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**THE DEVELOPMENT OF A CORPORATE SERVICES PRICE INDEX FOR
ACCOUNTANCY SERVICES**

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SUMMARY

S1. The UK began developing price indices for the service industries generally in the early 1990's and for accountancy services specifically in 1995.

S2. While the UK industrial classification, SIC(92), specifies that accountancy services should include activities such as book-keeping, auditing and tax consultancy in practice large UK accountancy firms are also involved in a significant amount of activity that is classified as business and management consultancy. The UK CSPI for accountancy services sought to collect data on this wider range of activities from the outset.

S3. Initially the price collection mechanism utilised was based on the fee income approach and this appeared to work satisfactorily for smaller firms, but not so for larger ones. So price collection based on model prices was introduced for mainly larger contributors which appeared to work well. So much so that it was decided to convert the original contributors who remained on the fee income collection mechanism to a model prices basis.

S4. The original contributors resisted the change to model prices, which resulted in the suspension of the survey from the first quarter of 1999. However, with the help of some additional contributor support and education work it is hoped to re-start the survey in about 3-6 months time on a model price collection basis.

S5. Using stratification by turnover, a sample of less than 5% of the population numbers achieved an estimated turnover coverage of greater than 50%. All the largest accountancy firms and a substantial proportion of the medium sized ones were included in the sample.

S6. Because of the lack of structural survey data in sufficient detail such as exists for the production sector, the weighting information used in combining together the price relative data collected from contributors has also been derived from the CSPI survey.

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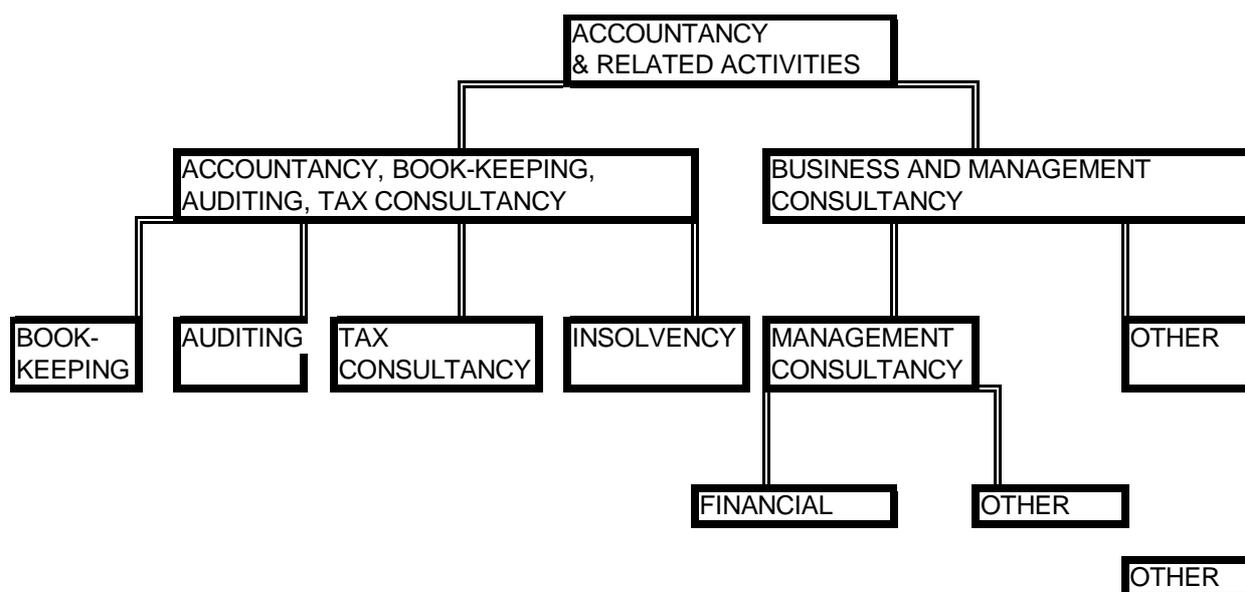
BACKGROUND

