofficial data from Statec for the period 1995-2004, delivered 14 July 2006. Not to publish.

Methods: - For years before 1995, data is not official data, the STATEC is not responsible for times series published calculated by the EUKLEMS consortium.

-We have extrapolated the series before 1995 (for the EU Aggregates) according to the following lines:

1. Total Employment and Employees data is also available for 1985-1995 at the National Accounts level. For extra detail we have used data from the GGDC 60-industry (these are total employment shares, but by using them for both variables we maintain consistency).

2. For the years before 1985 we have used the GGDC Total Economy Database data. These data are highly aggregated.

- **Comments:** - Please note that due to the fact that Luxembourg is a very small economy, exceptional events for major economic actors (such as big companies), may have strong effects on the statistical series which can even be

perceptible at a very aggregated macroeconomic level. So “jumps” in the resulting series are not necessarily due to mistakes. .

-STATEC (Statistics Luxembourg) would like to receive copies of papers or research based on their data (please provide feedback to john.haas@statec.etat.lu).

-Extra detail has been added to Employees for industry 33 with data from the Eurostat SBS database.

2. Hours

- **Sources:** Unpublished and unofficial data from Statec, delivered 29 august 2006, for the period 1995-2004. Not to be published
- **Methods:** There are specific estimates for Actual hours worked for employees and hours worked for total employment.
- **Comments:** -For the EU aggregates we have kept average hours constant for the period 1970-1995.

3. Labour composition

- Employment (or hours)
 - **Sources:** Not available.
 - **Methods:**
 - **Comments:**
- Compensation
 - **Sources:** Not available.
 - **Methods:**
 - **Comments:**

WP3: Capital Accounts

- **Main sources for GFCF**
Unpublished and unofficial data from Statec, delivered 27 April 2006 for the period 1948-2004. Not to be published.
- **Methods: (for estimating industry * asset)**
The calculations are based on the 22 following assets from CPA3 classification (in French) :
 - 011 : Culture
 - 013 : Animaux vivants
 - 280 : Produits du travail des métaux
 - 290 : Machines et équipements
 - 300 : Machines de bureau et matériel informatique
 - 310 : Machines et appareils électriques
 - 320 : Equipements de radio télévision et communication
 - 330 : Instruments médicaux, de précision, d'optique et d'horlogerie
 - 341 : Automobiles
 - 342 : Camions et Bus
 - 351 : Navires
 - 352 : Matériels de chemin de fer

353 : Avions
354 : Autres matériels de transport
361 : Meubles
362 : Produits des autres industries manufacturières
451 : Travaux publics
452 : Bâtiment
453 : Bâtiment - Logements
722 : Informatique
741 : Services Juridiques
922 : Culture et récréation (marchand)

A more elaborate description of the methods used can be found in:

-C.H. DiMaria and J. Ciccone (2006), 'Total factor productivity growth, technical change and efficiency change in Luxembourg's industrial Sector', STATEC, July 31 2006.

-C.H. DiMaria and J. Ciccone (2006), The source of total factor productivity growth in Luxembourg's services, August 21 2006.

-C.H. DiMaria and J. Ciccone (2006), Repenser la productivité au Luxembourg, Cahiers Economiques du STATEC.

- ***Definition of ICT assets***

See above

- ***Initial capital stock***

Calculated by STATEC. See publications above for an elaborate description.

- ***Comments*** -Please note that due to the fact that Luxembourg is a very small economy, exceptional events for major economic actors (such as big companies), may have strong effects on the statistical series which can even be perceptible at a very aggregated macroeconomic level. So "jumps" in the resulting series are not necessarily due to mistakes.

-STATEC (Statistics Luxembourg) would like to receive copies of papers or research based on their data (please provide feedback to john.haas@statec.etat.lu).

Malta

WP1: Inter-industry Accounts

1. NA data

- Nominal
 - **Sources:** For the period 1999-2005 National Accounts (NA) data has been used. This data was available at the A60 level and has all the variables. For the period 1996-1999 we have NA data for Gross Output, Intermediate Inputs and Value Added. This data is only available at the A31 level. For components of Value Added we only had A17 data for the period 1997-1999. For 1995 for all variables and 1996 for components of Value Added we only had broad aggregate GDP data from the United Nations National Accounts data.
 - **Comments:** For the pre-1999 period trends of the A31 (or A17) level data have been applied to the 1999 A60 level data. For 1995 (and 1996 for components of value added) trends of the UN data have been applied to all variables, by lack of other and more detailed data. Extra detail, when needed, has been based on Eurostat SBS data. The Eurostat SBS data was mainly available for 1999-2002, for other years shares have been assumed the same as the closest year available.
- Volume
 - **Sources:** For the period 1995-2003 UN National Accounts (NA) data has been used. This data was broad sector data. 2004-2005 data has been based on the Total Economy deflator from the GGDC Total Economy Database, by lack of more detailed data.
 - **Comments:** When extra detail was needed prices from higher aggregates have been used, combined with the nominal figures this led to the required volume data. Also only for value added deflator data was available, so this deflator has been applied to Gross Output and Intermediate Inputs as well.

2. SUT data

- Nominal
 - **Sources:** For 2000-2001 Supply and Use tables are available from Eurostat. These tables are at the A60 detail level.
 - **Comments:**
- Volume
 - **Sources:** For 2000-2001 Supply and Use tables are available from Eurostat. These tables are at the A60 detail level.
 - **Comments:**

WP2: Labour Accounts

1. Employment

- **Sources:** Data for 1994-2004 for Persons engaged has been calculated as the sum of full-time employment plus part-time employment. To distinguish between Employees and Self-employed, data on employees and self-employed for 2005 has been used. These data were available at the A60 level. Data was all received from Statistics Malta.
- **Methods:** The 2005 ratios of Employees over Persons engaged has been applied to the 1994-2004 Persons engaged data (assuming the employees-persons engaged ratio constant for the 1994-2004 period and equal to the 2005 ratio). Extra detail for the Persons engaged and Employees data has been based on Eurostat SBS data.
- **Comments:** The Eurostat SBS data was mainly available for 1999-2002, for other years shares have been assumed the same as the closest year available.

2. Hours

- **Sources:** Hours worked data for 2000-2001 and 2003-2004 for Employees and Self-employed was received from Statistics Malta. This data is available at the A17 level. For 1994-2000 Total Economy Hours worked from the GGDC Total Economy Database (January 2007 version) has been used.
- **Methods:** 2002 has been intrapolated between 2001 and 2003. Before 2000 the Total Economy trend from the GGDC Total Economy database has been applied across all industries.
- **Comments:** As the Hours worked data (for Persons engaged) was only available at the A17 level, average hours has been calculated at the A17 level. For more detailed industries, the closest higher aggregate average hours worked has been used.

3. Labour composition

- Employment (or hours)
 - **Sources:** Not Available
 - **Methods:** Not Available
 - **Comments:** Not Available
- Compensation
 - **Sources:** Not Available
 - **Methods:** Not Available
 - **Comments:** Not Available

WP3: Capital Accounts

- **Main sources for GFCF**
Not Available

- *Methods: (for estimating industry * asset)*
- *Definition of ICT assets*
- *Initial capital stock*
- *Weights*
- *Comments*

Netherlands

WP1: Inter-industry Accounts

1. NA data

- Nominal
 - **Sources:** Statistics Netherlands. The data from 1995 (revision 2001) onwards has been revised. The data before 1995 has not been revised yet, but includes estimates for FISIM allocated to users. 2002-2004 could still be revised.
 1. 1970-1986: Industry classification of 39 industries is available.
 2. 1987-1994: Industry classification of 61 industries is available.
 3. 1995-2001: Industry classification of 61 industries is available.
 4. 2002-2004: Industry classification of 61 industries is available.Data at the above mentioned detail is available for Gross Output, Intermediate Inputs and Value added and components of Value Added.
 - **Comments:**
 - The series before and from 1995 have been linked without any modifications. We assume that the correction for FISIM makes the pre 1995 series comparable to the post 1995 series. Statistics Netherlands is currently reworking the historical series and will provide completely revised series back to 1987 in the future.
 - For the breakdown to EUKLEMS industries, we have used pattern data from the Eurostat SBS database for value added and compensation for the period 1995-2004 (for C, 21, 24, 31, 32, 33, 74). For the split up of Value added and Compensation in AtB, C, 17t18, 30t33, 34t35, G and K trends in shares from WP2 (employees) have been used to fill the period 1970-1987.
 - Adjusted GOS to make COMP, GOS and TXSP add up to value added for 13-14 and 10-12 (96-04) 20, 25,36t37 (70-86)
- Volume
 - **Sources:** Statistics Netherlands. The data from 1995 (revision 2001) onwards has been revised. The data before 1995 has not been revised yet, but includes estimates for FISIM allocated to users. 2002-2004 could still be revised. Also, industry detail and variables differ across 5 periods:
 1. 1970-1977: Industry classification of only 13 industries is possible.
 2. 1978-1986: Industry classification of 22 industries is possible.
 3. 1987-1995: Industry classification of 61 industries is possible.
 4. 1996-2001: Industry classification of 61 industries is possible.
 5. 2002-2004: Industry classification of 61 industries is possible.
 - **Comments:**
 - The series before and from 1995 have been linked without any modifications. We assume that the correction for FISIM makes the pre 1995 series comparable to the post 1995 series. Statistics Netherlands is currently reworking the historical series and will provide completely revised series back to 1987 in the future.

-Instead of weights for breakdown to EUKLEMS industries, we have used pattern data from the earliest year for which more detailed data was available, e.g. shares from 1987 applied to 1970-1986. Weights would be preferable but are not available.

-In the period 1970-1977 there is limited detail available. One problematic industry contained data for a number of manufacturing industries and data for some services industries. We had to separate these before we could use it. Combining the constant price data of this industry with the nominal data corresponding to this industry gives us a deflator. This deflator has been applied to the nominal data of the manufacturing as well as the services data that make up this rest-industry. After normalizing the constant value added figures for manufacturing and services on the total of the rest-industry, we can split this rest industry into a manufacturing and a services part. Now pattern data can be applied to get the level of detail we need.

-For missing detail we apply the same volume indices growth rate as the higher aggregate volume growth rate.

2. SUT data

- Nominal
 - **Sources:** Statistics Netherlands
 - **Comments:**
 - Consistent with NA series
 - Number of industries as in NA. About 36 product categories.
 - The shares of the 1981 table have been used for 1980 as well.

- Volume
 - **Sources:** Statistics Netherlands
 - **Comments:**
 - Consistent with NA series for the period 1987-2004
 - Number of industries as in NA. About 36 product categories
 - The shares of the 1981 table have been used for 1980 as well.

3. References

Kolfoort, H., 2006, Constructie database 'inter-industry accounts t.b.v. het project EUKLEMS

Heij, R. de and H. Kolfoort, 2006, INDUSTRY CONCORDANCE EU KLEMS WORKPACKAGES I, II & III (VERSION II)

Kolfoort, H., 2006, Indeling naar goederengroepen t.b.v. het project EUKLEMS.

WP2: Labour Accounts

1. Employees: Employment

- **Sources:** The System of Labour Accounts integrates all available information from different sources to build a consistent data set for the labour market. The main data sources are the Labour Force Surveys and business inquiries into

wages and number of jobs. Variables covered include jobs, persons employed, hours (actually worked, contractual and actually paid), and wages.

- **Methods:** Data on jobs (including a split in gender) for the period 1969-1987 are based on the System of Labour Accounts publication “Tijdreeksen arbeidsrekeningen 1969-1993; 25 jaar banen en arbeidsduur van werknemers” from Statistics Netherlands. Data is available for 61 industries. For the period 1987-2004, historical and published data on employment in persons and jobs (A-series) are used. The period 1995-2004 has been adjusted for a revision in 2001.

For the period 1987–2003, the System of Labour Accounts is the main source on the number of employees (data on man years are available as well). For the period 1969–1986, time series of the numbers of employees have been constructed using time series of the ratio of persons to jobs for seven aggregate industries from the Labour Accounts to back-cast the ratios for all 61 industries from their 1987 levels.

- **Comments:** -Extra detail has been added to employees and persons engaged with Census data for employees for industries AtB, C, 30t33 and O, in order to end up with the EUKLEMS industry list.
-For a number of other industries (NACE 15t16, 17t19, 22, 24, 34t35) detail has been based on Eurostat SBS data.
-For self-employees a few holes in the data have been filled by linear extrapolation (for industries 9, 36, 40 and 46)

2. Employees: Hours

- **Sources:** For *contractual hours*, the System of Labour Accounts is the main source of data. For the period 1969–1986, CPB Netherlands Bureau for Economic Policy Analysis has made time series with a breakdown to 61 industries. For the period 1987–2003, the data are available for the 49 industries in the official industry classification of Statistics Netherlands (P49). Together, the two series form a consistent time series of contractual hours from 1969 to 2003.

The construction of contractual hours for the period 1969–1986 involves several steps. Labour Accounts data have been supplemented with more detailed information from Statistics Netherlands to construct time series of employment *in jobs and in (yearly) hours worked by gender* for a 61-industry breakdown. The National Accounts revision of 1987 has been tackled by using the percentage changes of the newly constructed series to back-cast employment in jobs from their post-revision levels in 1987. Finally, the ‘component method’ (see below) has been used to convert contractual hours into actual hours worked.

The other time components are derived from various other sources. *Paid overtime* comes (for the larger part) from the System of Labour Accounts. *Unpaid overtime* is calculated using a fixed ratio of paid to unpaid overtime; the ratio is based on data from the Labour Force Survey. *Sick leave* figures are derived from National Statistics on sick leave and data on *bad-weather leave*

comes from Production Statistics for the Construction Industry. Information on *strikes* is taken from Statistics Netherlands' strike-statistics. For each time component, industry concordance schemes have been constructed to link the specific industry classification used to either the P49 industry classification or the P61 industry classification.

Several time components - study leave, time spent on schooling and training, extra holidays for elderly workers - have not been accounted for. Short-time absence is put at 0,58% of the contractual hours in all years and in each industry.

- **Methods:** Statistics Netherlands has used a 'component method' for estimating hours worked by employees. The method takes the number of contractual hours as its starting point. It translates contractual hours into hours worked by adding or subtracting various time components. The time components added are paid and unpaid overtime; those subtracted are sick leave, pregnancy and maternity leave, parental leave, short-time absence, bad-weather leave, and hours lost due to strikes.
- **Comments:** Actual hours worked per job are the hours paid plus unpaid overtime less hours paid but not worked due to sick leave, pregnancy leave and maternity leave, parental leave, short-time absence, bad-weather leave, and strikes. Dividing total hours worked by the number of employees in the industry concerned yields hours worked per person.
-The weights to link the P49 industry classification to the EU KLEMS classification are based on the figures in the 61 industries classification and on even more detailed information in the System of Labour Accounts. Whenever possible, we have determined time series of weights rather than one single average to be used for the whole time period.
-Average hours worked per person of aggregate industries have been assumed the same for more detailed industries.

3. Self-employed: Number and annual hours worked

- **Sources:** System of Labour Accounts, Labour Force Sample Survey (LFSS) and Labour Force Survey (LFS)
- **Methods:** In constructing hours actually worked per self-employed several steps are taken. First, with the help of the tables from the Labour Force Sample Survey (LFSS) and Labour Force Survey (LFS) the number of self-employed per class of hours is determined for 10 industries. Second, per class of hours the midmark is determined. For the open class of hours, i.e. more than 45 hours per week, the value of 60 hours has been imputed. Third, by multiplying the midmark of a class of hours with the number of self-employed per class, the hours worked by self-employed per week is calculated. Fourth, the labour volume in hours worked per year is calculated by multiplying the hours worked per week by 48 weeks. This leads to a labour volume in annual hours worked by self-employed for the 10 industries, but only for a part of the time series: The LFSS provides information on hours worked by self-employed only for the years 1975, 1979, 1981, 1983 and 1985, the LFS for years 1988,

1991 and 1996 onwards. For the database, all those steps are taken for the years before 1995. In the intervening years, values were estimated using simple interpolation.

For the years 1995-2001 information comes from the System of Labour Accounts, where hours actually worked are available based on National Accounts revision 1995. From 2001 onwards hours worked are also available yet based on National Accounts revision 2001. As it was preferred to construct a data series following conventions regarding the National Accounts revision 1995, the revision 2001 data were linked to the older data using simple linear extrapolation. This results in a time series of actual annual hours worked by self-employed for the years 1995–2003 using the P10 industry classification.

For adding the gender split (see labour composition), the series of the number of self-employed in the 49 industry classification and of the annual hours worked by self-employed in P10 industry classification are converted to a 19 industry classification, by aggregating or by assuming the same composition as the higher aggregate respectively.

4. Labour composition

- *Employment and hours*
 - **Sources:** System of Labour Accounts, Labour Force Sample Survey (LFSS) and Labour Force Survey (LFS)

- **Methods:**
Number of hours worked by employees by gender

The methodology used for determining the labour volume in (actual) hours worked by gender for employees in the period 1970–2003 is to a considerable extent similar to the method described above. Again, adjustments, as a percentage of contractual hours, are defined per component separately for male employees and for female employees. Next to a labour volume in hours worked of employees by gender, the hours worked *per employee* by gender in the period 1970–2003 are calculated. For this exercise the following three building blocks are available:

-The labour volume in contractual hours worked for employees by gender in the period 1970–1987 for 61 industries.

-The labour volume in contractual hours worked for employees in the period 1987–1994 for 49 industries.

-The labour volume in hours worked for employees in the period 1995–2003 for 49 industries. This time series is available in The System of Labour Accounts

Now there are two problems. First, there was no information on the number of employees by gender in the period 1987–1994 and second, the time series labour volume 1995–2003 holds no information on gender.

With regard to the first problem; the ratio male/female from the number of jobs in that period is used as a proxy. This information is available from the System of Labour Accounts although based on an old industry classification. Therefore, this ratio is converted into a ratio based on the P49 industry classification. This ratio is applied to the time series of employees.

The hours worked in the period 1995–2003 should be broken down by gender. For solving this problem the following steps are taken. First, adjustments are made for both male and female employees based on a time series contractual hours from National Accounts. In this time series, no distinction is made by gender. In contrast to the labour volume in contractual hours, the labour volume in *hours paid by gender* is available. Accordingly, hours worked can be calculated by deducting the percentage from hours paid i.e. the components in money converted leave, paid overtime, unpaid leave and other are left out. In this way, the labour volume for female employees was determined. The labour volume for male employees was calculated by deducting the labour volume in hours worked of women from that of all employees.

Dividing the labour volume in hours worked by gender and the number of employees by gender results in the hours worked per employee by gender for 49 industries.

Number of hours worked by self-employed by gender

As discussed, for adding the gender split the industry classification is converted to a 19 industry classification. The hours worked by gender are calculated using the shares male/female in persons and in hours worked available in the Labour Force Sample Survey (LFSS) and the Labour Force Survey (LFS).

Comments: Labour composition is available at the level of 19 industries. For lower levels we assumed the same composition as the higher aggregate.

Age and skill

The allocation of hours worked per gender to three age classes and five skill levels of the workers has been derived from the LFSS for the years 1979 and 1985 and from the LFS for the period 1991–2003. This has been done for 19 industries, for employees and self-employed separately. The results are in the form of shares of each age-skill group in hours worked per gender. For the years between 1979 and 1985 and between 1985 and 1991, shares have been obtained by linear interpolation.

- Compensation

- **Sources:** Micro data on gross hourly wages per gender, age, skill, and industry are available for the years 1979, 1985, 1989, 1996, 1997, and 2002 from the Wage Structure Inquiry (Loonstructuuronderzoek, LSO) of Statistics Netherlands, and for the period 1992–2002 from the Inquiry of Work Conditions (Arbeidsvoorwaardenonderzoek, AVO) of the Ministry of Social Affairs and Employment.
- **Methods:** On each sample, Mincer-type wage equations have been estimated, for five groups of industries, with a dummy variable for gender and fourteen dummy variables for age-skill combinations; old, unskilled, male workers constitute the reference group. The coefficients exhibit substantial variability over time as a result of small sample sizes. The variability has been reduced by adding the assumption that the change in the wage rate of the reference group coincides with the contractual wage change, independent information on which is available for three groups of industries. Residual variability has been reduced by inspecting the time series of coefficients thus obtained and manually adjusting them whenever deemed appropriate. The results of the LSOs for the years 1996, 1997, and 2002 have been used as a source of information for judging and eventually adjusting the AVO results but have been disregarded otherwise. The results for the period 1992–2002 are thus mainly based on the uninterrupted time series of AVOs. Gaps in the time series have been filled by linear interpolation of the adjusted coefficients. The results have been used to compute time series of wage ratios, the wage of an old unskilled man being set at one.
- **Comments:**-Labour composition for wages is available at the level of 5 industries. For lower levels we assumed the same composition as the higher aggregate.
-The composition shares in wages of 2003 have been applied to wages in 2004 as well.

WP3: Capital Accounts

- **Main sources for GFCF**
The data were newly constructed from original source data on investments by Statistics Netherlands (Internal calculations). As yet unpublished data from Statistics Netherlands, delivered October 24, 2006. Data before 2001 are not officially revised National account data.
- **Methods: (for estimating industry * asset)**
Description of method: Van den Bergen et al., 2005, *Measuring Capital in the Netherlands*, BPA-number: 2005-60-MOO, Statistics Netherlands, Voorburg/Heerlen. Publications in Dutch: Van den Bergen et al., 2005, *Eindrapport herziening kapitaalgoederenvoorraadstatistiek*, BPA-number: 2005-43-MOO, Statistics Netherlands, Voorburg/Heerlen, *Kapitaal in de*

Nederlandse nationale rekeningen, in: De Nederlandse economie in 2004, p. 126--37, Statistics Netherlands, Voorburg/Heerlen

- ***Definition of ICT assets***

An unresolved issue is the split of asset type 10, *Machines en installaties*, into *CT* and *OMach*. We use data on investment by product type as given by the CBS and assume that all communication equipment investment is made by industry 64. This assumption is reasonable given the way this data was collected by the CBS (firms outside industry 64 were not covered for this statistic). Data before 1987 on communication equipment is estimated by the supply approach using data on production, imports and exports (keeping the ratio of investment over domestic availability constant for the period before 1987). This is used to calculate the share of communication equipment in non-structures investment by industry 64. The share of communication equipment in non-structures investment by all other industries is based on the average shares for France, Germany, UK and US, on an industry basis.

