

European exports 2000-2007: direct and indirect effects on employment and labour income in the EU-27 and euro area

Between 2000 and 2007 more than two thirds of the embodied employment in European exports was due to manufactured products, while financial and real estate services showed the largest embodied labour income per person employed in exports activities¹, both in the European Union (EU-27) and in the euro area. At the end of the period (2007), the embodied labour income per person directly or indirectly employed in exports activities was 12 % higher in EA than in EU-27. During 2000-2007, the labour intensity of exports has dropped in both, EU-27 and EA, however to lesser extend in the EA.

During the period 2000 to 2007 the production of exported manufactured products accounted annually on average for 68% of the embodied employment in EU-27 exports.

This annual average share rises to 71 % if the EA countries are considered. Trade, hotels, restaurants and transport services amounted to nearly 20 % of the embodied employment and financial and real-

¹The indicators are defined under "methodological notes", page 7

estate services to around 9 % for the EU-27; the proportions were 18 % and 7 %, respectively, for the EA countries. In 2007, manufactured products exported by the EU-27 employed directly and indirectly nearly 17 million persons, while trade, hotels, restaurants and transport services accounted for 5.6 million persons employed. The EA required fewer persons for the production of its manufactured exports (around 16 million persons) and the exports of trade, hotels, restaurants and transport services (4.8 million persons).

The total number of persons employed by firms engaged in exporting activities (directly and indirectly) in the EA grew by an annual average rate of 2.6 % from 2000 to 2007 while for the EU-27 the figure was only 1.6 %. Financial and real-estate services contributed most to the increase in embodied employment in exports in both the EA and the EU-27 (6.4 % and 6.0 % of annual average growth 2000-2007, respectively). They were followed by trade, hotels, restaurants and transport services with annual average growth rates of 4.8 % in the EA and 3.7 % in the EU-27. During the same period, there were significant reductions in embodied employment in exported agricultural products (-2.1 %) and other services including activities of households (-1.1 %) for the EU-27; for the EA, these figures were still slightly positive, +0.6 % and +0.3 %, respectively.

Table 1: Embodied employment in exports by products (Thousands of persons)

EU-27	2000	2001	2002	2003	2004	2005	2006	2007
Agriculture products	735	683	696	672	548	563	605	633
Manufactured products	16 059	16 248	16 079	15 578	14 708	15 097	15 808	16 791
Construction work	49	47	50	49	40	42	42	57
Trade, hotels, restaurants and transport	4 365	4 344	4 236	4 006	4 103	4 448	4 711	5 636
Financial and real estate services	1 722	1 722	2 017	1 864	1 904	2 031	2 264	2 590
Other services incl. activities of households	421	434	383	361	444	440	389	389
TOTAL	23 352	23 476	23 460	22 530	21 748	22 622	23 820	26 095
euro area	2000	2001	2002	2003	2004	2005	2006	2007
Agriculture products	565	538	550	532	481	518	543	587
Manufactured products	13 935	14 309	14 397	13 932	13 804	14 165	14 851	15 758
Construction work	38	44	44	46	39	42	39	42
Trade, hotels, restaurants and transport	3 480	3 476	3 485	3 343	3 559	3 806	4 026	4 820
Financial and real estate services	1 244	1 220	1 450	1 303	1 333	1 450	1 622	1 917
Other services incl. activities of households	212	231	194	187	247	248	208	216
TOTAL	19 474	19 818	20 120	19 343	19 463	20 229	21 289	23 341

Source: Leontief-type calculations based on Eurostat data (online data code: [naio_17_agg_60](#))

The embodied labour income in exports of both the EU-27 and the EA increased more rapidly than the number of persons needed to produce them.

The annual average growth rates of the embodied labour income in the exports of the EU-27 and the EA amounted to 2.3 % and 5.2 %, respectively, during the period 2000-2007. It is relevant to note that these annual average growth rates are higher than for the number of persons directly and indirectly employed for the production of exports (2.6 % for the EA and 1.6 % for the EU-27), thus implicating an overall growth of the per person income.