1. Development of service sector price indices began in the UK in the early 1990's as an adjunct to the familiar PPI system for estimating prices in the production sector. Initial efforts concentrated on price collection in a small number of "simple" industries where collection methods used were very much those already in place for the PPI. The first inquiries were voluntary and went to around 150 companies in five industries.
2. In 1995 the Business Statistics Group of the Office for National Statistics began a more serious investment in the development of service sector prices by setting up a proper branch structure (Corporate Services Price Index branch) and employing a professional economist and other staff resources to take things forward. The range of industries tackled has increased substantially since then and a range of price collection methodologies are now employed to cope with the problems of defining prices in the more "difficult" industries, many of those providing professional services for instance.
3. The development of service sector prices in the UK has not been in isolation; every opportunity has been grasped to take advantage of the advances made by other countries in this field. ABS, INSEE, StatsCanada and the US Bureau of Labour Statistics have all made significant contributions to knowledge and have experience, like the UK, of the problems of live data collection.
4. Development of price statistics for accountancy services began in 1995, with the first quarterly prices being collected in Q2 of 1995. Price collection continued until the 2nd quarter of 1999 when the survey was temporarily suspended. The underlying reasons for the UK's experience with collecting prices for accountancy services are described below.

DEFINITIONS AND CLASSIFICATION

5. As implied by their name, corporate services price indices set out to measure the price changes in the services which businesses provide to other businesses or intermediate users. Prices of services provided to final consumers are covered by the UK's CPI, the Retail Price Index (RPI) and not by the CSPIs. Thus specifically, the accountancy services for which price collection has been attempted are those provided to businesses rather than private individuals or households.
6. Accountancy services are classified under Division 74 of the UK Standard Industrial Classification (1992), known as SIC(92). The SIC(92) classification is identical down to the four digit level with the European NACE Rev 1 system and both map to ISIC Rev 3, although not exactly below 2 digit division level. Division 74 comprises the Other Business Activities part of Section K of SIC(92) and accountancy services, defined as *Accounting, book-keeping and auditing activities; tax consultancy* by SIC(92), are classified as 74.12.

7. A peculiarity of large UK-based accountancy firms is the extent to which business and management consultancy activity forms a major part of their business. To reflect this aspect of UK accountancy firms' endeavours, the CSPI for accountancy was developed to also cover these management consultancy aspects, which are actually classified to SIC(92) 4 digit class 74.14 (*Business and management consultancy activities*). So in practice the UK CSPI 'Accountants and Related Services' encompasses at the next level down in the index hierarchy both SIC(92) 74.12 and, at least in part, 74.14. Definitions of Classes 74.12 and 74.14 as given in SIC(92) are attached at Annex A. Businesses whose main activity is business and/or management consultancy activity have not been asked to provide data as part of the 'Accountants and Related Services' survey.
8. The diagram below shows the various elements of the index structure used to collect data for the CSPI 'Accountancy and Related Services'. Apart from the addition of a separate lower level branch of the tree for 'insolvency', the left-hand main branch reflects the main activities defined under SIC(92) 74.12. The mapping is less precise for the right hand main branch as 'public relations activities' are not separately represented, but the branch still reflects the main activities in SIC(92) 74.14.



9. Data collection was started at the lowest level in each main branch of the tree. Hence for the accountancy branch, price collection was undertaken for the activities:
 - a) Book-keeping
 - b) Auditing
 - c) Tax consultancy and
 - d) Insolvency.
10. For the management consultancy branch, price collection was for the financial and other categories of management consultancy and for the non-management consultancy other category.

PRICE COLLECTION MECHANISMS

11. Two price collection methods have been used to collect data for Accountancy and Related Activities. The first, which was used for the whole industry at the outset, is simple fee income. The second method, introduced when difficulties with the data collected under the fee income approach began to emerge, was model prices. Definitions of these two methods in the context of accountancy and their advantages and disadvantages are described below.

12. Fee Income approach

The fee income approach simply asked the contributor to provide total fees received in the quarter and total hours worked in the quarter for each of the seven activities defined by the family tree where price collection was required. Only data for activities which were significant elements of the contributor's normal business were requested.

