18th MEETING OF THE VOORBURG GROUP

Tôkyô, Japan

October 2003

SESSION 3 PRODUCER PRICE INDEX FOR SERVICES

THE FRENCH APPROACH TO MEASURING PRICE TRENDS IN BUSINESS SERVICES

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The aim of this paper is to **describe all the steps** of the calculation and dissemination of price indices forbusiness services in France. The idea for this article came after visits from foreign delegations and talks held at meetings of the OECD-Eurostat Task-Force on producer prices for services. More than an overview of methods, it gives emphasis to the different steps and the **organisation** used by INSEE to measure price changes in services.

Sections of this article summarise the various phases in calculating price indices, namely:

- **previous studies** before the survey is launched
- **company visits**: choice of services, calculation of weighting
- quarterly survey
- dissemination

In the last section, we will analyse some areas in this process where there is room for improvement.

I) Studies prior to the launch of the survey

We will not be discussing here the question "why calculate price changes in business services, and for whom?". Nevertheless, we should keep in mind that this is an important question on which the entire procedure depends.

For information, the objective – initially – was to calculate price indices for codes 71, 72 and 74 of the French Classification of Activities (NAF). This target was defined by the National Council of Statistical Information. Since 2003, it has also included Telecommunications (code 64 of NAF). The final objective is to cover 75% of the products mentioned; total coverage is mainly illusory as there are sectors where the notion of sale price is irrelevant (in holdings, for example). At the end of 2002, 40% of the sector had been covered. Not all branches of services in which the client can be a company are included in the final objective. Eventually, it is hoped that other branches will be surveyed, for example hotel-restaurants or travel agencies. It should be noted that transport price indices are drawn up in France by the Ministry of Transport, not by INSEE. Finally, it is **producer prices on the national market** which are measured, **not export prices.**

The first step is to **choose a branch**, in which we will measure price changes. Traditionally, until 2002, this choice was made using three criteria:

- i) the requirements of national accountants, in terms of the relevance of the indicators used as deflators in the absence of a price index for the branch.
- ii) the size of the branch, in terms of turnover
- the a priori greatest or least difficulty in defining a relevant price concept and implementing a method.

At the start of the process (from 1995), criterion iii) was the most important criterion. The first indices came into being for cleaning, security and rental. Subsequently, it was a combination of criteria i) and ii) which explained why indices for engineering, advertising and IT services were chosen. From 2002, the situation changed with the setting up of the OECD-Eurostat Task-Force for monitoring prices in services. From now on, the objective in the next few years (2003-2005) will be to develop price indices for branches given priority 1 by Eurostat. All the branches given priority are specified in the annual and long-term work objectives shared by all European countries.

Once the branch has been chosen, the first step consists of **obtaining information about it.** This initial information may be quantitative (turnover, concentration of the branch, composition of workforce, etc.) or qualitative (way the branch operates, different sub-branches, recent events, regulations). Qualitative information is often obtained from the internet sites of professional organisations or companies. At this stage, it is a question of collecting information about the branch, independently of prices initially, so that we gain a better understanding of it.

An initial meeting with the professional organisation takes place, as early as possible in the process. The purpose of this first meeting is to explain the operation – together with continuing to obtain information about the branch – and to obtain a list of company contacts so that so-called "test visits" can be made. The involvement of professional organisation in this operation varies but it is certainly beneficial to the smooth running of the operation and the quality of the results obtained.

Incidentally, we notice that they are becoming more and more involved with, for example, the organisation of quarterly follow-up meetings. After this initial contact, the professional organisationrefers this operation to its board or a specific committee (usually the economic committee). Contact is usually made again after this board. A second meeting may be organised before the test visits.

After this information collection phase and the meeting with the professional organisation, we have to consider the main question: which method of price monitoring should be used? In this regard, we have two principal sources of information: international experience in the field and test-visits to companies. We find out about international experience from contributions to the Voorburg Group or from Task-Force meetings about prices for services. Similarly, the OECD summary document tells us which countries have experience in this field. Contact is then made with colleagues in other countries who have experience in order to find out about the methods used. The purpose of test visits is then to compare these experiences with the real situation in the branch in France: how are prices arrived at? which methods of fixing prices are used? which management indicators are available? It is important to obtain names of contacts in companies through the professional organisation so that testvisits can be organised. This ensures that we can go back to companies without any problem and we have a suitable contact for helping us with our task of measuring prices. At the test-visits, the situation in the company being visited is discussed, not the whole branch. However, no facts and figures are collected at these visits. It is mainly a case of understanding price-fixing methods and testing possible monitoring methods with regard to the management indicators available. Three to five test visits may be enough for this. We just have to make sure that we visit companies of all sizes, and not overlook the smallest ones. At these test visits we also continue to collect information about the branch and we define the classification for this survey, in association with the national and international classification in this field. Field officers take part in the test visits.