Financial and real-estate services exports contributed most to the increase in embodied labour income in both the EA and the EU-27 (9.1 % and 6.3 % of

annual average growth, respectively), being followed by trade, hotels, restaurants and transport services with annual average growth rates of 7.2 % in the EA and 3.7 % in the EU-27. There is a reduction of embodied labour income in exports of agricultural products (-0.7 %) for the EU-27 but for the EA, a significant respective positive annual average growth rate 2000-2007 of 4.3 % is observed. It is also noteworthy that the exports of other services had an annual growth in the EA of 2.8 %, still positive but low. In the EU-27, it was merely a +0.3 % annual increase between 2000 and 2007.

Table 2: Embodied labour income in exports - EU-27 by products (Million EUR)

Products	2000	2001	2002	2003	2004	2005	2006	2007
Agriculture products	5 360	5 203	5 495	5 316	4 380	4 602	5 001	5 103
Manufactured products	410 241	426 577	432 072	418 818	391 895	411 842	424 664	452 660
Construction work	1 179	1 164	1 282	1 270	988	1 057	1 067	1 387
Trade, hotels, restaurants and transport	103 791	106 519	106 580	100 994	100 787	111 486	115 811	134 180
Financial and real estate services	55 128	57 216	69 596	64 823	62 865	68 552	76 552	84 316
Other services incl. activities of households	10 661	11 396	10 403	9 891	12 286	12 428	10 618	10 915
TOTAL	586 359	608 076	625 428	601 112	573 201	609 965	633 714	688 562

Source: Leontief-type calculations based on Eurostat data (online data code: [naio_17_agg_60](#))

During the period 2000-2007, the production of exported manufactured goods accounted for 68 % of the total embodied labour income in producing EU-27 exports, against 74 % in the EA countries. Trade, hotels, restaurants and transport services amounted to 18 % and financial and real-estate services to 11 % for the EU-27, these figures being 16 % and 8 %, respectively, for the EA countries.

In 2007, EU-27 manufactured exports generated directly and indirectly nearly EUR 453 billion, the figure for trade, hotels, restaurants and transport services being EUR 134 billion. The EA recorded higher values for manufactured exports (EUR 491 billion) and agricultural products (nearly EUR 7 billion).

Table 3: Embodied labour income in exports - euro area by products (Million EUR)

Products	2000	2001	2002	2003	2004	2005	2006	2007
Agriculture products	5 112	5 096	5 408	5 350	5 060	5 531	5 995	6 888
Manufactured products	363 177	383 787	395 540	388 781	396 609	415 637	448 304	491 299
Construction work	839	996	1 033	1 090	940	1 044	998	1 121
Trade, hotels, restaurants and transport	74 761	76 500	78 742	76 887	83 620	91 492	98 960	121 527
Financial and real estate services	34 894	35 507	43 135	39 507	41 165	45 950	52 591	64 025
Other services incl. activities of households	5 268	5 934	5 151	5 080	6 862	7 013	5 994	6 396
TOTAL	484 051	507 821	529 009	516 695	534 255	566 666	612 841	691 255

Source: Leontief-type calculations based on Eurostat data (online data code: [naio_17_agg_60](#))

Persons directly or indirectly employed in exports of financial and real-estate services earned most in both the EU-27 and EA

In 2007, each employee contributing to exported financial activities and real-estate services was paid on average EUR 32 560, in the EU-27, while it was EUR 33 410 in the EA.

Exports of agricultural products and some services such as trade, hotels, restaurants, construction and transport showed lower embodied labour income per person employed in exports activities, both in the EA and the EU-27. Exports of agricultural products generated significantly less labour income per person employed than the other sectors of the economy. In 2007, just over EUR 8 000 was paid on average to employees working for the production of exported agriculture products in the EU-27 (Table 4). However, the figure was nearly EUR 12 000 in the EA countries (Table 5). The

difference between the two economic areas with regard to the embodied labour income per person is much larger for agriculture products than for financial and real-estate services.