- ***Initial capital stock***

Net capital stock for 1952, using material from Korn en Van der Weide (1960), see the references.

- ***Comments***

-In each industry, asset type 14, *Overdrachtskosten op grond*, is to be allocated to RStruc, NRStruc, and Infra in proportion to the amounts of investment.

Asset type 21,

-*Overdrachtskosten op niet-geproduceerde immateriele activa*, occurs only in industry 1, landbouw, and refers to milk quota. It is to be concorded solely to OGFCFI.

Poland

WP1: Inter-industry Accounts

1. NA data

- Nominal

- **Sources:** -Data were provided by the Polish National Statistical Institute (PL NSI) at the NACE rev. 1 2-digit (60 industries) level.

- NACE industries 11-14 (Extraction of crude petroleum and natural gas and services, Mining of uranium and thorium ores, Mining of metal ores, and Other mining and quarrying) and 61-62 (Water transport and Air transport) are reported together.

- Data delivered include time series on gross output and gross value added at basic prices, intermediate input at purchaser prices as well as components of gross value added at current prices (no split of gross operating surplus into net operating surplus and consumption of fixed capital is possible).

- Data are FISIM-adjusted according to ESA'95 requirements.

- PL NSI provided the revised and FISIM-adjusted data for gross output and gross value added at the NACE 2-digit level (except the ones mentioned above) for the period 1995-1999 and 2002, at the level of 31 NACE industries in 2000, 2001 and 2003 and at 17 NACE industries in 2004. The gross value added components have been provided at the NACE 2-digit level (except the ones mentioned above) for the period 1995-1999 and 2002 and at 17 NACE industries for 2000-2001, 2003-2004.

- **Comments:** In order to provide all data at 60 NACE industries, wiiw has made the following adjustments:

- For 2000 and 2001 gross value added and gross output have been estimated from the level of 31 NACE industries to 60 industries by using the linear interpolation of shares for 1999 and 2002. For 2003 (31 industries) the missing shares of 2002 (60 industries) have been applied. For 2004 (17 industries available) the shares of 2003 have been applied.

- For 2000-2001 and 2003-2004 the gross value added components have been calculated at the level of 60 industries by using the original A17 data and applying the weighted A60 shares of 1999 and 2002 to the years 2000-2001. For 2003 and 2004 the average shares of 1999-2002 have been applied to the original data at A17. Gross operating surplus is calculated as the difference between total gross value added and the sum over all other components.

- Values for industry NACE 99 (Extra-territorial organizations and bodies) have not been included and are set to 0 by wiiw.

- Data of NACE industries 11-14 are allocated to NACE 13to14 in the EUKLEMS database.

- Weights for 3-digit industries in EUKLEMS classification have been calculated using SBS data (Structural Business Statistics) from Eurostat covering the period 1995-2003. Missing data in these series

have been imputed by various methods, mainly linear interpolation and calculation of trends; the respective variables have further been smoothed using 3-year moving averages. Table 1 presents the SBS indicators used for calculations of weights. To satisfy adding-up restrictions of components we calculated the shares of gross value added as the residual in a first step. To satisfy adding-up restrictions of gross value added and intermediate input the latter was calculated as residual.

-For industry NACE 92 (Recreational, cultural and sporting activities) no weights are available.

-Weights for NACE 61 and 62 have been calculated using data from the GGDC 60-industry database. wiiw used weights of value added for gross output, gross operating surplus, taxes and subsidies on production and of employment for compensation, wages and social contributions (A negative value of value added in 1997 was replaced by the average of 1996 and 1998).

-No weights are provided for NACE 11-14 as no original data are available.

Table 1 – Data for calculation of weights

EUKLEMS	
code	SBS indicator
GObas	12120 Production value Calculated using data from GObas and
Iipur	VAbas
VAbas	12140 Value added at basic prices (adjusted)
Comp	13310 Personnel costs

For the time being variables like GOS and Net Taxes on production have not been disaggregated beyond the level as received from the Czech National Statistical Institute.

- Volume
 - **Sources:** -Data are provided by the National Statistical Institute of Poland (PL NSI) at the NACE rev. 1 classification for 31 industries.
 - Data delivered include time series on gross output, intermediate input and gross value added at constant previous-year prices.
 - Data are available for the period 1996-2003 for 31 industries and in 2004 for 17 industries.
 - Data are FISIM-adjusted according to ESA'95 requirements.
 - **Comments:**
 - In order to get gross value added and gross output at the level of 60 industries for 1995-2004, wiiw first calculated 2004 from 17 industries to 31 industries by applying shares of 2003. Then the shares from the nominal time series at 60 industries from 1995-2004 have been used to calculate constant previous-year data at 60 industries for this period.

-NACE industries 11-14 (Extraction of crude petroleum and natural gas and services, Mining of uranium and thorium ores, Mining of metal ores, and Other mining and quarrying) and 61-62 (Water transport and Air transport) are reported together.

-Values for industry NACE 99 (Extra-territorial organizations and bodies) have not been included and are set to 0 by wiiw.

Data of NACE industries 11-14 are allocated to NACE 13to14 in the EUKLEMS database.

-Weights for 3-digit industries in EUKLEMS classification have been calculated using SBS (Structural Business Statistics) data covering the period 1995-2003. Missing data in these series have been imputed by various methods, mainly linear interpolation and calculation of trends; the variables have further been smoothed using 3-year moving averages. Table 2 presents the SBS indicators used for the calculation of weights. For gross output and gross value added we used the weights calculated for the nominal series. To satisfy adding-up restrictions of gross value added and intermediate input, the latter was calculated as residual.

-Weights for NACE 61 and 62 have been calculated using (current) value added data from the GGDC 60-industry database (see description on the current data above).

-For industry NACE 92 (Recreational, cultural and sporting activities) no weights are delivered.

-No weights are provided for NACE 11-14 as no original data are available.

Table 2 – Data for calculation of weights

EUKLEMS code	SBS indicator
GObas	12120 Production value
Iipur	Calculated using data from GObas and VAbas
VAbas	12140 Value added at basic prices (adjusted)

2. SUT data

- *Nominal*

- **Sources:** -Data are provided by the National Statistical Institute of Poland (PL NSI) at the NACE rev. 1 2-digit (60 industries) level and the CPA 2-digit (60 products) level before FISIM revision (including other items of revision).

-From the set of SUT provided only use tables at purchaser prices have been used further on.

-NACE industries 11-14 (Extraction of crude petroleum and natural gas and services, Mining of uranium and thorium ores, Mining of metal ores, and Other mining and quarrying) and 61-62 (Water transport and Air transport) are reported together.

-The period covered is 1996-2000.

- Use tables are not FISIM-adjusted.
- Use tables are balanced with NA.

- **Comments:**

- Use tables for 1996-2000 have been FISIM-adjusted by wiiw by applying the intermediate input shares of these tables to the revised values of intermediate input at current prices from NA.
- Use tables for 1995 have been calculated by extrapolating shares of 1996 back to 1995 using the average growth rates of 1996-1998 and applying these to NA data. Similarly, use tables for 2001-2004 have been calculated by extrapolating shares of the use table 2000 using average growth rates of input shares 1998-2000.
- In NACE industry 95 (Private households with employed persons) which did not show up in use table but in NA data, we set the value of the NA data at the diagonal of the use table.
- Values for industry NACE 99 (Extra-territorial organizations and bodies) have not been included and are set to 0 by wiiw.

- Volume

- **Sources:** No original use tables at constant prices are available
- **Comments:** -Use tables for 1996-2004 have been constructed by wiiw applying input shares from nominal use tables to intermediate input from NA at constant previous-year prices.

WP2: Labour Accounts

1. Employment

- **Sources:** -Data were provided by the National Statistical Institute of Poland (PL NSI) at the NACE rev. 1 2-digit (60 industries) level.
 - NACE industries 11-14 (Extraction of crude petroleum and natural gas and services, Mining of uranium and thorium ores, Mining of metal ores, and Other mining and quarrying) and 61-62 (Water transport and Air transport) are reported together.
 - The data delivered include time series (1995-2004) for employed persons, employees and self-employed in persons.
 - The period covered is 1995-2004.
- **Methods:** The employment data (in persons) are National Accounts data delivered by PL NSI. The NA data are constructed by PL NSI in the following way: The basis for the employment and hours worked data in the Polish National accounts provided by the Polish Central Statistical Office are the yearly establishment surveys and estimates on those employed in agriculture. Thus, in the case of Poland, LFS data are not used to construct NA employment data. The survey data are adjusted to the ESA'95 methodology in the process of constructing National Accounts. Data concerning persons employed on private farms in agriculture were estimated with the use of the results of the agricultural census conducted in June 1996.

- **Comments:** The following adjustments have been made by wiiw:
 - wiiw corrected employment figures for NACE 1 (Agriculture) in 2003-2004 due to changes in the agricultural census 2002. The figures for the employed, employees and the self-employed had fallen considerably and were recalculated with growth rates from the new census employment figures.
 - Growth rates of full-time equivalents figures were used to calculate employment figures for the NACE industries 60 (Land transport), 61-62 (Water and air transport) and 63 (Supporting transport; travel agencies).
 - Employment figures in NACE 67 (Activities auxiliary to financial intermediation) in 1999 and 2000 turned out to be an outlier and were removed by linear interpolation.
 - Since no NA figures were available for NACE 95 (Private households with employed persons), LFS employment data were used for that particular industry to be consistent over workpackages.
 - Weights for NACE 92 (Recreational, cultural and sporting activities) are not available; weights for NACE industries 61 (Water transport) and 62 (Air transport) were taken from the GGDC 60-industry database.
 - Furthermore wiiw decided not to split up the data for NACE 11-14 as no original data were available.
 - Weights for the employed, employees and self-employed have been constructed using Eurostat Structural Business Statistics (SBS) indicator 16110: Number of persons employed.

2. Hours

- **Sources:** -Data are provided by PL NSI at the NACE rev. 1 2-digit (60 industries) level.
 - NACE industries 11-14 (Extraction of crude petroleum and natural gas and services, Mining of uranium and thorium ores, Mining of metal ores, and Other mining and quarrying) and 61-62 (Water transport and Air transport) are reported together.
 - The data delivered include time series (1995-2004) on annual hours worked per industry for employees only.
 - The period covered is 1995-2004.
- **Methods:** The main source of the NA data is the yearly establishment survey.
- **Comments:** The following adjustments have been made by wiiw:
 - Hours worked have been calculated using total annual hours per industry divided by the number of employees. Since no information is available at the 3-digit level, it is assumed that hours worked per employee in 3-digit industries equal those at the 2-digit level.
 - Hours worked in 1995 and 1996 were assumed to be equal to 1997.
 - Estimations of hours worked of self-employed were not satisfactory/reliable and have not been included.
 - Since no NA figures were available for NACE 95 (Private households with employed persons) we used LFS data for that particular industry: construction of data was done by using usual weekly hours of work multiplied by 52 weeks.
 - For reasons of consistency with other workpackages wiiw decided not to split up the data for NACE 11-14.

-Hours worked in NACE 67 (Activities auxiliary to financial intermediation) in 2000 turned out to be an outlier and have been constructed by linear interpolation.

-Since levels of hours worked were inconsistently low or volatile over time we had to make use of LFS data on hours worked to adjust the final level of hours worked data in NACE sectors 01, 02, 67, 73, 80, 75, 91, 93.

-Hours actually worked per self-employed were calculated using the ratios of hours per self-employed to hours per employee in each NACE 60 sector which were available for the Czech Republic, the Slovak Republic and Hungary. The averages of the sectoral ratios of these three countries were applied.

-Hours worked of total employed were calculated as a weighted average of hours worked per employee and hours worked per self employed.

3. Labour composition

- Employment (or hours)
 - **Sources:** -Data are taken from Eurostat Labour Force Survey data, 2nd quarter of each year, at the NACE rev. 1 2-digit (60 industries) level for the years 2004-2005 and at the NACE rev. 1 1-digit (17 industries) level for the years 1998-2003.
 - The data provided include time series on employed persons, employees and self-employed broken down by industries, gender, age groups (five year cohorts) and educational groups (high, medium and low according to the ISCED 1-digit classification).
 - The period covered is 1998-2005.
 - **Methods:-**
 - **Comments:** For the specific requirements of the project the following adjustments have been made by wiiw:
 - Data not including information on industry have been allocated within sex, age and educational categories using available industry shares.
 - Data not including information on education have been allocated to the lowest educational category.
 - Since data at NACE 2-digit level are available only from 2004 onwards, wiiw split up NACE industry D (Manufacturing) into EUKLEMS categories 3 (Consumer manufacturing) to 5 (Investment manufacturing), as well as NACE industry I (Transport, storage and communications) into EUKLEMS categories 8 (Transport) and 9 (Communications).
 - Missing data for one year have been calculated by linear interpolation.
 - Data at the beginning (1998) or end of the period (2005) have been calculated applying the shares of the respective categories of the following (1999) or previous year (2004), respectively.
 - Labour composition is available at the level of 15 industries. For lower levels we assumed the same composition as the higher aggregate.
 - The composition shares in employment of 2000 have been applied to employment in 1995-1999 as well.

- Compensation
 - **Sources:** -Data are provided from PL NSI at the NACE rev. 1 1-digit level (17 industries except industry Q, Extra-territorial organizations and bodies).
 - Data include information on gross monthly earnings of full-time employees by educational attainment level (eight national education categories which have been allocated to the ISCED 1-digit categories highly, medium- and low-educated), age (ten year age cohorts), and gender.
 - Data are provided for the years 1999, 2001, 2002 and 2004.
 - **Methods:** Data are based on the Structural Earnings Survey (SES) data (gross monthly earnings of full-time employees).
 - **Comments:** The following adjustments have been made by wiiw:
 - Original SES data were available for the years 1999, 2001, 2002 and 2004. Data for 2000 and 2003 were calculated by linear interpolation.
 - Structural wage data of the year 1999 were used for 1998.
 - Original SES data were available with breakdowns by industries and gender, by age groups and gender as well as by educational groups and gender. wiiw used the ratios of wages of highly, medium- and low-educated men and women to total wages by gender to calculate educational breakdowns for wages by industries. The ratios of male and female wages in age groups to total wages by gender were used to estimate a further split-up by gender.
 - Since SES data are only available for NACE 1-digit industries, wiiw used additional data on 'Average monthly gross wages' from PL NSI to split up manufacturing industries (D) as well as NACE industry I (Transport, storage and communications).
 - The composition shares in wages of 1998 have been applied to wages in 1995-1997 as well.
 - Labour composition is available at the level of 15 industries. For lower levels we assumed the same composition as the higher aggregate.

WP3: Capital Accounts

- **Main sources for GFCF**
 - Data on GFCF at current and constant previous-year prices were delivered by the Polish National Statistical Institute (PL NSI) at the NACE rev. 1 2-digit (60 industries) level for the period 1995-2004.
 - For being consistent over workpackages NACE industries 11-14 (Extraction of crude petroleum and natural gas and services, Mining of uranium and thorium ores, Mining of metal ores, and Other mining and quarrying) and 61-62 (Water transport and Air transport) are reported together.
 - The following asset breakdown is available: AN.1111 Residential buildings (RStruc) which is only reported in industry NACE 70 (Real estate activities), AN.1112 Other buildings and constructions (OCon), AN.11132 Machinery and technical equipment (Mach), AN.11131 Transport equipment (TraEq),

AN.1114 Cultivated assets (OGFCFT), and AN.112 Total intangibles (GFCFI). Thus there is no information provided on IT, CT and Software.

-Data are available for the period 1995-2004 at current prices and for the period 1996-2004 at constant previous-year prices.

-Data on investment are available for the period 1995-2002 at current prices for the same asset types and industries. Capital stock data are calculated at the basis of the investment data.

- **Methods: (for estimating industry * asset)**

-For consistency with capital stock data (which are calculated from investment data) wiiw replaced GFCF data by investment data in case GFCF was zero and investments were positive. For 2003 and 2004 no investment data are available and wiiw replaced these by the mean over the whole period.

-NACE industries 95 and 99 are not reported and set to 0 by wiiw.

- **Definition of ICT assets**

Information on IT, CT and Software is not available.

- **Initial capital stock**

-Data on gross capital stock (GCS) at current and constant prices were provided by PL NSI at the NACE rev. 1 2-digit (60 industries) level for the period 1995-2003.

-NACE industries 11-14 (Extraction of crude petroleum and natural gas and services, Mining of uranium and thorium ores, Mining of metal ores, and Other mining and quarrying) and I (Transport, storage and communications) are reported together.

-Industries NACE 60-64 have been split by wiiw (using investment outlays data and the PIM method).

-In industry NACE 70 asset type Buildings and constructions was split into asset types Residential buildings (RStruc) and Other buildings and construction (OCon) by wiiw, using investment outlays and the PIM method.

-Capital stock estimations by PL NSI are based on investment data. However, there appear large differences between the series on investment data and that on gross fixed capital formation (which include the hidden economy, VAT fraud and capital repairs according to NA definitions). We therefore adjusted the level of the capital stock data by using the 3-year moving average of the ratio of GFCF/Investment data by industry and asset type.

- **Weights**

-Values for NACE industry 11-14 are reported together; no weights are specified to guarantee consistency over workpackages.

-For industry NACE 92 (Recreational, cultural and sporting activities) weights are not available.

Portugal

WP1: Inter-industry Accounts

1. NA data

- Nominal

- **Sources:** We took Gross Output, Intermediate Inputs and Value Added from a set of Use tables from Statistics Portugal (INE). These tables run from 1995-2003 and are at the A30 level. Labour compensation has been taken from National Accounts data (combined 2 sets, one for 1995-1999, one for 1999-2003). 2004 has been extrapolated with very aggregate and preliminary National Accounts data.
- **Comments:** The Use tables have been used because this is the only consistent data available for the whole 1995-2003 period. There are also two sets of National Accounts data available (1995-1999 and 2000-2002), both at the A60 level. Problem is that there is a break between the two sets and no overlap year available. So these two sets of NA data have been used to add detail to the data from the Use tables. For a few industries not even the A60 level is enough detail. When this happens (so for 3-digit NACE industries), Eurostat Structural Business Statistics (SBS) data has been used to add extra detail.

-Eurostat Structural Business Statistics (SBS) data had data up to 2003. For 2004 shares needed to add detail have been assumed the same as in 2003.

-A third comment concerns the consistency between the Labour compensation data (which is taken from the National Accounts) and the data taken from the Use tables. With National Accounts data we have calculated Compensation-Value Added ratio's and applied these to the Value Added data from the Use tables.

-A final comment concerns Labour compensation data for 2004. The National Accounts data runs from 1995-2003. For 2004 no Labour compensation data was available and thus 2003 Labour Compensation data has been extrapolated with the 2003-2004 value added trend.

- Volume

- **Sources:** We took Gross Output, Intermediate Inputs and Value Added from the same set of Use tables as those that were used for the current price data. These tables run from 1995-2003 and are at the A30 level. 2004 has been extrapolated with very aggregate and preliminary National Accounts data.
- **Comments:** When extra detail was needed prices from higher aggregates have been used, combined with the nominal figures this led to the required volume data. 2004 has been extrapolated with very aggregate and preliminary National Accounts data.

2. SUT data

- Nominal
 - **Sources:** Detailed Use tables have not been processed yet.
 - **Comments:**
- Volume
 - **Sources:** Detailed Use tables have not been processed yet.
 - **Comments:**

WP2: Labour Accounts

1. Employment

- **Sources:**

All Employment data was received from Statistics Portugal. The 1995-2002 data (divided in two sets, 1995-1999 and 1999-2002) is available at the A60 level. 2003 has been extrapolated with the 2002-2003 trends of Employment data, which was available at the A30 level. 2004 has been extrapolated with the 2003-2004 Employment trends of broad sectors, 12 sectors, most detail was in services.
- **Methods:**

For Employment there was a break in the National Accounts series as well (between 1999 and 2000), but as there was an overlap year available Employment could be linked.

For a few industries not even the A60 level is enough detail (i.e. 3 digit NACE industries). When this happens, Eurostat SBS data has been used to add extra detail. The Eurostat Structural Business Statistics (SBS) database had data up to 2003. For 2004 shares needed to add detail have been assumed the same as in 2003.
- **Comments:**

2. Hours

- **Sources:**

Hours worked have been based on a combination of 3 sources. First, for Manufacturing there was pretty detailed 1999-2002 data from the Eurostat Structural Business Statistics (SBS). Second, International Labour Organisation (ILO) has data on hours worked for broad sectors for 1994. And finally, for years where there was no Eurostat or ILO data, we have extrapolated the data using Total Economy Database hours from the GGDC.
- **Methods:**

Ratios of the ILO broad sectors over the manufacturing sector have been calculated. This 1994 ratio has assumed the same for other years and has been applied to the Total Manufacturing figures from Eurostat.

- **Comments:**
As the Hours worked data (for Persons engaged) was only available at the A31 level, average hours has been calculated at the A31 level. For more detailed industries, the closest higher aggregate average hours worked has been used.