At the same time as the test visits are taking place, we prepare the survey sample. The general principle is to select the largest companies on an exhaustive basis and the others by sample. The threshold (in terms of turnover) above which companies are systematically surveyed has not been set in theory. It depends on the concentration in the sector. Sampled companies are not reweighted. This therefore implies that price trends do not depend on company size. This point has never been really tested in the case of business services. It should be soon, in order to improve the method of surveying. In the case of companies not selected on en axhaustive basis, a sample is selected by stratum with size criteria per product. The survey base is in fact made up using the results of the annual survey of companies in services, by product. This ensures that our approach is by branch, not by sector. This source, by product, is however of limited use when the product classification is poorly understood by the profession (IT services as an example). Once the companies have been chosen, we check that the company is a company which establishes real market prices. It may in fact work for only one client, without using market prices. This happens very often in IT services, particularly data processing and consultancy. To carry out this check, we consult professional data banks and company internet sites, as well as the detailed replies to the annual business survey in services. In addition, to ensure that we do not overlook any major players in the branch, we ask the professional organisation for a list of leading companies. Where necessary, we add a few companies to our initial sample. As we can see, this survey method is more empirical than theoretical. At the moment, we are unable to calculate precision indicators (particularly variance).

This previous study phase ends with a branch meeting. The whole team (4 data analysts, 4 field officers, 1 manager) takes part in this meeting. A summary is drawn up about the branch, in relation to possible, relevant methods of price monitoring. The following documents are made available and commented on: report of meetings with professional organisation, report of each test visit, specimen questionnaire for visits made by field officers, branch document (summary of collected information), detailed information about each company in the sample. At the end of this meeting, the field officers are ready to start visiting companies.

Box 1: example of schedule

As an example for the phase involving previous studies, we can give the schedule of all these operations for the branch "management and business consulting services":

- Thursday 6 February 2003 : first meeting with the professional organisation for the whole branch
- Tuesday 6 May 2003: second meeting with the professional organisation specialised in management consulting services
- Wednesday 18 June 2003 Tuesday 8 July 2003: 4 test visits to management consultancy enterprises
- June 2003 : definition of the sample for management consultancy services
- Friday 18 July 2003 : third meeting with the professional organisation specialised in public relations consultancy services.
- Thursday 24 July 2003: "management consulting services" branch meeting
- 15 October 2003 15 November 2003 (projected) : test visits for public relations consultancy services
- December 2003 (projected): "public relations consultancy services" branch meeting.

This example shows that working with the profesionnal organisations can take a long time (for example, it took over four months to obtain a list of players for organising the test visits). However, this seems essential and should be set against the subsequent gain in efficiency.

2) the company visit

Each company in the sample will be visited by an field officer from INSEE, who specialises in monitoring the prices of services to companies. The purpose of this meeting is to have the company agree to the survey in principle and to choose the most appropriate method of price monitoring. The field officer's task is to draw up a report for each visit, choose the services whose prices will be collected every quarter and collect the prices for the reference period. Our company contacts are mostly financial managers in the case of large companies and general managers for other companies. Before the visit, each field officer must have the documentation handed out at the branch meeting and make appointments with the companies concerned. A letter will have previously been sent to the company, telling it about the purposes of the survey and giving the name of the field officer in charge of the survey. This phase of organising appointments, by telephone or e-mail, can be a long process.

After the visit, the field officer and his contact agree about the services to monitor and about a schedule, after which we must have prices for a reference period. The field officer often has to make many follow-up telephone calls in order to obtain the prices. Once he has them, a case report for each company is put together, containing the following items: report after the visit, specimen services and prices for the reference period, documentation about the company (annual report, etc.).

