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Computer services and related activities (NACE 72) in Sweden

The economic reality, statistics and some apparent aspects of measurement

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Report for 22th Voorburg Group Meeting in Seoul, Korea, 10-14 September 2007

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1. Background

The paper investigates some difficulties which arise when measures of the real output of service industries are constructed and focuses particularly on specific situation within computer services and related activities.

1.1 The general aspects of services

The main feature of services is to provide support. Business Services, statistically located in NACE section K, serve both other private firms and clients within local and central government. Business Services supports the production processes of private and public organisations. They may be provide elements of production processes or providing inputs to them that enable these processes to be performed well.
There are four major groups with section K:
NACE 71 – Renting of machinery and equipment without operator
NACE 72 – Computer services and related activities
NACE 73 – Research and development
NACE 74 – Other business services as Legal activities, Accounting and tax consultancy, Management consulting, Market research, Advertising, Architectural activities, Engineering activities, Technical testing and analysis, Labour recruitment and provision of personnel, Security activities, Industrial cleaning, Secretarial and translation activities, Packing activities.
When data on turnovers/revenues of services industries are often available, a researcher interested in productivity analysis will need a measure of output which distinguishes price change over time from real output change.

Computer services and related activities and some other of NACE section K belong to so called knowledge-intensive business processes. Their role is to improve the efficiency of processes. More important is that they can also help develop new knowledge, circulate knowledge in the economy, link knowledge derived from their clients with more generic knowledge (in

order to provide their specialised service solutions and sometimes to create new generic knowledge). Services require cooperation with buyers/clients.

The usual way to measure the real output of an industry is to deflate a nominal measure of output with a price index for the product. Common nominal measures of output are revenues/turnovers for services. In the very beginning of the construction of a price index to be used for deflating nominal output, it is necessary to first specify exactly what is being purchased. Normally this is the basic transaction unit of the product.
The detailed description of this product leads to the specific price of this product. The variations in one or several characteristics (over time or among suppliers) indicate the quality change. When a product's price increases due to an improvement in quality of a product, it leads to output growth and not to price change.

Generally services results in changes. In many cases they are intangible, tailored and are consumed during the production process; cannot be stored. The change may mean that buyer of a service can now do something he/she could not do before purchasing the service.
The problem with the exact definition of a certain service product is nothing new and a lot of progress have been done within the measurement of many services where the result of the service can be specified like for example reparations of machines, cars, air transports.

1.2 Description of the complexity to determine the basic transaction unit measurement within computer services and related activities

A significant part of computer services industry, hardware and software consultancy and other software consultancy and supply, belong to the group of services where the difficulties with defining of the basic output still remain.

Generally one can say that the service of the consultant is "giving the advice". During the consultancy the knowledge is transferred from the supplier to the buyer. The customer (buyer) of the certain consultancy has to cooperate (provide the descriptions of status quo on some way as an input to the consultant, he/she has to describe the expected result from his point of view). Neither the expectation nor customer's input is easy to valuate and measure. Since the supplier, the consultant often has better information than the buyer it is very difficult to ask the buyer for the determination of services quality (the problem of asymmetric information).

Moreover those types of services are often supplied as bundled. Each of bundled services can have characteristics that vary and - because of their intangible nature - are hard to identify.

Sometimes a simple basic unit, like an hour of a consultant's time can be specified as an output. However these units are not standardised and it can

be assumed that hours spent by a highly skilled and experienced consultant can be considerably more valuable than those of a novice in the business. The difference in probability of a well-done result between the two consultants may depend more upon their relative skills than the differences in hours spent on the case. By skills means talent, training and experience and they also can change over time for each of them.

The lack of the productivity measurement using the price indices grounded on time-based methods is a significant drawback for price statisticians. That's why the model pricing (based on a detailed characteristics of the unit of services output) is still in great demand asked as the best method among analysts and researchers interested in productivity analysis.

1.3 More about computer services industry

Changes in this industry are ongoing very fastly and even the structure of industry is fast changeable.
The time horizon for many of the products included in this industry is extremely short relative to that of other industries repriced in countries SPPI. The collection of structural data and repricing cycle is about 5 years in many countries, which seems not to be enough for computer services industry. The fast ongoing structural changes require different data collection, repricing and quality adjustment procedures as well as the different overall treatment of data. That's why the recollection of data and resampling every 1 or 2 year would be more suitable in this industry.

1.4 Impact on measured volume of GDP - investments

The globalisation process seems to suits computer services industry very well. Internet (its own product) is making global businesses local and vice versa for all type of businesses and government. A significant part of the output of computer services is used at other businesses and at governmental institutions as investments. All industries and governmental institutions of today are very depending on IT-driven innovations.

All that mentioned above means that a major part of this industry output is delivered to final demand, as investments. Volume measures of aggregate final demand and GDP will be affected. Quality of both turnover/revenues data and price indices is that's why extremely important. To get the correct effect on total GDP figures, only domestic produced output has to be measured in the collection of turnover/revenues and only domestic activities have to be prised.
Revisions of software investments, which indicate that this is a greater proportion of GDP than originally thought, are included to the revisions procedure for National Accounts since most of software investments is/was accounted as a cost to business (this is a special problem under the government) and so does not contribute directly to GDP measures. The measurement of investment's amount is under development in many

countries and the level is not easy to state. However software consultancy and new systems contribute to economic activity by reducing production costs and helping to provide new products.

The increased number of surveys on IT-investments and IT-use is evidence of higher importance of the issue. But both the coverage and the quality of their results have to be improved. Those are a part of the ongoing program on improvements of quality within the economics statistics is Sweden.

Up today are investments published on following categories:

Year 2006	percent	development
Buildings	44	11
Machinery	41	5
Others	15	7
Total investments	100	8
and		
Year 2006		
Manufacturing	24	6
Services	42	6
Dwellings	18	14
Government	16	8
Total investments	100	8

IT investments are included in the last category of others. It can be of interest to do investments on IT more visible as soon as the quality of prime statistics on this issue and the models concerning IT investments of government reach the acceptable levels.

Considerable part of production values for computer services products (about 45 percent) is used as investments (by Swedish National accounts).

1.5 Impact on measured volume of GDP – export and import

The usual way to measure volume of export or import of an industry is to deflate a nominal measure of export or import with a relevant price index for the product. Since also export and import contribute to GDP measures, the quality of nominal measurement of export/import and export/import price indices is crucial.

C – private consumption
I – investment
G – government consumption
X – exports
M - imports
GDP=C+I+G+X-M

The business competition is hard and the seeking for the lowering of costs by reallocation of production (or different stages of the production process) to the "rest of the world" is a story which has just begun.

When companies are going abroad, consultants are following because computer systems (hardware and software) need to be adjusted and adopted to the new situations. New staff has to be educated in the specific handling of the new system. Since the software, programs and systems are global, there is easy to find educated staff in that new geography since education is global too today. National problems don't always-required national solutions in computer services industry. The fast development of communications technologies makes it difficult to identify the international transactions in services and financial flows.
It is a difficult task to observe, measure and valuate either IT investments as a part of foreign direct investments (FDI) or export and import of computer services and related activities. (Some special problems of "the open market" within European Union can be mentioned.)

One can assume that IT investments are not negligible part of foreign direct investments (FDI).
There are different motives for FDI by the theory[1]:

Market seeking
Efficiency seeking
Strategic asset and capability seeking
Technology sourcing.

The market seeking behaviour means that receiving country can be seen as a export platform to other countries in the surrounding. By efficiency seeking means usually fragmentation of the production process to different country by their comparative advantages. Lowering the costs of production is the primary issue. By strategic asset and capability seeking means nearby the same; motives as a lowering the competition can be named. Technology sourcing leads e.g. to buying of companies with high-tech solutions; the target is to reach high productivity and R&D.

FDI flows are difficult to measure: no distinction is made between productive investment and purely financial investments. FDI redistribution is occurring at a global level independently of production, its final destination and thus trade. It is entirely possible that the relation behind FDI may be to reach new markets shares than to move production abroad.
Researchers did numerous case studies on multinational companies but the way to comprehensive statistics on services import and exports seems to be rather long.
Benchmark and international exchange of primary figures for important global company groups on product groups level concerning FDI, geographical flows of imported and exported products within the same

[1] Dunnig, 1993.

product groups among national statistical offices (NSO) are some promising ideas which should be tested in a broader extent.
Quality improvements of NSO's business registers and their benchmark concerning classifications manors and rules are also worth to be put on the agenda.

