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CHALLENGES IN THE DEVELOPMENT OF A PRICE INDEX FOR COMPUTER SERVICES IN THE UK

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Introduction

UK development of a CSPI for computer services started in 1995. Initially difficulties were encountered with the industrial classification (SIC 92) and finding suitable price collection mechanisms. These were discussed in a paper presented at the 1999 Voorburg conference. It was entitled 'The development of a Corporate Services Price Index for computer and related activities in the UK'.

At the time, accurate categorisation by business sector was becoming increasingly complex due to a growing trend towards the supply of multiple services and because the boundaries between the various business sectors were becoming indistinct. In spite of this, a range of computer services products was chosen, mechanisms for pricing them were put in place and an experimental computer services price index was launched. Results were published for the first time for Quarter 4 1996.

In 1999 the index was suspended from inclusion in CSPI results up until that time two years data had been collected. A significant reduction in coverage over time, difficulties with quality adjustment and dealing with changes in the specifications of services being priced, and a product list that no longer adequately reflected the division of activities within the industry had meant the index was judged not to be of sufficient quality.

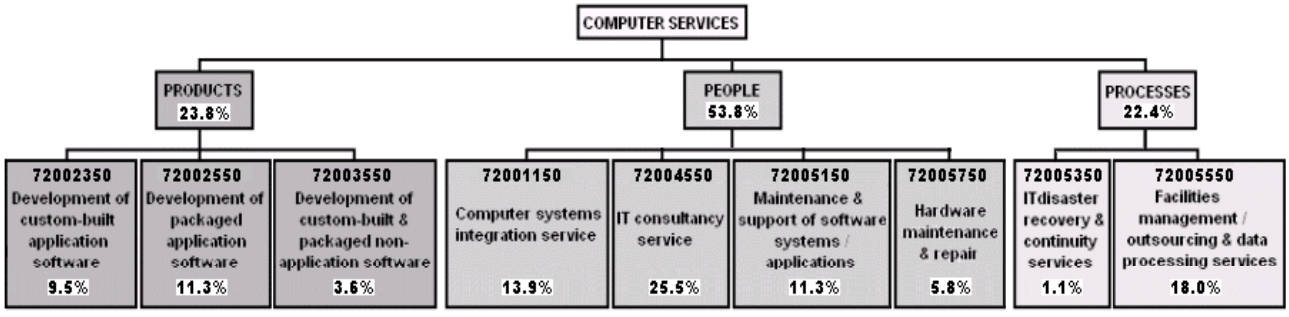
Building a framework

A new project to re-develop a CSPI for computer services was set up and a new product list developed in conjunction with ONS's Computer services survey 2000, which collected data on sales by type of service. Additional information regarding the Computer services survey is available on the National Statistics website[1].

Development of the product list was achieved through consultation with an industry-working group, businesses within the sector and other national statistical organisations. The new list has many similarities to the existing EC Classification by Activity (CPA) and UN Central Product Classification (CPC). Two noticeable differences are the categorisation by 'Products, people and processes' and the new software categories. (i.e. custom and non-custom application and non-application software)

Eventually the categories in the product list were consolidated into a "family tree", which represents business activity within the sector. The CSPI family tree including weights derived from the Computer services survey sales data (see Appendix A) can be seen in Figure 1.

Figure 1 - CSPI Computer services family tree



[1] www.statistics.gov.uk/downloads/theme_commerce/SERVCOM2000.pdf

It is noticeable when comparing the family tree and product list, the 'Information services' and 'Other' categories have been excluded. It was concluded the 'Other' category has minimal weight and would not be collected and the industry working group considered 'Information services' not to be part of the computer services sector even though large numbers of companies classified to the sector are involved in it.

In addition to providing structural and weighting information, the aforementioned computer services survey brings benefits to sampling for price collection. All responders to the survey who are known to be providers of the computer services in question are potential new recruits for the quarterly pricing survey. Indeed, a pilot sample has already been selected, as described in the next section. Knowing the responders' activity and sales assists in designing a sample that is reasonably representative, although it needs to be borne in mind that the sales and activity data relate to the year 2000.

