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*Réflexions sur l'extension récente de la statistique
de prix et de production à la santé et à l'enseignement*

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ON THE RECENT EXTENSION OF PRICE AND PRODUCTION STATISTICS
TO HEALTH AND EDUCATION

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Résumé : L'article s'intéresse à l'extension récente de la statistique de prix et de production à la santé, à l'action sociale et à l'enseignement. Dans un premier temps, elle souligne que le choix de suivre les prix nets, plutôt que les prix bruts, comme cela a été fait pour l'indice européen des prix harmonisé à la consommation, est regrettable. Cela aboutit à un indice en partie hybride. Dans un deuxième temps, reconnaissant que l'évaluation de la qualité est un enjeu fondamental, elle suggère cependant de mesurer la production sans s'appuyer sur la variation d'état des usagers, mais plutôt en fonction de la qualité offerte. Deux manières complémentaires de prendre en compte les variations de qualité sont alors examinées et discutées.

Abstract: The paper pertains to the recent extension of price and production statistics to health, social assistance services and education. In the first part, it is underlined that using net prices instead of gross prices, as it has been decided for the European harmonised consumer price index, is inaccurate. The index is thus partly hybrid and inconsistent. The second part explains why, even if quality is a significant issue, production measures should not rely on the user's changes of condition. It should rather be based on supplied quality. The paper then describes and discusses two complementary ways to estimate quality changes.

KEYWORDS: MEASUREMENT; OUTPUT; QUALITY, PRICE INDEX

JEL CLASSIFICATION: L89; E23; E31

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ON THE RECENT EXTENSION OF PRICE AND PRODUCTION STATISTICS TO HEALTH AND EDUCATION

INTRODUCTION

Statistical administrations have been seeking to better understand service industries for several years [Aspden, 2002]. Significant and valuable efforts are being made to integrate in statistics the production of those activities that were not or too poorly taken in consideration. Simultaneously, new price indexes for service consumption are developed (for instance in France, pertaining to GSM phone, health and social assistance) [Magnien, 2003; Barret, Bonoteaux and Magnien, 2003].

These mutations occur within a context of performance standardisation in order to cope with international competition newly reaching these economic sectors. This background underpins the need for comparison and assessment tools.

Statistical progress now reaches the domain of public or merely public services, where no market prices are available. It is notably the case of health and education, which encounter similar problems from the production measuring point of view [Cuneo, Letourmy and al., 2001: 59]. Furthermore, these services industries experience a very specific service relationship between provider and recipient because the user is often involved in the process of production, and even in the results. These latter features increase the difficulty to measure production, since quality may be affected by the relationship.

The paper focuses on recent works done in health, social assistance and education [Balsan, 2002; Baubeau and Pereira, 2003; Beudaert, 2003; Roos, 1997]. It addresses some methodological issues arising while measuring prices or production in these sectors. Its design is to give some hints to preserve a common economic approach of each type of activity, be it industrial or services. Its exploration is twofold; the first is related to price indexes in health and social assistance. The second considers the measurement of production and quality changes in health and education.

WHAT KIND OF PRICE INDEXES IN HEALTH AND SOCIAL ASSISTANCE ARE RELEVANT?

The valuation of prices for health and social assistance (see box n°1) encounters noteworthy difficulties. Some choices made to build price indexes in these sectors are

questionable. Wouldn't the framework decided for the European Harmonised Consumption Price Index (HCPI) bring a drift from the common conception of price indexes [Barret, Bonotaux and Magnien, 2003]? Prior to addressing this issue, I shall first remind some principles of price indexes building.

INCLUDE HERE BOX n°1

The Conventional Price Index Approach

The aim of a price index is to determine the pure price trend [Barret and al., 2003, 16; Piriou, 1983; Insee, 1998; Hill, 1999a]. To fulfil this goal, the price of an identical product should be repeatedly scrutinised through time. As often it is impossible, for instance because of the alterations in the characteristics of the product, one may track the price corresponding to a similar satisfaction. This leads to conceive a constant utility index or more pragmatically, a constant use index. When a statistician observes a price change, he has to look for the causes of the variation. If he realises it comes from a substantial modification of some attributes of the product (in other words, a shift in quality), he will ignore the proportionate share of the related price increase. For instance, if the whole price increase could be explained by a change in the characteristics of the product, the price index would stay unaffected despite the price change noted by the customer. In fact, price changes are monitored without fully considering the amount of the customer's expenses.