1.6 Statistics on international trade in services – export and import

Regulation (EC) No 184/2005 of the European Parliament and of the Council of 12 January 2005 on Community statistics concerning balance of payments, international trade in services and foreign direct investment (the application of BOPM5) has to be followed by all European countries, which will take significant effort in every European NSO during some years in the near future.
Figures on international trade in services are collected quarterly. The instructions imply that a Swedish unit supplies/acquires services to/from a foreign party. A "foreign party" is a client or supplier not domiciled in Sweden. A Swedish subsidiary or branch company in a foreign country is considered a foreign party while a foreign-owned subsidiary or branch company in Sweden is considered a Swedish party. The service can be conducted either in Sweden or abroad, as it is transaction flow, which determines the existence of international trade in services.
Figures supplied should covers all transactions with foreign parties no matter how the payment is affected by Swedish or foreign banks or by any kinds of settling. Transactions in both Swedish and foreign currency should be included. Transactions should refer to the reference quarter when registered in Swedish accounting system regardless of the date of payment.
Transactions, that are recorded on the balance sheet and periodized as income/costs over a longer period, are reported to their gross value. Licences are example of such transaction.

Distinction between goods and services
International trade in services does not normally include goods. Trade related services and construction and installation services are two exceptions. Trade related services comprises both the purchase and resale of goods abroad that never cross the Swedish border (merchanting) and commodity commissions for supplying goods on behalf of another original seller. These transactions should therefore be considered as services and not as goods. Including in construction and installation services are goods required for construction or installation projects.
Packaged software (non-customised) is considered as goods but customised software as services.
Incomes from abroad and costs to abroad on computer services and information services are collected. The collected data does not fit to the needs of national account since they are collected on a rather aggregated level. The percent share of software services (product group 7220) is based

on a study made by national accounts in connection with the adjustment to ESA 1995 (European System of Accounts).
There are some potential sources of error in the international trade statistics. One is that companies may have difficulties in distinguishing between goods and services and in determining what codes theses should be reported under.

A general aim from Swedish Unit of national accounts is to obtain international trade statistics on services collected and classified according to CPA (CPA is the EU's Classification of Products by Activities) and to include these in the system of national accounts rather than the percentage shares currently used.

Before this is done, the Business Statistics questionnaires are currently extending with questions about foreign production, residence of clients (resident, non-resident Intra-EU, non-resident Extra-EU), sales of licenses, specifications of resident clients (for example IT consultants, other companies, government, other resident clients), export by products and country specifications, foreign affiliates, part of total costs for subcontracted production to be paid abroad in as detailed specification as possible. Those extended figures are needed by national accounts unit also for updating of input-output tables and products accountants.
There are plans to coordinate the evaluation of received figures on micro level with the Unit of international trade.

Export amounted about 23 percent of the production value within product group 7220 Purchased software, or 19 percent of the total use. Import was about 10 percent of the total supply within the product group. (Based on current prices 2004.)
According to the latest figures obtained from the International trade Unit the amount of export of computer services and related activities in current prices increased by 40 percent (2007Q2/2005Q2).

There are usually about 300-350 firms belonging SIC 72 that report export services and around 630 firms reporting import of computer related services. The rate of no respondents among firms reporting export and import in SIC 72 is relative high (18 and 14 percent). The results are therefore revised a long time after the quarterly data were published first time. Further more structural changes among services companies' leads to high volatility of the results. The collection of data on international trade with services began 2003, quarter 1.

It is well known that there is a lack of SPPI concerning export and import price indices in Sweden and among many other countries. That's why Unit of National accounts in Sweden uses for deflation of foreign trade in services other indices like PPI, existing domestic SPPI, CPI, wages indices and some others even when it is well acknowledged that use of not appropriate indices is a less than ideal method.

(According the Amendment of the Council Regulation (EC) No 2223/96 of 17 December 2002, Annex A, the coverage of export and import SPPI should be completed year 2006 among EU countries except those with derogations. It is obviously hardly possible to fulfil the statement in Annex A concerning export and import SPPI at that date since the difficulties seems to be enormous in compare with the difficulties to develop appropriate domestic SPPI.)

1.7 Updating of SNA 1993 and some regulatory work for Europe

The ongoing process of updating SNA 1993 (System of National Accounts) reflects the increasing importance of globalisation and some difficult issues like the treatment of "the rest of the world and transactions between related units" will be changed and simplified. The rest of world chapter will be revised to link the revision of the balance of payment manual and another chapter will provide a link to monetary and financial statistics.
Research and development (R&D) expenditure will be accounted as intangible assets.
ESA 1995 (European System of Accounts) is a European application of SNA 1993 suitable to conditions of European Union. In ESA 95 is stated what type of tables and variables should be submitted to Eurostat but not how the variables should be estimated and the sources to figures (primary statistics) are the national task of every country following the principle of subsidiarity. This treatment requires a huge harmonising process that is ongoing.
Council Regulation (EC) No 2223/96 of 25 June 1996 on the European system of national and regional accounts in the Community (ESA95)

Regulation (EC) No 184/2005 of the European Parliament and of the Council of 12 January 2005 on Community statistics concerning balance of payments, international trade in services and foreign direct investment.
Regulations have a status of law in all member states of EU.

2. Turnover of computer services industry in statistics

2.1 Overview of the current and future classification of computer services industry

The ISIC (International Standard Industrial Classification of All Economic Activities) is the UN's nomenclature that corresponds with the European NACE (General Industrial Classification of Economic Activities of the European Communities). The corresponding Swedish nomenclature is SNI 2002 (SE-SIC 2002 - Swedish Industrial Classification 2002).

In **SE-SIC 2002**, Standard for Swedish industrial classification 2002, based on NACE Rev 1.1, group 72 in the detailed structure is called Computer and related activities and includes the following subgroups:

Table 1

Computer and related activities	**Prod. SE-SIC 72**	**CPA 2002**
Hardware consultancy	72.100	72.10.10
Software consultancy, publishing of software	72.21	72.21.11-12 72.21.20
Other software consultancy and supply	72.22	72.22.11-15
Data processing	72.300	72.30.10 72.30.21-24 72.30.30
Database activities	72.400	72.40.11-13 72.40.20
Maintenance and repair of office, accounting and computing machinery and data processing equipment	72.500	72.50.11-12
Other computer related services	72.600	72.60.10

Source:SPIN 2002, Statistics Sweden.

CPA 2002 is the EU's Classification of Products by Activities and **Prod. SE-SIC 2002** is the Swedish version.

Revisions of ISIC, NACE and corresponding national classification systems were presently concluded. To adapt economic statistical system to newly revised classification systems will take additionally years of efforts and keys will be used during the period of transition.

Table 2
Computer services and related activities according to the **future** NACE and ISIC classification

NACE Rev. 2	**Description**	**ISIC Rev. 4**
62	Information technology service activities	62
62.0	Information technology service activities	620
62.01	Computer programming activities	6201
62.02	Information technology consultancy activities	6202
62.03	Computer facilities management activities	6202
62.09	Other information technology service activities	6209
63	Information service activities	63
63.1	Data processing, hosting and related activities; web portals	631
63.11	Data processing, hosting and related activities	6311

63.12	Web portals	6312
63.2	Other information service activities	632
63.21	News agency activities	6321
63.29	Other information service activities n.e.c.	6329

Source: Mieke Berends-Ballast, Turnover and output measurement for the computer services industry, Statistics Netherlands, paper to 22nd Voorburg Group Meeting, Seoul, 2007.

Year 2008 is the first year of reference for the new SIC2007 for all type of statistics except STS, Labour Costs Index (LCI) and NA. January 2009 will be the first reference period for STS and LCI. In October 2009 the preliminary results of Structural Business Statistics (SBS) will be delivered to Eurostat in both old and new classification. June 2010: the final STS will be delivered to Eurostat with 2008 as a year if reference in both new and old SNI. The SIC2007 will be incorporated in the system of national accounts and BoP in September 2011.