In the EU-27, manufactured exported products are the second largest generator of labour income per person in the EA. In 2007, employees working for firms engaged in the exports of manufactured products were paid on average EUR 31 180, while in the EU-27 the average income was just under EUR 27 000. By contrast, export services other than finance, real estate, trade, hotels, restaurants, transport, construction and trade were the second most important generator of labour income per person in the EU-27 (EUR 28 060).

Table 4: Embodied labour income per person employed in exports activities - EU-27 by product (Thousand EUR at current prices)

Products	2000	2001	2002	2003	2004	2005	2006	2007
Agriculture products	7.29	7.62	7.89	7.91	7.99	8.17	8.26	8.06
Manufactured products	25.55	26.25	26.87	26.88	26.65	27.28	26.86	26.96
Construction work	23.96	24.74	25.64	25.87	24.90	25.40	25.36	24.27
Trade, hotels, restaurants and transport	23.78	24.52	25.16	25.21	24.56	25.06	24.58	23.81
Financial and real estate services	32.01	33.23	34.51	34.77	33.01	33.75	33.81	32.56
Other services incl. activities of households	25.31	26.28	27.19	27.40	27.65	28.22	27.32	28.06
TOTAL	25.11	25.90	26.66	26.68	26.36	26.96	26.60	26.39

Source: Leontief-type calculations based on Eurostat data (online data code: [naio_17_agg_60](#))

Table 5: Embodied labour income per person employed in exports activities - euro area by product (Thousand EUR at current prices)

Products	2000	2001	2002	2003	2004	2005	2006	2007
Agriculture products	9.05	9.48	9.84	10.06	10.51	10.68	11.04	11.73
Manufactured products	26.06	26.82	27.47	27.91	28.73	29.34	30.19	31.18
Construction work	22.13	22.61	23.27	23.82	24.39	24.90	25.75	26.51
Trade, hotels, restaurants and transport	21.48	22.01	22.60	23.00	23.50	24.04	24.58	25.21
Financial and real estate services	28.04	29.10	29.74	30.33	30.89	31.69	32.43	33.41
Other services incl. activities of households	24.84	25.71	26.55	27.13	27.75	28.27	28.77	29.56
TOTAL	24.86	25.62	26.29	26.71	27.45	28.01	28.79	29.62

Source: Leontief-type calculations based on Eurostat data (online data code: [naio_17_agg_60](#))

Embodied labour income per person employed in exports activities was 12 % higher in the EA than in the EU-27

In 2007, every one million EUR of EA exports, expressed in constant prices of the year 2000, created employment for 15.3 persons (Table 7). Each of these employees was remunerated on average EUR 29 370. The equivalent figure for the EU-27 exports was 18.5 persons employed, which were remunerated on average EUR 26 290 per person. Consequently, the EA countries remunerated the embodied labour income per person employed in exports activities 12 % more than

the EU-27 did in 2007. This difference has been continuously growing since 2003 (see Table 6).