3. Labour composition

- Employment (or hours)
 - **Sources:** Not Available
 - **Methods:** Not Available
 - **Comments:** Not Available
- Compensation
 - **Sources:** Not Available
 - **Methods:** Not Available
 - **Comments:** Not Available

WP3: Capital Accounts

- **Main sources for GFCF** : Not Available
- **Methods:** (for estimating industry * asset)
- **Definition of ICT assets**
- **Initial capital stock**
- **Weights**
- **Comments**

Slovak Republic

WP1: Inter-industry Accounts

1. NA data

- Nominal
 - **Sources:** Data were provided by the Slovak National Statistical Institute (SK NSI) at the NACE rev. 1 2-digit (60 industries) level.
 - Data delivered include time series on gross output and gross value added at basic prices, intermediate input at purchaser prices as well as components of gross value added at current prices.
 - All data cover the period 1995-2005.
 - Data on mixed income are available for 2001-2003 by industry and for 1995-2004 at the aggregate level.
 - Data are FISIM-adjusted according to ESA'95 requirements.
 - **Comments:**
 - Data for industry NACE 99 (Extra-territorial organizations and bodies) and NACE 12 (Mining of uranium and thorium ores) are set to 0.
 - Inconsistencies in NACE 95 (Private households with employed persons) over workpackages induced wiiw in consultation with SK NSI to integrate them to NACE 93 (Other service activities).
 - Weights for 3-digit industries in EUKLEMS classification have been calculated using SBS data (Structural Business Statistics) of Eurostat covering the period 1995-2003. Missing data in these series have been imputed by various methods, mainly linear interpolation and calculation of trends; the respective variables have further been smoothed using 3-year moving averages. Table 1 presents the SBS indicators used for the calculation of weights. To satisfy adding-up restrictions of components we calculated the shares for gross value added as a residual in a first step. To satisfy adding-up restrictions of gross value added and intermediate input, the latter was calculated as residual.
 - For industry NACE 92 (Recreational, cultural and sporting activities) weights are not available.
 - Weights for 2004-2005 are set equal to 2003.

Table 1 – Data for calculation of weights

EUKLEMS	
code	SBS indicator
GObas	12120 Production value
Iipur	Calculated using data from GObas and VAbas
VAbas	12140 Value added at basic prices (adjusted)
Comp	13310 Personnel costs

For the time being variables like GOS and Net Taxes on production have not been disaggregated beyond the level as received from the Slovak National Statistical Institute.

- Volume
 - **Sources:** -Data were provided by the Slovak National Statistical Institute at the NACE rev. 1 2-digit (60 industries) level.
 - Data delivered include time series on gross output, intermediate input and gross value added at constant 2000 prices.
 - All data cover the period 1995-2005.
 - Data are FISIM-adjusted according to ESA'95 requirements.
 - **Comments:** -Data for industry NACE 99 (Extra-territorial organizations and bodies) and NACE 12 (Mining of uranium and thorium ores) have not been included and are set to 0 by wiiw.
 - Inconsistencies in NACE 95 (Private households with employed persons) over workpackages induced wiiw in consultation with SK NSI to integrate them to NACE 93 (Other service activities).
 - Weights for 3-digit industries in EUKLEMS classification have been calculated using SBS data covering the period 1995-2003. Missing data in these series have been imputed by various methods, mainly linear interpolation and calculation of trends; the respective variables have further been smoothed using 3-year moving averages. Table 2 presents the SBS indicators used for the calculation of weights. For gross output and gross value added we used the weights calculated for the nominal series. To satisfy adding-up restrictions of gross value added and intermediate input the latter was calculated as residual.
 - For industry NACE 92 (Recreational, cultural and sporting activities) weights are not available.
 - Weights for 2004-2005 are set equal to 2003.

Table 2 – Data for calculation of weights

EUKLEMS	
code	SBS indicator
GObas	12120 Production value
Iipur	Calculated using data from GObas and VAbas
VAbas	12140 Value added at basic prices (adjusted)

2. SUT data

- Nominal
 - **Sources:** -Data are provided by the Slovak National Statistical Institute at the NACE rev. 1 2-digit (60 industries) level of NACE rev. 1 and the CPA 2-digit (60 products) level.
 - From the set of SUT provided only use table at purchaser prices have been used further on.
 - The period covered is 1995-2002.
 - Use tables are FISIM-adjusted according to ESA'95 requirements.
 - Use tables are balanced with NA.

- **Comments:**
 - Use tables for 2003-2005 are constructed by wiiw by calculating trends of input shares over 1999-2002 and applying them to available data on intermediate inputs by industry taken from NA.
 - Data for industry NACE 99 (Extra-territorial organizations and bodies) and NACE 12 (Mining of uranium and thorium ores) have not been included and are set to 0 by wiiw.
 - Inconsistencies in NACE 95 (Private households with employed persons) over workpackages induced wiiw in consultation with SK NSI to integrate them to NACE 93 (Other service activities).
- Volume
 - **Sources:** -Data were provided by the Slovak National Statistical Institute at the NACE rev. 1 2-digit (60 industries) level and the CPA 2-digit (60 products) level.
 - From the set of SUT provided only use table at purchaser prices have been considered further on.
 - The period covered is 1995-2002, based on constant previous year prices.
 - Use tables are FISIM-adjusted according to ESA'95 requirements.
 - Use tables are balanced with NA.
 - **Comments:**-Use tables at constant previous-year prices have been calculated by applying shares of nominal inputs to NA data on intermediate inputs by industry taken from NA.
 - Data for industry NACE 99 (Extra-territorial organizations and bodies) and NACE 12 (Mining of uranium and thorium ores) have not been included and are set to 0 by wiiw.

WP2: Labour Accounts

1. Employment

- **Sources:** -Data were provided by the Slovak National Statistical Institute (SK NSI) at the NACE rev. 1 2-digit (60 industries) level.
 - The data delivered include time series (1995-2005) for employed persons, employees and self-employed in persons.
 - The period covered is 1995-2005.
- **Methods:** The employment data are National accounts data. Data contained in the Slovak National Labour Accounts are based on business type statistical sources, such as the Structural Business Statistics (SBS) or survey on employment and earnings (see below). To ensure the exhaustiveness, data from the business statistics are adjusted for unregistered work using the Labour Force Survey (after harmonization on common concepts according to ESA'95).

To compile labour data in the Labour Accounts, mostly the following surveys were used:

- the annual statistical survey on employment and earnings, which covers all enterprises with more than 20 employees and all institutions of the general government sector, NPISH sector as well as financial corporations;
 - the quarterly statistical survey on employment and wages and salaries, which covers all institutions of the general government sector and NPISH sector;
 - the quarterly enterprise survey for small enterprises (up to 20 employees);
 - the structural business survey on establishments (over 20 employees);
 - the structural business survey on small enterprises (up to 20 employees);
 - the structural business survey on self-employed, the sample survey;
 - the LFS, continuously sample survey on households;
 - the administrative data of the Tax Office;
 - the administrative data from the Statistical Register.
- **Comments:** The following adjustments have been made by wiiw:
 - Weights to convert the industry classification into 72 EUKLEMS industries for employed, employees and self-employed have been constructed using Eurostat Structural Business Statistics (SBS) indicator 16110 (Number of persons employed). For EUKLEMS industries 331t3 and 334t5 we used SBS indicator 16130 (Number of employees) as SBS 16110 (Number of persons employed) is not available for 334t5.
 - Weights for 2004-2005 are assumed to be equal to weights in 2003.
 - Since no information is available on NACE 92 (Recreational, cultural and sporting activities) sub-industries, weights for this industry are set to not available.
 - Due to inconsistencies in NACE 95 data series after consultation with SK NSI all data of NACE 95 was included in NACE 93.This was performed consistently in all workpackages.

2. Hours

- **Sources:** -Data were provided by SK NSI at the NACE rev. 1 2-digit (60 industries) level.
 - The data delivered include time series (1995-2005) on annual hours worked per industry for employed persons, employees and self-employed.
 - The period covered is 1995-2005.
- **Methods:** The number of hours worked by employees is based on data from business statistics. The definition of hours worked used in the statistical surveys is in accordance with ESA and ILO definitions. The total hours worked by all those employed are stated for regular work time and overtimes. Breaks are also included and also time spent on work travel for which the wage is paid. Short periods of rest are included as well. Paid but not worked time is not included in time worked, e.g. recovery holiday, public holidays, sick-leave, care of family member.
The number of hours worked by those in self-employment is estimated based on the usual working hours of the self-employed observed in the LFS (after correction for holidays and free days).

- **Comments:** The following adjustments have been made by wiiw:
 - Annual hours worked per employed, employee and self-employed have been calculated by dividing annual hours worked per industry for employed persons, employees and self-employed by the number of employed, employees or self-employed.
 - After consultation with SK NSI, wiiw smoothed and adjusted hours worked data for various industries (and years) in the following way:
 - Hours per employee:* linear interpolation for NACE industries 5 (2003), 13 (2002), 16 (2004), 30 (2002), 61(2000), 62 (2000, 2004), 66 (2004), 67 (1998), 71 (2003), 74 (2004), 91 (2003-04), 92 (2004), 93 (2004). Average yearly growth rate of industry has been used instead of original growth rate in 2005 in NACE industry 30.
 - Hours per self-employed:* linear interpolation for NACE industries 14 (1996, 2002, 2003), 31 (2002), 32 (2000), 30 (2002), 33 (1998), 36 (1996, 1997, 2002), 51 (2000), 63 (2002), 67 (2003), 71 (2000, 2002), 73 (2002), 80 (1996, 1997), 95 (2003). Average yearly growth rate of industry used instead of original growth rate in NACE industries 15 (1996, 1997), 20 (1997, 1998), 27 (1997), 29 (1998), 31 (1999), 21 (1998), 34 (1998, 2001), 36 (1997), 37 (1997), 40 (1995-1997, 2003, 2004), 41 (1996, 2000), 41 (1996, 2000), 45 (1997), 50 (1997, 1999), 51-60 (1997), 61 (1997, 2001), 62-65 (1997), 67 (1996-1997, 1999), 70 (1997), 71-74 (1997), 80 (1999, 2001). In NACE sector 66 we used the arithmetic average of the figures of 2002-2005 for these years. In NACE sector 75 the value of the year 1997 was used to the years 2001-2003 and 2005. In NACE sector 91 the value of the year 1996 was used for 2003.
 - Due to inconsistencies in NACE 95 data series after consultation with SK NSI all data of NACE 95 was included in NACE 93. This was performed consistently in all workpackages.
 - We assume throughout that average hours worked per person in 3-digit industries equal those at the 2-digit level.

3. Labour composition

- Employment (or hours)
 - **Sources:** -Data are taken from Eurostat Labour Force Survey data, 2nd quarter of each year, at the NACE rev. 1 2-digit (60 industries) level.
 - The data provided include time series on employed persons, employees and self-employed broken down by industries, gender, age groups (five year age cohorts) and educational groups (high, medium and low according to the ISCED 1-digit classification).
 - The period covered is 1998-2005.
 - **Methods:** -
 - **Comments:** For the specific requirements of the project the following adjustments have been made by wiiw:
 - Data not including information on industry have been allocated within sex, age and educational categories using available industry shares.
 - Data not including information on education have been allocated to the lowest educational category.
 - Missing data for one year have been calculated by linear interpolation.

-Data at the beginning (1998) or end of the period (2005) have been calculated applying the shares of the respective categories of the following (1999) or previous year (2004), respectively.

-The composition shares in employment of 1998 have been applied to employment in 1995-1997 as well.

-Labour composition is available at the level of 15 industries. For lower levels we assumed the same composition as the higher aggregate.

- Compensation

- **Sources:** -Data were provided by SK NSI at the NACE rev. 1 2-digit (60 industries) level. Data are based on Structural Earnings Survey (SES) data (gross monthly earnings of employees).

- Data series were provided including information on gross monthly earnings of employees by educational attainment level (9 national educational categories which have been allocated to the ISCED 1-digit categories highly, medium- and low-educated) age (5 year age cohorts) and gender.

- The period covered is 1996-2004.

- **Methods:** -

- **Comments:** Adjustments made by wiiw:

- In case of missing information on educational attainment level, data have been allocated to the upper secondary education group because of similar wage level.

- The original SES data were available with cross-classifications by industries and gender, by age groups and gender as well as by educational groups and gender. wiiw used the ratios of wages of highly, medium- and low-educated men and women to total wages by gender to calculate education breakdowns for wages for each industry.

- In a second step the ratios of male and female wages of different age groups to total wages by gender were used to calculate a further split-up by age group.

- In case of missing or suppressed wage data for educational or age groups in specific industries, wiiw estimated these values with the help of ratios of wages of similar educational groups, age groups or industries to the total wage of industries, age groups or educational groups or with the help of ratios of wages of adjacent years.

- No data on wages split up by educational attainment groups as well as age were available for the year 1996, but only a breakdown by industries and gender. Therefore the educational and age cross-classifications of 1997 were used for 1996.

- Labour composition is available at the level of 15 industries. For lower levels we assumed the same composition as the higher aggregate.

- The composition shares in wages of 1996 have been applied to wages in 1995 as well.

WP3: Capital Accounts

- ***Main sources for GFCF***
 - Data on GFCF were delivered by the Slovak National Statistical Institute (SK NSI) at the NACE rev. 1 2-digit (60 industries) level for the period 1995-2004.
 - A breakdown by asset types and industries is not available.
 - Data on GFCF were delivered by SK NSI at the total economy level for the period 1993-2004 by asset types (Buildings and construction total, of which Residences, Machinery and equipment, Transports, Other tangible fixed assets, and Intangible fixed assets); for these a breakdown by industry is not possible.
- ***Methods: (for estimating industry * asset)***

Values for NACE industry 12 (Mining of uranium and thorium ores) and 99 (Extra-territorial organizations and bodies) were not included and set to 0 by wiiw.
- ***Definition of ICT assets***

No breakdown by asset types available.
- ***Initial capital stock***

Data on gross capital stock (GCS) were delivered by SK NSI at the total economy level for the period 1993-2004 by asset types (Buildings and construction total, of which Residences, Machinery and equipment, Transports, Other tangible fixed assets, and Intangible fixed assets); for these a breakdown by industry is not possible.
- ***Weights: -***

Slovenia

WP1: Inter-industry Accounts

1. NA data

- Nominal
 - **Sources:** -Data were provided by the National Statistical Institute of Slovenia (SI NSI) at the NACE rev. 1 2-digit (60 industries) level.
 - Data delivered include time series on gross output and gross value added at basic prices, intermediate input at purchaser prices as well as components of gross value added at current prices (net taxes on production cannot be split into taxes and subsidies on production).
 - All data cover the period 1995-2004.
 - Data are FISIM-adjusted according to ESA'95 requirements.
 - **Comments:** -Data for industry NACE 11 (Extraction of crude petroleum and natural gas and services) and NACE 99 (Extra-territorial organizations and bodies) are not included and set to 0 by wiiw.
 - Output and intermediate input data in NACE 18 showed a methodological break in 1999/2000. wiiw applied an estimated ratio to the years 1995-1999.
 - Weights for 3-digit industries in EUKLEMS classification have been calculated using SBS data (Structural Business Statistics) from Eurostat covering the period 1995-2003. Missing data in these series have been imputed by various methods, mainly linear interpolation and calculation of trends; the respective variables have further been smoothed using 3-year moving averages. Table 1 presents the SBS indicators used for the calculation of weights. To satisfy adding-up restrictions of components, we calculated the shares of gross value added as the residual in a first step. To satisfy adding-up restrictions of gross value added and intermediate input, the latter was calculated as residual.
 - For industry NACE 92 (Recreational, cultural and sporting activities) weights are not available.
 - Weights for 2004 are set equal to 2003.

Table 1 – Data for calculation of weights

EUKLEMS	
code	SBS indicator
GObas	12120 Production value Calculated using data from GObas and
Iipur	VAbas 12140 Value added at basic prices
VAbas	(adjusted)
Comp	13310 Personnel costs

For the time being variables like GOS and Net Taxes on production have not been disaggregated beyond the level as received from the Czech National Statistical Institute.

- Volume
 - **Sources:** -Data are provided by the National Statistical Institute of Slovenia at the NACE rev. 1 2-digit (60 industries) level.
 - Data delivered include time series on gross value added at constant previous-year prices only, therefore gross output and intermediate inputs have been deflated with value added deflators.
 - All data cover the period 1996-2004.
 - Data are FISIM-adjusted according to ESA'95 requirements
 - **Comments:** -Data for industry NACE 11 (Extraction of crude petroleum and natural gas and services) and NACE 99 (Extra-territorial organizations and bodies) are not included and set to 0 by wiiw.
 - Data on NACE industries 12 (Mining of uranium and thorium ores) and 13 (Mining of metal ores) are included in industry 10 (Mining of coal and lignite; extraction of peat) because of negative gross value added at current prices; that is why no split is available.
 - Weights for 3-digit industries in EUKLEMS classification have been set equal to current weights on gross output and gross value added (see above).

2. SUT data

- Nominal
 - **Sources:** -Data are provided by the National Statistical Institute of Slovenia at the NACE rev. 1 2-digit (60 industries) level and the CPA 2-digit (60 products) level.
 - From the set of SUT provided, only use tables at purchaser prices have been used further on.
 - Data are available for 1996 and 2000-2002.
 - Use tables are FISIM-adjusted according to ESA'95 requirements.
 - Use tables are not balanced with NA.
 - **Comments:** -The use tables for 1996 and 2000-2002 have been balanced with NA by wiiw by applying the input shares from original use tables to intermediate input data of NA.
 - Use tables for 1997-1999 have been constructed by wiiw by calculating linearly interpolated shares (using data from 1996 and 2000) and applying these shares to data on intermediate inputs taken from NA.
 - Use tables for 1995 and 2003-2004 have been constructed by wiiw by calculating extrapolated shares (using growth rates of shares for 1996-1999 and 2000-2002, respectively) and applying these shares to intermediate input data taken from NA.
 - Data for industry NACE 11 (Extraction of crude petroleum and natural gas and services) and NACE 99 (Extra-territorial organizations and bodies) have not been included and set to 0.

- Volume
 - **Sources:** No data available
 - **Comments:** Construction of use tables in constant previous-year prices was not possible as data on intermediate inputs are not available at constant previous-year prices.

WP2: Labour Accounts

1. Employment

- **Sources:** -Data were provided by the Slovenian National Statistical Institute (SI NSI) at the NACE rev. 1 2-digit (60 industries) level.
 - The data delivered include time series (1995-2004) for employed persons, employees and self-employed in persons.
 - The period covered is 1995-2004.
- **Methods:** The employment data delivered by the SI NSI are National accounts data. The main source for the employees' estimate is the Statistical Register of Employment (SRDAP). SRDAP is regularly updated on a monthly basis by forms of health and pension insurance (data are provided by the Health Insurance Institute, the Pension and Disability Insurance Institute and the Employment Service of Slovenia) and different databases (the Central Population Register and the Business Register). It includes persons who pay social contributions to the obligatory pension and health insurance system and are employed (employees and self-employed) on the territory of the Republic of Slovenia (domestic concept). It also includes persons temporarily out of work because of sickness or any other reason, if social contributions for them are paid. The following categories are not included: persons performing temporary or occasional contract work, students' work and conscripts.

The estimate for self-employed (employers and own-account workers) is mainly based on tax declarations on income from production activities. According to the declarations, also persons who perform second jobs as self-employed are included (apart from second jobs in legal units, which have not yet been estimated in the national accounts). A separate estimate is made for farmers and unpaid family workers in agriculture, who are estimated according to the Labour Force Survey. Unpaid family workers are entirely added to Agriculture, hunting and forestry and are not estimated for other activities since they are not significant for them.

- **Comments:** The following adjustments have been made by wiiw:
 - Weights for 3-digit industries in EUKLEMS classification have been calculated using SBS data (Structural Business Statistics) from Eurostat covering the period 1995-2003. Missing data in these series have been imputed by various methods, mainly linear interpolation and calculation of trends; the respective variables have further been smoothed using 3-year moving averages. Weights have been constructed by using Eurostat Structural Business Statistics (SBS) indicator 16110 (Number of persons employed).
 - Weights for 2004 are set equal to 2003.
 - NACE industries 11 and 99 are missing and set to zero by wiiw.

-Since no information is available on NACE 92 (Recreational, cultural and sporting activities) subindustries, weights for NACE 92 are not available.

-After consultation with SI NSI contracts for services (which were included for the first time in 2002 in NA employment figures in NACE sector 74.8) were excluded from employee and self-employed figures in NACE sector 74 in the years 2002-2004.

2. Hours

- **Sources:** -Data are provided by SI NSI at the NACE rev.1 2-digit (60 industries) level.
 - The data delivered include time series (1997-2004) on average weekly hours worked per employed person only (no data for hours worked per employee and self-employed were available). Weekly hours have been multiplied with 50 to arrive at yearly hours (not with 52 to avoid overestimation of hours worked).
 - The period covered is 1997-2004
- **Methods:** The source of the hours worked data delivered by SI NSI is the Labour Force Survey (LFS). This covers the resident population according to the Central Population Register, i.e. all persons whose usual place of residence is on the territory of the Republic of Slovenia. The survey covers only population living in private households and the observation units are all individuals living in the selected households.
- **Comments:** The following adjustments have been made by wiiw:
 - Total hours worked per employed have been calculated by multiplying LFS figures (hours actually worked per week) by 50 (weeks) after consultation with NSI SI.
 - For NACE 5 (Fishing) the figures for 1997 and 1998 are set equal to 1999.
 - For NACE 12 (Mining of uranium and thorium ores) the figures for 1997 and 1998 are set equal to 1999, for 2002 and 2001 to 2000.
 - For NACE 13 (Mining of metal ores) the weighted yearly averages of NACE sectors 10, 12 and 14 were used.
 - For NACE 23 (Coke, refined petroleum and nuclear fuel) the value for 2004 is set equal to 2003.
 - For each industry wiiw calculated linear trends which were used instead of original data for hours worked for total employed.
 - Hours actually worked per employee and self-employed were calculated using the ratios of hours per self-employed to hours per employee in each NACE 60 industry, which were available for the Czech Republic, the Slovak Republic and Hungary. The averages of the sectoral ratios of these three countries were applied.
 - We assume that hours worked per person in 3-digit industries equal those at the 2-digit level.
 - Data for 1995 and 1996 are set equal to 1997.
 - Data for NACE industries 11 and 99 are not included and set to zero by wiiw.