2.2 Turnover by product in computer services industry, 2001 – 2004

by business statistics and by national accounts

The comparison of the distribution of turnover by product in computer services industry of Sweden (SE SIC 72) between years 2001 – 2004 resulted in following figures based on current prices:
The amount of the total turnover per industry increased by 6,1 percent.
Turnover of 72100 (Hardware consultancy) decreased by 30 percent during the period of 2 years. Turnover of 72200 (Software consultancy and supply) decreased by 16,3 percent during the same time to represent less than a half of the total turnover of industry 72 year 2004. Turnover of 72300 (Data processing activities) decreased nearly by 30 percent. Turnover of 72400 (Database activities) represents 2 percent of total. Turnover of 72500 (Maintenance and repair of office, accounting and computing machinery and data processing equipment) increased by 45 percent. Turnover of 72600 (Other computer related services) increased by 7 185 percent.
All other products within SIC 72 like 71330 (rental of machinery without operator), 64200 (telecommunications services) increased. Especially 50-52 (wholesale and retail trade) increased by 420 percent.
Even if some of the figures above seem to change rather dramaticly they may, to some extent, correspond to structural changes, which are rapidly and continuously ongoing in the computer services industry. Only six of the largest companies (measured by turnover) in the year 2000 were represented among the 20 largest year 2005.

Table 3

Turnover by product in computer and related services, 2004

SPIN2002	Product	percent
71.330	Renting of machinery and equipment	1.5
72.100	Hardware consultancy	3.1
72.200	Software consultancy and supply	46.6
72.300	Data processing activities	16.7
72.400	Database activities	1.8
72.500	Maintenance and repair of office, accounting and computing machinery and data processing equipment	2.6
72.600	Other computer related services	5.3
64.200	Telecommunications services	3.3
80.000	Education	0.3
01-45	Agriculture, fish and forest, manufactory, constructions	0.2
50-52	Wholesale and retail trade	15.3
55-93	Sales of other services	1.6
99.999	Others	1.7
	Total turnover	**100**

Source: Business Statistics

What do the results mean to national accounts?
By the ongoing general revision within the system of national accounts in Sweden the new distribution by production per products within SIC 72, computer services industry, is as follows:

Table 4

Computer and related services, SIC 72, distribution by production per products after the revision, year 2004 (based on current prices)

CPA	Product groups	Description	percent
32.2	**30020**	Computer and other equipment for information processing	0.3
71.3	**713**	Rental of machinery and equipment	1.8
72.1+72.3+ 72.4+72.6	**72A**	Other data processing services	27.1
72.2 excl own account software	**7220**	Software supply services and other related services	56.7
72.20 own account software	**7220EG**	Software development for own use	2.7
72.5	**72500**	Maintenance and repair of office, accounting and computing machinery and data processing equipment	3.2
Part of 70.202-9	**7020A**	Other property rental excl internals state sales	0.1
Part of 74.1	**741**	Legal and economy consultancy services	1.3
Part of 74.1	**741A**	Use of licences, patents royalties	4.3

80.4	**804**	Adult education and other education	0.5
Commissions	**5AA**	Commission	0.2
Merchanting	**5AB**	Merchanting	0.1
Trade margins	**5C**	Margins	1.8
		Total production	**100**

Source: National accounts

The 72-products/SIC 72 ratios are by Business statistics 76.1 and by national accounts 89.7. The different ratio can be partly explained by the difference between wholesale and retail trade in computer products (15.3%) included by Business statistics and margins and commissions (2.0%) included by National accounts. Furthermore Units of national accounts includes within SIC 72 product group 7220EG, model of software development for own use, which includes production of software services developed by staff employed in the rest of economy. Telecommunication services (3.3%) are excluded.

Since business statistics on services industries is provided annually, the distribution of production values (in current prices) within the system of national accounts can be changed every year. What does that mean to the quarterly published SPPI for SIC 72 if the system of weights can be changed every year retroactively? Has the policy of index revisions been discussed?

2.3 Turnover/revenues as measurement of industry's output

GDP is a sum of all commodities and services produced in the economic territory during a year or other unit of time.
Questions to be discussed are:

The relevance of turnover/revenues as a measurement of the services industry's output of today?
How can so called double counting of countries productions be avoid?
Recommendations for future?

2.4 Computer service activities: net turnover, number of enterprises and employees according to Business statistics 2006 and 2005

According to **Business statistics 2006,** there were 32 758[2] enterprises in SIC 72. **Year 2005** there were 102 000 people occupied and 89 800 were employed within enterprises classified in SIC 72 by the main level of activity. The total net turnover was 147.9 billion SEK. In addition, many major corporate enterprises have many subsidiaries in the same sector.

[2]See table in Appendix for turnover, number of employees, etc. per service group.

SE-SIC 72201 Software consultancy is the sub-sector with the largest share of enterprises, employees, net turnover and value added in relation to the total value for each of these variables.

Of the total net turnover of SEK 147.9 billion, sole employers represented a about 12 % of total occupied in SIC 72. Some 12 200 enterprises were registered as sole employer.

2.5 Customer structure

The customers structure of computer services industry as the result of intermittent survey 2001, the year of the development of SPPI:

Table 5

Customer category[3]	%
Enterprises and public utilities	75,8
Central gov. and municipal authorities	14,1
Households and individuals	0,2
Households' non-profit organisations	0,0
Exports	9,9
Total:	100,0

Source: National Accounts

Since households represented such a very little part of computer services industries turnover, it was decided not to develop SPPI covering households. SPPIs on exports of computer services products are not developed yet and there are no plans for the development at the present time.

2.6 Computer consultancy activities in other sectors

A number of large enterprises provide consultancy services, but these are not classified in sector group 72 and thus also not included in the survey of Business statistics on SIC 72. This is because most of their operations are located for example in the manufacturing of computers, which means that they are assigned a different sector code. Most of these enterprises are probably found in these sectors:

- 52463 Retail trade in computer, office trade and software
- 51640 Wholesale trade in office machinery and equipment
- 51653 Wholesale trade in telecom products and electronic components.

From SPPI point of view they are important respondents if they can be regarded as price leaders or if their shares of the market are significantly large.

[3] Results from intermittent survey of IT consultants 2001.

3. Services PPI of computer services industry

3.1 Conditions and definitions for statistical work in the field of SPPI; requirement of national accounts

The output price index for service sectors was developed as part of the SPPI project, which started in January 2000. The services producer price index (SPPI) is a output price index for services designed for use in the Swedish National Accounts system for calculating of services production at constant prices on the product group level. This is done regardless if households, government or enterprises use the service.

Alternatively, a services producer price index can be created by weighing together information on price developments for the product used by enterprises and government with the corresponding CPI (which measures the price development for households).

The creation of any sector-wide price index requires knowledge about the structure of the sector (its size and concentration), the economic actors' (the enterprises') size, number, turnover, geographical dispersion in the sector, etc. The price setting mechanisms are studied and typical products are identified.

There is a basic work strategy that applies to both the development of indices for new service industries and the review of existing indices.

Four guiding principles are applied:

- The service producer price index is an **output price index** that describes the average price development at the producer level for service industries, where services are delivered from domestic service producers. The index figure refers to a quarter period and the price data represent **an average** per quarter.
- Measured services should be **representative and stabile**.
- Measurements should refer to **transaction prices**. The transaction price is the true price for the good/service that the buyer pays and at which the seller sells, i.e. the price after deduction of all discounts. See the revised PPI Manual.
- **PPS** (Sampling by Probability Proportional to Size) is the main sampling methodology.

Cooperation with industry organisations and companies is necessary since price changes should be observed and described. Initially, a special industry competence has to be developed. These special service industry competences require much time, but both cooperation and competence are extremely essential components of the work for each service industry where a price index should be developed.

Eurostat´s Handbook on Price and Volume Measures in National Accounts, 2001, became a Amended Council Regulation *(EC) No 2223/96, Annex A* year 2002. The implementation date of e.g. 2006 for a particular product means that annual constant price data submitted to Eurostat under Council Regulation 2223/96 in 2006 and afterwards should comply with the A/B/C classification defined for that product. Concretely that means that from that date C methods are no longer allowed for that product.
The Methodological Guide for Developing Producer Price Indices for Services, published 2005, is a useful result of Eurostat/OECD´s Task Forces on SPPI.