Given our last remark, two facts should be noted:

When the index is adjusted to take into account 'quality' changes, it is necessary to make allowances for the fraction of price change that is proper price variation and the fraction representing more goods supplied to the consumer (volume). In this procedure, the conception of quality involved is not exactly the consumer's one, which could be exclusively related to the outcome for himself. For instance, when one litre of milk is sold for the price of half a litre, or when the capacity of a hard drive included in a personal computer increases, the statistical 'quality' provided rises, even if the consumer does not feel so. In each case, the volume supplied to the consumer increases, regardless of the intrinsic quality offered to the consumer. To be more specific, instead of using the terms 'change in quality', it would be more appropriate to say 'change in kind'. Thus, the price index does not directly report the consumers' expenditures; it is not its key purpose. Eurostat rightly expresses this idea in its handbook: 'on a theoretical point of view, HPCI are rather Laspeyres' indexes than cost of

living indexes, in this way it expresses their role in the price stability appraisal process' [Com, 2004: 4]. However, given the underlying issue at stake, some pressure may be observed to twist the building and using of the price index towards the other direction [Magnien, Pougard, 2000: 82; Barret and al., 2003: 4].

An expenditure index would count what the consumer actually pays. Thus for instance, if the increase in the capacity of the computer hard drive were connected to a price rise, the expenditure index would reckon it. Furthermore, for instance the French price index gives an offered price and not a mean recorded price [Insee, 1998: 36]. Elementary indexes are commonly combined using an arithmetical average, sometimes a geometrical one, but without any weight. A mean recorded price would take into account, through its weights, the market shares actually purchased of every basic product among each assortment of the same kind.

After these preliminary explanations, it is time to address the issue of price indexes for public or quasi public services.

Prices in Health and Social Assistance

The measurement of price in health and social assistance seems complicated mainly because the price itself is problematic [Barret, Bonotax and Magnien, 2003]. Three difficulties arise:

On the one hand, several prices may be identified: a gross price and a net price. The gross price would be paid when no collective participation exists, it is the full fare. The net price is the one truly paid by the consumer, i.e. after social benefits.

On the other hand, some fares are connected to household income. It is usually the case in social assistance services as for instance day care facilities. When the household income rises, the net fare increases, but the gross price remains unchanged.

Finally, some households have an additional personal insurance. In this case, net price is different again and depends on which insurance was contracted. This situation will be left aside because it is a specific problem, and above all would divert the discussion from its main subject.

At this point, the question becomes: which price should be taken into account, the gross price or the net price?

If one follows the principles I mentioned above, the gross price is the good one.

Indeed, the gross price is not the best reference to expect, because it is administratively settled. Nevertheless, between both possibilities it is the one that gets closer to a standard price. It should be noticed that the gross price is also the closest to the consumers' effective consumption. Truly enough, effective consumption encompasses, not only the part of consumption directly payable by households, but the part paid by public subsidies as well. Due to economical consistency of National Accounts, it is much desirable that price index be a close counterpart of the volume of goods and services consumed, and therefore of production. Even if the net price shows better what is really paid by a household, it was underlined previously, that the price index is not an expenditure index, or a cost of living index. Finally above all, the net price encounters a major drawback, because it evolves with shifts in public intervention [Piriou, 1983: 37]. As shifts in the net price, may diverge from variation in the volume actually consumed, or even from the evolution of quality, the price index could be cut from the measures of production and consumption. A true price index does not move with the modification of social benefit.

In the case of social assistance, the fact that the fare changes with the household's income especially pleads in favour of the gross price as a basis for price index. Day care is typically facing this kind of problem. Gross prices are lists. The net price depends on the tariff but also on the evolution of the household reference income. This one is calculated with regard to total earnings, and if necessary, the household composition. Even if gross price is not a cure-all, it prevents at least the price index from being influenced by variation in earnings and the size of the family, which have no connection with a true price change. Using an evolution measured in net price gives, in fact, some amalgamated indicator of the income structure of the parents using day care centres. This bogus price is far from illustrating real production or consumption. Indeed, gross price may also be distant from these indicators, but its long run variations express more straightly actual data.