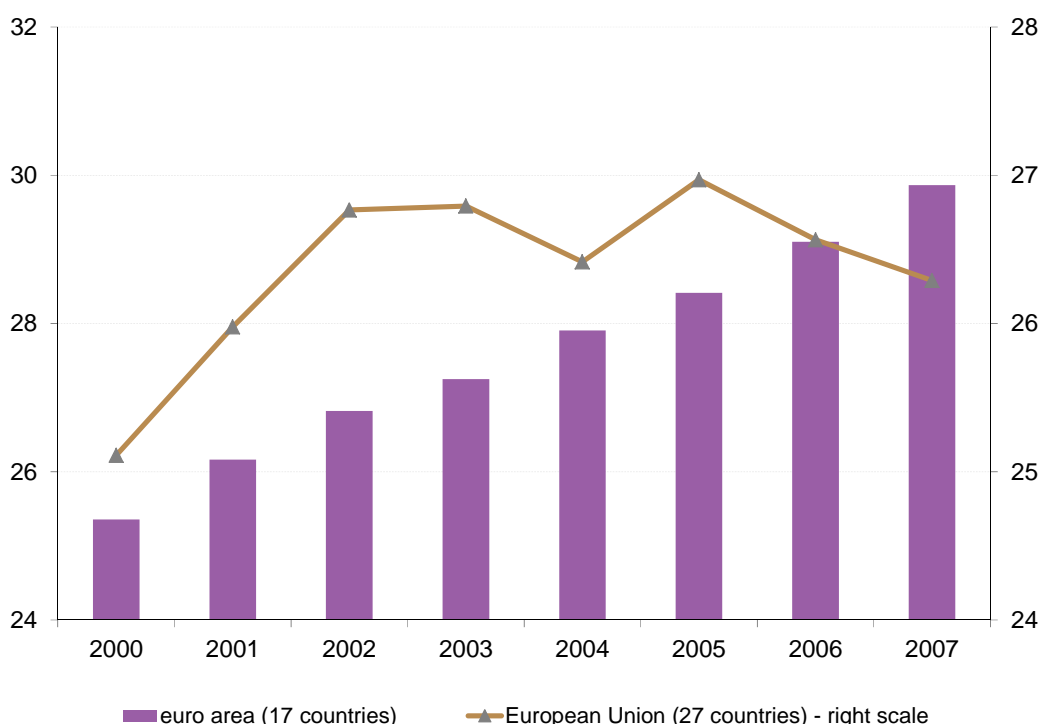
During the period 2000-2007, the embodied labour income per person employed in exports activities has increased continuously in the EA at an annual average rate of 2.4 %, while in the EU-27 there were two downturns in 2003 and from 2005 onwards (Figure 1) that resulted in an annual average growth rate of only 0.7 %.

Table 6: Embodied labour income per person employed in exports activities (Thousand EUR)

Constant prices of 2000	2000	2001	2002	2003	2004	2005	2006	2007
Lab income per person employed - EU-27	25.11	25.98	26.77	26.79	26.42	26.97	26.56	26.29
Lab income per person employed - euro area	24.86	25.66	26.32	26.75	27.41	27.91	28.60	29.37

Source: Leontief-type calculations based on Eurostat data (online data code: [naio_17_agg_60](#))

Figure 1: Embodied labour income per person employed in exports activities (Thousand EUR per person)



Source: Leontief-type calculations based on Eurostat data (online data code: [naio_17_agg_60](#))

The EA and the EU-27 reduced the labour intensity of their exports in terms of persons employed.

The EU-27 employed 21 persons per one million EUR of exports in 2000, falling to 18.5 in 2007; in the EA, the equivalent decline was from 16.9 to 15.3 persons employed. In 2007, the exports of the EA involved 10 % fewer persons per one million

EUR (in constant prices of 2000) than in 2000, which means an annual average fall of 1.5 %. The EU-27 employed in 2007 about 12 % fewer persons than in 2000 per one million EUR of exports, resulting in a higher annual average fall (-1.8 %).

Table 7: Embodied employment (persons employed per 1 million EUR of exports)

Constant prices of 2000	2000	2001	2002	2003	2004	2005	2006	2007
EU-27	21.0	20.8	20.7	20.6	20.0	19.5	18.8	18.5
euro area	16.9	16.9	17.0	17.0	16.6	16.3	15.6	15.3

Source: Leontief-type calculations based on Eurostat data (online data code: [naio_17_agg_60](#))

The labour intensity of exports in terms of embodied labour income per one million EUR of EA exports grew by 0.9% on annual average while that of the EU-27 decreased by 1.2% during the period 2000-2007.

In 2007, per one million EUR of EA exports (constant prices of the year 2000), the enterprises directly and indirectly involved in it had to pay around EUR 448 000 of annual labour income which means an annual average growth rate of 0.9 % from the year 2000. On the other hand, the embodied labour income in EU-27 exports fell from 527 660 in 2000 to

485 290 in 2007, which meant a decrease of the labour intensity of exports by 8 % during the same period and an annual average fall of 1.2 %.