Box 2: interview schedule for company visit

An interview schedule is drawn up for each branch. The field officer uses it as a basis for conducting his interview. Similarly, he will make out a report based on this schedule. The interview schedule is made up of the following sections:

- information about the company, the contact during the visit, the person to whom the questionnaire is sent. This ensures that we subsequently send the questionnaire to the "right" person.
- information about the company's organisation in general: activity, staff, part of a group, recent events:
- questions about the economic situation in the branch;
- questions about turnover: company's turnover in the branch, excluding exports, excluding subcontracting and excluding purchase-sales. This turnover will be used as a basis for weightings. It is then broken down according to the classification.
- questions about prices (method of fixing, method of monitoring). This is the main part of the interview schedule. Firstly, the aim is to understand and explain the method of price fixing in detail. There are then questions about how recent price changes are perceived. The field officer uses questions which enable him to test the relevance and feasibility of possible methods of monitoring prices. These questions vary according to the branch being investigated. The purpose of this section is to identify and validate the most appropriate method of monitoring prices, in view of the management tools available.

Box 3: a compulsory survey

Companies are obliged by law to reply to this survey, which has been declared to be of general interest by the National Council of Statistical Information. In practice, we try as far as possible to get the company to cooperate without pressing home this point. The question about the general usefulness of the survey (best measurement of growth, most satisfactory information about companies) is comparatively well received by professional organisations and large companies. If the company refuses to see the interviewer (a very rare occurrence) or refuses to send prices (often for reasons of confidentiality), we have standard letters which we send to the company. In some cases, we may decide not follow up the issue. This applies in particular to small companies which are in difficulties or do not have the right management tools for monitoring prices appropriately. We never close a case report for a large company. This can turn out to be a very long process. For example, in advertising, two large companies still refuse to reply to us after more than two years of calling them and after numerous visits.

When the case report has been returned, the first job is to calculate the weighting coefficient for each specimen service. This weighting coefficient is calculated based on the company's turnover (excluding subcontracting, exports and purchase-sales) and its break-down according to the classification. When monitoring the price of contracts, we choose contracts which are representative of each stratum of the classification. In each stratum, each contract will have the same weight. When the method used in the branch is based on monitoring fees, we also need to know the numbers of people concerned by each qualification whose sale price we are going to monitor. These number are updated annually in IT services in order to take into account (via the weighting coefficients) the general increase in qualifications in this sector. For each stratum (according to the classification), the weight of each qualification will be identified according to its share in the company, which is evaluated from the product of price * numbers (for the reference period). These weighting coefficients will then be incorporated into each level of the classification. In most cases, the intra-branch weightings are calculated only from the information supplied by the companies in the sample. There are a few rare exceptions. For example, in the security sector, weighting coefficient for the transfer of funds and surveillance is deduced from the results of the annual survey of companies in services. As the transfer of funds is a much more concentrated business than surveillance, its weight would be overestimated given the method of sampling, which favours the selection of large companies. When branches are aggregated, we will use weightings which include the weight of different branches in the national accounts.

All information which is necessary and useful will then be processed in an **IT application** dedicated to monitoring producer prices in manufacturing industry and in business services. This initialisation stage can be long for large companies for whom we may monitor many services. For small and medium-sized companies, the average number of services monitored is eight.