3.2 International experience on SPPI for SIC 72

The annual OECD Inquiry on National Collection of Services Producer Prices states that Austria, Australia, Japan, Canada, Finland, France, Great Britain, Ireland, Korea, Mexico, New Zealand, Netherlands, The Czech Republic and the US collect or plan to collect price information on computer services industry.

Two papers were presented at the 14th Voorburg Group meeting in New Zealand in 1999 that treated the service price index for computer consultancy services: "Australian Price Indexes for Computing Services" by David Collins and "The Development of a Corporate Services Price Index for Computer and Related Activities in the UK" by Bernice Francis and Dave Watts. Both reports emphasized the difficulties in finding recurrent services for price measurements and suitable methods for following price developments. The two countries had chosen partly different price measurement methods and moreover, the methods varied due to the type of service.
Experiences from the development of SPPI for computer services industry were presented during Voorburg Group meetings 2002, 2003 and 2004.
Eurostat/OECD´s Task Forces on SPPI, which started in November 2002, is still running and is regarded as an important forum for dissemination of know-how in the issues of SPPI.

3.3 Methods (used and asked) within SPPI for SIC 72

Consultancy on software seems to be the mayor part of computer services industry in most countries. The most frequently used methods, namely charge out rates (there are several modifications of this time based method used across the countries) has significant drawback. It is not possible to calculate the developments of productivity if time based methods are used.

Both OECD and Eurostat stressed the lack of real specified output of consultancy services in general. Model pricing seems to be the best target pricing method welcomed by analysts. Countries NSO are asked to put additionally efforts to switch from time based to model based methods. If

that is the case in different countries, it should be pointed out that only prices for the production provide on the economic territory of the country should be followed/used. If a part of the production process is done in the rest of the world and the decline of prices hade been observed that's why, some type of quality adjustment should be considered.

It is plausible that there do exist differences among countries to which extent computer services are easy or difficult to be specified as a base for a price measurement. By Nählinder report (2005)[4] on a survey of a thousand companies in Sweden over a half reported that they mainly produced bespoke products. The survey enquired about bespoke, customised and standardised products. Firms that had more cooperation with clients, to which category NACE 72 belong in mayor, were less likely to produced standardised products, more likely to produce bespoke (customised) ones. Extent of contacts was not associated with less standardisation, but was slightly associated with more bespoke production. On the contrary a study on German firms from the mid-1990s reported by Hipp (200)[5] reports different results. Firms reported that about 70 percent of their outputs belong to standardised services and only about 18 percent of software firms classified their output to bespoke or custom-made.
This can be taken as an evidence of national variations which may be considered in connection with choice of method of price measurement.

3.4 Methods currently used in Sweden within SIC 72 [6]

There are 4 SPPI regularly quarterly delivered to Swedish unit of national accounts. The price data represent an average for the quarter and the index number has the average of previous year as a base.

For 722, software publishing, consultancy and supply, a specified hourly rate was requested for the following categories:

- Project manager
- Systems developer
- Programmer
- Computer technician.

The consultant's experience and length of contract are also taken into account.
To meet the needs of Swedish Unit of national account there are two indices at 72.2; one for Software development for own use (pr group **7220EG**) and one for **7220**.
In 72.1, 72.3, 72.4 and 72.6, product group **72A** (Other data processing services), the most common pricing method is direct use of actual

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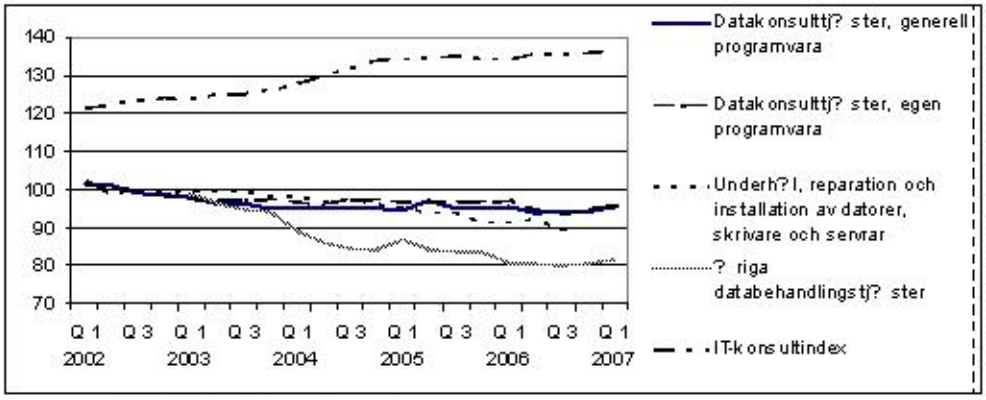
[4] Nählinder, J (2005) Innovation and Employment in Services: The case of Knowledge Intensive Business Services in Sweden
[5] Hipp, C, B Tether & I Milles (2000), The Incidence and Effects of Innovation in Services: Evidence from Germany
[6] For more details see Methodological Guide for Developing Producer Price Indices for Services, OECD/Eurostat (2005)

transaction prices of repeated services. For unique services are hourly charge-out rates applied.
In 72.5, product group **72500**, Maintenance and repair of office, accounting and computing machinery and data processing equipment are both contract prices and actual transaction prices of repair services used.[7]

Chart 1
SPPI for Computer services in Sweden



Source: SPPI, Statistics Sweden

3.5 Management principals of SPPI in Sweden[8]

The rapid expansion of development of PPI for services in Sweden and the restriction of the production's budget in combination with the high requirements of National Accounts unit have led to the choice of the following management principals of the SPPI-production:
New πPS sample every year
Updating of the weight structure every year
New questionnaires every year
Ongoing methodological review of industry indices every 3 – 4 years

3.5.1 New πPS sample every year

There are a number of different methods for probability sampling, all of which select a sample randomly and objectively. It is also possible to get a measurement of the sample's quality.

A probability sample has been used since many small enterprises account for a large share of the turnover. One advantage of a probability sample is that a small number of small enterprises represent a large number of small enterprises, and are thus significant. By only measuring large enterprises,

[7] For more details see Cerda, M, Glanzelius, M (2001), Service Price Index for Computer and Related Activities, TPI project report no. 2 at http://www.scb.se/english
[8] For more details see Norrman, V, (2006), Tools for Managing High Data Quality in Development and Production of Services Producer Price Indices in Sweden; prepared for The European Conference on Quality in Survey Statistics, Cardiff 2006

a considerable amount of the turnover disappears. By making a subjective sample, the significance of small enterprises is very little and only influences the price index slightly.

A πps sample is used for all industries. Pareto πps is used since it has lower variance according to simulation studies (Rosen, (1996)).

Within SPPI in Sweden, the πps sampling method is used to draw a new sample every year. This is done during the month of November. Sampling frames are constructed so that the smallest enterprises in the industry are spared, as enterprises with low turnover or few employees are not included. The size limit is chosen subjectively, depending on what is appropriate for the specific industry. Thereafter πps sampling is used for all surveys with many enterprises within an industry. The probability that an enterprise may be selected in the sample is proportional to its size. For example, the measurement of size can be the number of employees or the turnover. An advantage with using this method is that the sample is "self-weighted", which means that it is not necessary to construct weights from ambiguous sources, as is often the case. Furthermore, there is a higher possibility that the larger enterprises, which can be seen as guiding the setting of prices within the industry, will be included in the sample. To ensure that the burden of respondents is not too large and that changes in the industry are not missed, new samples are drawn every year when 20 percent of enterprises also rotate out of the sample.

3.5.2 Updating of the weight structure every year

The structures of service industries are generally more changeable than the structure of manufacturing industries. Enterprises within special computer services (NACE Rev 1.1 72) and Other business services (NACE Rev 1.1 74) are especially vulnerable to rapid changes. But the same can be said about enterprises in the transport industry (NACE Rev 1.1 60-63) and financial enterprises (NACE Rev 1.1 65-67)
Other industries have been greatly affected by deregulation of postal services and telecom markets (NACE Rev 1.1 64).

Therefore it is important to be aware of new information when it is available in the Business Register of Statistics Sweden, and look over the weight structure. Other sources besides Statistics Sweden are also used. Concerning the weight distribution between different services in each enterprise, enterprises are asked once a year.