During this period, the labour income share of the gross value added has remained stable in the EA countries while it has decreased from around 62 % to 50 % in the EU-27.

Table 8: Embodied labour income and embodied value added in exports (Thousand EUR per 1 million EUR of exports); share of embodied income in embodied value added - constant prices of 2000

Embodied labour income in exports	2000	2001	2002	2003	2004	2005	2006	2007
EU-27	527.66	541.34	554.81	550.98	529.05	525.53	499.14	485.29
euro area	420.23	433.03	446.64	455.31	455.88	453.99	444.79	448.06
Embodied value added in exports								
EU-27	854.10	877.16	908.36	909.67	933.48	937.83	943.53	965.17
euro area	808.54	832.80	863.93	882.25	893.94	893.31	886.03	903.78
Share of embodied labour income in embodied value added								
EU-27	61.8%	61.7%	61.1%	60.6%	56.7%	56.0%	52.9%	50.3%
euro area	52.0%	52.0%	51.7%	51.6%	51.0%	50.8%	50.2%	49.6%

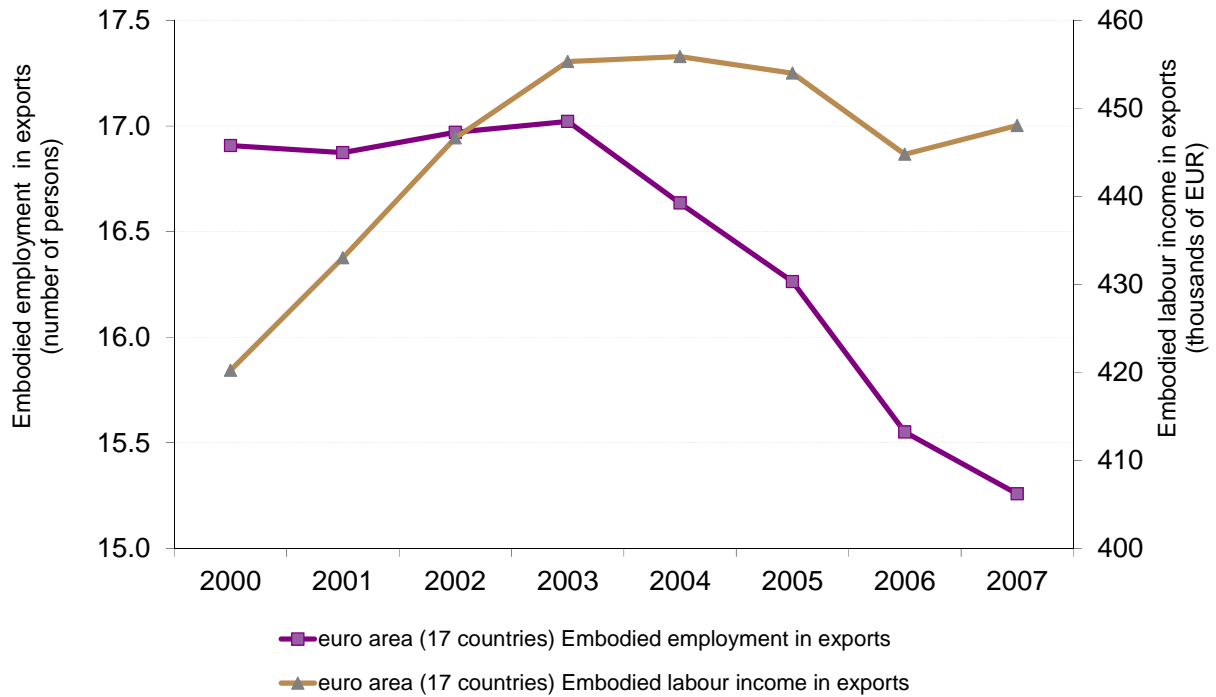
Source: Leontief-type calculations based on Eurostat data (online data code: [naio_17_agg_60](#))

The decline of labour intensity of EU-27 exports during 2000-2007 was followed by a similar decline of the embodied labour income.