Current approach

The longer-term intention is to re-develop a price index covering the whole sector based on the new framework. There are several obstacles that will need to be overcome in order to achieve this objective. These include:

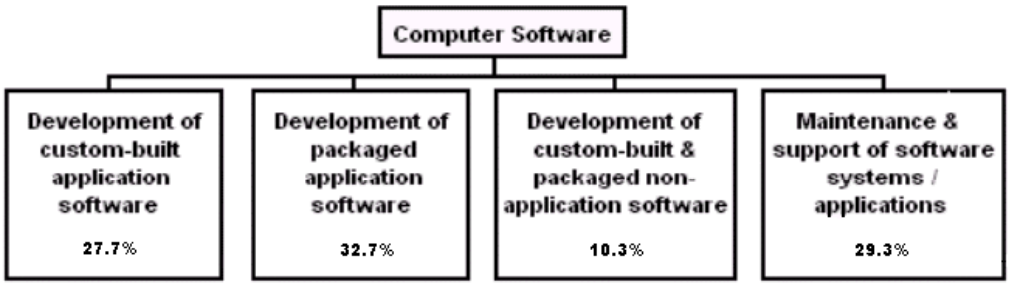
- Adequate coverage will be difficult to achieve as companies of less than 10 employment account for approximately 30% of turnover within the sector. According to the ONS Business Register there are over 100,000 computer services companies of this size in the UK.
- Attrition of the sample will need to be overcome, the original computer services CSPI was severely affected to the point that major activities within the sector were not represented. A sample augmentation process is being considered to help alleviate the problem.
- In order to pinpoint quality-affecting factors and improve the relevance of specifications a consistent approach for defining item descriptions will need to be developed. The descriptions will be more detailed to allow easier understanding for contributor and data validation staff.

As the need for a national accounts deflator is so great and so many problems producing an index had already been experienced it was decided to concentrate initially on a particular area and consider using it as a proxy for the industry. As nearly 35% of sector activity by turnover is software based[2] and the majority of data salvaged from the original computer services CSPI also related to software this was deemed the most suitable activity to measure for a developmental pilot index.

A small sample of 50 contributors has been recruited for the pilot software survey. The Computer services sales survey panel acted used as a sampling frame (although businesses with less than 10 employees were excluded). The newly recruited companies will be classified into a software activity structure, which has been derived from the CSPI family tree and is shown in Figure 2.

[2] Source - ONS's Computer services survey 2000

Figure 2 - CSPI Software services family tree



We will utilise the information obtained from the new suppliers to develop suitable price collection mechanisms. There is also a requirement for more relevant detailed item specifications and a consistent approach for dealing with quality change. Consultations with responders will be carried out.

Suitable price collection mechanisms

When a CSPI for computer services was originally developed, the most appropriate pricing methods were considered to be actual transaction pricing and model contract pricing.

In theory the model pricing method should reflect changes arising from current market forces, improved quality of the service provided from the producers' point of view and productivity. However, the accuracy of this information, if at all supplied, depends very much on the integrity of the contributor. As the specified model is not an actual ongoing contract the onus is on the contributor to devote time to estimating what the price would be if it were a real job, taking all the above factors into account. The two price collection methods discussed will be tested for suitability during the process of carrying out the pilot software survey and refined or a different approach adopted if required.

Difficulties with product specifications and quality adjustment

We have encountered many difficulties caused by rapid changes in the specifications of the services for which prices were being collected. In particular, products in the software sector are regularly upgraded, e.g. Microsoft have launched several versions of the Windows operating system in the last 5 years, and this affects the specifications of the computer services that utilise them.

The current method means that upgrades have mainly had a neutral effect on the price index. Where prices for services relating to older versions of software or hardware (i.e. those relating to the base year) have become unavailable, prices for new versions have been accepted. In most cases, the upgrade has been regarded as entirely responsible for the change in price. A commensurate adjustment is made to the base year price and this results in no change to the price index. For some items, price changes have only occurred at the time of an upgrade, so leading to a completely flat price index under the method applied. Further investigation has revealed that, in some cases, it has been unsatisfactory to accept that the change in price is entirely due to the change in product specification.

