

VOORBURG GROUP ON SERVICE STATISTICS

Sixth Meeting
Helsinki, 7-11 October 1991

**TOWARDS TIME-TO-TIME PRICE INDEXES
FOR BUSINESS SERVICES**

(Practical considerations)

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The opinions expressed in this paper are those of its author and may not be those of the institution to which he belongs.

As for now, INSEE has made some experiments towards the establishment of time-to-time price indexes in the field of market services to enterprises. Such experiments are not advanced enough for finalizing any index. However, from the present standpoint, it is possible to provide some features of the methods which will be applied for designing any index on business services.

Two specific experiments were started in 1989, one with the industry of catering food to enterprises and of managing enterprise cafeterias, and the second one with the security and surveillance industry.

The first experiment had to be ended; the second one is still on its way; it has developed rather slowly for several reasons, one of them being linked to some events for which the industry had to make special efforts and could not divert adequate persons to discuss statistical problems (bi-centennial of the French revolution during which, in addition, the meeting of the G-7 took place, insecurity due to the situation in the Persian gulf). It is interesting to note that the conclusions drawn from the first (aborted) experiment were confirmed in the development of the second one, from which some examples in this paper will be taken.

In fact, many procedures which were developed empirically, during these first attempts, from services which do not imply a large intellectual input appeared to remain valid when representants of so-called intellectual professions were met, on two occasions, to discuss the possibility of establishing price indexes for their activities. These meetings took place in April 1991 and included high level executives of major French enterprises engaged in such activities as market research and public opinion polling, business and management consulting, computer services, accounting and auditing, labor recruitment (head hunter), professional training,...

Of course, from what is said during a meeting one cannot draw final conclusions on the actual feasibility of a time-to-time price index. So, it was decided to make a test in the field of market research. A group of enterprises operating in this field will be gathered and their representants will work with those of INSEE and of the Commission on service accounts in order to design the principles of a price index and to start its calculation.

All these preliminary but fruitful approaches explain why there is so much confidence from the French part in the possibility of calculating time-to-time price indexes for business services, even for products which *a priori* seem to be difficult to take account of.

Several points will be examined hereafter, namely the rythm of calculation of an index, the place to collect prices, the requirement of consistency with National Accounts, the necessity to work with professionals, the price to represent (cost or sale price), the detailed description of the services, the way billing is done, the selection of respondants, of items to price and the treatment of quality changes.

There is no claim for completion in any matter treated. The only aim is to present some problems and how practically they may be answered (or not answered). Even the proposal are questionable and presented for further discussions.

Furthermore, there is no claim for having examined all practical matters relevant for the establishment and the calculation of any service price index. In particular, nothing is said about weighting patterns and aggregation formulae.

Annual vs. infra-annual indexes

As to deflation in National Accounts, only an annual price index for business services would be necessary. But an indicator on price changes over time would serve many other purposes such as deflating infra-annual estimates of change of turnover, improving the analysis of "conjuncture", assisting enterprises in the knowledge of their market, helping the Government in its day-to-day conduct of the economy, etc.. For these reasons, it has appeared that an infra-annual index would be preferable.

Furthermore, as enterprises are contacted for providing information, although the addition of infra-annual works required is a little more important than the annual work, experience shows that infra-annual regular requests (say, trimestrial), especially when they are rather straightforward, are considered to be "usual" by the respondents while annual questionnaires, when they are light enough to be forgotten from one year to the other, are considered to be "exceptional" and thus to "increase the statistical burden put on enterprises"!

A priori vs. a posteriori price index

The choice between an index based on actual transactions (*a posteriori*) or on potential ones (*a priori*) is also discussed in another paper [1].

In fact, as to services, if actual transactions are to be priced, this has to be done from the users and not from the provider. Indeed, contrary to goods, the actual quality of a service provided is not equal to the potential quality of this service, because of the "risk factor" inherent to the activity of service provision: the quality can only be known from the one who "received" the service, i.e. the user. Obtaining regular data, in sufficient number, from the users is a costly operation, which may turn to be fruitless because of the difficulty to evaluate the quality of the sole product-service and to separate it from the general quality included in the result of the activity.

In choosing the measure of a potential price for a product, i.e. the price of a service which an enterprise may provide, one ensure a certain continuity in the quality, provided that no fundamental improvement is made in the way the provision is done and that such improvement results in a better service provided (by opposition to improvements which result only in gains in productivity).

At last, the measure of prices for a fixed basket of services, which basically is the way the index will be computed, is feasible at a reasonable cost and without too much technical problems to solve, when prices are collected from the producers.

Should indexes be consistent with National Accounts practices?

It might be astonishing that such a question be raised, in consideration of the fact that the most frustrated user of business service price indexes are the National Accountants. But, in some cases, the procedures of National Accounts are so far away from the reality of the product provided that it is difficult to find a way of collecting prices which are directly relevant for National Accounts purposes.