It is interesting to see (Figures 2 and 3) how the embodied labour income in exports associated with the embodied employment in exports in the EA grew between 2000 and 2003 and then remained more or less stable during the period 2003-2007. Notice, however, that the number of persons needed for the production of exported goods and services was decreasing continuously during the whole period. Consequently, there has been a reduction in the number of persons employed in relation to the EA

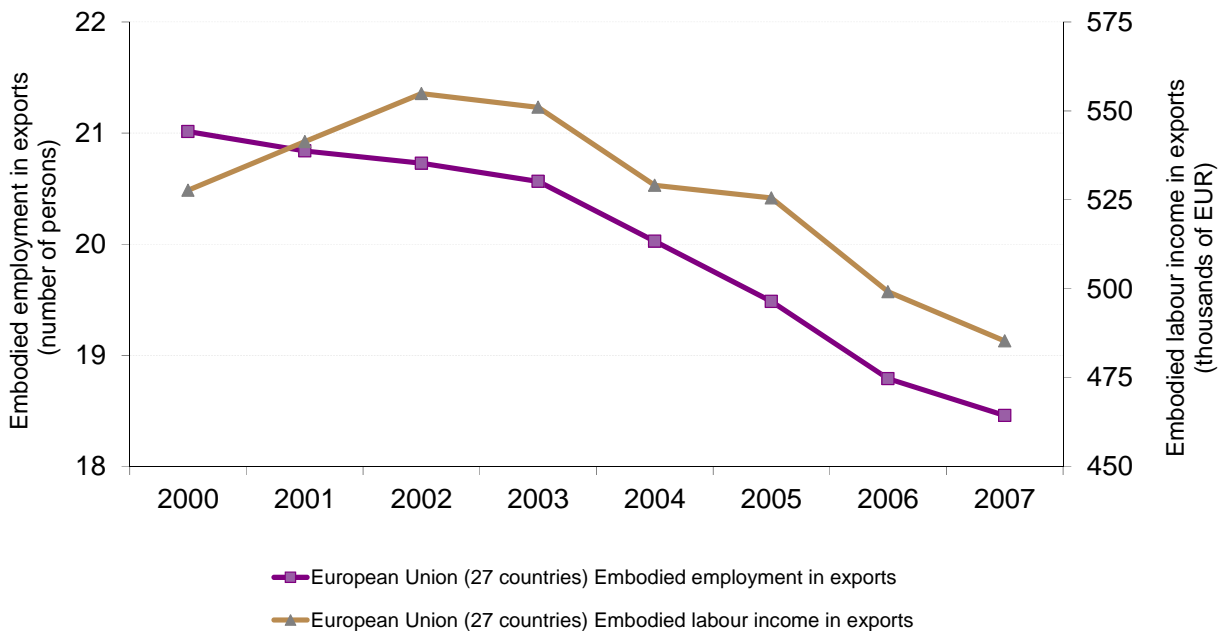
exports but the fall of the embodied labour income of those employees has been less pronounced. Figure 3 shows the opposite for the EU-27. The reductions in the labour intensity of EU-27 exports during 2000-2007 have been accompanied by similar reductions in the labour income.

Figure 2: Embodied employment and labour income in exports in euro area



Source: Leontief-type calculations based on Eurostat data (online data code: [naio_17_agg_60](#))

Figure 3: Embodied employment and labour income in exports in EU-27



Source: Leontief-type calculations based on Eurostat data (online data code: [naio_17_agg_60](#))

METHODOLOGICAL NOTES

This Statistics in Focus employs various data sets resulting from the European System of National and Regional Accounts (ESA95) transmission program. Under this regulation, EU Member States transmit to Eurostat Supply and Use Tables (SUT, annually) and Input-Output Tables (IOT, 5 yearly) up to 36 months after the end of the reference period.