Advantages

Data was readily available from contributors' management information systems and the data concept was easily understood.

Disadvantages

Data received reflected the ebbs and flows in the contributors' business, including timing of income received, rather than the actual transaction prices. Resulting indices were very volatile, reflecting business cycles rather than prices. It was not possible to control for quality and productivity changes and changes in the mix of human resources used.

13. Model Prices approach

The model price approach asked the contributor to provide a quotation based upon an assignment with a representative mix of staff. The assignment could be actual real pieces of work carried out during the period or hypothetical assignments. Assignments though were to be typical of the type of work performed in each of the activities defined in the family tree. Contributors were asked to update the charging information for each real or hypothetical assignment each quarter. This involved providing data on the hours worked by each grade of staff employed on the assignment together with the standard and achieved charge rates per hour for each grade. Achieved charge rates were to take into account any discounts and preferential terms offered to obtain business.

Advantages

Main advantages are the maintenance of consistency since the same project is re-costed on subsequent occasions and service quality is in theory unchanged.

Disadvantages

Contributors' compliance costs were higher and some had difficulty in fully understanding the methodology at first, both of which had an adverse effect on survey response and drop-out rates. It was clear that in a number of cases current market conditions were not reflected as achieved chargeout rates did not change.

SURVEY DETAILS AND PROBLEMS ARISING

14. The UK accountancy industry has a total turnover of around £7 billion per annum and an estimated value added GDP weight of around 8 parts per thousand. Stratifying by size in turnover terms results in three fairly homogeneous groupings:
- a) A handful of very large firms which account for around 30% of total industry turnover.
 - b) A band of around 50-70 medium sized firms.
 - c) A large number of small firms.
15. In practice a more precise stratification by turnover band was constructed and random samples selected from each band, although in the top band all the firms in the population were selected for the sample. Since accountancy services were the main activity of the businesses actually classified under SIC(92) 74.12 in the ONS' business register, the population numbers and turnover data used below were drawn from that register, known as the Inter-Departmental Business Register (IDBR). The stratification and sample size data are shown in the table below:

Stratum	Turnover Band (£000)	Proportion of industry turnover in stratum (%)	No. of firms in stratum	Sampling Fraction (%)	Expected sample size
1	50,000+	47	13	100	13
2	5,000-49,999	11	53	50	27
3	0-4,999	42	1500	2	30
Total		100	1566		70

The sample selected amounted to 70 firms covering around 53% of the turnover in the industry. All of the very largest firms were selected together with 50% of the medium sized ones and a small sample of smaller firms. Very small firms with less than 10 employees were excluded from the sample and population.

16. Examples of the questionnaires used to collect data under the two price collection mechanisms attempted are shown at Annexes B and C. The form at Annex B is a first draft of the "recruitment" form for the fee income approach, used when firms were approached to provide data for the first time in 1995. Annex C a copy of the (regular) form used to collect model price information on accountancy services from the beginning of 1997. Whereas the fee income form was used for all respondents to the survey at the outset, the model price form was introduced mainly for large and medium sized firms.
17. At this point it is worth considering the ways in which UK accountancy firms charge for their services. Charging is almost uniformly determined on the basis of fees for contracts, usually of a one-off nature. There are no services for which a standard fee is charged.