From reference year 2003 on, data collection has been extended to cover all industries within the service sector. Data on turnover by product are included in the annual Structural Business Statistics questionnaire. This gives an opportunity to meet the demands from both the National Accounts and Services Producer Price Indices. It is also a huge step in the direction

of having an equal data collection for the service sector as for the manufacturing sector.

3.5.3 New questionnaires every year

Once a year the enterprises receive introductory information and questionnaires by mail. They can then choose different response alternatives and they are asked to select themselves at least four representative and recurring services (and specify them carefully) and then asked to set a price for the same service in the following quarters. It is important to regularly update the representative services. When one of the enterprise's representative services is no longer representative, it should be replaced with a more representative service.

The index figure refers to one quarter and, if the service has been carried out several times during the period, the price data should represent an average for the quarter.

3.5.4 Ongoing methodological review of industry indices every 3 – 4 years

The aim is to look over both the index construction and the industry as a whole periodically. When large changes occur in an industry, a new industry description is made. Since changes occur rapidly, a cycle of 3-4 years is a suitable interval for review. This means that, for example, a review of the industry for Renting services of automobiles (NACE Rev 1.1 71.1) as well as the index construction occurred 2004, since the SPPI for Car rental was developed in 2000. Due to near total personal changes among the staff that developed and produced SPPI until the beginning of year 2005, the tempo on planned review of industry indices had to slow down. But nevertheless the review of the SPPI for Computer and related services (NACE Rev 1.1 72) was completed. Architectural, engineering and related technical consultancy services (NACE Rev 1.1 74.2) are currently reviewing.

74.4 Results of the review on SPPI of computer services industry

The company visits carried out during the review process brought new light on the stage of conditions among firms operating in Swedish computer service industry.
Some findings can be of interest:
The globalisation process involves nowadays even medium-size firms, which can operate on time-follows scheme around the world. So-called Lego production is more used.
Expression as “export” and “import” are less understandable among firms that speak more in terms of “abroad based activities of the production processes”.

The updated Swedish classification of products SPIN2002 provide wide better base for the structure among services accounted under SIC 72.
Since the current used method of hourly charge-out rates for different categories of staff (as project manager, systems designer, programmer and computer technician) with varied consultant's experience has to be computed as average of a quarter, the burden on respondent companies is quite high. Some of the visited firms complained on that fact and suggested themselves to provide Statistics Sweden with model-based figures in the future. The willingness to cooperate on the design of the representative and detailed model was appreciated by price statisticians and the work is ongoing and looks promising.
One thing, already mentioned above, which can be troublesome to the price statisticians is amounted increase in parts of production processes done abroad. Changes in the ratio have to be known by statisticians and handled on some consistent way.

4. Special topics

4.1 Computer services industry and the ratio of suitable indices (A, B)

The Handbook on Price and Volume Measures in National Accounts, Eurostat (2001), gives international recommendations for the selection of methods for calculating deflators. The handbook classifies different methods of suitability as A, B and C methods. The A method is the most suitable method, the B method is another method that can be used, and the C method is one that should not be used. The handbook gives recommendations on the method selection, specifically for the different product areas and transaction categories. For more detail see the handbook, page 101-103.

Table 6

Computer and related services, NACE 72
used SPPI classified by A/B/C-methods

Product groups	Description	percent	**Acceptabel deflator**	**Not Acceptabel**
30020	Computer and other equipment for information processing	0.3	A	
713	Rental of machinery and equipment	1.8	B	
72A	Other data processing services	27.1	A/B	
7220	Software supply services and other related services	56.7	A/B	
7220EG	Software development for own use	2.7	A/B	

72500	Maintenance and repair of office, accounting and computing machinery and data processing equipment	3.2	A/B	
7020A	Other property rental excl internas state sales	0.1	A	
741	Legal and economy consultancy services	1.3	A/B	
741A	Use of licences, patents royalities	4.3		C
804	Adult education and other education	0.5		C
5AA	Commission	0.2		C
5AB	Merchanting	0.1		C
5C	Margins	1.8		C/B
	Total production	**100**	**93**	**7**

Source: National Accounts and own calculation

The coverage of acceptable indices within NACE 72 used by Swedish Unit of national accounts during the annually compilation of GDP is as minimum 93 percent which seems to be satisfactory. If the deflator on margins will be included, there are just 5 percent of C deflators left.

4.2 The possible impact of SPPI used and productivity figures

The comparison undertaken during winter 2005 shows that SPPI for computer services industry were below the Index of Salaries in all compared quarters and both years 2003 and 2004. Even later on SPPI showed the declining trend. Example below describes the clear impact of the used type of deflator on the development of product value in industry 72 and by that, ceteris paribus, on the development of productivity in the same industry.

Furthermore a speculative question can be raised: Could those early implemented SPPI within Swedish system of national account have had some influence on international comparability studies concerning the development of productivity?

Table 7

Computer services and related activities, NACE 72
The development of SPPI and Salaries Index, 2003-2004

	SPPI	**Salary Index**	**Difference**
2002 = 100	1)	2)	1) - 2)
2003Q1	98,10	100,12	-2,0
2003Q2	97,05	100,01	-3,0
2003Q3	96,55	99,89	-3,3
2003Q4	95,91	100,65	-4,7
Year 2003	**96,90**	**100,17**	**-3,3**
2003 = 100			
2004Q1	97,90	100,50	-2,6

2004Q2	97,41	101,71	-4,3
2004Q3	97,31	101,85	-4,5
2004Q4	97,33	102,31	-5,0
Year 2004	**97,49**	**101,59**	**-4,1**

Source: National Accounts and own calculation

There are no studies undertaken yet to clarify the legitimacy of this question.

74.4 Note! Laspeyres indices are biased (example from the balancing problem in compilation of quarterly GDP in Sweden)

One of well known facts among price statisticians is the mathematical relationship between different indices. The relationship has its base in the economic theory regarding the **consumer's behaviour** on a market with trend on prices.[9]
In shortness can be stated that:

$$P_{Lo} > P_L > P_F \text{ or } P_T \text{ or } P_W > P_P$$

where
P_{Lo} = Lowe price index[10]
P_L = Laspeyres price index
P_F = Fisher price index
P_T = Törnqvist price index (superlative)
P_W = Walsh price index
P_P = Paasche price index

Observe that this relationship is based on the theory of the true cost-of-living index where the **buyers behaviour** is determine by *cost minimization* problem. In the family of PPI it is applicable on price measurement of intermediate inputs by input PPI. However input PPIs are rather rare among countries (US, AUS, NZ).

It should be considered that for output PPI (SPPI included) the opposite relationship is valid, based on **producers (sellers') behaviour** of *revenue maximization* problem.

Namely **Laspeyres output price index is a lower bound to the theoretical output price index and Paasche output price index is a upper bound.**

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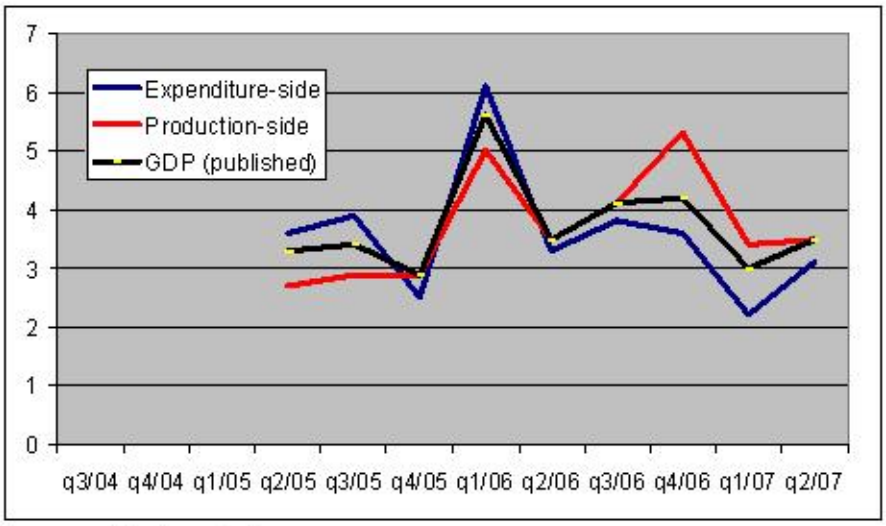
[9] For clear information please see PPI Manual.
[10] A Lowe index (called by many as "Laspeyres-type index") that uses quantities from an earlier period than the price reference period has greater upward bias than the Laspeyres index (which is often a target index for PPI).