3. Labour composition

- Employment (or hours)
 - **Sources:** -Data are taken from Eurostat Labour Force Survey data, 2nd quarter of each year, at the NACE rev. 1 2-digit (60 industries) level.
 - The data provided include time series on employed persons, employees and self-employed broken down by industries, gender, age groups (five year cohorts) and educational groups (high, medium and low according to the ISCED 1-digit classification).
 - The period covered is 1998-2005.
 - **Methods:** -
 - **Comments:** For the specific requirements of the project the following adjustments have been made by wiiw:
 - Data not including information on industry have been allocated within sex, age and educational categories using available industry shares.
 - Data not including information on education have been allocated to the lowest educational category.
 - Missing data for one year have been calculated by linear interpolation.
 - Data at the beginning (1998) or end of the period (2005) have been calculated applying the shares of the respective categories of the following (1999) or previous year (2004), respectively.
 - The composition shares in employment of 1998 have been applied to employment in 1995-1997 as well.
 - Labour composition is available at the level of 15 industries. For lower levels we assumed the same composition as the higher aggregate.
- Compensation
 - **Sources:** -Data are provided by SI NSI at the NACE rev. 1 1-digit level as well as CA-CB for mining and quarrying and DA-DN for manufacturing industries (29 industries level) excluding information on NACE industry Q (Extra-territorial organizations and bodies).
 - Data are based on Structural Earnings Survey (SES) data (gross monthly earnings of employees).
 - Data series were provided including information on gross monthly earnings of employees by educational attainment level (13 national education categories which have been allocated to the ISCED 1-digit categories highly, medium- and low-educated) and by gender for the years 1999 and 2002.
 - Further data series were provided including information on gross monthly earnings of employees by level of professional skills (9 national skill categories which have been allocated to the ISCED 1-digit categories highly, medium- and low-educated) and by gender for the years 1996-2002.
 - Data on wages by age cohorts are not available.
 - The period covered is 1996-2002.
 - **Methods:** -

- **Comments:** Adjustments made by wiiw:
 - With the use of data broken down by industries, professional skill levels and gender, wiiw constructed consistent time series, allocating wage data of detailed professional skill categories to skill groups corresponding to the three ISCED 1-digit educational attainment groups (highly, medium- and low-educated). To adjust these structural wage data based on professional skill categories, wiiw calculated the ratios of wages by industries, educational attainment groups and gender to wages by industries, professional skill groups and gender for the years 1999 and 2002. The average ratios of these two years were used to adjust the wages by professional skill groups of the years 1996-2002 to the level of wages by educational attainment groups.
 - Since SES data were only available for 29 NACE industries (see above) wiiw used additional data on 'Average monthly wages' from the SI NSI to split up industry NACE I (transport, storage and communications).
 - In case of missing or suppressed wage data for educational attainment or age groups in specific sectors, wiiw estimated these values with the help of ratios of wages of similar educational groups, age groups or sectors to the total wage of sectors, age groups or educational groups or with the help of ratios of wages of adjacent years.
 - The composition shares in wages of 1996 have been applied to wages in 1995 as well.
 - Labour composition is available at the level of 15 industries. For lower levels we assumed the same composition as the higher aggregate.

WP3: Capital Accounts

- **Main sources for GFCF**
 - Data on GFCF were delivered by the Slovenian National Statistical Institute (SI NSI) at the NACE rev. 1 2-digit level for all required EUKLEMS asset types at current and constant previous-year prices for the period 2000-2004.
 - GFCF values for NACE industries 11 (Extraction of crude petroleum and natural gas and services), 95 (Private households with employed persons) and 99 (Extra-territorial organizations and bodies) are zero.
 - Data on total GFCF were delivered by the SI NSI by asset types at current and previous-year prices for the period 1996-1999.
 - Data on investment were delivered by the SI NSI at the NACE rev. 1 2-digit level for all required EUKLEMS asset types at current prices for the period 1996-2003. These investment data refer to enterprises, companies and organizations with more than 10 employees and cover investments in new assets (according to ESA'95).
 - Values on investment for NACE industries 11 (Extraction of crude petroleum and natural gas and services), 95 (Private households with employed persons) and 99 (Extra-territorial organizations and bodies) are zero.
- **Methods: (for estimating industry * asset)**
 - For 2000-2004 no further adjustments were necessary.

-For 1995-1999 wiiw applied the shares from current investment data (available at the NACE rev. 1 2-digit level by all EUKLEMS asset types) to the total of GFCF by asset type; for 1995 we used the shares of 1996.

-Before using these investment data, wiiw calculated several adjustments:

- In 1996 and 1997 data on 'Patents, licences and trade marks' have been deducted from 'Intangible fixed assets' by wiiw due to official non-coverage from 1998 onwards (which is in accordance with ESA'95 recommendations).
- For 1996 we adjusted values for NACE industries 74 (Other business activities) and 75 (Public administration and defence; compulsory social security) by applying the share of 1997, as 'National Motor Company' was officially re-registered from 74 to 75 in 1997.
- The EUKLEMS asset type 'Infrastructure' is a sum of three Slovenian asset types: 'Civil-engineering', 'Hydro-engineering', and 'Land improvement'.

-GFCF series at constant previous-year prices for the period 1995-1999 have been calculated by wiiw by applying deflators derived from data on total GFCF by asset types to all industries.

-Additionally wiiw adjusted asset type "Residential structures" (dwellings) in NACE 70 in the period 1995-1999 in order to be consistent with GFCF methodology (the applied shares of investment data (based on enterprises) in this asset type do not include dwellings of households). wiiw used the available GFCF shares of NACE 70 in 2000-2004 and applied a trend backward. Using this share all industries within "Residential structures" in NACE 70 have been recalculated. This adjustment has been made at current and constant previous year prices.

- ***Definition of ICT assets***

IT corresponds to CPA code 30 (Office machinery and computers) and CT corresponds to CPA code 32 (Electronic equipment and apparatus).

- ***Initial capital stock***

-Data on Gross capital stock (GCS) were delivered by SI NSI for 1999 which are constructed according to ESA'95 methodology.

-Values for NACE industries 11 (Extraction of crude petroleum and natural gas and services), 95 (Private households with employed persons) and 99 (Extra-territorial organizations and bodies) are set to zero.

-Software has been estimated using the arithmetic mean of GFCF shares of - Software (AN.1122) in Intangibles (AN.112) by industry over 2000-2004.

-Stocks for 1995 have been generated backwards with the PIM method.

- ***Weights: -***

Spain

WP1: Inter-industry Accounts

1. NA data

- Nominal
 - **Sources:** See SUT data
 - **Comments:** -The growth rates of Value added have been used for Gross output and Intermediate inputs as well for the period 1970-1980.
-For the period 1970-1985 detail had to be added for NACE industries 50-52, this has been done on basis of data delivered by IVIE.

- Volume
 - **Sources:** See SUT data
 - **Comments:** The growth rates of Value added have been used for Gross output and Intermediate inputs as well for the period 1970-1980.

2. SUT data

- Nominal
 - **Sources:** -Data from Spanish National Accounts elaborated by INE (National Statistics Institute): 1970 base, 1980 base, 1985/1986 base, 1995 base and 2000 base.
-*Industrial Firms Survey, Services Survey, Labour Force Survey, Agricultural and Food Statistics Yearbook* of the Ministry of Agriculture, Fisheries and Food; *Statistical Bulletin, Economic Bulletin, Central Balance Sheet Data Office* published by the Bank of Spain; *Construction Structure* published by the Ministry of Public Works, and other complementary sources such as the *United States 1997 Use Table*.
 - **Comments:**
FISIM

The financial intermediation services indirectly measured (FISIM) of years 1980 to 1999 have been distributed among the table sectors using data from the Statistical and Economic Bulletins of the Bank of Spain, as well as information from the Central Balance Sheet Data Office, also published by the Bank of Spain.

Due to the difficulty in distributing the FISIM sectors and the way their values are introduced in the use tables, we think it is necessary to make an additional comment on the distribution of the FISIM in Spain and their method of accounting.

In the first place, it is convenient to explain the distribution of the FISIM by institutional sectors, as well as their repercussion for different macroeconomic magnitudes. *Non-Financial Institutions, Households, Government and Household Service Non-Profit Institutions* are considered as institutional sectors and the FISIM of each one are assigned in a different way in the use tables.

In non-financial institutions as well as financial institutions different from financial intermediaries (producing FISIM), FISIM only take part of intermediate consumption. However, as production is fixed according to the market, the GVA of these sectors is cut down by the same amount.

Households have a double function, they are consumers and producers. As producers, households can operate as individual businesses in different industries producing goods and services. On the other hand, as owners they receive payments due to property rental that are assigned to the *Imputation of owner occupied rent industry*. Consistently, FISIM assigned to *Households* has been broken down into:

- Intermediate consumption of the households in dwelling owners
- Intermediate consumption of the households as owners of non-society enterprises.
- Final consumption of the households as consumers

In the first two cases, FISIM are assigned to intermediate consumption in the same way that the FISIM of non-financial institutions. On the other hand, FISIM borne by households as consumers are part of the final consumption.

In non-financial institutions, being market institutions, the evaluation of output is made directly. On the other hand, according to ESA-95, in non-market sectors like the *Government* and the *Household Service Non-Profit Institutions*, output is obtained from the total amount of costs: intermediate consumption, compensation of employees, fixed capital consumption and other net taxes on production. As all FISIM become a fictitious sector, they are not taken into account, with that methodology, in the evaluation of the non-market output. Following the new regulation, the FISIM are considered part of intermediate consumption in some cases and of final consumption in others. Consequently, according to this methodological change, the FISIM are part of the intermediate consumption of *Government* and *Household Service Non-Profit Institutions*, so they have to be included in the non-market output of those institutional sectors.

Therefore, the new handling of FISIM means an increase of the intermediate consumption of the *Government* and *Household Service Non-Profit Institutions* which automatically implies an increase of its total output. Finally, as the production of these institutions constitutes an expense in consumption carried out by themselves it also means an increase on its final consumption.

Thus, in the use table, FISIM of the non-financial institutions and of households as businesses and as dwelling owners are completely assigned to intermediate consumption which decreases the GVA in the same amount, so that output remains stable. On the other hand, the FISIM of households as consumers are completely assigned to final consumption which means an increase of this item. Finally, FISIM of *Government* and of the *Household Service Non-Profit Institutions*

mean an increase of intermediate consumption, but also of output, as they do not diminish the GVA. This production is, at the same time, final consumption of these sectors.

1995-2000 Use tables at current prices

The elaboration of the Use tables of the Spanish economy for the period 1995-2000 has been based mainly on the information provided by INE, which published for this period one Use table per year, with base year 1995. For year 2000 two tables were published: one with base year 1995 and another with the new base in 2000. As explained later on, we have used the information for the common year, 2000, in the two bases in order to make the needed adjustments originated by the change in the base year.

Starting from the data in the Use tables published by INE, the first step has been the distribution of the FISIM in the tables corresponding to the years 1995, 1996, 1997, 1998 and 1999, in which it appeared in a single column and was not assigned to the corresponding industry.

After distributing the FISIM, we took advantage of the fact that for the year 2000 two tables were published (one with base year 1995 and another with base 2000) to link the rest of the available tables and convert them to base 2000. Thus, the data of the tables for period 1995-99 has been estimated using the following linkage coefficient:

$$\left(X_i^{Base2000} \right)_t = \left(X_i^{Base1995} \right)_t * \left(\frac{X_i^{Base2000}}{X_i^{Base1995}} \right)_{t=2000}$$

where X is the magnitude or variable which base is being changed; the subscript i denotes industries (in the case of intermediate output, the different products available) and t indicates the year which the data corresponds to.

This procedure has been carried out for the Intermediate Inputs, Intermediate Outputs, Compensation of Employees; Gross Operating Surplus; and Net Production Taxes.

Afterwards, the numbers obtained by industries have been readjusted using the method described above, in order for the totals to equal the ones published by the INE in the *Quarterly National Accounts* (CNT) Base 2000.

In this way, we have homogenous series by industries for Compensation of Employees; Gross Operating surplus; and Net production taxes, and by aggregation also of Gross Value Added for period 1995-2000. Also, we have the Total Intermediate Inputs by industries as well as the Intermediate Output of each product. Therefore, with all this information we can construct the matrix of intermediate inputs of the Use table using the RAS method, relying on the structure of the Use tables of each year with base year 95 published by the INE.

On the other hand, the columns of the tables relative to final demand (private and public consumption; gross fixed capital formation; change in inventories; and exports) have been adjusted to the totals of the CTB Base 2000, following the same percentage structure as the tables base 95 (the only information available).

In this way, the use tables for period 1995-2000 have been obtained with base year 2000, although in some industries and products small adjustments were made, due to problems in the linkage of the two bases. These problems have appeared, overall, in the industries and products related to the energy.

Once this procedure is carried out, chained volume indices can be constructed and use tables at constant prices can be obtained.

1980-1994 Use tables at current prices

The procedure adopted in the construction of the Use tables, base year 2000 at current prices, according to ESA-95 for the period 1986-1994 is summarized as follows:

- The Use tables of year 1980, base year 1980 and 1985, base year 1985 for period 1986-1994, base year 1986, were elaborated by INE (Spanish National Statistical Institute) according to ESA-79 methodology (except the one corresponding to 1980 which follows the ESA-70 methodology). From this information, we proceed in the following way:
 1. Transform the original value of the tables at producer prices to basic prices (bp).
 2. Adapt the original tables' disaggregation by industries to the EU KLEMS classification. For that, we have used additional information published by the INE -such as the *Industrial Survey*, *Industrial Firms Survey* and *Labour Force Survey*- as well as from other institutions such as the *Annual report of agro-alimentary statistics* of the Ministry of Agriculture and the *Spanish national income and its regional distribution* published by the BBVA Foundation since 1955.
 3. Assign the FISIM to the different industries.
 4. Include other changes made by ESA-95, such as the treatment of the GFCF and intermediate inputs of certain immaterial assets produced (computer software acquisitions, mining and oil research expenses, etc.).
 5. Interpolation and adjustment through the RAS method of the intermediate and final demand matrices for the period 1981 a 1984.
- The CNE (Spanish National Accounts) base year 1986 additionally provides information, disaggregated by industries, for the following variables: gross operating surplus; compensation of employees; GVA at factor cost (fc). Once adapted to the EU KLEMS classification and using data for years 1995 in two bases years,

1986 and 2000, we obtain the 1985-1994 series. In the case of intermediate inputs we were forced –due to lack of INE’s data for the two bases- to extrapolate the CNE series 1985-1994 one more year, in order to link with the 1995 data base year 2000.

The CNE base year 1980 also publishes the series for the previously mentioned variables for period 1980-1985. The variables adjust as much as possible to the EUKLEMS classification. This time, year 1985 cannot connect to base 1980 with base 2000.

- On the other hand, the INE’s Quarterly National Accounts (CNT) offers series of demand, income and supply with a level of disaggregation for the period 1980-1995 in base 1995, and for period 1995-2000 in base 2000. From this information, and applying rates of variation, we obtain aggregated annual series for period 1986-1995 in base 2000. These series do not include intermediate inputs or gross output.
- With all the information considered in 1), 2) and 3) the following adjustments were made:
 1. The distribution by products of the different components of the final demand adjusts to the CNT data, base year 2000.
 2. The distribution by industries of net taxes on products as well as other taxes on production obtained in 1) (after certain readjustments due to linkage problems), were adjusted to the CNT data base year 2000 obtained in 3).
 3. Some additional adjustments were introduced in the Use table, which did not exist for base years 1980, 1985 and 1986, affecting final demand: the adjustment CIF/FOB, purchases made by non-residents in the economic territory and purchases made by residents outside the economic territory obtained in 3).
 4. The series disaggregated according to EU KLEMS classification (GVA_{fc}, compensation of employees and gross operating surplus) obtained in 2) were adjusted to the CNT data described in 3).

2001-2004 Use tables at current prices:

The INE’s CNE (Spanish National Accounts) with base year 2000 publishes series of production, intermediate consumptions, GVA at basic prices and its breakdown in gross exploitation surplus, wage-earning remuneration and other net taxes on production disaggregated by sectors for period 2001-2004. Additional information from the *Annual Service Survey* (INE), *Construction structure* (Ministry of Public Works) and the *Annual report of agro-alimentary statistics* (Ministry of Agriculture, Fishing and Food) was used in order to obtain series by sectors for period 2001-2004 with the level demanded by the EUKLEMS classification (72 branches).

The use tables for period 2001-2004 have been obtained applying the methodology proposed by M. Timmer (2005) in “EUKLEMS Road

map WP1” which consists of five steps. The first step consists of obtaining all the data necessary to make the estimations. The base information is the supply table of year 2000, the use table of year 2000 and the series by sectors of production, intermediate consumptions and total net taxes on products, CIF/FOB adjustments, purchases made by non-residents in the economic territory, purchases made by the residents outside the economic territory and imports for period 2001-2004 provided by the INE. Data of imports by products published by CEPII (edition n. 8, March 2006): “Comptes South Armonices them Echanges ET L ’ Economie Mondiale (CHELEM)” has also been used.

The supply tables at basic prices for period 2001-2004 are created using the procedures described in the second step. In the third step, we obtain the margin columns, net taxes on products and supply at purchase prices for period 2001-2004. The fourth step allows obtaining the matrix of intermediate demand at basic prices for period 2001-2004 and in the fifth and last step the use tables at basic prices for period 2001-2004 are produced.

1970-1979 GVA, GO and II Series at current prices

Data on production and intermediate consumption are not available for the period 1970-1979. Thus, for this period series have been estimated for GVA at basic prices and compensation of employees. Besides the CNE base 1970, additional information has been used from R. Gandoy (1988) Ph.D. thesis “Evolución de la Productividad Global en la Industria Española. Un análisis desagregado para el periodo 1964-1981”, (Universidad Complutense de Madrid) and the *Annual report on agro-alimentary statistics* (Ministry of Agriculture, Fishing and Food).

As already mentioned, due to lack of information the growth rates of Value Added have been used for Gross Output and Intermediate Inputs for the period 1970-1979. Data on IIS, IIE and IIM are not available for this period.

- Volume

- **Sources:**

- Data from Spanish National Accounts elaborated by INE (National Statistics Institute): 1970 base, 1980 base, 1985/1986 base, 1995 base and 2000base

- Industrial Firms Survey, Services Survey, Labour Force Survey, Industry Price Index (IPRI), Consumer Price Index (IPC)*, published by the INE; *Agricultural and Food Statistics Yearbook* of the Ministry of Agriculture, Fisheries and Food, *Unit Value Index (IVU)*, published by the Ministry of Economy; and other complementary sources.

- **Comments:**

- 1980-2004 Use tables at constant prices:

- The INE (National Statistical Office) does not publish information on gross output for any year of the period 1980-2000.

Therefore an investigation has been made to obtain indices of prices by products: altogether approximately 50 series of indices of prices have been obtained.

The assumption adopted is that the price is identical along of each row of use table. This assumption is relatively acceptable when it is applied, as it is our case, to use tables at basic prices.

To obtain the use matrices in constant prices, we have used information from various sources. Price indices for manufactures have been built using IPRI (Industry Price Index) and services products have been deflated with the CPI (Consumer Price Index), both published by the INE. For imports, prices were estimated using the UVI (Unit Value Index), published by the Ministry of Economy. Taxes and Gross Value Added were deflated using data from National Accounts.

Regarding the GVA deflators, in which the price index of an INE industry correspond to several EUKLEMS industries, it has been assumed that in all industries which were disaggregated into new industries the GVA price index was the same. In other more complex cases – for example, in certain energy and industry branches – in which the composition in the period 1986-1994 has changed with respect to the period 1995-2004 –other procedures, have been used such as weighted averages.

For years 2003 and 2004, GVA price information is only available for 30 branch activities. For this reason and given the fact that no more information is available, the same price variation rate is applied to each of the components in order to disaggregate and reach the EUKLEMS branch levels.

1970-1979 GVA, GO and II Series at constant prices

For the period 1970-1979, for which only GVA, GO and II data exists, the current figures have deflated based on the information published by INE (National Accounts) on GVA at constant prices for those years. From this data and by means of some transformations similar to the ones made for the current figures, deflators are obtained that are finally used to construct chained indices of this period.

As had occurred before for period 1980-2004, in some cases an INE branch corresponds to several EUKLEMS branches. In these cases, it is assumed that the price index is the same for these branches, except in those cases where weighted measures or additional information from other sources are used.

WP2: Labour Accounts

1. Employment

- **Sources:** National Accounts, Industrial Firms Survey and Labour Force Survey from Spanish National Statistics Institute.

- Methods:**-The main source used in constructing the employment figures is the NA. The Industrial Firms Survey and the Labour Force Survey are used when NA industries are too aggregate (these are the main sources NA is based on). All employment figures are persons.

 - For the control totals for total economy and five aggregate industries (agriculture, energy, manufacturing, construction and services) the information source is INE Quarterly National Accounts homogenous series 1980-2004.
 - As for the rest of the industries: When there exists an exact correspondence between EUKLEMS industries classification and INE's Annual National Accounts (NA) we have relied on this source.
 - For the remaining EUKLEMS industries, we have used the weights calculated from the Industrial Firms Survey (INE) for manufacturing industries and the micro data from INE's Labour Force Survey (LFS) for Agriculture and Services (note that, in both cases, the weights changed annually – weights not provided).
 - The figures of total employment provided by NA are not equal to those from LFS. The reason is that, prior to being included in the National Accounts, the information from LFS is complemented with other surveys or registries. This procedure is adopted in those industries where the sample in LFS is not large enough to give an accurate number of persons employed. This is the case of Financial Institutions, Public Administration and Private Households, for example.
- Comments:**- Employment has been extrapolated with the trend of jobs before 1980 (smoothed by IVIE).