18. The most common method of charging is for the number of hours required for each grade of staff to complete a job to be established, charge-out rates applied, and a total fee identified. However, the actual fee charged is rarely equal to this sum. Discounts will be applied, depending on the nature of the customer and, most critically, on the overall state of the market. There are few continuing contracts outside book-keeping.
19. Although in principle the price per unit of accounting service performed is what is required, this is not possible because of the method of charging used by accountancy firms described above. So collecting data on the basis of charges per period (i.e. quarter) engaged was the chosen route with an intention at some point to attempt to separately measure productivity change in a more limited way. Productivity data could then be used to adjust the data collected on a charges per period basis.
20. Both the price collection methods tried in the UK for accountancy are on a charges per period basis. The first method tried was fee income. This method asked contributors to supply their gross fee income in each of the seven activity areas defined in the family tree (if they performed activity in those areas) plus the number of chargeable hours in each of those activities. Change in the value of work in progress was also to be included. It was emphasised that the fee income and hours charged should relate to exactly the same packages of work. The price statistic calculated was the average fee income per chargeable hour for each activity.
21. Clearly the costs to contributors supplying this data should be low, the data should be readily available in their normal management information systems (MIS). However, the problems lay in the way in which the relevant data was stored in the MIS systems. In many cases the relationship between fee income and chargeable hours was either lost or eroded by the method of treatment. The result was that when gross fee income and chargeable hours totals were retrieved for a whole quarter the two totals were on different bases and the quotient was therefore not meaningful.
22. This in turn led to very volatile behaviour in the resulting indices, producing movements that were not credible. Not all contributors were affected, the problems tended to occur in the larger ones. So a new price collection mechanism based on model prices was developed to cope with these more difficult cases.
23. The model price approach asked contributors to select a real or hypothetical assignment, which was representative of their assignments in each area of activity. Each real or hypothetical assignment was to be defined in terms of the grades of staff involved, the number of hours each grade spent on the assignment and both the standard and achieved or market chargeout rates per hour that actually were or would be applied, again for each grade working on the assignment. Thus a total value for the assignment could be computed using the combination of hours worked and either the standard or achieved chargeout rates. The change in this total value over time is the proxy for price changes over time.
24. The original group of contributors, who changed from reporting on the fee income basis to model prices, seemed to settle down after experiencing some initial problems associated with being presented with a more difficult conceptual task. Once these problems had been ironed out, data of apparently good, consistent quality was supplied.

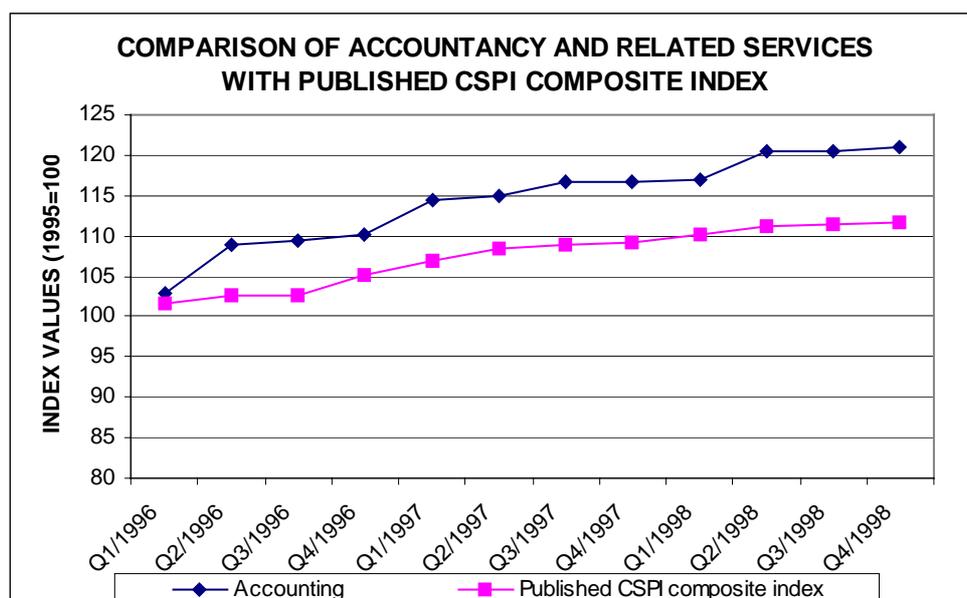
25. As a result it was decided to switch the remaining contributors reporting on a fee income basis to model prices. These contributors had been reporting for some time on this less work intensive basis and a degree of resistance to the change was met, together with the kind of initial problems experienced when the first group of contributors had switched over. Pressure on ONS resources caused by these contributor difficulties was such that the accountancy survey was temporarily suspended in the first quarter of 1999. Hopefully the suspension can be lifted and the survey restarted in late 1999/ early 2000.