Appropriate quality adjustment resulting in some degree of change to the price index is often required. This has been attempted for a range of items, e.g. the specification of a facilities management contract needed to be updated to take into account the fact that the new version of the hardware was now easier to support. This meant it required less labour input from the producer and a decrease in contract price had occurred. When dealing with this change several factors were considered, including:

- the price difference;
- the change in the nature and quality of the services being provided, if any;
- how much of the price change is due to the change in specification;

The process is dependent on the co-operation of the contributor and on maintaining an informed dialogue with them (and often on a regular basis).

Roles in the consultative process

Trade associations such as Intellect UK have played a major role in the re-development of a CSPI for this sector, in particular the development of a new product list and industry structure framework. This particular trade association has been instrumental in bringing together its members and other industry bodies into a working group, it has also been a source of information for re-inforcing our sampling frames by providing details of businesses active in the sector.

We also have an ongoing consultative process with large IT businesses such as IBM and Microsoft who are regularly providing feedback and assisting with the development process.

Even though we are already utilising several sources of industry expertise we are hoping to expand this even further. It has been recommended that we contact academic establishments, in particular the world renowned Science and Technology Policy Research Centre (SPRU) at Sussex University.

In addition we will contact other trade associations such as the Institution of Analysts and Programmers who specialise in the software sector, they will be utilised when pin-pointing the specification details required to be able to develop a consistent approach to quality change.

The organisations involved in the development of a computer services CSPI are shown in Appendix B along with others which we aim to contact over the coming months.

Realistic aims

Our vision is the development of a set of price indices covering all activity within the computer services sector within the next 3-4 years. These will be combined to produce a price index representing the whole industry. This is a major challenge considering the complex nature of the industry and the problems encountered to date, but we hope it can be achieved by a series of short term development projects starting with a pilot software survey.

The pilot survey should allow us to test and refine techniques for dealing with the complexities of price collection, item specification and quality change for the software sector. If the pilot is successful towards the end of 2002,it is intended that a much larger recruitment of contributors will take place, the lessons learnt from the pilot will be applied and the index made available in mid 2003. Once this has been achieved the next stage of development is likely to cover outsourcing and facilities management which is a high profile and expanding activity within the sector.

Appendix A

Computer Services Pilot Survey Results by Service Type – by Businesses Classified to Division 72

GB, 2000

Service Product Code	Service Description	£m
72001150	Computer Systems Integration Service - integration of different computer software products, with or without the associated hardware, to form a complete system	4,190
72002350	Development of Custom Built Application Software products for customers	2,875
72002550	Development of Packaged Application software products for customers i.e. programs developed and sold as a product. (Software licences included)	3,402
72003550	Development of Non-Application Software for customers (System Software, Tools, Utilities) whether custom built or packaged. (Software licences included)	1,071
72004550	IT Consultancy Service	7,687
72005150	Software Systems or Applications Maintenance and Support	3,403
72005350	IT Disaster Recovery / Business Continuity Services	317
72005550	Computer Facilities Management (outsourcing) / Data Processing Services (Includes: Operating the day to day running of clients' computer/network systems; Data entry, Data capture and imaging, Transaction processing; Application Service Provision (ASP) etc.	5,407
72005750	Hardware Maintenance – Repair and/or Maintenance of office machinery, including computing equipment	1,758
72009550	Electronic Information Services - Database Related Activities (without design of specific software) (Including: Database development, i.e. assembly of data from one or more sources ; Data storage; On-line provision of information; Data mining; Directory and mailing list publishing. Excluding "Fulfilment Housing" activity	1,789
72009750	Other computer services nowhere else specified	53

Appendix B

Current Participants in the consultative process:

Intellect UK - (created from merger of CSSA and FEI)

Association of Independent Computer Specialists (AICS)

IBM UK Ltd

Microsoft Ltd

Ovum Holway Group

Potential participants:

British Computer Society

Computing Suppliers Federation (CSF)

Institute of Computer Technology

Science and Technology Policy Research centre(SPRU) - Sussex University

Institution of Analysts and Programmers