2. Hours

- Sources:** National Accounts and Labour Force Survey from Spanish National Statistics Institute.
- Methods:**

 - For 2000-2004 the source is National Accounts (NA) derived from the INE. NA does not provide information for persons but only for jobs. Therefore, we have obtained hours worked by dividing total hours worked by jobs (distinguishing between employees and self employed).
 - For previous years NA does not provide information on hours worked. Thus, we have relied on LFS information. However, due to the important differences between NA and LFS in the overlapping years (2000-2004) we have smoothed the LFS data in the following way. First we have computed the average -for the 2000-2004 period- of the ratio: (hours worked in sector i according to NA)/(hours worked in sector i according to LFS). Then, we have applied this ratio to the LFS figures for period 1980-1999. Differences between the National Accounts and the Labour Force Survey in terms of hours worked arise from the fact that LFS is a survey made to persons employed while NA is based on surveys or registries made to/on firms or enterprises.
 - Up to two digit LFS figures for both employment and hours come from the micro data available at Ivie. For three digit industries the data has been provided directly from INE.
 - Furthermore, we have used Industrial Firms Survey (INE) from 1980 to 1992 to estimate EUKLEMS industries 11, 12, 14, 24, 25, 31 and 38 because for these EUKLEMS industries LFS 3 digits is still too aggregate. In order to get

the concordance between those EUKLEMS industries and the industrial classification used by INE for that period (different from the one used from 1993 onwards, without no overlapping year), we had to use an alternative source of information that provided us with the required level of aggregation. Therefore we have applied the shares coming from IFS 4 digits to LFS 3 digits in order to obtain data for EUKLEMS industries 11, 12, 14, 24, 25, 31 and 38. We have followed this process with total employment as well as with total hours worked. Using that information we have obtained hours per worker for those seven EUKLEMS industries.

-Further special adjustments for hours worked per person in some industries: In some industries small size sample problem is particularly acute. It produces too much intertemporal variability and unreliable data. Industries with both too small size and too much variability have received special treatment.

-Employees:

Smoothing using moving averages order 3 from 1980 to mid 90s (industries 2, 4, 26, 29-31, 33, 35-37, 54-55, 57-60).

Smoothing using moving averages order 3 from 1980 to late 80s (industries 41, 42, 49 and 50).

Aggregation and smoothing from 1980 to mid 90s (industries 5-8 and 18). First we obtain the average hours worked by employees for the aggregate (euk5-euk8) and we smooth this series using a moving average order 3. Then for each industry we apply to that series the average ratio over period 2000-2004 (hours worked EUK-i/hours worked EUK5-8). These new industry specific series are used from 1980 to mid 90s.

Summary: These further adjustments change data in industries representing 0%-4% of the total number of employees.

-Self-employed persons:

Using backwards the rate of growth of average hours worked by employees in the same industry for period 1980-1999 (industries 20, 22, 23, 52, 57).

Using backwards the rate of growth of average hours worked by employees in the same industry for period 1980-1994 (industries 55, 64, 65).

Using average hours worked by employees in the same industry corrected by the following annual ratio: (average hours worked by non-agricultural self-employed workers in year t /average hours worked by non-agricultural employees in year t). This method was used for period 1990-2004 for the following industries: 2-8, 10-11, 13, 15-19, 21, 25-37, 39-42, 49-51, 53-54, 56, 58-60, 63, 66-68, 71-72).

Summary: These further adjustments change data in industries representing 2.2%-4% of the total number of self-employed workers.

- **Comments:** -Constant 1980 hours worked have been used for the period 1970-1980.

3. Labour composition

- Employment (or hours)
 - **Sources:** Labour Force Survey (LFS) from Spanish National Statistics Institute.
 - **Methods:** -Using LFS data we get 417 zeros (0 people with a given age, gender and schooling working in some sector in a given year). In

order to make feasible to get labour quality indexes we have dealt with this problem as follows: we have estimated the share of that type of labour in the year and industry for which it is zero by using moving averages of the shares of that specific group in that industry before and after that zero.

- **Comments:** -The data refer to persons engaged (each type of labour as a share of total employment in each industry and year) from 1980 to 2004.

-Spanish LFS is a continuous quarterly survey that targets households, and its main objective is to obtain data on the labour force (which is subcategorized by employed and unemployed), and on the people outside the labour market. The theoretical sample varies from 65.000 households per quarter to approximately 60.000 actually interviewed households, which implies approximately 200.000 people.

-The division by skill always refers to completed schooling. First age group is 16-29 instead of 15-29 because 16 is the minimum legal working-age in Spain from 1980 onwards.

-There is no need of making any adjustments to data due to changes in industry classification or skill groups (given the level of aggregation considered). However, in 1990 a new law (known as LOGSE) added 2 years of compulsory education (the age to end compulsory education changed from 14 years old to 16 years old). This only affects to the years of schooling of people classified as Lower secondary and below (No formal qualifications), but not to the number of persons in that group. No effect for people classified as Upper secondary or University graduates.

-Labour composition is available at the level of 23 industries. For lower levels we assumed the same composition as the higher aggregate.

- Compensation

- **Sources:** Wage Structure Survey (WSS) from Spanish National Statistics Institute

- **Methods:** -Wages refer to annual gross wage per worker by industry (23 industries), age (16-29, 30-49, 50 or more), gender and schooling (low, upper secondary, university). We have two sorts of data. For 1995 and 2002, annual gross wages in euros. For the whole period 1980-2004, the relative annual gross wage per worker for each type of labour in a given industry compared with the wage of a male worker aged 30-49 with a university degree in that industry.

-The division by skills always refers to completed schooling. First age group is 16-29 instead of 15-29 because 16 is the minimum legal working-age in Spain from 1980 onwards.

-There is no need of making any adjustments to data due to changes in industry classification or skill groups (given the level of aggregation considered). However, in 1990 a new law (known as LOGSE) added 2 years of compulsory education (the age to end compulsory education changed from 14 years old to 16 years old).

Special adjustments:

Year 2002. WSS presents a number of gaps. Four of the industries in our labour quality industrial classification are not investigated by the 2002 survey: Agriculture, hunting and forestry (industry 1); Fishing (industry 2); Public administration (industry 19); Private household with employed persons (industry 23). First, we have obtained the 2002 National Accounts ratio between the average wage of each of these industries and the average wage of rest of the economy. Then, for each type of labour, we have applied those ratios to the average annual gross wages for the total of industries investigated by the 2002 survey. In the case of the 19 industries investigated by the survey, due to INE's statistical secrecy policy, we lack 29 data. We have estimated these data using the fitted values from an estimation like:

$$w_{iags} = f(w_{.ags}, w_{i.gs}, w_{ia.s}, w_{iag.})$$

where

w_{iags} is the wage of a worker in industry i with age a , gender g and schooling s

$w_{.ags}$ is the average wage of a worker with age a , gender g and schooling s

$w_{i.gs}$ is the average wage of a worker in industry i with gender g and schooling s

$w_{ia.s}$ is the average wage of a worker in industry i with age a and schooling s

$w_{iag.}$ is the average wage of a worker in industry i with age a and gender g

Year 1995. WSS presents a number of gaps.

Seven of the industries in our labour quality industrial classification are not investigated by the 1995 survey: Agriculture, hunting and forestry (industry 1); Fishing (industry 2); Public administration (industry 19); Education (industry 20); Health and social work (industry 21); Other community, social and personal services (industry 22); Private household with employed persons (industry 23).

We have estimated these data using the fitted values from an estimation like:

$$w_{iags}^{95} = f(\text{gender}, \text{age dummies}, \text{schooling dummies}, w_{iags}^{02})$$

where

w_{iags}^{95} is the wage of a worker in industry i with age a , gender g and schooling s in year 1995

w_{iags}^{02} is the wage of a worker in industry i with age a , gender g and schooling s in year 2002

In the case of the 16 industries investigated by the 1995 survey, due to INE's statistical secrecy policy, we lack 46 data. We have estimated these data using the fitted values from an estimation like:

$$w_{iags}^{95} = f(w_{.ags}^{95}, w_{i.gs}^{95}, w_{ia.s}^{95}, w_{iag.}^{95})$$

where

w_{iags}^{95} is the wage of a worker in industry i with age a , gender g and schooling s in 1995

$w_{.ags}^{95}$ is the average wage of a worker with age a , gender g and schooling s in 1995

$w_{i.gs}^{95}$ is the average wage of a worker in industry i with gender g and schooling s in 1995

$w_{ia.s}^{95}$ is the average wage of a worker in industry i with age a and schooling s in 1995

$w_{ias.}^{95}$ is the average wage of a worker in industry i with age a and gender g in 1995

Year 1990

We have estimated the relative gross wage for each type of labour in a given industry compared with the wage of a male worker aged 30-49 with a university degree in that industry combining information from 1995 WSS and 1990/91 HBS as follows:

$$\omega_{iags}^{90} = (\omega_{.ags}^{90} / \omega_{.ags}^{95}) \omega_{iags}^{95}$$

where

ω_{iags}^{90} is the wage of a worker in industry i with age a , gender g and schooling s in 1990 relative to a male worker aged 30-49 with a university degree in industry i in 1990.

$\omega_{90.ags}$ is the average wage of a worker with age a , gender g and schooling s in 1990 relative to a male worker aged 30-49 with a university degree in 1990.

ω_{iags}^{95} is the wage of a worker in industry i with age a , gender g and schooling s in 1995 relative to a male worker aged 30-49 with a university degree in industry i in 1995.

$\omega_{.ags}^{95}$ is the average wage of a worker with age a , gender g and schooling s in 1995 relative to a male worker aged 30-49 with a university degree in 1995.

Year 1980

We have estimated the relative gross wage for each type of labour in a given industry compared with the wage of a male worker aged 30-49 with a university degree in that industry combining information from 1995 WSS and 1980/91 HBS as follows

$$\omega_{iags}^{80} = (\omega_{.ags}^{80} / \omega_{.ags}^{95}) \omega_{iags}^{95}$$

where

ω_{iags}^{80} is the wage of a worker in industry i with age a , gender g and schooling s in 1980 relative to a male worker aged 30-49 with a university degree in industry i in 1980.

$\omega_{.ags}^{80}$ is the average wage of a worker with age a , gender g and schooling s in 1980 relative to a male worker aged 30-49 with a university degree in 1980.

ω^{95}_{iags} is the wage of a worker in industry i with age a , gender g and schooling s in 1995 relative to a male worker aged 30-49 with a university degree in industry i in 1995.

$\omega^{95}_{.ags}$ is the average wage of a worker with age a , gender g and schooling s in 1995 relative to a male worker aged 30-49 with a university degree in 1995.

Period 1980-1989

The relative gross wage for each type of labour in a given industry compared with the wage of a male worker aged 30-49 with a university degree in that industry is obtained by interpolation between 1980 and 1990 data in that industry.

Period 1991-1994

The relative gross wage for each type of labour in a given industry compared with the wage of a male worker aged 30-49 with a university degree in that industry is obtained by interpolation between 1990 and 1995 data in that industry.

Period 1996-2001

The relative gross wage for each type of labour in a given industry compared with the wage of a male worker aged 30-49 with a university degree in that industry is obtained by interpolation between 1995 and 2002 data in that industry.

Period 2003-2004

Estimated by extrapolation from 1995 and 2002 data.

- **Comments:** -This source is available for only two years (1995 and 2002). The data refer to annual gross wage. The SWS has been combined with information about family incomes obtained from INE's Household Budget Survey (1980/81 survey and 1990/91 survey).
-The Wage Structure Survey is a statistical operation carried out in the framework of the European Union with common methodology and content criteria, with the objective of obtaining some comparable results on the structure and distribution of wages among its member states. This survey investigates the distribution of wages based on a large variety of variables such as sex, occupation, activity branch, age or size of the company. In Spain it was carried out for the first time referred to 1995 and later for 2002.
-Spanish WSS is a survey that targets firms. The principal objectives of the survey may be summarised as twofold: 1) knowledge of wage levels, not only average levels but also their distribution; 2) the determination of the wage structure, both from the point of view of composition and variables that have an influence on wages and to what extent. The main novelty that is brought compared to other surveys on this subject such as the labour cost survey, wage surveys in industry and services or labour cost index is that wages are covered in the questionnaire individually and together with these a large quantity of variables related to the worker (such as age, schooling and gender).

-The theoretical sample varies from 185.226 workers in 1995 to 229.866 in 2002. The sampling units are workplaces which contribute to the Social Security with ten or more workers. WSS only refers to wage-earners.

-Labour composition is available at the level of 23 industries. For lower levels we assumed the same composition as the higher aggregate.

WP3: Capital Accounts

- ***Main sources for GFCF & methods (for estimating industry * asset)***

Mas, M., F. Pérez and E. Uriel: "Capital stock in Spain, 1964-2002. New Estimates" in Mas, M. and P. Schreyer (2006): *Growth, Capital and New Technologies*, Bilbao: Fundación BBVA, chapter 2, 67-91.

- ***Definition of ICT assets***

The most problematic task was to disaggregate 'software' from 'other products', and 'communication' from 'other machinery and equipment'. GFCF in software was estimated by a two-step procedure. The first step was to estimate data for 1995 and 1998. GFCF for the rest of the period were obtained from these benchmark years. Primary source for information on Software GFCF for 1995 was the INE 'Information Technologies Service Surveys ("Encuesta de Servicios Informáticos")', whose population is intended to cover all firms whose core business falls within division 72 of CNAE93 'Information technologies activities' ("Actividades informáticas"). In order to test the representativity of the sample, two additional sources were used: the 1995 Input and Output table and the Labour Force Survey. For 1998, the Input-Output framework was used as well as the 1998 "Annual Services Survey" ("Encuesta Annual de Servicios 1998") which contains data on information technology firms.

Once the 1995 and 1998 data for software GFCF had been obtained, estimation of the series for 1981-2005 relied on the previous estimation of the "Supplied destined for domestic end user demand", and import/export information. For imports and exports the source is again, the INE Input-Output Tables for the years when they are available. For the remaining years, the annual rate of change provided by SEDISI has been applied. Once the series are obtained, growth rates are applied to the definitive data of the Input-Output framework

Following OECD (2001c) practice, the communication items considered in this study according to ISIC are:

3130 Insulated wire and cable

3210 Electronic valves and tubes and other components

3220 Television and radio transmitters and apparatus for line telephony and line telegraphy

3230 Television and radio receivers, sound or video recording or reproducing apparatus, and associated goods.

3312 Instruments and appliances for measuring, checking testing, navigating a other purposes, except industrial process equipment.

An estimate of GFCF in this ISIC items is required in order to estimate Communications capital stock. National Accounts do not offer such information. INE (National Statistic Institute) includes *communications* GFCF in the item ‘Other machinery and equipment’ which in addition to communications is broken down into ‘Machinery and electrical materials (except cables), ‘Medical and surgical, optical and watchmaking machinery’ and ‘Furniture and other manufactured products n.e.c.’. Hence it has been necessary to separate ‘communications’ GFCF from ‘other machinery and equipment’.

This was achieved in two steps. Firstly, GFCF for ‘Other machinery and equipment’ and its components for benchmark period 1995-1998 were calculated in the same way as for software. The starting point was to estimate each of the components of ‘other machinery and equipment’ obtained from Input-Output tables (INE) and using the ‘Industrial Enterprises Surveys’ (“Encuesta industrial de empresas” (INE)) to obtain a breakdown of sectors 31 and 33. Additionally it was necessary to estimate intermediate consumption, imports, exports and household consumption. Different statistical sources were used such as ‘Industrial Survey’ (Encuesta Industrial) (INE), “Spain’s Industrial Statistics”(Estadística Industrial de España (INE), Comex database (Eurostat) and CNEe-86. The second step was to obtain the evolution of the variables estimated in the first step to calculate GFCF for the period 1970-2005.

Since the INE does not provide information on deflators for two of the three ICT components, and for software only for the period 1995-2005 we have followed the “harmonized” procedure described in Schreyer et al. (2004) when INE data was not available.

- ***Initial capital stock***

1964 is the benchmark year for the private capital stocks estimates based on a study by University of Deusto (1968), which provided the first estimation of Spain’s capital stock for 1964, as a reference. Data availability on public capital goes back to 1845.

- ***Comments***

One of the main features of the estimation procedure is the distinction between private and public capital. The latter is broken down into roads, water infrastructures, urban infrastructures, and health and education infrastructures. Railways, motorways and harbour infrastructures are added, even though they are not strictly provided in Spain by public authorities but they can be assimilated with the former in view of the nature of the services they provide. Possible weights for further disaggregation and for splitting IT and OMach within “Office machinery and equipment” are still needed.

-Capital compensation was not available for industries 50, 51, 52, 60t63, 64. Higher level aggregates have been used here.

Sweden

WP1: Inter-industry Accounts

1. NA data

- Nominal
 - **Sources:** For the period 1993-2003 all variables are taken from the Official Use tables, these tables are at the A60 level. 2004 data has been taken from the Swedish National Accounts.
 - **Comments:** -The 2004 data was less detailed than the 1993-2003 data, therefore growth rates of aggregate industries have been applied to more detailed sub-industries where needed.
 - Extra detail for gross output in NACE industries 50-52 has been based on Eurostat SBS. The same source has been used for additional detail in Value added and Compensation for NACE industries 22, 24, 31-33, and 74.
 - Industry 16 has been added to industry 15, by lack of detailed data.
 - To be able to construct an EU aggregate for the whole period 1970-2004 we have estimated the period 1970-1993 with historical National Accounts. This Swedish data is only visible in the aggregates and not published separately. Trends for current value added and compensation data for 1980-1993 are taken from SNA68 National Accounts. For the period 1970-1980 we have detailed Manufacturing data for each variable. For the non-manufacturing industries we have used current trends of GDP data from OECD NA, Detailed tables, Volume II, 1982 edition (1963-1980). Compensation for non-manufacturing has been extrapolated backwards from 1980 with current GDP trends. Gross Output and Intermediate Inputs have been extrapolated with Value Added trends, by lack of more detailed data.
- Volume
 - **Sources:** For the period 1993-2003 all variables are taken from the Official Use tables, these tables are at the A60 level. 2004 data has been taken from the Swedish National Accounts.
 - **Comments:** -When extra detail was needed prices from higher aggregates have been used, combined with the nominal figures this led to the required volume data.
 - To be able to construct an EU aggregate for the whole period 1970-2004 we have estimated the period 1970-1993 with historical National Accounts. This Swedish data is only visible in the aggregates and not published separately. Trends for constant value added data for 1980-1993 are taken from SNA68 National Accounts. For the period 1970-1980 we have detailed Manufacturing data for each variable. For the non-manufacturing industries we have used constant trends of GDP data from OECD NA, Detailed tables, Volume II, 1982 edition (1963-1980). Gross Output and Intermediate Inputs have been extrapolated with Value Added trends, by lack of more detailed data.

2. SUT data

- Nominal
 - **Sources:** For 1993-2003 Supply and Use tables are available from Statistics Sweden. These tables are at the A60 detail level.
 - **Comments:**
- Volume
 - **Sources:** For 1994-2003 Supply and Use tables (at previous year prices) are available from Statistics Sweden. These tables are at the A60 detail level.
 - **Comments:**

WP2: Labour Accounts

1. Employment

- **Sources:** Statistics Sweden. For the period 1993-2003 we received Persons engaged and Employees data at the A60 level (or something very close to it). 2004 data has been taken from Swedish National Accounts data (but this NA data has recently been published and is less detailed).
- **Methods:** Extra detail (mainly for 3-digit NACE industries), when needed, has been based on Eurostat SBS.
- **Comments:**
 - The 2004 data was less detailed than the 1993-2003 data, therefore growth rates of aggregate industries have been applied to more detailed sub-industries where needed.
 - The Eurostat SBS database has been used for additional detail for Employees in industries 22, 24, 31-33, 50-52 and 74.
 - Industry 16 has been added to industry 15, by lack of detailed data.
 - To be able to construct an EU aggregate for the whole period 1970-2004 we have estimated the period 1970-1993 with historical National Accounts. This Swedish data is only visible in the aggregates and not published separately. For 1980-1992 trends from SNA68 National Accounts has been used for both total employment and employees. For 1970-1980 for Manufacturing we have used Persons engaged data (so same trends for EMPN and EMPE). For the other industries we have used OECD LFS broad sector employment data.
 - To keep consistency between Employment (EMPN and EMPE) and Hours (H_EMPN and H_EMPE) figures we have decided to use a little less detail than is available. For the years 1980-1992 for hours and employment some slightly different aggregates in LtQ were available, however to maintain consistency the trends of the aggregate of LtQ has been used for all variables.

2. Hours

- **Sources:** Statistics Sweden, Hours worked data for Persons engaged and Employees for the period 1993-2003 data has been taken from Swedish National Accounts data and is at the A60 level (or something very close to it).

2004 data has been taken from Swedish National Accounts data (but this NA data has recently been published and is less detailed).

- **Methods:** The 2004 data was less detailed than the 1993-2003 data, therefore growth rates of aggregate industries have been applied to more detailed sub-industries where needed.
- **Comments:** -The Hours worked data is not detailed enough, it is available at the A60 level (or something very close to it). For more detailed industries, the closest higher aggregate average hours worked has been used.

-To be able to construct an EU aggregate for the whole period 1970-2004 we have estimated the period 1970-1993 with historical National Accounts. This Swedish data is only visible in the aggregates and not published separately. For 1980-1992 trends for hours worked for both Total Employment and employees stem from an old National Accounts version of the Swedish National Accounts. For 1970-1980 no separate Hours worked data was available. Therefore we have used the trend of employment for this period (implicitly assuming the average hours are constant).

3. Labour composition

- Employment (or hours)
 - **Sources:** Statistics Sweden, employment at A60 level with split ups for age, gender and skill levels for the period 1993-2004
 - **Methods:** See Skyttesvall, Tomas and Hans-Olof Hagen (2006), Economic Growth in Sweden, New Measurements, Statistics Sweden
 - **Comments:**
- Compensation
 - **Sources:** Statistics Sweden, income levels for employment split-ups.
 - **Methods:** -
 - **Comments:**

WP3: Capital Accounts

- **Main sources for GFCF:** Statistics Sweden, National Accounts data at current and previous year prices, available at the A60 level (or something very close to it), for the period 1993-2004.
- **Methods: (for estimating industry * asset)**
See Skyttesvall, Tomas and Hans-Olof Hagen (2006), Economic Growth in Sweden, New Measurements, Statistics Sweden

- **Definition of ICT assets**
Unknown
- **Initial capital stock:** Statistics Sweden, National Accounts data at current and previous year prices, available at the A31 level, for the period 1993-2004.
- **Comments:** For asset number 1 (Communication equipment), industry 16 and 19 and asset number 2 (IT equipment), industry 19 the conversion of the previous year prices GFCF data into 1995 price GFCF data led to unbelievable values of constant GFCF. On basis of the rest of the industry data we calculated an asset specific Total Economy deflator which we combined with the current GFCF data to arrive at more reasonable constant GFCF values.