Box 4: General survey of the IT application and quality effect

We cannot go into detail here about the IT application we use to calculate price indices in services to companies. However, we will discuss some key points about this application. A "reply serie" corresponds to each line in the questionnaire in the application. The value of this "reply serie" is exactly the same as the information given by the company. This value cannot be changed without the company's consent. A "quality coefficient" is attached to each "reply serie". We use this coefficient to process the quality effect. When the survey is set up, this coefficient is equal to 1. It will remain 1 if there is no change in the nature of the service. When the content of the service which is being monitored changes (for example, the scope of a cleaning contract may change, additional services may be carried out), the company is contacted. The quality effect is established through this contact. In fact, the evolution in the elementary price index for each service is the change in the product of the value of the "reply serie" and the "quality coefficient". When a service changes, the company is asked to isolate the "change in service" part from the "change in price with the service staying the same" part. This enables us to calculate the new "quality coefficient" for the service. This will stay the same until the next change in the service. The basis for calculating price indices is called an "elementary serie", in the vocabulary of IT application. A "reply serie" can supply one or more "elementary series". Each "elementary serie" is calculated from a "reply serie" - and their quality coefficient - or "calculated reply" serie. In fact, we may have to construct an intermediate serie between the "reply serie" and the "elementary serie". For example, when we monitor turnover per day worked and per qualification, there are two "reply series" (turnover and number of days). From this, we calculate a "calculated reply" serie (the ratio between turnover and number of days). This "calculated reply" serie will feed the "elementary serie". Each "elementary serie" will then feed a "basic index" serie which corresponds to the most refined level of classification. An index serie and weighting are therefore associated with each "elementary serie". An aggregation tree is then created - in the IT application in order to calculate the value of the indices of any "index" serie which is the result of aggregating other index series. A level of dissemination (no dissemination, public dissemination, limited dissemination) is associated with each index serie. Dissemination may take place provided there is a sufficient rate of response. The rates of response, by means of "index" serie, are automatically calculated by the IT application. They are compared to a target rate of response (70% in most cases) in order to activate – or not – the process of dissemination.

It should be noted that all the steps described in parts 1) and 2) will be reproduced **with the reviewing**. However, since in this case we have the background to the case report in this branch as well as feedback, the reviewing may be an opportunity to change methods. This recently occurred in accounting services. The method of monitoring becomes really final after the first reviewing. Reviewing takes place every 4 to 5 years on average.

The following table sums up, branch by branch, the methods of price monitoring used. Details of these methods are not given here; there are several articles on the subject particularly those produced by the Voorburg Group.

Branch	Main method used	Other method(s) used
Hiring of construction equipment	Average sale price per type of equipment	
Car hire	Price of contract	
Accounting services	Average sale price per qualification (catalogue price and rate of discount)	Price of contract
Engineering	Sale price per qualification	
Security	Price of contract	
Cleaning	Price of contract	
Ad placement	Average sale price of advertising space (quality effect and audience)	
Advertising agencies, consultancy	Fees per qualification	% on purchase of space and % on technical expenses
Data processing	Price of contract	Average price per type of service
Consultancy, integration and software development	Average sale price per qualification	Margin ratio method
Maintenance-repair of IT equipment	Price of contract	Average price per type of equipment
Data bank	Average price per type of service	
Computer facilities management	Average price per unit of work	Price of contract, model pricing
Pre-packaged software	Average sale price per product	Price of contract for maintenance

3) the collection of information every quarter

Once all the previous stages have been completed, we can begin **sending out quarterly questionnaires** to the companies concerned. Questionnaires are currently sent out by post. The company replies by post but it may decide to reply to us by e-mail. If it does, we tell the company that they are wholly liable when they send us replies by email. When the questionnaires have been received from companies, data analysts carry out **checks** to identify the most important changes, as a result of which the company will be contacted by telephone in order to obtain additional information about these price variations. Companies have about a fortnight to reply to the survey; they then receive a reminder which gives them an additional 10 days. Data analysts must then make targeted **follow-up calls** so that there is a sufficient rate of response. These follow-up calls can be made very quickly (15-20 days after the questionnaire is sent out), in the case of branches for whom we disseminate results. As a matter of priority, we contact the largest companies to ensure a sufficient rate of response (>70%). Very simple management tools (in Excel) enable us to keep track of the rate of response per branch.

Box 5: example of survey schedule.

Below is an example of the schedule for branches for which we disseminate the results, in the case of a survey of prices in the second quarter of 2003:

- -Thursday 26 June : questionnaires sent out
- Friday 11 July: reminders sent out to companies which have not replied
- Tuesday 15 July : start of follow-up telephone calls hursday 24 July : last calculations before distribution
- Friday 25 July: distribution bases created with indices for the second quarter of 2003 (as well as revised values of indices for the first quarter of 2003)
- Monday 28 July : internet distribution sites supplied
- Wednesday 30 July: distribution, particularly the internet website http://indicespro.insee.fr/

Calculations are begun as soon as possible for each branch to examine the initial results. On the calculation printout, we can read – for the latest quarter calculated – changes in each "elementary serie", the contribution of each "elementary serie" to changes in the "basic index" serie, associated with the finest level of the classification. This contribution reflects the changes in the "elementary serie" as well as its weighting. This information helps us to point to what is the most important in the checking stages. We have changes over the last five quarters as well as the annual trend for each "elementary serie". All this information is structured by "basic index" serie. We also have all the values of all the "indices" series, whatever the level of aggregation. Rates of response are available for each "index" serie. When these calculations are examined, we very often go back to the companies (follow-ups by telephone). On one hand, we try to validate – or not – certain items of information and, on the other, to obtain explanations, in order to gain a better understanding of the price variations reported. We try to make a maximum number of checks before the results are disseminate. Dealing with the quality effect is particularly tricky (see box 4).