$P_P > P_F$ or P_T or P_W $> P_L > P_{Lo}$

Discuss what happened in time of price pressures.

Chart 2
First results of the compilation of quarterly GDP before balancing procedures are completed. Possible impact of price indices used?



Source: National Accounts

5. Conclusion

Services industries dominate the economy of today but the quality of measurement is still not satisfactory. To improve the compilations methods of GDP (annually and quarterly) there are needs for improvements of data sources. The presented inventory of primary statistical data sources when Computer services and related activities (NACE 72) in Sweden was used as an example might bring a broader understanding for needs of National Accounts in the complex and changeable reality.
Concerning SPPI a more detailed specifications of services products are needed as well as improvements at quality adjustment issues. Despite the rapid development of SPPI in Sweden since 2000, there are still needs of progressive extension into a greater proportion of service activities. A productivity issue needs SPPI of a good quality. The problem is not unique to Sweden.
Concerning services output there are needs of more detailed specification in the coverage on product groups of national account. The deflation of Index of Services output should be considered.
Government Consumption versus ICT investments should be considered. Does Unit of national accounts suffer of lack of influence over data providers?
The improvement of quality within Input–Output tables needs improvements of the underlying data quality.

Who (and how) will initiate issues of product specification?
Concerning financial accounts / BoP: Possible inconsistencies/duplication are mentioned. The collected distribution on international trade in services does not fit needs of national accounts.

Swedish Economic Statistics are cost-efficient and of good quality. But there are specific areas for improvement. And there needs to be enough spare capacity to continue innovation and development since the economy is changing at an unprecedented pace.

6. Appendix

A Turnover, number of employees, etc. 2005, SIC 72

Table

NACE 72, Computer consultancy and repated services, 2005

number of companies	31 422
Turnover by clases, Sweden 2005	percent
Development and sale of customised software	30
Computer facilities management and data processing services	19
Development and sale of packaged software	16
Resale of hardware and equipment	11
Other software and computer consultancy services	8
Others	16

Turnover by type of customers	percent
Consultancy companies	7
Other companies	63
Government	10
Rest of the world	20
Others	2

50 largest companies classified by group	numbers
72.1	0
72.2	37
72.3	11
72.4	1
72.5	1
72.6	0
	50

NACE 72	Turnover	percent
50 largest companies	73739	50
Total	148161	100

	Employees	percent
50 largest companies	29636	36
Total	89800	100

6. Appendix

B The actual coverage of SPPI, September 2007

Current production or development of SPPI, number of series in ( ), if more than 1:

55.1	Hotel services (3)
60.10	Freight transportation services by railway
60.211	Other scheduled passenger land transport services
60.24	Freight transportation services by road (2)
61	Water freight transportation services (2)
74.4.1	Scheduled passenger transportation services by air (2)
74.4.2	Scheduled freight transportation services by air (2)
63.11	Cargo handling services
63.12	Storage services
63.4	Other transport agency services
64.11	National post services
64.12	Courier services other than national post services
64.2	Telecommunications services (4)
65.12	Other monetary intermediation services
70.20.12	Renting or leasing services involving own non-residential property (annually)
70.3	Real estate agency and other services
71.1	Renting services of automobiles
71.3	Rental of machinery without operator
72	Computer and related services (4)
74.11	Legal services
74.12	Accounting, bookkeeping and auditing services (2)
74.13	Market research and public opinion polling services
74.14	Business and management consultancy services
74.2	Architectural, engineering and related technical consultancy services (2)
74.3	Technical testing and analysis services
74.4	Advertising services
74.5	Placement services of personnel
74.6	Security and investigation services
74.7	Cleaning services
90.02, 03	Refuse disposal services
93.01	Washing and try cleaning services

The main purpose of developing services producer price indices is to create price indices designed for use in the Swedish System of National Accounts for calculating the production values of services at the product group level in concordance with the European Union's

recommendations. Private services represent about 50 percent of GDP in Sweden.

It remains about 10 percent to cover by SPPI.

6. Appendix

C Overview of Product groups in Swedish National Accounts

Table

STATISTICS SWEDEN

Product groups (PG) in accordance with SNI 92 in ESA-adjust

National Accounts

product groups	SNI 92 product	
01111A	01.111.01+part 02	Wheat
01111B	del 01.111.06	Rye
01111C	01.111.05	Barley
01111D	del 01.111.06	Oats
01111E	del 01.111.02	Mixed grain
01111F	01.111.03-04+07-08	Other cereals
01111G		Energy crops
01111H		Planting seed
011130A	01.113.00	Potatoes for home consumption
0111300	01.113.00	Potatoes
0111401	01.114.	Sugar beet and sugar cane
0111A	01.111.09, 01.112.01	Feed crops
01119A	01.119.01-02	Legumes for feed
01119B	01.119.04-07	Oil plants
01119C	01.119.08	Raw tobacco
01119D	01.119.14	Planting seed (excl. cereals and potatoes)
01119E	01.119.03+(09-13)+15+01.115+117	Other agricultural plants
0112A	01.121.01-02, 01.123.01-02	Vegetables
0112B	01.121.03-04,01.122+124	Flowers/plants
0113A	01.131.01-07, 01.137	Fruit
0113B	01.131.08-10	Coffe and tea
0113C	01.131.11	Cacao beans
0113D	01.139.01	Spices
0113E	01.139.02	Wild berries
0121201	01.212.01	Cattle
0121202	01.212.02	Calves
0122A	01.221.01, 01.222.01	Sheep and goats
0122801	01.228.01	Horses including breeding horses
0123	01.23	Pigs
012410A	01.241.00	Eggs for home consumption
0124100	01.241.00	Eggs
0124A	01.242.+249	Poultry
0125100	01.251.00	Reindeer
01252	01.252	Animals reared for furs
01254	01.254	Pets

01259	01.259	Game
012A	01.211.00, 01.221.02,01.222.02	Milk
012B	del 01.2	Meat for home consumption
012C	del 01.2	Invest. livestock for breeding and dairy cattle
012D	01.221.03, 01.253,01.228.02,01.212.03	Other animal products (honey,etc)
012E		Milk for home consumption
014A	01.4	Services to agriculture
014S		Services to agriculture (public sector internal)
0150000	01.500.00	Hunting and game protection
0201101	02.011.01	Variations in quantity of timber cut
02011A	del 02.011.02-04	Pulpwood
02011B	del 02.011.02-04	Saw timber
0201105	02.011.05	Firewood
0201106	02.011.06	Other unprocessed wood
02012A	del 02.012.00	Forest drainage
0201A	del 02.012.00, 02.013.00	Forest management and logging
0201AS		Forest management and logging (publics sector internal)
0201B	02.014.00, 02.019exkl energi	Forest regen. mat. and other forestry prod.
0202	02.02	Services to forestry
050A	del 05	Fish, crustaceans etc.
050B	del 05	Services to fishing
10100	10.100	Hard coal
1020000	10.200.00	Lignate
1030	10.30	Peat
1110001	11.100.01	Crude oil
11100A	11.100.02-04	Natural gas
11200	11.200	Serv. to crude oil/natural gas extraction,incl. hire of drilling/dwelling pl
1200000	12.000.00	Uran- and thorium ore
1310000	13.100.00	Iron ore
13200	13.200	Non-ferrous metal ores except uranium and thorium ores
141	14.1	Stone
142	14.2	Sand, gravel, rock and clay
14300	14.300	Chemical and mineral furtilisers
1440000	14.400.00	Salt
14500	14.500	Other products from ore and minerals
15111	15.111	Beef and veal; whole, half or quarter carcasses
15112	15.112	Beef and veal; small cuts
15120	15.120	Poultry meat, fresh and preserved
15130	15.130	Meat products
15200	15.200	Fish and fishery products, processed and preserved
15310	15.310	Potatoes, processed and preserved
1532000	15.32000	Fruit and berry juices and vegetable juices
15330	15.330	Miscellaneous fruit, berries and vegetables, processed/preserved
15410	15.410	Raw vegetable and animal oils and fats
15420	15.420	Refined vegetable and animal oils and fats
1543000	15.430.00	Margarines and similar preparations
1551100	15.511.00	Cheese and curds