The reader should not be misled by what is written hereabove: it is not meant that the National Accountants' brains are tortuous but that the actual services provided are not easy to define or are "hidden" within a set of other operations. For example, the service of insurances on goods is the operation of gathering funds, preventing them from loss of purchasing power and distributing them to those whose relevant goods have suffered a bad occurrence. The premium, this is well known, is

not the price of the insurance service alone, since it covers the value of the funds necessary for redistribution, besides the value of the services of collecting funds, managing them, treating the bad occurrence files and distributing the funds. Other examples can be obtained in such field as advertising or distributive trade services.

In the development of future time-to-time price indexes, the first aim will be to obtain a valid time-to-time price index for an "object" related to the service under review without referring obligatorily to National Accounts procedures. This decision was taken for two reasons: (i) if price statisticians continue examining theoretical problems, then no step can be taken towards the organization of data collection and thus, eventually, no information will be readily available for the practical calculation of the index; and (ii) as the work is made with representants of the industries concerned, statistical things, which are already complicated, should be presented as simply as possible.

Of course, National Accounts procedure will be taken into account as much as possible from the very beginning, and according to the type of professional interlocutor (for example, insurance representants are well aware of the "true" price index for their industry, but this does not make things easier). But it will be in a second phase, when the measure of price changes for the related "object" will be well established, that all actual requirements of National Accounts will be taken care of.

Working with the Industry concerned

As can be understood from the introduction, a major principle applied is working with the industry producing a given type of services. Of course, when an index is to be calculated, all enterprises producing the type of services over review have to be taken into account, but, in the preliminary phase, where the knowledge of the services is required without a necessity to be representative, the industry, i.e. the enterprises engaged primarily in the corresponding activity, is the main source of assistance. It should be noted that the production of some services by enterprises where this is not the principal activity may however account for a non neglectable share of the activity; for example, 20% of computer service production is made by enterprises not classified in the computer service industry.

Working with the industry concerned by the price index has many advantages and, also, some inconveniences.

One should not forget that it is dealt here with services to enterprises, that is services with which statisticians are not familiar with, as they could be with services to households. First of all, the professionals have a rather clear view of their market in terms of which services are provided, how they can be classified and how the invoicing is usually prepared. Secondly, they are also able to provide information about new services or new types of services which are being developed in their field of competence. At last, they may be readier to provide information as long as (i) this information is requested in terms they are used to employ and (ii) they have been closely associated with the definition of the information required.

But the interest of the professionals may not always be the same as those of the statistician. This implies that either the statistician convinces his partners of the high importance of his aims or, more frequently, that he "pays" his partner by providing information which would interest them.

Another difficulty is that the industry is usually approached through a professional association. But the selected association may not be the only one for the industry (when several associations exist, they do not always have good relationships with each other). According to their importance, the statistician might have to deal

with each of them, or hope (as it is the case for the surveillance industry) that the selected professional association will contact the others and explain the importance of the price statistics operations. There may also be enterprises of major importance which do not pertain to any association, or which pertain to an association dealing with their principal activity, although their secondary activity is also very important (for example, some computer enterprises are also engaged in computer service industry).

Cost price vs. sale price

One of the main misunderstanding with the professionals is the nature of the price to be collected. Many of them focus their attention on the cost price, and the "payment" they expect is to obtain an indicator for automatic revision of their sale price. The best indicator, for them, seems to be a cost price index adapted to their kind of activity.

For the statistician, the first objective is to obtain the sale price, since it is the one which will help to deflate the turnovers and will enter in the calculation of cost price index for deflation of inputs.

Obtaining a cost price calculated by an independant organization like INSEE is, in the entrepreneur's mind, some kind of asset when he wants to explain the changes in his sale prices. On the other hand, the knowledge of the movements of sale prices, even at an aggregated level, is considered by some industries as some kind of "attempt to privacy". This typical French comportment is, in some way, understandable: until the beginning of the eighties, sale prices, and especially service prices, were closely controlled, as to their changes over time, by the Administration. Now, pricing is free, but the firms are still afraid of a possible re-establishment of controls or, at least, of indirect ways of sanction for those firms or those industries which did not comply with (unwritten) norms fixed by the Administration. The Administration is more preoccupied by price changes for consumer goods and services, since they imply the movements of the most looked at economic indicator, the CPI. So, the business service providers who are closer to consumption of households are the most likely to receive remarks from the national or local Governments. This might explain why the industry of catering food to and of managing enterprise cafeterias did not want to continue their participation as long as INSEE was not ready to calculate only a cost price index.