Box 6: the project for collection by internet

With regard to monitoring producer prices for manufacturing industry and services to companies, a project for collection by internet was launched in 2002. This project consists of two phases. Phase 1 will enable companies to send their data by internet, without sending correspondence by post. A secret code will be assigned to each supplier of information in a given company. With this phase, the data analyst will always have to introduce the prices, as happens at the moment, onto the IT application. Companies will fill in their questionnaire on-screen and send it to the INSEE electronically. Only a "copy" of the paper questionnaire will be displayed on the screen. Phase 2 is more ambitious and should make a radical difference to the data analysts' work. The plan is that prices sent by companies via the internet will be automatically supply into the IT application, without reinputting the questionnaires. Phase 2 calls for the creation of a validation tool. The purpose of this tool is to enable the data analyst to check the collected data before they are imported into the IT application. The data analyst must always check a questionnaire before it is imported. Regarding complex cases, it may be necessary to print the questionnaire, alter it and/or reinput it if necessary. Warning criteria will be established so that the data analysts' attention is drawn to complex cases which must be dealt with. The implementation of phase 2 will have a profound effect on the data analysts' work. Data analysts will spend less time on easy cases and have more time to deal with difficult cases. Productivity gains are anticipated with this project for collection by internet. The unknown factor remains the proportion of companies which will choose this method of collection over collection by post. Phase 1 is expected to begin in January 2004. We will have to wait until June 2004 for phase 2.

4) Dissemination and stages prior to distribution

After a survey has been launched in a given branch, the value of series must be collected and observed over a period of 4 to 6 quarters before we can think about disseminating results. **The aim is to disseminate results as quickly as possible**, so that the companies who reply can get feedback. Dissemination is also proof of better quality. When the indices are disseminated, the phase of validating the results iswill be particularly important. However, it is not always possible to disseminate the results quickly because of large companies who take time to reply.

One of the first steps, once all the case reports have been gathered in, is to identify **the tree of** aggregation and to enter all the weighting coefficients for each index serie. For each branch, this tree of incorporation must remain stable for 45 years. In the case of branches with important changes, such as consultancy-integration in IT services, intra-branch weightings will be reviewed every year. Before dissemination, all the quarterly indices which have already been calculated are validated. This **validation** is necessary due to the late return of some case reports which can contain prices over several quarters. A date for starting dissemination by branch is also serie (date on which the branch indices are equal to 100), depending on the level of coverage. Once the indices have been examined, a dissemination plan is drawn up and put forward to the professional organisation. The latter has about 2 months to inform us of its response. Over the coming months, we hope to better promote the published data. We intend to inform each company we survey of the start of dissemination and the list of disseminated indices. We also want to give a quick demonstration of the Internet dissemination site.

Before the results are disseminated, there is still the problem of validating the indices. Which factors should be used to make a diagnosis about the quality of the indices about to be published? When companies are contacted, it is comparatively easy to see if the trend in indices is in line with what the profession "feels". It is also possible to compare these price indices with cost indices (labor costs) to see if the trend being monitored is indeed the same. International comparisons can also be made. However, it is still difficult to validate the value of indices and make a diagnosis about the quality of the information disseminated. In particular, it is very difficult to calculate confidence intervals. This validation phase is a tricky stage in monitoring the price of business services since there is little additional information with which to validate – or not – the indices which are going to be published.

In the current stage of collection, we are doing our utmost to disseminate the quarterly indices within a **short time.** We are in fact sticking to the timetable serie out for the producer price indices for industry. For example, in the case of the price indices for the second quarter of 2003, we were able to distribute the basic indices (22 out of 24) before the end of July. Sometimes certain companies cannot reply by this deadline, due to the availability of their management indicators. At the end of July 2003, indices for the second quarter of 2003 have a provisional status. Those for the first quarter become final at the end of July. The final value of indices for the second quarter will only be known at the end of October. Between the provisional and final versions, the value of indices can change slightly because of the late replies. These variations in value are still less than 0.5 of a point.