INDEX CONSTRUCTION AND DATA

26. At the lowest level indices are constructed by calculating a weighted average of price relatives. Each price relative, constructed from data provided by a single contributor, being the ratio of a price quote for a particular activity in the current quarter compared to the price for that same activity in the base year. The weights were derived from additional turnover data supplied when contributors were first sampled, the turnover being the total for each contributor in that area of activity over a 12 month period. Turnover estimates and thus weights for contributors from non 1-in-1 strata were grossed up appropriately, reflecting the inverse of sampling probabilities.

27. The same estimated turnover data was then used to construct estimates of total turnover which were used as weights to generate higher level indices. This is because of the lack of a service sector equivalent to the EU sponsored PRODCOM survey in the production sector, which provides the relevant weights for the Producer Price Indices (PPIs). A mathematical presentation of the index methodology used is at Annex D.

28. The graph below shows the movement of the Accountancy and Related Services industry level index compared with a composite CSPI index (based on those individual CSPIs regularly published) over the period 1996 to 1998.



Prices charged by the UK accountancy industry to other business customers have risen by about twice the rate that prices for the composite corporate services index (see Note 1 below) have risen over the three year period.

CONCLUSIONS

29. The UK experienced difficulties with its implementation of the fee income approach for accountancy. The initial experiment with model prices was so successful that a more ambitious project to switch all those contributors reporting on a fee income basis to the model price basis was attempted. Unfortunately contributor resistance, probably due to insufficient explanation being provided, led to difficulties in collecting the model price data from this group and these became so great that the survey was suspended.
30. Overall though the UK experience indicates that model pricing is worth pursuing as the main price collection mechanism in accountancy and the intention is to put resources into a suitable re-education programme for contributors so that the survey can be re-started. The alternative is to employ a more sophisticated version of the fee income mechanism, which has been considered for application in other professional services industries. Either way resumption of data collection is expected in around 3-6 months time with regular publication following in a further 12 months or so.

Note 1: The published composite CSPI shown above is constructed only from the 12 individual industries for which data is currently published. These 12 industries represent less than a quarter of the eventual expected coverage of the CSPIs when fully developed.

ANNEX A to UK Voorburg paper on Accountancy Services – September 1999

Extracts from Standard Industrial Classification (1992)

74.12 *Accounting, book-keeping and auditing activities; tax consultancy*

74.12/1 *Accounting and auditing activities*

This subclass includes:

- Preparation of financial accounts, examination of such accounts and certification of their accuracy

This subclass excludes:

- Data processing and tabulation activities even for accounting purposes cf. 72.30
- Management consultancy such as design of accounting systems, cost accounting programs, budgetary control procedures cf. 74.14/2
- Bill collection cf. 74.84/1

74.12/2 *Book-keeping activities*

This subclass includes:

- Recording of commercial transactions from business or others

This subclass excludes:

- Data processing and tabulation activities even for accounting purposes cf. 72.30
- Management consultancy such as design of accounting systems, cost accounting programmes, budgetary control procedures cf. 74.14/2
- Bill collection cf. 74.84/1

74.12/3 *Tax consultancy*

This subclass includes:

- Preparation of personal and business income tax returns
- Advisory activities and representations (other than legal representation) on behalf of clients before tax authorities

This subclass excludes:

- Data processing and tabulation activities even for accounting purposes cf. 72.30
- Management consultancy such as design of accounting systems, cost accounting programmes, budgetary control procedures cf. 74.14/2
- Bill collection cf. 74.84/1

74.14 *Business and management consultancy activities*

74.14/1 *Public relations activities*

This subclass includes:

- Provision of advise, guidance or operational assistance to business and the public service:
 - . Public relations and communication

74.14/2 *Financial management*

This subclass includes:

- Provision of advise, guidance or operational assistance to business and the public service:
 - . Design of accounting systems, cost accounting programmes, budgetary control procedures

74.14/3 ***General management consultancy activities***

This subclass includes:

- Provision of advise, guidance or operational assistance to business and the public service:
 - . Planning, organising, efficiency and control, management information, etc.