It should be noted that, eventually, the persons met in the surveillance service association found out that a sale price index was of major importance for them: it is an indicator of the policy of an enterprise in comparison with competition; if cost price indexes are still required, their relative importance for the users is on the decreasing side. As to intellectual service industry, the request was directly towards sale price indexes, and cost price indexes were only evocated for sake of completion.

Description of the service; stratification of the operations

The thorough description of the service includes various criteria such as the various types of detailed services which can be provided, their classification in the "tangible-intangible/obligation of result-obligation of means" categories, their possible combinations for some usual global service provided, the types of users and the usual services provided to each type, the way the services are invoiced as to the service provided, the length, the revision and the duration of contracts, etc.

Obviously, only the persons well involved in the industry can provide relevant data to the statisticians.

For example, as to surveillance, the various types of services provided were first listed in some detail; the list includes static ward, active watching, technical and fire security, patrolling and intervention, telewatching and telesecurity, inspection of stores.

Secondly, a list of possible clients was established: warehouses and working sites, banks and jewelleries, factories and other manufacturing buildings, parking sites, large size stores, office places, classified markets (defence), high rise buildings, dwellings for individuals or for collectivities, sport events and fairs or expositions.

The third step was to cross-classify the detailed services with the types of users and to specify what was meant by users of surveillance services for each item in the cross classification (such user's product was then "translated" in terms of means provided by the producer).

The following table provides the results of these operations as to the cross-classification of detailed services with the user "warehouses and working sites".

Detailed service	Request of the client	Means provided by the producer
Static ward 1	Control of entrances and exits during work period	Access control agt
Static ward 2	Surveillance at night in the buildings	Surveillance agent
Active watching	Man(men) with dog(s) within the buildings	Dog-master agent
Techn.and fire 1	Fireman(men)	Fire security agt Fire prevention agt
Techn.and fire 2	Periodical technical controls	Fire security agt Fire prevention agt
Patrol,interv. 1	Outside patrols with dogs	Dog-mast.patrol agt
Patrol,interv. 2	Other outside patrols	Patrol agent
Tele-watching 1	Intervention on inside alarm	Intervention agent
Tele-watching 2	Intervent. on outside alarm	Intervention agent
Store inspect.	[No request here]	[No request here]

Remark: Classification in "tangible-intangible*obligation of result-obligation of means"

*The problem of classifying surveillance services within the four categories of "tangible-intangible*obligation of result-obligation of means" (see [1]) was not discussed with the industry so far (the last meeting with the industry took place prior to the time it was known about this classification. But it is interesting to discuss the problem here.*

The service that a company expect from a surveillance enterprise is that no bad occurrence happens or that there is a minimum of bad occurrence. In statistical terms, this would be that the probability of bad occurrence be inferior to a certain level of probability. However, such probability is not measurable; for example, if nothing happens, the client is not sure if this is due to the service of the surveillance company or due to the fact that nothing would have happened even if no surveillance company was hired. These remarks are in favor of classifying surveillance services within the category of "tangible with obligation of means": for a given contract, men, dogs and some specific telesurveillance appliances are provided and run by the surveillance company. But there is also some methodology involved for selecting the right combination for a given contract. Furthermore, insurance companies are well acquainted with this technique and are able to evaluate the relevance of such or such combination. Then, in regard of insurance companies, there is also some kind of obligation of result. But, for the sake of making continuous statistics, the first classification proposed will be used.

It should be noted that the latter decision (which is not final) implies that the men and appliances provided are to be evaluated in the absolute as to their "quality", and that no question is to be raised about the fact that the probability of bad occurrence increases or decreases as time goes by (for example, apartment robberies are increasing in France). It should be noted that this decision is rather common to price index makers, when goods or services are judged per se and their environment is not taken into account.

Invoicing

The next step in the establishment of price indexes is to know how the pricing is made. In many services, this is done by unit of time (hour, day, ...). Sometimes, this is done by task or on a flat rate basis. However, in all cases, one should know what is included in a unit of time or of task and if this is likely to change over time.

In many instances, the following is heard from the professionals: "I bill my clients on time spent and have done so since a long time; furthermore, I can tell that such task has always lasted so many hours"; this would imply that the movement of the charge per hour is the relevant indicator for price change; but... further inquiry shows that if performing a given task takes apparently the same time as ten years earlier, in fact, the quality of its product is higher (decrease of the risk, better presentation of documents, improved analysis, ...) or, even, its content has changed (more results are provided, for example).

Among items to examine when looking at the pricing procedure, stands also the way contracts are established (for which duration, with which clause for price revision, ...).

The pricing terms serve then, with the help of the professionals, to "translate" the clients' request into the items which serve for pricing (this is done in the above table for surveillance services). At the same time, some preliminary examination of quality criteria has been done.

Selection of respondents

This item is put here *pro memoria*. So far, it has not been examined thoroughly as to business services, but there is no a priori reason to think that the technique of sampling of enterprises will be different from usual methods applied in other time-to-time price indexes.