Box 7: list of disseminated indices

At the moment, 27 price indices are distributed in business services. The dissemination involves 6 branches: hiring of construction equipment, car rental, accounting services, engineering services, security services and cleaning services. Most of the indices are quarterly, those for engineering are currently six-monthly and those for accounting services, annual. Before the end of 2003, it is planned to disseminate new indices in advertising and to begin distributing indices in IT services, particularly data processing.

The list below shows the exact situation regarding distributed indices:

CPF 7132: Hiring of machinery and equipment for construction

CPF 7110 : Car rental

Rental of commercial vehicles Rental of private vehicles

CPF 7412 : Accounting services Accounting expertise

Audit / Auditorship

CPF 7420 : Engineering services

Construction Engineering Infrastructure Engineering

Industrial Engineering

Technical assistance and documentation

Prior industrial studies Industrial design studies

Industrial implementation expertise

CPF 7460 : Security services excluding systems installation and maintenance

CPF 7470 : Cleaning services

Cleaning services, public sector

Cleaning services, private sector

Cleaning services, offices including public buildings

Cleaning services, public sector offices

Cleaning services, private sector offices

Cleaning services, factories and workshops

Cleaning services, business premises

Cleaning services, community facilities

Cleaning services, communal areas of housing

Cleaning services, transport

These indices are disseminated on the Internet (http://indicespro.insee.fr) but they may also be consulted in a paper publication (monthly statistical bulletin) and in the INSEE macroeconomic data bank.

Some other indices have the status of private indices (for companies which reply) available on an internet site with personalised access code. There are currently 12 indices of this type. However, they are about to disappear or be disseminated to the public. Unlike the United Kingdom, there is no concept in France of indices for experimental dissemination.

5) Summary and personal comments

During 2003, all the team in charge of monitoring prices for business services have attended several meetings to make an "initial quality assessment" of this operation. The idea was firstly to bring out the weak points of our plan so that they could be improved in the medium term. Before going into detail about them, we should mention that one of the strong points of the plan we set up is the contact with companies. This has proved to be very fruitful, particularly due to the methodical work of the field officers and the numerous telephone calls made by the data analyst.

Points which could be improved can be divided up into three main areas :

sampling method

The principle of survey sample itself should be validated. Selecting the largest companies on an exhaustive basis and the others by sample without reweighting them supposes that changes in price are independent from the company size. Based on the data currently available to us, we are going to try to conduct a study – by branch – so that we can analyse the link between price changes and company size. The results of this study may change the sampling methodology. Furthermore, we must try to identify in advance companies which are not relevant because they do not use market prices (but, for example, transfer prices within a group). This type of company must be detected before they are contacted by the field officers in order to cut down on the number of samples we have to take again.

- validation of information

This point is not straightforward and particularly concerns the information given by companies to the field officers. Does this information really come up to expectations? For the moment, we can only have complete faith in the companies. The problem is exactly the same with quarterly collection. One of the courses here is to spot "suspect" companies in an organised manner. For example, a company which says it gives us average sale prices per qualification must see its prices change regularly. If we find that the prices stay the same, we may need to send a letter as a matter of course to alert the company. As we have already said, it is also the same for the validation of indices at an aggregated level. There are some ideas to explore here: international comparisons, comparisons with labor costs, contacts with companies and professional organisations.

dissemination of results

A timetable for rapid dissemination is necessary here (5 quarters after the survey is launched) so that use can be made of the results. Likewise, we want to promote the dissemination. Finally, we must certainly think about the indices we would like to disseminate despite large companies which do not reply, for example, or quality which has not been fully validated. The concept of expiremental diffusion is particularly interesting here.

Apart from the above-mentioned points, **the key elements** in price monitoring in services are as follows:

- **calculate indices in new branches** in order to keep in line with the list of priorities drawn up by Eurostat. Investigations have begun for management consultancy and temporary work.
- **disseminate new indices** particularly in advertising and IT services, start to think about dissemination of aggregated indices.
- expect the arrival of the tool for Internet collection
- continue the policy of fruitful **international cooperation**