This short publication defines four indicators:

1. *Embodied employment in exports*: Number of persons employed by the firms that are directly engaged in exporting activities (direct effects) including also those used by upstream industries for the supply of the necessary inputs to these firms (indirect effects);
2. *Embodied labour income in exports*: Labour income paid by the firms that are directly engaged in exporting activities (direct effects) including also the labour income paid by upstream industries for the supply of the necessary inputs to these firms (indirect effects). The labour income is measured as compensation of employees in the Use table;
3. *Embodied labour income per person employed in exports activities*: as the ratio of the embodied labour income in exports over the embodied employment in exports;
4. *Labour intensity* refers to the ratio of embodied employment or embodied labour income in exports over the total value of exports (in constant prices 2000). In other words, how many persons employed directly or indirectly were needed or how much labour income firms had to pay to produce products worth one million EUR of exports.

Similarly the *embodied value-added in exports* is defined as the value-added generated by the firms directly engaged in exporting activities (direct effects) including also the value-added generated by upstream industries (indirect effects).

Eurostat, in association with the European Commission's Joint Research Centre at the Institute for Prospective and Technological Studies in Seville, has since 2011 compiled European consolidated tables: Supply, Use and Input-Output tables at basic prices. The input-output Tables at European level forms the basis for analysis and models in macro-economics.

As a standard input-output technique, the European Input-Output Tables were used for the calculation of the results of applying the Leontief quantity model to employment and labour income (compensation of employees). Firstly, a domestic input coefficient matrix (A) was calculated for each homogenous branch of activity showing the direct input

requirements for the production of one unit of output. Subsequently, the Leontief inverse matrix (the inverse of $I - A$, being I, the identity matrix) was computed to obtain the so called matrix of output multipliers. Next, the Leontief inverse matrix was post-multiplied by a column vector of exports to calculate the total output embodied in those exports. Finally, output coefficients of employment and labour income pre-multiplied the above embodied output values to obtain the employment and labour income embodied in exports.

A Supply table shows the supply of goods and services by product and type of supplier at basic prices, while the Use table shows the use of goods and services by product and type of use at purchaser prices. The Member States tables form the point of departure for a sequence of adjustments leading to a consolidated data set for the aggregated EU-27 and the EA. The data is based on the CPA2002 and NACE Rev 1.1 classification. Due to confidentiality reasons, the SUTs at basic prices are published only for the aggregated EU-27 and the EA. For more technical details, the reader may download a technical report published at Eurostat:

http://epp.eurostat.ec.europa.eu/portal/page/portal/esa_95_supply_use_input_tables/publications

The aggregated SUTs were transformed into symmetric product-by-product Input-Output Tables (IOTs) using the so-called *industry technology assumption* (see Model B, Eurostat Manual of Supply, Use and Input-Output Tables, p.349). The time period covered ranges from 2000 to 2007. The tables come with two breakdowns: 60*60 and 6*6 product groups. The calculations were done using the latter breakdown.

Implementation of the new classification NACE Rev 2 and CPA 2008 in the National Accounts domain started in September 2011. In the area of SUTs, the first year compiled in the new classification will be the year 2008. Eurostat will compile for each Member State SUTs at basic prices using the NACE Rev 2 classification and will produce European tables by end of 2012.

The reader should know that whenever the text refers to EA exports, they include deliveries to non-EU countries and to EU countries that do not have the euro currency.

Finally, for the sake of clarification, the services denoted as 'other services including activity of households' include divisions 71 to 74 and sections L to P of the NACE rev1.1 classification.

Further information

Eurostat website: <http://ec.europa.eu/eurostat>

Data on 'ESA 95 supply, Use and Input-Output tables'

http://epp.eurostat.ec.europa.eu/portal/page/portal/esa95_supply_use_input_tables/data/database

Select 'Tables at current prices – 60 branches'

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http://epp.eurostat.ec.europa.eu/portal/page/portal/esa95_supply_use_input_tables/introduction

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