1551201	15.512.01	Milk and cream <6% fat
1551202	15.512.02	Milk and cream >6% fat
1551206	15.512.06	Yoghurt
15512A	övr 15.512	Other dairy products
1552000	15.520.00	Ice-cream
15611	15.611	Flour
15612	15.612	Breakfast cereals, mixes and other grain-mill products
15620	15.620	Starches and starch products
15710	15.710	Prepared feeds, meal and pellets of alfalfa
1572000	15.720.00	Petfoods
15810	15.810	Bread and fresh bakery products
1582	15.82	Crispbread, biscuits and preserved bakery products
15830	15.83	Sugar
1584	15.84	Cocoa, chocolate and confectionery
15850	15.850	Pasta products
15860A	15.860.01-02+06	Coffee
15860B	15.860.03-05	Tea
15870	15.870	Mustard, ketchup, spices and other condiments
158A	15.880-890	Other foods, including homogenised preparations
1591000	15.910.00	Distilled alcoholic beverages
15920	15.920	Ethyl alcohol (crude spirit)
159A	15.930-950	Wine, cider and other non-distilled fermented beverages
15960	15.960	Beer
1597000	15.970.00	Malt
15980	15.980	Mineral water and soft drinks
16000	16.000	Tobacco products
171	17.1	Yarn
172	17.2	Woven fabrics of textile and glass fibre
17300	17.300	Bleaching, dyeing, textile printing plants and other textile processing p
174	17.4	Sewn textile products except wearing apparel
175	17.5	Other textiles
17600	17.600	Elastic webbing
177	17.7	Knitted goods
17X		Second-hand clothing and textile waste
1810000	18.100.00	Leather garments
182	18.2	Other clothing and accessories
18300	18.300	Furs; fur products
19100	19.100	Leather
19200	19.200	Luggage, handbags, saddle goods
19300	19.300	Footwear
20101	20.101	Wood, sawn
20102	20.102	Wood, planed
20103	20.103	Unprocessed wood; impregnated or otherwise treated
20201	20.201	Veneer, plywood and laminated board
2020200	20.202.00	Particle board
20203	20.203	Fibre board
2030100	20.301.00	Prefabricated timber houses
20302	20.302	Building joinery and interior fittings
20400	20.400	Wooden containers
20510	20.510	Other wood products
20520	20.520	Articles of cork, straw, plaiting materials and the like
2111100	21.111.00	Mechanical or semi-chemical wood pulp
21112	21.112	Sulphate pulp

2111300	21.113.00	Sulphite pulp
2112100	21.121.00	Newsprint
21122	21.122	Other printing paper
21123	21.123	Kraft paper and kraft liner board
21129	21.129	Other paper and board
2121100	21.211.00	Corrugated board and corrugated board packaging
21219	21.219	Paper and board packaging except corrugated board
21220	21.220	Household and sanitary goods of paper
21230	21.230	Writing paper, envelopes and the like
21240	21.240	Wallpaper
21250	21.250	Miscellaneous paper or board products
221	22.1	Products from publishing activity
222	22.2	Printing products
223	22.3	Reproduction of recorded media
2310001	23.100.01	Coke
2310002	23.100.02	Mineral tars
23200A	del 23.200.01	Motor gasoline
23200B	23.200.03+del 04+06	Light oils, kerosene (excluding aviation), other medium oils
23200C	23.200.02+del 01+del 04	Aviation and jet gasoline, aviation kerosene
23200D	del 23.200.04+del 05	Diesel oil, motor kerosene
23200E	del 23.200.05	Domestic fuel oil
2320007	23.200.07	Heavy fuel oils
2320008	23.200.08	Lubricants
2320009	23.200.09	Propane and butane
2320010	23.200.10	Ethylene, propylene, butylene etc.
23200F	23.200.11-12	Petroleum coke, petroleum bitumen etc.
23300	23.300	Nuclear fuel
24110	24.110	Industrial gases
24120	24.120	Dyes and pigments
24130	24.130	Other inorganic basic chemicals
2414A	24.140.25-26+28	Tall oil, charcoal, liquors from the manufacture of wood pulp
2414B	övr 24.140	Other organic basic chemicals
24150	24.150	Fertilisers and nitrogen products
24160	24.160	Basic plastics
2417000	24.170.00	Synthetic basic rubber
24200	24.200	Pesticides and other agricultural chemicals
24300	24.300	Paints, varnishes, printing inks etc.
24410	24.410	Basic pharmaceuticals
24420	24.420	Medicines
24510	24.510	Soaps, detergents and polishing preparations
24520	24.520	Perfumes and toilet preparations
246	24.6	Other chemical products
24700	24.700	Man-made fibres
251A	25.110-120	New and retreaded tyres and tubes
25130	25.130	Other rubber products
252	25.2	Plastic products
26110	26.110	Flat glass
26120	26.120	Shaped and processed flat glass
26131	26.131	Bottles and glass containers
26132	26.132	Household and ornamental glass
26140	26.140	Glass fibre
26150	26.150	Other glass products including technical glassware

262	26.2	Ceramic products except non-fire-resistant for construction purposes
2630000	26.300.00	Ceramic floor and wall tiles
26400	26.400	Bricks, tiles and other construction products, in baked clay
265	26.5	Cement, lime and plaster
266	26.6	Concrete, cement and plaster products
2670	26.70	Stone goods
268	26.8	Other non-metal mineral products
27100	27.100	Iron and steel and ferroalloys
27100X		Scrap iron
272	27.2	Iron and steel tubes
273	27.3	Other primary products of iron and steel and ferroalloys
274	27.4	Non-ferrous metals
274X		Non-ferrous metal scrap
275	27.5	Iron and non-ferrous metal castings
281	28.1	Structural metal products
28210	28.210	Cisterns, tanks, reservoirs and other containers of metal
28220	28.220	Central heating radiators and boilers
28300	28.300	Steam generators except central heating boilers
28400	28.400	Forging, pressing, stamping/roll forming of metal;not for the purpose
285	28.5	Coating and plating of metal, contract metal work
286	28.6	Cutlery, tools and other hardware products
287	28.7	Other metal products
291	29.1	Machinery for the production and use of mechanical power, except air
292	29.2	Other general purpose machinery
293	29.3	Agricultural and forestry machinery
2940	29.40	Machine-tools
29510	29.510	Machinery for metallurgy
29520	29.520	Machinery for mining, quarrying and construction
29530	29.530	Machinery for food, beverage and tobacco processing
29540	29.540	Machinery for textile, apparel and leather production
29550	29.550	Machinery for pulp, paper and paperboard production
29561	29.561	Plastic and rubber processing machinery
29569	29.569	Miscellaneous other special machinery
29600	29.600	Weapons and ammunition
29711	29.711	Refrigerators and freezers, washing machines and other white goods
29719	29.719	Other domestic electric appliances
29720	29.720	Non-electric domestic appliances
30010	30.010	Office machinery and parts for such machinery
30020	30.020	Computers and other data processing equipment
31100	31.100	Electric motors, generators and transformers
31200	31.200	Electricity distribution and control apparatus
31300	31.300	Insulated wire and cable
31400	31.400	Batteries and accumulators
3150	31.50	Lighting equipment, electric lamps and lighting tubes
316	31.6	Other electrical equipment
32100	32.100	Electronic components
32200	32.200	Television and radio transmitters, apparatus for line telephony and lin
32300	32.300	Television and radio receivers, sound or video recording apparatus
33101	33.101	Medical equipment
3310200	33.102.00	Dentures
33200	33.200	Instruments and appliances for measuring, checking, testing
3330000	33.300.00	Instruments for industrial process control
33400	33.400	Optical instruments and photographic equipment