United Kingdom

WP1: Inter-industry Accounts

1. NA data

- Nominal
 - **Sources:** -Nominal data from ONS (Office for National Statistics), delivered Jan 2005. The data is consistent with the ESA 95 for current prices and the latest 2006 NA revision at A31 level. ONS data does not contain FISIM allocation.
-Supplemented by data from NIESR, final revisions delivered Nov 2006.
 - **Comments:** -NIESR revisions to A31 data before 1990: Nominal gross value added (GVA) and COE from 1970 to 1992 were taken from Blue Book publications. Gross output (GO) was estimated by taking the ratio of GO to GVA in the input output tables (1970-72, 1974, 1979, 1984 and 1989) and applying this to GVA from the Blue Book. Ratios were interpolated between years when IO tables were available. Nominal intermediate input was estimated as the residual between GO and GVA. Similar methods were used to update from 2002 to 2004
-Breakdown to 72 EUKLEMS industries is executed with weights based on SUT/Annual Business Inquiries from 1992 onwards. Prior to 1992 weights based on Annual Census of Production and Business Inquiries for distributive trades and service sectors.
-The shares of each industries financial services in total purchases of financial services was used to allocate FISIM by industry – this was carried out from 1974 to 2004, using the SUTs from 1992, IO tables before then and interpolating shares for missing years.
-Intermediate input was divided into three categories, Energy (E), Materials (M) and Services (S) using their shares in total intermediate purchases in the SUT and IO tables, with interpolation for missing years.
-Intermediate input shares for industry 37 have been set equal to those of 36t37 for the period 1970-1991. Shares for industry K are assumed to be constant at 1997 level for the period 1970-1991.
-Taxes less subsidies were extracted from the SUTs from 1992 to estimate Gross operating surplus. Data were also gathered from the IO tables on taxes less subsidies.
- Volume
 - **Sources:** -Constant price A31 GVA series were those delivered by ONS (Office for National Statistics), 1970 to 2002.
-Supplemented by data from NIESR, final revisions delivered Nov 2006.
 - **Comments:**-Constant price data: ONS series on GVA were updated to 2004 using estimates from the Blue Book, downloaded from the ONS

web-site. The implied deflators were used to disaggregate below A31 level.

Intermediate input deflators were calculated as Laspeyres chain linked indexes using detailed intermediate use shares from the SUT/IO tables combined with producer price indexes for manufactured products, energy price indexes and implicit deflators from the national accounts for services.

Volume indexes for gross output were constructed as Törnqvist indices of the growth in real value added and intermediate input.

2. SUT data

- Nominal
 - **Sources:** Data from ONS (Office for National Statistics) and NIESR, as described in section 1 above, delivered February 2007.
 - **Comments:**

- Volume
 - **Sources:** As for Nominal
 - **Comments:**

WP2: Labour Accounts

1. Employment

- **Sources:** -Annual Business Inquiry 1998-2004
Annual Employment Survey 1978-1998
-Census of Employment 1971-1978
-Labour Force Survey 1984-2004
-Annual Census of Production 1970-1992
-Social security card count data (British Labour Statistics yearbooks) 1970-71

- **Methods:** Employment numbers and hours of work data for the United Kingdom have been provided for the full 1970-2004 period for the EUKLEMS 72 industry breakdown, constrained to National Accounts total persons employed for the total economy.

Employees

The Annual Employment survey (AES) /Annual Business Inquiry (ABI) data were used to construct series. For sectors where ABI data are not available (notably part of agriculture and the financial services sector) data from the Annual Employment Survey were used to provide detailed information. In this way, WP2 data are consistent with those in WP3 and WP1 for manufacturing. For the pre-1995 period, the detailed division is based on the Annual Employment Survey (AES) until 1978. For the years before 1978 the Census of Employment and the social security card count data were used for A31.

The above data are for jobs. To convert to persons, data from the Labour Force Survey (LFS) were used to allocate second jobs to industry of use. The jobs

measures were then scaled by using the ratio of first to first and second jobs from the LFS.

Self employed

Data from 1984 onwards were extracted from the Labour Force Survey (LFS) micro data¹³. Before 1984 we only have information on the ratio of self employed and employees in SIC80 two digit industries 1970-1995 (provided by Mary O'Mahony). These ratios have been used to estimate self employment from the employee numbers which are trended backwards by using the sources mentioned above. The trends from this series are then used to backcast the LFS self employed numbers. Self employment values are set to zero if there are considerable number of zero values or if it is known that the industry in question does not have self employment by definition.

There are breaks in industry classification in 1980 and in 1992 and it is difficult to define exact concordance between the classifications. Instead we use SIC92 data as a benchmark and, by using trends from other classifications, we construct the whole series. The Annual Employment Survey figures are provided at two digit SIC92 level. LFS 1984-1993 is in SIC80 and the Census of Employment and insurance card count data are in SIC68. Aggregate industries that roughly correspond to EUKLEMS72 industries have been constructed from three digit SIC80 and SIC68 industries and trends calculated from these are then applied accordingly to extend LFS 1994-2004 series backwards, always using the source which allows the closest match to the EUKLEMS72 industry. Growth rate across two consecutive years are always calculated from figures from the same source with the same classification. If the data for the matching industry are not available or look unreliable, the trends from the more aggregate industry level are used.

Self employed data constructed in the manner described above are aggregated to A31 and then allocated on the basis of census of production ratios for manufacturing sectors in order to make data consistent with other WPs. Self employed totals are also constrained to national accounts totals from 1978 onwards, and for the earlier years, 1970-1977, the national accounts totals for 1978 are back-cast on the basis of growth rates in the LFS-based data, since no employment figures are reported in the National Accounts in this period.

- **Comments:** -We have extrapolated employment in P with the trend of NACE industries 75-99 for the period 1970-1983

2. Hours

- **Sources:** -UK Labour Force Survey micro data 1984-2004.
-O'Mahony, Mary & De Boer, Willem (2002). Britain's Relative Productivity Performance 1950-1996: Updates to 1999.
- **Methods:** The data from 1984 onwards have been extracted from the Labour Force Survey micro data accessed through UK Data Archive whose assistance is again gratefully acknowledged. The hours variable used measures weekly

¹³ We gratefully acknowledge the Data Archive for granting access to these data.

total actual hours including paid and unpaid overtime and also takes into account absences and other deviations from usual hours of work. These hours were also adjusted for hours worked in other jobs at broad sectoral level, though industry allocation is done on the basis of the industry of the main job. Because the LFS is conducted round the year the average weekly hours genuinely represent an average week (taking into account the variation in absences over time) and when multiplied by 52 they should give a correct estimate of the actual annual hours.

For the period before 1984 we use employee hours data from O'Mahony and Boer (2002). These data were used to construct trends rather than levels.

Hours per person were estimated as total hours for primary and secondary jobs divided by number of persons.

Due to the large variation in average hours in the 72 industries the hours measures for each EUKLEMS industry are not used as such but instead various trend and level correction methods are applied. In order to extract trends that are not too volatile the original hours data are aggregated to a smaller number of industries. For employees the average hours are calculated for 20 industries and for the self employed and second jobs for five main industries. Change in industry classification occurs in 1993. The data in SIC80 are aggregated roughly to correspond to the aggregated industries from EUKLEMS. When there are no two consecutive years of consistent data from the same source with the same classification, trends from the hours data by O'Mahony and de Boer (2002) are used to bridge the series.

In order to obtain reliable level estimates as a starting point, we calculate average hours for each 72 industries over the period 1994-2004 when SIC92 was in use. For each industry we then compute the ratio of average hours to the total average and obtained estimated hours for 2002 by multiplying the total average hours 2002 by this ratio. We then use the trends calculated as described above to extend the hours series backwards and forwards from 2002.

- **Comments:** Contact persons: Mari Kangasniemi or Kate Robinson, NIESR

3. Labour composition

- Employment (or hours)
 - **Sources:** -Labour Force Survey 1979-2004¹⁴
-General Household Survey 1974-80¹⁵
 - **Methods:** The labour composition in terms of employment is presented as shares of each education-gender-age group by industry and year. These shares include both employees and self employed. We do not

¹⁴ We gratefully acknowledge the UK Data Archive for granting access to these data.

¹⁵ We gratefully acknowledge the UK Data Archive for granting access to these data.

- Employment shares of different education-gender-age groups from the LFS were calculated by using a 15 industry split. Due to major changes in LFS education classification we see a large jump in the shares in 1992-1993, 1987-1988 and 1983-1983. We bridge these by constructing employment observations that overlap the latter year of each break. We take the average trend of employment over 3-5 years before the break (depending on availability) and extend the employment series forward by using this trend. We then calculate the ratio of the new observation to the real data from that year and multiply the observations preceding the break with the ratio to bring them to the level of the series after the break. These new employment figures are then used to calculate the shares.

The shares are first calculated for the total combined years of 1994-2004 and these shares are applied to year 2002. Trends obtained from the data are used to extend these figures backwards and forwards. For each year the shares are corrected by dividing them by the total sum of the initial estimates of shares. This ensures that the shares sum to one.

The LFS data are only available for 1979, 1981 and 1983 before 1984. The missing years are interpolated and corrected to make them sum to one.

The sample size in the GHS is too small to allow using annual shares, thus years 1974-1975, 1976-77 and 1978-79 are combined to attain adequate sample size to calculate shares and years 1975 and 1977 are interpolated from the data attained by extending the data backwards from 1979 by using the trends. Data from 1979-80 are used to construct an overlapping year with the LFS series. The 15 industry split is not possible using the GHS data, given the sample sizes and so instead the shares are calculated using 12 industry split.

There were GHS data available for 1972-1973 but these turned out to be highly volatile. Therefore 1974 data were backcast to 1970 by using the change in shares in 1974-1975.

- **Comments:**

The education classes used are the following:

- 1 University degree
- 2 HND, HNC, BTEC, teaching qualification, nursing qualification
- 3 A level or equivalent, trade apprenticeship
- 4 O level or equivalent, BTEC, BEC, TEC GENERAL, City & guilds
- 5 No qualifications

-Labour composition is available at the level 15 industries for employment. For lower levels we assumed the same composition as the higher aggregate.

- Compensation
 - **Sources:** -Labour Force Survey 1993-2004.
-General Household Survey 1972-1993/94.
 - **Methods:** In order to obtain reliable level estimates as a starting point, we calculate average gross weekly wage from main job for each of the 15 industries over the period 1994-2004 when SIC92 was in use. For each group the ratio of average wage to the total industry average is computed and estimated weekly wage for 2002 is obtained by multiplying the total industry average 2002 by this ratio. The industry split is again the 15 minimum industries.

We then used trends from each group to take these wage figures backwards and forwards. If the group specific wages were too variable total industry trend was used instead of group specific trend. Most typically this was the case for female employees in the oldest groups.

The LFS wage data are extended back using trends from the GHS. Because the definition of wage or earnings changed from LFS to GHS and occasionally during the period covered by the GHS, we have to use trends in relative wage to extend the series backwards. All wages, including the LFS series, are thus expressed in terms of wage relative to men in age group two, education group three.

The GHS are rather small samples and thus they are combined into four industries and six three year blocks of data, 1972-74, 1975-1977, 1979-81, 1982-84, 1987, 1988/89 and 1989/90, and 1990/91, 1992/93 and 1993/94. The quality of the data for 1985 and 1986 are poor and they are not used. The missing years were interpolated from the final data. The four industries are agriculture, production, distribution, trade and transport and other services.

When constructing the final series these industry trends are used with the exception of agriculture and the years before 1976 where the industry trends are too volatile. Instead trends of relative salaries from total sample are used. In the final data the 1972 data seemed to differ markedly from those of 1973, therefore relative wages from 1973 were used for years 1970-72.

Comments: Contact persons: Mari Kangasniemi or Kate Robinson, NIESR

-Labour composition is available at the level 15 industries for compensation. For lower levels we assumed the same composition as the higher aggregate.

WP3: Capital Accounts

- **Main sources for GFCF:**

Source: ONS Published National Accounts/Other ONS/ACOP/BEID

These data are GFCF in current and constant terms for 8 assets: structures, equipment, vehicles, computers, software, telecommunications, intangibles, residential buildings. The total number of industries for which data are provided is 62.

The main source for these data is the Published National Accounts (Blue Book). We take data on capital expenditure by asset type for the period 1949-2005 for 30 industries and for the period 1995-2005 for 12 additional sub-industries. This source gives data in current and constant (2002) prices for five asset types: Structures, Plant & Machinery, Vehicles, Intangibles and residential buildings. However in the case of intangibles there is less disaggregation, only 25 industries.

- **Methods: (for estimating industry * asset):**

To obtain further disaggregation in constructing current price series we use shares of sub-industries data from ONS, the data underlying the analysis in Wallis 2005, which provides data for 57 industries. For current price series we employ sub-industry shares in this series to aggregate industry investment from the National Accounts. To obtain constant price series we use the aggregate industry deflator applied to all its sub-industries. In addition to the assets mentioned above, these unpublished ONS data also include nominal investment in computing equipment. Computer equipment is deflated using the Producer Price Index for computing equipment from 1991 and the index employed in the Bank of England investment series (BEID) pre 1991, which is based on the US hedonic price deflator – for details see

www.bankofengland.co.uk/workingpapers/wp259techannex.pdf

Finally to achieve additional industry disaggregation, the National Accounts/ONS data were supplemented by data from the Annual Census of Production (ACOP), and services industries inquiries, to achieve greater industry disaggregation. In particular, *other transport equipment* disaggregates into *building and repairing of ships, aircraft and spacecraft*, and *railroad equipment*. *Electricity, gas & water* disaggregates into *Electricity, Gas* and *Water* separately. *Land transport* disaggregates into *Rail transport* and *Road transport* and *Recreational activities* break into *Media activities*, and *Other recreational activities*. In total we obtain data for 62 industries. Again we use ACOP and services inquiry data to calculate investment shares of sub-industries which are then applied to National Accounts totals. Since the ACOP only provides data for structures, plant and machinery and transport, we used plant and machinery shares for non-ICT equipment, computers and telecommunications.

- **Definition of ICT assets:**

To date there are no officially published data for the UK on ICT investments.

For computers we use the data underlying Wallis (2005) from 1984 to 2004. Then we use the data from the BEID on computers to splice these data back to 1960. Before 1960 this investment is assumed to equal zero.

For telecommunications we apply the proportion of this asset in total equipment (including computers) from the supply-use tables (SUT) from 1992 to 2004 to NA totals for plant and machinery. The product categories included in telecommunications equipment are ‘Transmitters for TV, Radio and Telephone’, ‘Receivers for TV and Radio’ and ‘Telecommunications Services’. This was then linked to the BEID series, which used a similar method based on investment matrices in the input output tables.

For software we use data from ONS, which provided new estimates of own account software and purchased software using survey sources, nominal investments and deflators - see Chesson and Chamberlin (2006) for details.

Non-ICT equipment is plant and machinery from the National accounts minus computers, minus telecommunications and minus a part of software which was based on comparisons between the SUT software series and the intangibles series in the national accounts. Non-ICT deflators were supplied by ONS.

“Survey-based measures of software investment in the UK”, by Andrew Chesson and Graeme Chamberlin, *Economic Trends* 627, February 2006.

“Estimates of the volume of capital services”, by Gavin Wallis, *Economic Trends* 624, November 2005.

- **Initial capital stock:**
Initial capital stock for 1948 from O’Mahony (1999), *Britain’s Productivity performance, An international comparison, 1951—96*, NIESR, based on unpublished investment series from ONS, 1860-1948.
- **Weights:**
- **Comments:**
-Capital stocks: Industries 50-52, 70-74 and 75-85 have been split up with 1970 Value Added data.

United States-SIC based

The basic building blocks for a KLEMS productivity database for the U.S. are the annual industry accounts for the United States provided by the BEA. Beginning with 1998, the annual industry accounts have been revised and industries are defined according to the North American Industry Classification System of the United States (NAICS). Unfortunately, the NAICS KLEMS data are complete only for the period 1998-2005. BEA will be releasing a new industry data set on a NAICS basis in 2008. This involves a number of changes, including integration with their annual and five-year benchmark IO tables. Inbetween, partial data on a NAICS basis for varying levels of industry detail are provided for 1947-1997. As a consequence three main approaches in building a productivity database for the U.S. can be followed. First, starting from the NAICS KLEMS data and backward extrapolating to 1987 based on SIC (see Corrado et al., 2006). Second, starting from SIC KLEMS data and extrapolated forward to 2004 using NAICS (Jorgenson, Ho, Stiroh and Samuels 2006). And third, using KL and total intermediate inputs series on NAICS basis, available from 1947 onwards at varying levels of industry detail (Inklaar, Timmer and van Ark 2006).

We have decided to provide two alternative data sets within EU KLEMS:

- **US-SIC** based on SIC KLEMS data for 1970-2000 extrapolated forward to 2004 using NAICS
- **US-NAICS** based on the NAICS 1997 classification system and consistent with the 2003 Comprehensive Revision of the National Income and Product Accounts (NIPA) for 1977-2004.

The main differences between the two datasets are the following:

- US-SIC includes detailed estimates of labour composition whereas US-NAICS does not
- US-SIC includes full KLEMS productivity measures whereas US-NAICS only includes KL measures of productivity.
- US-SIC covers the period from 1970 onwards, US-NAICS from 1977 onwards.
- US-NAICS time series are consistent with the 2003 Comprehensive Revision of the National Income and Product Accounts (NIPA).
- US-NAICS is based a more detailed industry correspondence table between NAICS and ISIC, improving international comparability at lower level of industries.

WP1: Inter-industry Accounts

1. NA data

- Nominal
 - **Sources:**
 - 1960-2000: Dale Jorgenson and associates on basis of database described in Jorgenson, Ho and Stiroh (2005). Breakdown of 44 industries to euk industries happens on basis of weights.
 - For the period after 2000:** The output and intermediate input data for the 1977-2000 dataset comes from the BLS Office of Employment Projections. We first construct a time series of IO tables for 1977-2000

for our 88 industries using the procedures described in JHS (2005, Chapter 4). We then extend the series to 2004, however, we do not use the updated version of that BLS data for the 2001-04 period, but instead turn to the BEA's GDP by Industry accounts which gives the gross output for 490 NAICS industries corresponding to the most detailed benchmark input-output tables¹⁴.

- **Comments:** -The list of these industries is given in Table III.1 of Jorgenson, Ho, Samuels and Stiroh (2006), "The Industry Origins of the American Productivity Resurgence", which also gives the link between these NAICS industries and the DJIA 88 industries. There is no simple one-to-one bridge between the NAICS at this level of classification and the SIC and we make the approximate assignment given in Table III.1. We first aggregate the 490 BEA industries to our 88, and then calculate the growth rate of nominal and real gross output for each of the 88 sectors. From these aggregates we derive the price index of gross output for our 88 industries for 2001-04. Starting from the nominal gross output of our 88 (SIC-based) industries in 2000 we apply these growth rates to obtain output for 2001-04. These industry nominal values are then multiplied by the Make table for 2000 to give the commodity values for the 88 commodities for 2001-04. Before we can update the IO table we need to construct new estimates of final demand for 2001-04, this is done using information from the new BLS IO tables. Combining this final demand by commodity data with the industry output and commodity output we then RASed the 2000 IO table to obtain updated IO tables for 2001-04. These tables are then deflated by the 88 price indices for 2001-04 derived from the BEA Industry data, giving real output and real intermediate input.
- -Weights delivered for 1977/1982/1987/1992/1997 for GO, and for 1987/1992 for II and LAB. Years in-between have been intrapolated. Weights for GO after 1997 same as 1997, before 1977 based on trend in weights in period 1977-82. Weights for other variables before 1987 and after 1992 based on trend in GO. Weights are based on benchmark IO-tables from the BEA.

- Volume
 - **Sources:** See Nominal.
 - **Comments:** See Nominal

2. SUT data

- Nominal
 - **Sources:** See NA data
 - **Comments:**

¹⁴ This data is available at the BEA website http://www.bea.gov/bea/dn2/home/annual_industry.htm, and described by Smith and Lum in the *Survey of Current Business* (2005).

- Volume
 - **Sources:** See NA data
 - **Comments:**

WP2: Labour Accounts

1. Employment

- **Sources:**
 - 1960-2000: The main data sources here are the Census of Population, the Current Population Survey and the U.S. National Income and Product Accounts (NIPA). The first two are individual data, while the NIPA are based on establishment data and reflect payroll records. The observational unit for establishment data is the “job” reflected on a payroll, while the corresponding unit for individual data is the “person.” A person may be a “multiple job-holder,” and a job may be held by more than one person. To link persons and jobs we assemble four matrices of data -- compensation, hours worked per week, weeks worked per year, and employment -- cross-classified by the characteristics of individual workers.
 - For the period after 2000: The main data sources here are again the Census of Population, the Current Population Survey and the U.S. National Income and Product Accounts (NIPA). The population survey data that we use to construct labor input from 2000 onwards was also changed to the NAICS classification beginning with the 2000 Census and subsequent Current Population Survey (CPS).

- **Methods:**

- 1960-2000

We begin with the public use tapes from the decennial Censuses of Population for 2000, 1990, 1980, and 1970, covering one percent of the population in 1990 and 1980 and 0.1 percent of the population in 1970. We employ individual observations for about one million workers to construct benchmark matrices of employment, weekly hours and weeks per year. For each worker, we collect data on age, highest grade completed, class of employment, primary industry of employment, weekly hours worked, weeks worked the previous year, and wage and salary income of employees from the previous year¹⁵. This data set also provides population weights that allow us to derive national totals. The benchmark matrices are adjusted so that they equal the aggregate tables published by the Bureau of the Census.

We make some additional refinements to deal with special features of labor data. First, there are multiple job holders working in more than one industry. We use detailed information on this from the May CPS to allocate hours for individual workers among industries and employment classes. Second, information on income is “top-coded.” For each industry we fitted a lognormal distribution and used this to estimate the average income for the upper tail of the distribution. Third, the Census of Population for 1990 defines educational

¹⁵ In the first run of the model, data were aggregated to be consistent with the other countries, and thus, not disaggregation by labour type is provided.

attainment as highest degree achieved. We used the estimates in Jaeger (1997) to bridge the new Census definition to the old definitions that apply prior to the 1992 data.