Selection of "items" within a company

For the time being, the principles of the methodology have been established with the surveillance service industry. They might be of more general validity, but they need to be tested first with some willingful companies.

The selected surveillance enterprises are asked to find, in their own set of contracts, for each type of service provided (according to the stratification above), two effective contracts (if possible, a "simple" one and a more advanced one) which they think are representative of the operations usually made by them. For each contract they will give the relevant information as to the number, qualification and time of men employed along with the equipment used and invoiced (on a renting term basis). Of course, enterprises are usually specialized in a small number of service types and will not be in a position to provide sample contracts for all types of services. The contracts selected in all the companies will constitute the sample for price collection which will be made regularly.

The sampled contracts will be priced regularly. This procedure of pricing will include the total price for the contract selected along with the prices per unit (of time, of task, ...) which are used to calculate the total price.

Price collection

Normally, the best way to control the data provided and to treat some problems related to data collection is to have the price collected by the professional associations. But, besides the fact that some important service provider may not pertain to one of these service providers' associations, the importance of competition and the requirement of a real guarantee of neutrality make this procedure quite impossible. In fact, all associations have turned to INSEE for this Organization to collect prices and all relevant informations for calculating the price index. This implies that the information to collect be correctly structured and that the procedures for treating quality changes be rather simple, or require the open participation of the firm concerned.

Of course, the treatment of the collected information and the final calculations of the indexes will be made by INSEE also.

Quality changes

The problems of quality changes have many aspects which are specific to each type of service. The example of surveillance services will be taken once again, but diversions will be made to see what would happen for other types of services.

1) Changes in the qualification of men or in the quality of equipment.

In the case of surveillance services, these changes have to be considered as modifications of the quality of the service, and reflected in the index.

For example, the basic qualification for patrol agents has recently been increased: they must have a basic professional training to be employed (while, before, everybody could be employed). This is translated by an increase in salary, which, in turn results in an increase in the bill. A better training is likely to decrease the risk of bad occurrence for the user, thus a quality correction has to be included in the bill total (this may be done by assuming that the hour charged for the patrol agents should have a relative increase equal to that of his salary).

Thus, for some service providers, with obligation on means, change in qualification or in equipment may have an impact on quality. When services require an obligation of results, there may not necessary be a change in quality if men or equipment are changed, unless an ascertained decrease of risk is observed. For example, if an office cleaning company uses vacuum cleaners of a quality which permits an increase in the rapidity, this has no meaning for the client as long as the result is the same. However, if a company account is made by a professional accountant in state of, formerly, by a trainee, then the risk of error decreases.

2) Changes in the contract

Some terms of a contract may be changed, for several reasons (the client require more or less services, a new way of combining men and equipment has been found for a similar risk, etc.). In such a case, the statistician has usually to rely upon the opinion of the producer, to whom he will ask the following two questions:

- what would be, in the previous period, the combination of men and equipment which would provide a service equivalent (including the risk) to the one presented in the new contract?

- according to *the billing made previously to the present client*, what would have been the price of the above combination?

This operation can be partially checked by the statistician since he possesses some information, but, of course, he cannot be aware of the exact techniques.

Of course, once again, such procedure may not be applied if, when an obligation of result is one of the characteristics of the service provided, it is admitted that the revised contract does not modify the result.

Nota: if it is the client himself who requires a change in the combination of men and equipment, it is questionable whether the full price change should not be taken into account.

3) New contracts

New contracts are the occasion of an increase in prices higher than what is included in the price revision clauses of existing contracts, at least if competition let a company do it (in fact, an important competition may lead to the opposite result!).

As time goes by, new contracts have to be included in the sample in order for it to be continuously representative and, also, to represent correctly the price movements linked to this contracts.

A price during a previous period has to be determined for these new contracts. The method is the one presented in the case of changes in existing contracts, but the price factors to take into account for the previous period should be some average price for the service company.

New contracts include also contracts which clients have ceased with a firm to pass them to another one. In theory, the comparison should be made according to the pricing procedures of the two companies, using, in addition, a correction factor to take account of the difference of notoriety. In reality, besides the fact that notoriety factors can seldom be established, it is very difficult to know, since firms are questioned, which company has contracted with a client who has stopped contracting with another one.

4) Important remark

All above considerations on quality are valid in the short run. For contracts which are renewed on a long period of time, one should also take into account the improvement of methodologies, the accumulated experiences, the renewal of the staff, etc.

Furthermore, the advances in some professions are such that what is proposed to a potential client is much more efficient than what was proposed some years before (the contrary may also exist). This general improvement (or deterioration) would also have to be taken into account.

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- [1] See "Calculating service price indexes? It is possible!". *Paper prepared for another session of the present meeting.*