74.14/9 ***Business and management consultancy activities not elsewhere classified***

This subclass includes:

- Other provision of advise, guidance or operational assistance to business and the public service:
 - . Management consultancy such as by agronomists and agricultural economists farms, etc.
 - . Arbitration and conciliation between management and labour

ANNEX B to UK Voorburg paper on Accountancy Services – September 1999

Example of data collection form for the initial fee income approach

Please phone free on **0800 220973 (24 hours)**

Contributor ID number:

Period for return:

Activity Reference	Activity	Gross fee income ¹ (excl VAT)	Total hours charged ²	Please quote this number when telephoning with a query

1. Please provide the total gross fee income invoiced for each principal activity shown. Estimates of the breakdown across activities are acceptable. If reasonable estimates are not feasible, please allocate to dominant activity. Please include the estimated realisable value of any change in the value of work in progress.
2. Please provide the total hours charged for the work as invoiced. Where charging on some other basis please estimate the total hours worked by chargeable staff.

ANNEX C to UK Voorburg paper on Accountancy Services – September 1999

Example of data collection form for the model prices approach

IMPORTANT: PLEASE READ THE NOTES BEFORE COMPLETING. For further assistance, telephone us on the number on the front page.

Supplier ref.:

Supplier:

Period for return :

Specimen assignment	Breakdown of assignment (please complete for period given above)					
	Grade of staff	No. of hours needed	Standard chargeout rate (per hour)		Typical market chargeout rate (per hour)	
			Last return	Current	Last return	Current
<p>Please amend the grades of staff and/or hours shown above if they would no longer be realistic for carrying out the specified assignment. Possible reasons include efficiencies through upgraded computer systems or company re-structuring.</p>						
<p>CURRENCY : If any of the details above need to be updated, please amend as appropriate.</p>						

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<p>CURRENCY : If any of the details above need to be updated, please amend as appropriate.</p>						

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Corporate Services Price Indices – basic index construction methodology

Stage 1 level

The very lowest level of the CSPI system, known as Stage 1, actually converts price quotations into an index form by comparing them with the equivalent quotations in the base year and weighting the comparisons together using estimates of turnover that relate to the service being priced in the base year. In many cases there may be more than one price quoted for a particular service by a contributor, but for simplicity below it has been assumed that each contributor supplies only one quote.

So if P_t^j is the price quoted by contributor j at time t and P_b^j is the price quoted in the base year b then

the Price Relative for contributor j at time t =
$$\frac{P_t^j}{P_b^j}$$

The weights derived from the base year turnover applicable to each quote are defined as

follows :- Weight for contributor j
$$W_b^j = \frac{T_b^j}{\sum_{k=1}^m T_b^k}$$

Where T_b^j is the base year turnover that relates to contributor j and m is the number of price quotes in the Stage 1 index.

The Stage 1 index is the weighted mean of the price relatives so at time t the hth Stage 1 index is defined as

$$I_t^{1h} = \frac{\sum_{k=1}^m W_b^k \left(\frac{P_t^k}{P_b^k} \right)}{\sum_{k=1}^m W_b^k}$$

But W_b^j should be based on grossed data which implies that W_b^j is re-defined as

$$W_b^j = \frac{T_b^j \cdot N_b^i / n_b^i}{\prod_{k=1}^m T_b^k \cdot N_b^i / n_b^i}$$

where the subscript i refers to the sample stratum to which contributor j belongs and N_b^i and n_b^i are the population and sample sizes in stratum i in the base year b. However, the construction of the Stage 1 level index remains unchanged.

Stage 2 level

At the next level up indices are weighted by the estimate of total turnover in the base year i.e. for example,

Estimate of total turnover for hth Stage 1 index is

$$T_b^{1h} = \prod_{k=1}^m T_b^k \cdot N_b^i / n_b^i$$

So the 1th Stage 2 index is given by

$$I_t^{2l} = \frac{\prod_k T_b^{1k} \cdot I_t^{1k}}{\prod_k T_b^{1k}}$$

Stage 3 level

Higher levels of index up to industry level are derived in similar fashion to the Stage 2 level indices described above. Derivation of the weights used to combine indices above overall industry level merits separate description as the data relied upon lies outside the CSPI data collection system.