33500	33.500	Watches and clocks
34100	34.100	Motor vehicles
34100X		Used cars
34200	34.200	Bodies for motor vehicles; trailers, semi-trailers
34300	34.300	Parts and accessories for motor vehicles and engines
35110	35.110	Ships and boats
35110X		Used ships
35120	35.120	Pleasure boats
35200	35.200	Railway locomotives and rolling stock
35300	35.300	Aircraft and spacecraft
35410	35.410	Motorcycles
35420	35.420	Bicycles
35430	35.430	Invalid carriages
3550000	35.500.00	Other transport equipment
361	36.1	Furniture
362	36.2	Jewellery, gold and silver articles
36300	36.300	Musical instruments
36400	36.400	Sports goods
36500	36.500	Games and toys
366	36.6	Miscellaneous goods
3710000	37.100.00	Recycling of metal waste and scrap
3720000	37.200.00	Recycling of non-metal waste and scrap
37200X		Wastes
4010002	40.100.02	Used fuel elements in nuclear reactors
40100A	40.100.01+03	Electricity and distribution of electricity
40200	40.200	Manuf. gas and distribution of gaseous fuels through mains
4030000	40.300.00	Steam and hot water supply, incl cold water/ice for cooling
41000	41.000 + 90.001.01	Supply of water including sewerage
45	45	Construction
50A	50.20+ 50.400.04	Repair of motor vehicles incl. motorcycles
527	52.7	Rep household/personal articles
5A		Commissions generated by resident activities incl. merchanting 93-99
5AA		Commissions
5AB		Merchanting
5B		Commissions, imports
5C		Trade m+C324argins
551	55.1	Hotel services
552	55.2	Camping and other accommodation services
55A	55.3-4	Restaurant and bar services
555	55.5	Canteen, catering and central kitchen services
60100A	del 60.100.01-02	Passenger transport by railway
60100B	del 60.100.01-02	Passenger transport by railway: contract
60100C	60.100.03-10	Goods/ore transport
6021A	del 60.21	Passenger transport (public transport)
6021B	del 60.21	Goods transport (public transport)
60220	60.220	Taxi transport
60230	60.230	Passenger transport, bus
60240	60.240	Road transport, goods
60300	60.300	Transport via pipelines
61A	61.101.01,.102.01,.200.01-02	Passenger transport, boat/ship
61B	61.101.02-05,.102.02-07,.200.03-07	Goods transport, boat/ship

61C	61.102.08-09,.200.08-09	Hire of ships and boats
62A	62.100.01, .200.01	Passenger transport, air
62B	62.100.02-04, .200.02	Goods transport, air
62C	62.200.03	Hire of aircraft
62300	62.300	Space transport
63110	63.110	Cargo handling
63120	63.120	Storage and warehousing
63210A	63.210.05	Parking services
63210B	63.210.03-04	Toll road and bridge services
63210C	63.210.01-02+.05-06	Other supporting land transport activities
6321OPEA		Pub. prod. for own fin. cons. Supp. land transport act.
63220A	63.220.01	Port services
63220B	63.220.02-04	Pilotage and other navigation services
63220C	63.220.05-06	Other supporting sea transport activities
63230	63.230	Other supporting air transport activities
63301	63.301	Package tours by air and bus, domestic and foreign
6330A	63.302-303	Other travel organising and tourist assistance activities
633OPEA		Pub. prod. for own fin. cons. Travel agencies
63400	63.400	Other transport agency services
641	64.1	Post and courier activities
64201A	64.201.01-11	Telecommunications services excluding mobile telephony
64201B	64201.12	Mobile telephony
64202	64.202.01-02	Broadcasting services, television and radio transmission
64203	64.203	Cable services, television and radio services
65B	65.	Banking services & other financial intermediation
65A		FISIM
6601	66.01	Life insurance
66020	66.020	Pension fund services
66030A	del 66.030	Non-life insurance
66030B	del 66.030	Reinsurance
67	67	Activities auxiliary to financial intermediation
70201A	del 70.201.00	Imputed rentals for owner-occupiers
70201B	del 70.201.00	Imputed rentals for secondary residences
70201C	del 70.201.00	Actual rentals paid by tenants
7020A	del 70.202-209	Other real estate letting
7020L	del 70.202-209	Other real estate letting (public sector internal)
7020PK	del 70.202-209	Other real estate letting (public sector internal)
7020S	del 70.202-209	Other real estate letting (public sector internal)
70A	70.1 + 70.3	Real estate management etc.
71100	71.100.00	Motor vehicle hire (cars and vans)
71100A		Car benefits
71210	71.210	Hire of other land transport equipment without driver
71220	71.220	Hire of ships and boats without master
71230	71.230	Hire of aircraft without crew
713	71.3	Hire of machinery and equipment
7140	71.40	Hire household articles/goods for personal use
7220	72.20	Computer system and software consultancy
7220EG	72.20	Computer systems/software produced on own account
72500	72.500	Maintenance and repair of office and accounting machinery
72A	72.1+3+4+6	Other data processing services
73	73	Research and development
73S		Research and development (public sector internal)

73OPEA		Pub. prod. for own fin. cons. R&D
741	74.1	Legal and business consultancy
741A		Licence, patent and royalty services
741S		Legal and business consultancy (public sector internal)
742	74.2	Architectural and technical consultancy
742A		Construction services abroad
742S		Architectural and technical consultancy (public sector internal)
743	74.3	Technical testing and analysis
743S		Technical testing and analysis (public sector internal)
744	74.4	Advertising services
745	74.5	Labour recruitment and provision of personnel
746	74.6	Investigation and security activities
746S		Investigation and security activities (public sector internal)
747	74.7	Cleaning and chimney-sweeping
748	74.8	Other business services
75A	75.11, 75.21	General public service activities
75B	75.1 exkl 75.11	Other public administration
75BPK		Other public administration (public sector internal)
75BS		Other public administration (public sector internal)
75C	75.2 exkl 75.21	Defence, law enforcement and fire protection
75CS		Defence, law enforcement and fire protection (public sector internal)
75OPEA		Pub. prod. for own fin. cons. Public administration
801	80.1	Primary education
802	80.2	Secondary education
803	80.3	Higher education
803S		Higher education (public sector inernal)
804	80.4	Adult and other education
804S		Adult and other education (public sector internal)
80OPEA		Pub. prod. for own fin. cons. Education.
85A		Health & social services (pub.sector internal) Municipalities' sales to co
85B		Health & social services (pub.sector internal) County councils' sales to
851A	85.110 + del 85.120	Hospital activities
851B	del 85.120	Medical practice activities
85130	85.130	Dental practice activities
85140	85.140	Other human health activities
85140S		Other human health activities (public sector internal)
851OPEA		Pub. prod. for own fin. cons. Human health activities.
85200	85.200	Veterinary activities
853A		Child care
853B		Care of the elderly and disabled
853C		Pers. assistant
853D		Individual and family welfare
853OPEA		Pub. prod. for own fin. cons. Care and social services.
90	90 ej 90.001.01	Sewage and refuse disp.
911	91.1	Business, employers' and professional org.
912	91.2	Activities of trade unions
9131000	91.310.00	Activities of regligious organizations
913A	91.320-330	Activities of political organizations and other organizations n.e.c.
91HPEA		NPISH prod. for own fin. cons. Organisations and religious activities
91OPEA		Pub. prod. for own fin. cons. Business employers' and professional orga
921	92.1	Motion picture and video activities
922	92.2	Radio and television activities
9231	92.31	Artistic and literary creation and interpretation

923A	rest 92.3	Theatre, entertain.
924	92.4	News agency activities
925	92.5	Library, archive and museum activities
925S		Sporting activities
926	92.6	Sporting activities
92B		Originals
9271	92.71	Gambling and betting activities
9272	92.72	Other recreational activities
92OPEA		Pub. prod. for own fin. cons. Culture
9301	93.01	Laundering and dry-cleaning activities
9302	93.02	Hairdressing and other beauty treatment
9303	93.03	Funeral and related activities
9304	93.04	Physical well-being activities
9305	93.05	Other service activities
9500000	95.000.00	Private households with employed persons
9900000	99.000.00	Extra-territorial organizations and bodies

Supply and use not distributed by product group

99901	Consumption by Swedes abroad
99902	Foreign consumption in Sweden

Source: National Accounts

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http://www.scb.se/pr0801-en

(*) Paper can be found on Voorburg Group website:
http://stds.statcan.ca/english/voorburg