In the next step we employ the Current Population Survey (CPS) Annual Demographic File from the March surveys to estimate employment, hours, and compensation matrices for each year, again at the individual level. For years 1964-91 we use the files reorganized by Unicon (2002) so that they have a convenient consistent structure through time. For years after 1991 we use the CPS March files directly¹⁶.

Our extension of the industry classification to the EUK72 sectors raises specific issues, since some of them are not explicitly identified in the Census-CPS industry classification. For example, only one total is given for Electrical Machinery and Equipment; we therefore had to assume the same distribution of characteristics for Communications Equipment, Electronic Components, and Other Electrical Machinery. For most EUK72 sectors, the BLS Industry Output and Employment data provide industry totals for employment, for those not identified in the BLS data we assume the proportions derived from the CPS samples.

Our first step is to scale employment, hours, and weeks matrices based on the March CPS to the BLS annual tabulations based on the monthly CPS.¹⁷ These matrices are taken as marginal totals to interpolate and extrapolate the 1970, 1980, 1990 and 2000 Census benchmarks. An initial guess at the full matrix is derived from the nearest two Censuses and made consistent with these marginal totals for every year between 1970 and 2000. The Census-based matrices are calibrated to the BLS totals for those years in order to provide a smooth series. A further refinement would be, for example, to revise the 1981 CPS to take into account the 1980 Census, but this could only be done with detailed information available within the Bureau of the Census.

The CPS covers only the civilian population. For data on military workers we turn to data from the Defense Manpower Data Center¹⁸ which provides information on very similar demographic groups. Another detail to note is that the CPS also top-codes the income information. Since 1996 they have provided the average of the top-coded wages, for years prior to 1992 we use the estimates in BLS (1993), Appendix Table E-1. For the years 1992-1995 we use the averages we estimated from the 1990 Census.

From the time series of matrices on employment, hours, and weeks based on individual data we generate a time series based on establishment data given in the National Income and Product Accounts. The NIPA gives the total number

¹⁶ The data after 1991 are based on the new educational classifications of highest degree attained rather than the old number of years of schooling.

¹⁷ A list of BLS reports is given in Appendix A of JGF. These include *Employment and Earnings*, *Special Labor Force Reports*, and *BLS Bulletins*. Other unpublished tabulations such as the educational attainment of self-employed and unpaid family workers were kindly provided by Tom Hale and Tom Nardone of the BLS.

¹⁸ We thank Mike Dove and Scott Segerman of the DMDC for making these data available to us.

of employees and self-employed for detailed industries.¹⁹ For the EUK72 sectors not broken out in the NIPA, these are allocated according to the employment data from the BLS 192-sector data. The number of workers is summed over the detailed sectors so that they match our industry classification for each class of employment.

2000-2004

The population survey data that we use to construct labor input was also changed to the NAICS classification beginning with the 2000 Census and subsequent Current Population Survey (CPS). We first created the (s,a,e,c) matrices of employment, weekly hours, annual weeks, and labor compensation based on the 275 NAICS industries (at the 3-digit level) categorized in the 2000 Census. Next we constructed a link that assigns each of those 275 NAICS industries to the DJA88 industries which is based on SIC.

While some of these 275 industries mapped directly into one of the DJA88 industries, for example census industry 1, Crop Production, mapped directly to Farms in the SIC system, many did not. For example, census industry 767 (Travel Arrangements and Reservation Services, NAICS 5615) needed to be mapped to SIC 472 (Arrangement of Passenger Transportation), SIC 738 (Other Business Services) and SIC 869 (Membership Organizations). For the industries that needed to be split across multiple 3-digit SIC industries, we employed ratios from the Current Employment Statistics program of the Bureau of Labor Statistics (BLS)²⁰. The map between the 275 Census industries to our 88 is given in Table III.2 of Jorgenson, Ho, Samuels and Stiroh (2006). The allocation column gives the shares of each NAICS industry going to the corresponding SIC industries. Using this map we convert the Census 2000 benchmark matrices of employment, hours worked, and labor compensation to the DJA88 industries that are based on the SIC data. We thus have a consistent time series for the period 1960-2000.

The annual CPS data that came after 2000 which are on the NAICS system are treated in a similar fashion. We first compile the matrices for employment, hours and compensation on the NAICS classification and then map them to the DJA88 industries giving us a set of control matrices with the same definitions for 1960-2004.

These data based on the population surveys are then scaled to the totals given in the BEA National Accounts (NIPA). The NIPA gives the total number of employees and self-employed for each of 67 NAICS-based industries, and the total compensation of employees. It also gives total annual hours for a smaller group of industries. We first convert these NIPA/NAICS industries to our DJA88. This is done with a map similar to the one given in Table III.1. The employment matrix from the household survey data is then scaled to these NIPA totals for each of the DJA88 industries. The hours and compensation per

¹⁹ *Survey of Current Business*, August 2001, Tables 6.4C, 6.7C, 6.8C give the most recent data. The time series is available at www.bea.gov. The number of self employed for each sector is derived from subtracting the number of employees from total workers.

²⁰ The ratios were downloaded February 2005 from <http://www.bls.gov/ces/cesratiosemp.htm>.

hour for employees is then similarly scaled. The estimate of compensation for self-employed is as described in JHS (2005, Chapter 6).

- **Comments:**

We note one more adjustment to the NIPA data. The Bureau of Economic Analysis revised the industry classification in NIPA from the 1972-SIC to the 1987-SIC. To obtain a consistent time series we transformed all the data prior to 1987 to the new basis using the 1987 data for both classifications provided by the BEA.

An issue that has vexed labor economists in the U.S. is the change in educational classification in the CPS in 1992 and in the Census of Population in 1990. Jaeger (1997) has carefully analyzed this problem and we make use of his tables to construct a bridge to link the new classification to the old. That is, we take the 1992 CPS, bridge it to the old classification, and estimate the change in labor quality between 1990 and 1992. For 1992 onwards we use the new educational classification only.

References:

Jaeger, David A. (1997), "Reconciling the Old and New Census Bureau Education Questions: Recommendations for Researchers," *Journal of Business and Economic Statistics*, 15, 300-309.

Jorgenson, Ho, Samuels and Stiroh (2006), "The Industry Origins of the American Productivity Resurgence"

Unicon Research Corporation (2002), "CPS Utilities," Santa Monica, Unicon Research Corporation.

2. Hours

- **Sources:** The main data sources here are the Census of Population, the Current Population Survey and the U.S. National Income and Product Accounts (NIPA). The first two are individual data, while the NIPA are based on establishment data and reflect payroll records.

- **Methods:** See employment

- **Comments:**

The NIPA gives the total hours worked by *employees* for 15 industry groups.²¹ Using the hours and weeks matrices described above we generate the establishment-based hours, on a 52 weeks per year basis by scaling to this control total for each industry group.

For the self-employed and unpaid family workers, the BLS Division of Productivity Research provides an estimate of total non-farm hours for this group. We scale hours for these workers so that the sum over the non-farm sectors equals this total. For hours in agriculture the Economic Research

²¹*Survey of Current Business*, August 2001, Table 6.9C. Kurt Kunze kindly provided separate information for total military hours.

Service of the U.S. Department of Agriculture provides estimates of total hours.²²

3. Labour composition

- Employment (or hours)
 - **Sources:** See employment
 - **Methods:**
 - **Comments:**
- Compensation
 - **Sources:** See employment
 - **Methods:**
 - **Comments:**

WP3: Capital Accounts

- **Main sources for GFCF**
 - 1960-2000

Dale Jorgenson and associates on basis of database described in Jorgenson, Ho and Stiroh (2005).
 - 2000-2004

The BEA investment data after 2000 is provided only on the NAICS basis. We first estimate the capital stocks and inputs for 2001-04 using the same methodology in JHS (2005, Chapter 5) for the 67 BEA NIPA industries. We then map the 67 industries to the DJA88 using a map similar to Table III.1. The asset data is available for more than 60 assets but this mapping is done only for the 7 assets identified in the EUKLEMS project. These series for capital stock, capital input, capital stock price, and service price are then joined to the 1960-2000 series constructed in JHS (2005).
- **Methods: (for estimating industry * asset)**
 - Breakdown of capital input of 44 industries to euk industries on basis of weights.
 - Weights have been delivered for 1977/1982/1987/1992/1997 for GO, and for 1987/1992 for II and LAB. Years in-between have been intrapolated. Weights for GO after 1997 same as 1997, before 1977 based on trend in weights in period 1977-82. Weights for other variables before 1987 and after 1992 based on trend in GO.
- **Definition of ICT assets**

Calculation of ICT capital based on investment series underlying JHS. These series are available for 57 industries, which have been concorded to 88 industries in the JHS dataset (without weights) and subsequently concorded to euk industries with industry weights for capital compensation

²²We are grateful to Larry Rosenblum of the BLS and Eldon Ball of the ERS for generously sharing their unpublished data with us.

- *Initial capital stock*

- *Weights:* see above

- *Comments*

Reference:

Smith, George M, and Sherlene K.S. Lum (2005) “Annual Industry Accounts. Revised Estimates for 2002-2004”, Survey of Current Business, December, p18-69.

United States-NAICS based

The basic building blocks for a KLEMS productivity database for the U.S. are the annual industry accounts for the United States provided by the BEA. Beginning with 1998, the annual industry accounts have been revised and industries are defined according to the North American Industry Classification System of the United States (NAICS). Unfortunately, the NAICS KLEMS data are complete only for the period 1998-2005. BEA will be releasing a new industry data set on a NAICS basis in 2008. This involves a number of changes, including integration with their annual and five-year benchmark IO tables. In-between, partial data on a NAICS basis for varying levels of industry detail are provided for 1947-1997. As a consequence three main approaches in building a productivity database for the U.S. can be followed. First, starting from the NAICS KLEMS data and backward extrapolating to 1987 based on SIC (see Corrado et al., 2006). Second, starting from SIC KLEMS data and extrapolated forward to 2004 using NAICS (Jorgenson, Ho, Stiroh and Samuels 2006). And third, using KL and total intermediate inputs series on NAICS basis, available from 1947 onwards at varying levels of industry detail (Inklaar, Timmer and van Ark 2006).

We have decided to provide two alternative data sets within EU KLEMS:

- **US-SIC** based on SIC KLEMS data for 1970-2000 extrapolated forward to 2004 using NAICS
- **US-NAICS** based on the NAICS 1997 classification system and consistent with the 2003 Comprehensive Revision of the National Income and Product Accounts (NIPA) for 1977-2004.

The main differences between the two datasets are the following:

- US-SIC includes detailed estimates of labour composition whereas US-NAICS does not
- US-SIC includes full KLEMS productivity measures whereas US-NAICS only includes KL measures of productivity.
- US-SIC covers the period from 1970 onwards, US-NAICS from 1977 onwards.
- US-NAICS time series are consistent with the 2003 Comprehensive Revision of the National Income and Product Accounts (NIPA).
- US-NAICS is based a more detailed industry correspondence table between NAICS and ISIC, improving international comparability at lower level of industries.

WP1: Inter-industry Accounts

1. NA data

- *Nominal*
 - **Sources:** The main source is the GDP by Industry accounts from the Bureau of Economic Analysis (BEA). Specifically, the release of December 2005 of the data for the period 1998-2004 is used in combination with the release of December 2005 of historic data for the period 1947-1986 and the data for the period 1987-1997, released in

November 2004²³. The industry data in each of these releases is organized according to the NAICS 1997 classification system and is consistent with the 2003 Comprehensive Revision of the National Income and Product Accounts (NIPA)²⁴.

The three releases also delineate three distinct periods in terms of data quality. For the period 1998-2004, all source material used by the BEA is on a NAICS basis and there is an underlying set of consistent Supply and Use tables²⁵. For 1987-1997, the original source material is on the old 1987 SIC basis, but of sufficient detail for the BEA to estimate consistent gross output, intermediate inputs and value added accounts²⁶. For 1977-1986, the source material, on 1972 SIC basis, is still detailed enough to provide series of value added for 65 industries, but no gross output series in either current or constant prices. The 1947-1976 is not incorporated in the database or discussed here as the number of industries in the BEA dataset drops to 22. In the discussion of the data construction by variable, the three periods will often be distinguished.

Gross output

As discussed earlier, the main source of data is BEA GDP by Industry accounts for the period 1987-2004. The variable 'Taxes on production and imports, less subsidies' is used to remove all taxes on products and production. For the 1977-1986 period, the 1987 data is extrapolated using BLS Industry output and employment data (BLS EMP). For the period 1998-2004, the BEA publishes detailed Gross output by Industry data, consistent with the GDP by Industry totals. For the period 1977-1997 and a number of industries for 1998-2004, the BLS EMP data is used to distinguish the industries on the AUX list, with the exception of the distinction in wholesale and retail trade between motor vehicle trade and other wholesale and retail. For the 1993-2004 period, NAICS based data on output (gross margins) is available from the Census Annual Wholesale Trade Survey and the Annual Retail Trade Survey. For the 1977-1992 period, these data are extrapolated using the BEA Gross Output by Industry data for 1977-1997.

Value added

The basic source of data is value added minus taxes from the BEA GDP by Industry accounts for 1977-2004. For 1977-1986, no NAICS-based data on taxes is available, so the GDP by Industry data on the old SIC basis are used to extrapolate the 1987 share of taxes in value added. Since there is more detailed source material on gross output than on value added, especially outside manufacturing, a complete set of value added/gross output (VA/GO) ratio is estimated. If no information is available about (trends in) the VA/GO ratio of the detailed industries on the AUX list, it is assumed to follow the more aggregate trend from the BEA data. For 1997, the BEA Benchmark Use table provides the VA/GO

²³The corresponding articles in the *Survey of Current Business* are, respectively, Smith and Lum (2005), Yuskavage and Fahim-Nader (2005) and Yuskavage and Pho (2004).

²⁴ See Seskin and Larkins (2004).

²⁵ See Moyer, Planting, Vern and Kish (2004).

²⁶ Only overall intermediate input use is available, instead of the more detailed annual Use tables available from the later period.

ratio for almost all AUX industries. The exception is the distinction between motor vehicle and other trade so in that case, the same VA/GO ratio is assumed. For the period 1998-2004, the manufacturing VA/GO ratios for 1997 are extrapolated using data on value added and value of shipments from the 2001 and 2004 Annual Survey of Manufacturers (ASM). The private households industry (ISIC 95) is relatively special in that, by construction, intermediate inputs are zero. The procedure described above can, in general, lead to VA/GO ratios not equal to 1. This equality is enforced later and any value added above or below gross output is distributed to the other community and personal services industry (ISIC 90-93). Another problem is that in the 1977-1986 period, some of the value added estimates exceed gross output. In those cases, gross output is adjusted upward to the average 1987-1997 VA/GO ratio for that industry. Obviously, this adjustment is not ideal, but since value added is the variable which needs to be consistent with BEA data, while gross output data are from a different source (BLS), this adjustment is the least problematic.

Compensation

The estimation of labour compensation follows along similar lines as the estimation of value added: the basic source is labour compensation from BEA GDP by Industry and a full set of compensation to gross output (COMP/GO) ratios is estimated. For 1977-1986, no NAICS-based labour compensation is available from the BEA, so a compensation to value added ratio based on the SIC-based GDP by Industry data is used to extrapolate from the 1987 level. The estimates generated this way are adjusted to sum to total economy labour compensation from the SIC-based GDP by Industry data. For 1997, the Benchmark Use table is the main source, extrapolated for the period 1998-2004 for manufacturing industries using ASM data on total labour compensation and value of shipments. For non-manufacturing industries, estimates for this period are based on the BLS Current Employment Statistics (CES). The variable on Average weekly earnings of production and non-supervisory workers is combined with the All employees variable to get an estimate of total earnings. Just as with the ASM data, the COMP/GO ratios calculated in this way are applied to the Use table-based ratios, which are consistent with BEA concepts. As with other variables, in the final estimation stage, the estimates of labour compensation are normalized to BEA totals. For the private households industry (ISIC 95), the same procedure is followed as for value added, since all output consists of labour compensation (by construction).

○ ***Comments:***

The guiding principle in the construction of the data is that for additive variables, such as value added at current prices or the number of persons engaged, the industries should add up to BEA control totals. So this means that summing value added across all industries gives GDP at current prices, but also that value added of all agricultural industries adds up to the BEA total for that industry group. For growth rates of prices and quantities, such consistency cannot easily be enforced, but obviously, any deviations from BEA totals should be small. However, there are three reasons why the consistency for the additive variables cannot easily be

demonstrated from the final tables. The first reason is that ‘Taxes on production and imports, less subsidies’ are subtracted from gross output and value added to make the data more comparable to the output series at basic prices that are available for other countries. This does not achieve perfect comparability, because this variable not just covers indirect taxes on products, but also taxes on production. The basic prices concept would exclude the former, but include the latter type of taxes (less subsidies), so in the U.S. case, it is more appropriate to refer to the resulting series as gross output and value added at factor cost²⁷.

The second reason is that for a considerable number of the industries in the database, there is no easy concordance to one or more of the 65 industries of the GDP by Industry list (BEA). In database terminology, there is a many-to-many concordance between the EUKLEMS and the BEA list. To resolve this many-to-many concordance, an auxiliary (AUX) list of 92 industries is set up, which has a one-to-many concordance to both the EUKLEMS and BEA list.

The final reason why the final series for value added and employment cannot be easily compared to BEA series is an adjustment involving the new Management of Companies industry (NAICS 55). For the most part, this industry covers the output and employment of firm headquarters. Under the ISIC classification (and the previous U.S. SIC87 classification), such activities are included in the industries to which they provide headquarters services. So for example, the headquarters of Wal-Mart would be included as part of retail trade under ISIC but as part of management of companies under NAICS. The 1997 Benchmark Use table and 1998-2004 Annual Use tables are used to determine intermediate deliveries from management of companies to all other industries. The output and employment of the management of companies industry is then allocated to other industries based on these deliveries²⁸.

- Volume

Sources:

Gross output deflator change

The main data source for 1998-2004 is the detailed BEA Gross output by Industry data, which can be aggregated to replicate the deflators as shown in the GDP by Industry dataset. Using gross output at current prices from this source, Törnqvist aggregates are calculated for industries on the AUX list. So the price change of the aggregate industry from year $t-1$ to year t is equal to the weighted average price change of the detailed industries, where the weights are equal to the average share in output over the two years of each of these detailed industries. For a number of industries, the

²⁷ The BEA publishes aggregate data distinguishing between taxes on products and on production. Taxes on products represent about 55 percent of total taxes in 2004, but no breakdown by industry is available.

²⁸ Not all output and employment is redistributed. Part of the services of this industry is also exported. Furthermore, gross output is almost fully removed, since the reallocation is basically the consolidation of an industry, with intermediate inputs and corresponding gross output canceling out. Even though the price of headquarters’ services is used by the BEA in estimating double deflated value added prices, an adjustment to the BEA results is omitted here because this caused a larger discrepancy between aggregate growth of value added at constant prices based on our data and the corresponding BEA aggregate.

BEA deflator data is supplemented by BLS EMP data. For motor vehicle wholesale and retail trade and other wholesale and retail trade, the output indices from the BLS Industry Productivity and Costs program are used in combination with the gross output data described above. For the period 1977-1997, the main source is the gross output deflator data in the BLS EMP dataset. For wholesale and retail trade, the old SIC-based gross output data, as described above, is used. For other detailed industries, the same price change is assumed as for the broader aggregate.

Intermediate input price deflator

The BEA estimates an implicit value added deflator based on the gross output deflator of an industry and the intermediate input price index. The intermediate input price index is estimated based on Use tables and price indices at a level of detail that is not publicly available. As a result, in many cases, developing alternative intermediate input deflators for detailed industries on the AUX list is unlikely to lead to more reliable estimates of value added prices. However, in other cases, estimates for detailed industries are likely to improve value added deflator estimates. A case in point is the computer industry. In the BEA dataset, the computer industry (NAICS 3341) is part of the broader Computer and electronic products industry (NAICS 334). However, the computer industry uses more semiconductors as intermediate inputs than other parts of that industry and semiconductors show a much different price development than other commodities. The final column of Table 2 shows whether a BEA intermediate input deflator is used for that industry or not. A BEA deflator is used if either 1) the AUX industry in question is a direct match to an industry on the BEA list, 2) the Benchmark Use table does not provide information about intermediate input use of that specific industry or 3) if specific estimates of intermediate input prices leads to large discrepancies. A large discrepancy is defined based on the growth of value added at constant prices, for which two alternatives are compared. First, value added deflators for each industry on the AUX list are calculated using specifically estimated intermediate input deflators (the estimation procedures are described below). Next, value added deflators are calculated based on the BEA intermediate input deflators. Both sets of value added deflators are then aggregated to the BEA industries and used to calculate growth of value added at constant prices. A large discrepancy is signaled if the average growth rate based on estimated intermediate input deflators over the 1998-2004 period differs by more than 10% from the BEA benchmark. So, for example, estimating specific intermediate input deflators for agricultural services, forestry and fishing leads to an aggregate average growth rate of value added at constant prices of 8.1 percent, while the growth rate based on the BEA GDP by Industry data was only 7.2 percent (a difference of 12%). In contrast, using the BEA intermediate input deflator of the aggregate industry for each of the detailed industries leads to an aggregate average growth of 7.2 percent, so using the BEA intermediate input deflator is preferable. In the case of Computer and electronic products, estimating specific intermediate input deflators leads to a difference with the BEA totals of only 3 percent, compared to a difference of 9 percent if BEA intermediate input deflators were used, so here, specific intermediate input deflators seem preferable.

So to summarize, a separate estimate of the intermediate input deflator is only used if it is likely to improve the detailed industry results while not creating large discrepancies at more aggregate levels. For the entire 1977-2004 period, we use the intermediate use shares of the 1997 Benchmark Use table in combination with the gross output deflators described above to estimate intermediate input deflators. As the BEA provides overall intermediate input deflators only for the period 1987-2004, the 1977-1986 deflators are all based on specific estimates based on the 1997 Use table.

