

Review of computer and related activities

Mical Tareke

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Foreword

As part of the process to improve economic statistics, producer price indices for services, Services producer price indices (SPPIs), were developed a few years ago. The primary aim of SPPIs is to measure price trends in business services. Services production has made up a large share of Sweden's gross domestic product (GDP) for a long time, but relevant price indices were not developed to any great extent before the year 2000. This can partly be given historical explanations: commodities have previously made up a dominant part of the economy and economic statistics have also been focused on commodities. Another reason is that measuring price trends in services is complicated.

As another step in improving economic statistics, regular reviews are made of the developed indices. This is because many industries are constantly changing at the same time as we price statisticians gain more experience from different industries and countries and can more clearly see improvement opportunities.

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1 Summary

This report discusses the review of price indices in industry SNI 72 Computer and related activities. The category includes six sub-groups, presented in the table below.

72.1	Hardware consultancy
72.2	Software consultancy and supply
72.3	Data processing
72.4	Data base activities
72.5	Maintenance and repair of office, accounting and computing machinery
72.6	Other computer-related activities

There is a considerable need for a review of this industry due to its rapid, constant development. Pricing mechanisms, services and companies in the industry change quickly and price measurement methods therefore need to be constantly adapted to be able to identify price trends. The report also discusses the problem of "offshoring" from a price measurement point of view and undercoverage of price indices in SNI 72.

"Offshoring" relates to a part of the finished product for sale in Sweden being produced overseas.

The review of SNI 72 began during 2007 and will continue during 2008.

During 2007, a number of company visits were carried out to collect as much data about the industry as possible.

A new form for companies in SNI 72.2 was developed and tested and the conclusion is that more changes need to be implemented.

2 How it is done today

2.1 Sampling

The sampling procedure functions in much the same way as in most other SPPI surveys. Companies are selected with the help of a PPS sample, using the Statistics Sweden Business Register as a sampling frame. Size of turnover and number of employees are taken into consideration when drawing the sample. The largest companies are selected with 100 per cent certainty. A cut-off point of 10 employees is used to ensure the burden on data providers is not too heavy. These companies can then themselves select the service that are representative of their activities.

2.2 Price measurement methods

The target variable is the price of hardware consultancy services, system and software consultancy services, data processing, data base activities, maintenance and repair and other computer-related activities, actually paid by the customer. Value-added tax (VAT) and other taxes are not included.

SNI 72 includes the following six sub-groups.

SNI 72.2 Software consultancy and supply, under which Publishing of software, SNI 72.210, and Other software consultancy and supply, SNI 72.220 are classified.

Specified hourly rates are requested for SNI 72.220 and 72.210. The questions are identical, albeit for different samples of companies. The services measured are presented below:

Services	Skill level ¹	Sub-groups
Project manager	3	-
IT-architect/systems designer	3, 4	-
Systems analyst	2	-
Systems programmer	2, 3	Program

¹ Verva's (Swedish Administration Development Agency's) skill classification
http://www.verva.se/web/t/Page___1803.aspx

		language
Systems engineer	3	-

Operating services

Operating services is an amalgamation of 4 different SNI groups

72.100- Hardware consultancy

72.300- Data processing

72.400- Data base activities

72.600- Other computer-related activities

The prices measured are for support services, server monitoring, back-up, data storage, data communication monitoring and physical location of computers.

Maintenance and repair of office, accounting and computing machinery, SNI 72.500

The prices measured are for maintenance, repair and installation of computers, printers and servers. Consumable supplies, colour cartridges, etc., shall not be included in the prices.

2.3 Weighting and calculations

An index is calculated for each SNI group by first computing an index for each company and then weighting all companies together geometrically, where large companies have their own weighting. Another step is added for operating services, in which 4 different SNI groups are weighted together arithmetically to give a index with weights. Finally, all the main groups are weighted together arithmetically to form a total index.

3 Problems

3.1 Price measurement methods that use hourly prices do not reflect productivity

This method is different from other price measurement methods in that the price of the definitively supplied service is not identified. Instead, the time used to produce the service is used as a measure. This method is problematic since hourly rates represent pricing mechanisms rather than prices of services actually performed. The price of an actual service is made up of all payments to the service supplier, and it is this total price, rather than the hourly rate, which the service purchaser is interested in. This is also the price which price statisticians should use, if possible.

Changes in productivity are not reflected in the hourly price since the amount of work that can be performed in an hour can change without the price being changed.

3.2 Rapid changes in the industry

The computer processing industry is under constant and rapid change. The services and the way in which they are offered are constantly changing, as is the pricing.

3.3 Offshoring

Another problem as regards measuring SPPI for computer processing activities is "offshoring". "Offshoring" is when the production of one part of a service has been imported from overseas. Offshoring can lead to substantial price reductions without the product changing from a user perspective. The substantial price reduction is due to programming done overseas

being much cheaper than domestic programming. Should the entire price reduction be reflected in indices? Principles governing how these phenomena are to be taken into account must be developed.

3.4 Undercoverage of services

Within the industries included in operating services, there are several services not covered by the current survey. This is true for example of services such as hardware consultancy, scanning, web-hotels, online publishing, data protection, database publishing, database development and online search engine services. These service should also be included in any future survey.

4 Possible improvements

4.1 Price measurement methods

Price measurement methods base on transaction prices provide a better measure of productivity changes than price measurement methods based on hourly rates. One of the chief goals of the review of computer and related activities is to be able to convert to a price measurement method based on transaction prices for services.

4.2 Review of the industry

Visits mostly to the large companies in the industry have been made to examine the types of services supplied, pricing, etc. In addition to companies, the trade organisation for the industry has also been contacted.

4.3 Cooperation with the Swedish National Accounts and with other countries

The review of the industry has been coordinated with the Swedish National Account's need for good deflators. National Accounts representatives have participated in the company visits so that they could give their opinions on price measurement. Besides good cooperation with the National Accounts, we also participate in international meetings, seminars, conferences, etc., to collect as much information about the industry as possible.

4.4 Undercoverage operating services

To be able to measure prices for the services in industries 72.100, 72.300, 72.400 and 72.600, the survey for computer operating services needs to be reviewed.

5 Implemented changes

5.1 The new form for SNI 72.2

A new form was designed and during 2007, the companies in SNI 72.2 *Software consultancy and supply* have been given the opportunity to choose the new form for computer consultants. The companies affected were asked to choose some service which they feel are representative and repetitive for their activities and then submit average prices invoiced for these services.

A third of the companies have used the new form and these are equally distributed between SNI 72.210 *Publishing of software* and SNI 72.220 *Other software consultancy and supply*. The companies have used the option of choosing the consultant categories relevant to their activities. However, those who have submitted data on the new form have submitted hourly rates for different consultancy categories, apart from one company that submitted prices for services. The form needs further adjustment and more contact with the companies needs to be taken.