Value added price deflator

The implicit value added price deflator is taken either directly from the BEA GDP by Industry dataset if there is a one-to-one correspondence with an industry on the AUX list, such as, for example, in the case of Farms. For all other industries, a double deflated price index is estimated based on the gross output and intermediate input deflators described above. The assumption is that an industry's gross output price index is a weighted average of the value added price index and the intermediate input price index.

- **Comments:** Volume has been calculated as the derivative of output series in constant prices and the price deflators.

2. SUT data

- Nominal
 - **Sources:** Not available
 - **Comments:**
- Volume
 - **Sources:** Not available
 - **Comments:**

WP2: Labour Accounts

1. Employment

- **Sources:**
Total persons engaged
The persons engaged variable in the EU KLEMS database is equal to the number of employees plus self-employed workers. Due to inconsistencies between data sources, estimating the total number of persons engaged independently from the number of employees can potentially lead to estimates of persons engaged that are smaller than the estimates of the number of employees. Therefore, the number of self-employed workers is estimated and added to the earlier employee estimates. For 1998-2004, the main source is the number of self-employed from the GDP by Industry dataset. This number is calculated indirectly by subtracting the variable Full-time equivalent employees from Persons engaged in production. Information about the number of self-employed is less complete than data about employees, so estimates are made of the self-employed to employee ratio. If no data for detailed industries is available, a more aggregate ratio is applied. For most industries, the BLS EMP dataset contains data in the Self-employed and unpaid family worker

jobs variable. For 1977-1997, the BLS EMP dataset represents the only NAICS-based source for data on the number of self-employed, so this source is used to calculate the self-employed to employee ratio for those years. In the final stage, the estimates are normalized to the BEA total economy figures from the SIC-based GDP by Industry dataset.

Employees

For the 1998-2004 period, the Full-time and part-time employees variable in the GDP by Industry dataset is used as the main source. Detailed breakdowns for manufacturing industries are based on the Employees variable in the ASM and the non-manufacturing breakdowns are based on the CES. For the 1977-1997 period, the main data source is the Wage and salary jobs variable in the BLS EMP dataset. Missing industries in that dataset are filled using CES data. These estimates are used as the trend for 1977-1997, linked to the 1998 levels. In each year of the 1977-1997 period, the estimates are normalized to sum to the total economy BEA figures from the SIC-based GDP by Industry dataset.

- **Methods:-**
- **Comments:-**

2. Hours

- **Sources:**

This is the only variable which is not benchmarked to a BEA variable. The reason is that data on hours worked is not part of the GDP by Industry dataset. NIPA table 6.9 does provide data on total hours worked by employees, but only at a relatively aggregate level. Moreover, the basic data is readily available from the CES. The estimation procedure is in two stages, comparable to that of the number of persons engaged. First, the average hours worked by employees is estimated using the BLS EMP dataset, which provides matching data on wage and salary jobs and total hours worked. The resulting data on average hours worked by employees are supplemented by data on average weekly hours of production and supervisory workers from the CES for some detailed industries for the period 1998-2004. For earlier years, the average number of hours worked of more aggregate industries is applied to detailed industries. Proceeding along the same lines, average hours by self-employed are calculated based on the BLS EMP dataset and here, no supplemental data is available. In the final stage, the estimates of average hours worked by employees on the one hand and by self-employed on the other are combined with the earlier estimates of the number of employees and self-employed to arrive at a consistent average number of hours worked by all persons engaged.

- **Methods:-**
- **Comments:-**

3. Labour composition

- Employment (or hours)
 - **Sources:** Not available
 - **Methods:**
 - **Comments:**
- Compensation
 - **Sources:** Not available

- *Methods:*
- *Comments:*

WP3: Capital Accounts

- ***Main sources for GFCF***
For U.S. investment we used two main sources, namely the BEA *1997 Capital Flow Table* (CFT), showing the use of different types of investment goods by 123 NAICS industries in 1997, and the BEA *Detailed Data for Fixed Assets* (DFA) with time series on purchases of different types of investment goods by 63 NAICS industries for the period 1901-2004. We also made substantive adjustments to the U.S. data to fit the ISIC rev. 3 industrial classification, which is the basis of our international comparative database.
- ***Definition of ICT assets:*** ICT assets are defined as Computers and peripheral equipment, Software and Communications
- ***Initial capital stock***
- ***Weights:*** We also made substantive adjustments to the U.S. data to fit the ISIC rev. 3 industrial classification, which is the basis of our international comparative database. These weights are based on the BEA *1997 Capital Flow Table* (CFT) and additional survey material such as the Bureau of the Census, *Annual Survey of Manufacturing*, BLS Gross output by Industry data and the NBER Manufacturing Industry Database.
- ***Comments***

West Germany

WP1: Inter-industry Accounts

1. NA data

- Nominal
 - **Sources:**

Time-series from 1970 to 1991 in line with Revision 2005 are published in the National Accounts (DESTATIS, 2006c) in an at least A60 industry breakdown for the following variables:

 - Gross production,
 - Intermediate input,
 - Value-added, including the following components of value added: Labour compensation, Taxes minus subsidies, CFC , Net operating surplus including mixed income.
 - **Comments:** -The A60 had some industries containing only zero's. The previous delivery of NA data for West Germany (which is consistent with this more detailed data) did have aggregates of these 'missing' industries. Therefore we have combined the A60 with the A31 to arrive at the maximum level of detail possible. For NACE industries 21 and 22, 36 and 37, 60-64 aggregates from the A30 NA data have been used.
-To arrive at the required level of detail, 1991 weights from the total Germany data have been used for the whole 1970-1991 period.
- Volume
 - **Sources:**

Volume indices in line with Revision 2005 are published for

 - Gross production,
 - Intermediate input,
 - Value-added.

Only value-added is published in the same A60 and A31 industry breakdown as the nominal values (see above). In general, value-added is deflated by a double deflation approach.
 - **Comments:** -Gross output and Intermediate Inputs have been deflated with the value added deflator as no gross output or intermediate inputs deflator data is available.
-Aggregate price deflators are assumed to be identical for more disaggregate industries when more detail was necessary.

2. SUT data

- Nominal
 - **Sources:** OECD IO tables for 1987, 1986, 1988 and 1990 have been used to calculate the necessary EMS shares.
 - **Comments:** -Because we did not have Use tables for West Germany, we used the IO tables and assumed they have the same EMS-distribution as Use tables.

-1978-1985, 1987 and 1989 have been intrapolated. To create an overlap year for a link with the data for total Germany, 1991 has been extrapolated from 1990 with the trend of 1988-1990.

- Volume
 - **Sources:** OECD IO tables for 1987, 1986, 1988 and 1990 have been used to calculate the necessary EMS shares.
 - **Comments:** -Because we did not have Use tables for West Germany, we used the IO tables and assumed they have the same EMS-distribution as Use tables.
-1978-1985, 1987 and 1989 have been intrapolated. To create an overlap year for a link with the data for total Germany, 1991 has been extrapolated from 1990 with the trend of 1988-1990.

WP2: Labour Accounts

1. Employment

- **Sources:** In the case of persons, the historical time series 1970 - 1991 for the territory of the former Federal Republic of Germany corresponds with the original data from the National Accounts.
The sectoral degree of differentiation is presently significantly lower than with the data for Germany. Only 31 industries are distinguished.
- **Methods:** -To arrive at the required level of detail, 1991 weights from the total Germany data have been used for the whole 1970-1991 period.

2. Hours

- **Sources:** In the case of hours worked we also used the benchmark figure of the National Accounts. For more structural information in line with ESA'95, we transposed historical information from the IAB, Nuremberg.
The sectoral degree of differentiation is presently significantly lower than with the data for Germany. Similar to the data for West Germany in WP 1 and WP 3, 31 industries are distinguished.
- **Methods:** To arrive at the required level of detail, 1991 weights from the total Germany data have been used for the whole 1970-1991 period.

3. Labour composition

- Employment (or hours)
 - **Source:** Social security data and the German socio-economic panel, supplemented with information on employment by gender and occupation from the Statistisches Jahrbuch. Combined data with ILO occupation data.

- **Methods:** Employment and wages by skill were available from 1976 to 1992. We used the ILO occupation data to backdate to 1970 for the high skill group and backcasted the intermediate group. We then used data on gender by industry to split by gender, assuming that the gender proportions are the same in each skill group back in time, although there is a levels difference due to joining with the DIW series in 1992. We also assume the male/female wage differential for each skill group is constant at 1992 values.
- **Comments:-**
- Compensation
 - **Source:** Social security data and the German socio-economic panel, supplemented with information on employment by gender and occupation from the Statistisches Jahrbuch. Combined data with ILO occupation data.
 - **Methods:** Employment and wages by skill were available from 1976 to 1992. We used the ILO occupation data to backdate to 1970 for the high skill group and backcasted the intermediate group. We then used data on gender by industry to split by gender, assuming that the gender proportions are the same in each skill group back in time, although there is a levels difference due to joining with the DIW series in 1992. We also assume the male/female wage differential for each skill group is constant at 1992 values.
 - **Comments:-**

WP3: Capital Accounts

- **Main sources for GFCF**
Time series of *new investment* (ESA'95, 3.102) by industries are published in a NACE A 31 industry classification for three types of assets: *Non residential buildings and structures, Dwellings, Machinery and equipment including Others*. *Others* is a shortcut for the sum of cultivated assets, mineral exploitation, software, literacy originals and transfer costs (DESTATIS, 2006c). *Dwellings* capital formation in the German National Accounts is defined to be exclusively made by industry 70.
- **Methods: (for estimating industry * asset)**
For the analytical module of EU KLEMS estimates have been based on A60 cross tabulations. However, since new investment supplied by DESTATIS is only available in an A 31 industry breakdown, the respective sub industries have been estimated applying the same development of per capita investment as for the higher level industry. The results have subsequently been aggregated to A 31 level.
Using the cross tabulation for Germany in 1991, time-series of new investment have been estimated, applying a biproportional method. Net sales and GFCF have been estimated with the same methodology as for Germany. Deflation has been done in the same way.

- ***Definition of ICT assets***

Time series of *GFCF* by type of asset are available for 10 categories of machinery and equipment, 3 categories of building and structures, two categories of others. Separate time series for IT assets (based on 68 different goods out of CPA 32) and CT assets (based on 41 different goods out of CPA 31) are published (DESTATIS, 2006c). Estimates for some of the different components for *others* have been made using constant shares.

Time series for *net sales* (ESA'95, 3.103) are available by type of asset for three categories of machinery and equipment.

- ***Initial capital stock***

Time series on capital stock (gross and net) and CFC by industries are available at constant and current replacement prices in a NACE A60 industry classification (Germany) and NACE A31 industry classification (West Germany) for three types of assets: *Non-residential buildings and structures, dwellings, machinery and equipment including Others*. In addition, a more detailed breakdown by type of asset is available for the total economy, however not as detailed as the breakdown in the *GFCF* time-series calculated for EU KLEMS.

Based on this information, in a first step initial stocks by type of asset and by industry have been estimated for Germany (1991) and for West Germany (1970). Furthermore, the closing stock for West Germany in 1990 could be estimated, such that the closing stock in 1990 for the former GDR can be calculated. All stock estimates in this step have been made consistent with the stock and depreciation values of the National Accounts for Germany and West Germany by applying a PIM-Model on the estimated *GFCF* data, which in turn have been made consistent with the National Accounts. The PIM-Model applied is the DIW capital-stock model (Görzig, 2006). The implicit service life assumptions (in the sense of an average life expectancy, which should not be confused with the service life approach used in the BEA method) of DESTATIS (Schmalwasser, 2001; UNECE, 2004) have been used to simulate the National Accounts stock data.

DESTATIS capital-stock estimates are based on a methodology differing from the one applied in the EU KLEMS analytical module. While, in principle, DESTATIS is assuming a constant relation between gross capital stock and CFC, the *average expected service life*, EU KLEMS assumes a constant relation between net capital stock and CFC, the *depreciation rate*.

The implicit depreciation rate of the DESTATIS estimates can be calculated from the results and compared with the EU KLEMS assumptions. The depreciation rate calculated for DESTATIS capital stocks is not constant and may vary in time for a given type of assets. Calculating the average depreciation rate for Germany for several years for (1991-2004) will give an impression of the differences between the DESTATIS calculations and the EU KLEMS assumptions on CFC.

Table 1: Average resulting depreciation rates Germany 1991 - 2004

	EU KLEMS	DESTATIS
Dwellings	0.01	0.02
Non-residential buildings and structures	0.03	0.03
Intangibles	0.32	0.26
Vehicles	0.19	0.17
Machinery and equipment (excl. IT and CT)	0.13	0.14
IT equipment	0.32	0.31
CT equipment	0.12	0.17

Differences between the depreciation rates applied by DESTATIS and by EU KLEMS do not only result from different assumptions on the depreciation schedules, but also because DESTATIS is considering in its calculation premature scrapping, especially in the case of East Germany and in some cases a change of service life over time.

Because of these differences, initial capital stocks as calculated by DESTATIS cannot be applied directly in the EU KLEMS analytical module, since these stocks are based on depreciation rates differing from the ones applied in the EU KLEMS analytical module. Therefore, initial stocks compatible to the assumptions in the EU KLEMS analytical module had to be estimated. For this, initial stocks by type of asset and by industry as calculated by the National Accounts methodology for 1970 have been corrected. The correction factors have been chosen in such a way that the average growth rate of capital-stock in the EU KLEMS analytical module for the period 1970 to 2004 is consistent with the average growth rate calculated for the DESTATIS based stocks. Initial stocks for Germany in 1991 have been calculated by assuming the same relation between Germany and West Germany as given by the National Accounts.

EU aggregates

EU-15ex: Austria, Belgium, Denmark, Finland, France, Germany, Italy, Netherlands, Spain and United Kingdom

EU-15: Austria, Belgium, Denmark, Finland, France, Greece, Germany, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden and United Kingdom

EU-10: Czech Republic, Cyprus, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovak Republic and Slovenia

EU-25: Austria, Belgium, Czech Republic, Cyprus, Denmark, Estonia, Finland, France, Greece, Germany, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Slovak Republic, Slovenia, Spain, Sweden and United Kingdom

Eurozone: Austria, Belgium, Finland, France, Greece, Germany, Ireland, Italy, Luxembourg, Netherlands, Portugal and Spain.

WP1: Inter-industry Accounts

1. NA data

- Nominal
 - **Sources:** See sources documents of specific countries. more detail was available.
 - **Comments:** -For Finland VA, II and GO have been extrapolated with the growth rate of the total economy for the period 1970-1974. For volume indices more detail was available.
-For Portugal, Greece and Ireland, GO and II have been extrapolated with the growth rate of value added.
-Confidential data has not been shown for Austria (all detail in mining), Sweden (industry 32 after 2003, 10, 11, 12, 13, 14, 15, 16) and Germany (13 and 14) in their respective country files. For EU aggregations this data has been used however.
-For Ireland detail in industries G, I, J and K has not been displayed before 1995.
-Summation of all current variables has been executed by applying the sector specific Purchasing Power Parity for 1997, and the gross output deflated PPP for the other years.
- Volume
 - **Sources:** See sources documents of specific countries. more detail was available.
 - **Comments:** -For Ireland, GO and II have been extrapolated with the growth rate of value added. There is no Gross output and intermediate input at constant prices for Portugal before 1976 and for Greece before 1995.
-Confidential data has not been shown for Austria (all detail in mining), Sweden (industry 32 after 2003, 10, 11, 12, 13, 14, 15, 16) and Germany (13 and 14) in their respective country files. For EU aggregations this data has been used however.
-For Ireland detail in industries G, I, J and K has not been displayed before 1995.

-Summation of all constant variables has been executed with the tornquist method.

2. SUT data

- Nominal
 - **Sources:** See sources documents of specific countries. EMS aggregations are only available for the EU15ex aggregate.
 - **Comments:** -For Belgium E, M and S shares for 1995 have been used for the whole period 1980-1995.
-For Netherlands: the E, M and S shares have been extrapolated before 1987 with the growth rate of Total intermediate inputs.
-For West Germany I-O tables (for 1978, 1986, 1988 and 1990) have been used to estimate E, M and S. Intermediate years have been interpolated.
-For France we have used yearly I-O tables, deflated to constant series with gross output deflators.
-Italy, West Germany and the Netherlands do not have enough detail for the minimum requirements for E, M and S, which is why there is no data in all aggregates before 1992.
- Volume
 - **Sources:** See sources documents of specific countries. EMS aggregations are only available for the EU15ex aggregate.
 - **Comments:** -For Belgium E, M and S shares for 1995 have been used for the whole period 1980-1995.
-For Netherlands: the E, M and S shares have been extrapolated before 1987 with the growth rate of Total intermediate inputs.
-For West Germany I-O tables (for 1978, 1986, 1988 and 1990) have been used to estimate E, M and S. Intermediate years have been interpolated.
-For France we have used yearly I-O tables, deflated to constant series with gross output deflators.
-Italy, West Germany and the Netherlands do not have enough detail for the minimum requirements for E, M and S, which is why there is no data in all aggregates before 1992.

WP2: Labour Accounts

1. Employment

- **Sources:** See sources documents of specific countries.
- **Methods:** -All countries in the EU15ex, Eurozone and EU15 aggregates do have data for employment for the period 1970-2004. New member states mostly start in 1995. Aggregation is a simple sum of all countries.
- **Comments:** -Confidential data has not been shown for Austria (all detail in mining), Sweden (industry 32 after 2003, 10, 11, 12, 13, 14, 15, 16) and

Germany (13 and 14) in their respective country files. For EU aggregations this data has been used however.

2. Hours

- **Sources:** See sources documents of specific countries.
- **Methods:** -All countries in the EU15ex, Eurozone and EU15 aggregates do have data for employment for the period 1970-2004. New member states mostly start in 1995. Aggregation is a simple sum of all countries.
- **Comments:** -Confidential data has not been shown for Austria (all detail in mining), Sweden (industry 32 after 2003, 10, 11, 12, 13, 14, 15, 16) and Germany (13 and 14) in their respective country files. For EU aggregations this data has been used however.

3. Labour composition

- Employment
 - **Sources:** See sources documents of specific countries.
 - **Methods:** -Labour composition is only available for the EU15ex aggregate. Ireland, Portugal, Greece and Luxembourg do not have data on this subject. Swedish data only starts in 1993. For most countries this variable is available at the level of 15 industries. For lower levels we assumed the same composition as the higher aggregate.
 - **Comments:** -For Belgium the shares of 1986 have been used for the period 1980-1986 as well.
-For France the shares of 1982 have been used for 1981 and 1980 as well.
- Compensation
 - **Sources:** See sources documents of specific countries.
 - **Methods:** -Labour composition is only available for the EU15ex aggregate. Ireland, Portugal, Greece and Luxembourg do not have data on this subject. Swedish data only starts in 1993. For most countries this variable is available at the level of 15 industries. For lower levels we assumed the same composition as the higher aggregate.
 - **Comments:** -For Belgium the shares of 1986 have been used for the period 1980-1986 as well.
-For France the shares of 1982 have been used for 1981 and 1980 as well.

WP3: Capital Accounts

- ***Main sources for GFCF***
See sources documents of specific countries.
- ***Methods (for estimating industry * asset)***
See sources documents of specific countries.
- ***Definition of ICT assets***
See sources documents of specific countries.
- ***Initial capital stock:***
See sources documents of specific countries.
- ***IT deflator:***
See sources documents of specific countries.

List of abbreviations

AMBER	AMsterdam Business and Economic Research, Free University
BEA	Bureau of Economic Analysis, United States
BLS	Bureau of Labor Statistics, United States
CEBR	Centre for Economic and Business Research, Fredriksberg
CEPII	Centre d'études prospectives et d'informations internationales, Paris
CPA	Classification of Products by Activity
CPB	CPB Netherlands Bureau for Economic Policy Analysis, Den Haag
Depr.	Depreciation
DIW	Deutsches Institut für Wirtschaftsforschung e.V. Berlin
ESA 1995	European System of National and Regional Accounts
EUKxx	EUKLEMS industry list with 'xx' number of industries
FHK	Fachhochschule Konstanz
FISIM	Financial Intermediation Services Indirectly Measured
FPB	Federaal Planbureau, Brussels
FTE	Full time equivalent
GDP	Gross Domestic Product
GFCF	Gross Fixed Capital Formation
GGDC	Groningen Growth and Development Centre
GO	Gross output
GOS	Gross operating surplus
HSE	Helsingin kauppakorkeakoulu (Helsinki School of Economics), Helsinki
ICT	Information and Communication Technology
II	Intermediate inputs
IOT (or I/O, or IO)	Input-output table(s)
ILO	International Labour Organisation
ISAE	Istituto di Studi e Analisi Economica, Rome
ISCED	International Standard Classification of Education
ISTAT	Istituto nazionale di statistica (Statistics Italy)
IVIE	Instituto Valenciano De Investigaciones Economicas S.A., Valencia
LFS	Labour Force Survey
NA	National Accounts
NACE	Nomenclature générale des Activités économiques dans les Communautés Européennes
NIESR	National Institute of Economic and Social Research, London
NIPSH	Non Profit Institutions Serving Households
NOS	Net operating Surplus
NSI	National Statistical Institute
OECD	Organisation for Economic Co-operation and Development
PIM	Perpetual Inventory Method
PTT	Pellervo Research Institute
RAS	Bi-proportionate balancing tool used in IO-table calculations
RuG	Rijksuniversiteit Groningen
SBS	Eurostat Structural Business Statistics
SNA68	System of National Accounts 1968
SUT	Supply and use table(s)
TCBE	The Conference Board Europe
TXSP	Net taxes
UNI-BHAM	Birmingham University
VA	Value Added
VAT	Value Added Tax
WIFO	Austrian Institute of Economic Research, Vienna
wiiw	The Vienna Institute for International Economic Studies, Vienna
WP1	Workpackage 1: interindustry accounts
WP2	Workpackage 2: labour accounts
WP3	Workpackage 3: capital accounts