An Inaccurate Choice for the HPCI

The October eighteenth 1999 settlement of the Council states that, for health, social assistance and education, the scope of the Harmonised Consumption Price Index pertains to the monetary expenditure of final consumption of households. Prices are to be net of social benefits, and have to take into account variations resulting from income change. National price indexes may however carry on with their usual method, and the French one keeps using gross price. Consequently, in the aforementioned sectors, the European index better represents

what households actually pay, than how pure prices are evolving. Given what was explained before, this choice is not only truly unfortunate, but also inconsistent with the main purpose of this price index. The HPCI is not used to measure the cost of living, but inflation. It is a tool for Maastricht criteria and an objective for the European Central Bank. Besides, the fact that the Council's settlement considers the index may likely be used to index the very growth of social benefits (art. 4 paragraph 2.c), which are removed in the calculus of the index adds yet quite puzzling questions.

This inappropriate decision has several reasons. It may partly stem from the American traditional expression 'cost of living index' commonly used to express equally price indexes and cost of living indexes [Insee, 1998: 37]. The diffusion of the Boskin Committee's analyses in 1996 [Gadrey, 1999] has most likely spread this misinterpretation. It also may come from other European countries' habits, as for instance Germany's. This latter has built a 'standard of living' index, which, in some fields, is nearer the cost of living than the French notion of consumption prices [Buchwald and Saglio, 1994].

The final choice of Eurostat has most likely been resolved for practical concerns. Often, a difficult arbitrage is required between, considerations of doctrine, and practical necessities. On the one hand, principles should probably have led to postpone the integration of the aforementioned sectors into the HPCI. On the other hand, practical necessities demand quick answers or results. However, as Elissalt [2001: 43] notes, statistics are to meet four quality criteria: consistency, relevance, comparability and availability. It seems that the two first criteria have more or less been neglected to favour the last ones. Seemingly, comparability is better fulfilled: the net price is the common European standard. But, contrasting European national net prices may more illustrate divergence or convergence in social policies than divergence or convergence in price fundamentals.

THE MEASURE OF PRODUCTION: PRICE, VOLUME AND QUALITY

European recommendations and international thoughts, also boost researches pertaining to the measure of production in educational and health services. Two types of problems need however to be overcome. On the one hand, there is no simple standard unit of production that could be individualised as a reference for quantity, as for instance, a minute of communication in telecommunication services. On the other hand, there is no true commonly accepted perception of what is produced. The production of health or education is not so easy

to define, as for instance, that of car manufacturers. A tangible conception of the production seems irrelevant [Lombrail Naiditch and al., 2001: 16].

I shall briefly remind why old production measures in health and education are poor. Then I shall underline the need to emphasise the supplied quality. At last, I shall suggest some hints to assess the variation of the quality.

From a Measure by Inputs towards a Measure by Outputs

In the aforementioned sectors, the conventional production measure was a derivation of operational costs (inputs).

This approach presents as a major flaw its obliqueness, but relies on a practical perception. There is an obvious link between production costs and the value of production itself. After all, if the evaluation of the total level of output is not exact, on the whole, the shift of production costs may represent a relevant approximation of actual shift in the production.

This idea is definitely solid in common cases, but may be defective especially in service industries. Indeed, the total cost of production may rise without a significant impact on the amount produced; incidentally the reverse remark could be true as well.

In fact, in service industries, production is done in the consumer's presence, and service cannot be stored. Established production capacities must be ample enough and immediately available to cope with instantaneous demand. The scale of production needs to be as large as the transitory maximum of the demand, otherwise waiting queues appear. The prerequisite to set large production facilities induces a considerable share of fixed costs, in comparison to variable costs. For example, in hospitals medical staff charges roughly amount to 70per cent of total costs and, at least in the short run, are fixed costs.

Two consequences may be underlined. On the one hand, all things being equal, a total cost rise illustrates an increase of the extent of production, or possibly an improvement of the quality, rather than an increase in the amount produced. On the other hand, when maximum capacities of production are not reached, a true variation of production has only a modest impact on total production costs. This phenomenon is documented for service industries like for instance live shows [Broussolle 2003]. But, it is nevertheless a comparable situation in educational, as well as in health services, even if in the latter sector variable costs are more significant. Finally, the linkage, costs variation \leftrightarrow modification of quantity produced, is not fully definite.

Contemporary economic analysis wishes to go beyond the defective characteristics of the measure by inputs, and tries to get closer to a true measure of production (output ones). Yet, real production is not easy to define. The methods conceived consist thus in measuring the evolution of production through the variation of an indicator of quantity activity.

In the field of health, many indicators are available: the number of days of hospitalisation, the number of treatments, the score of the Combined Activity Index ¹ (CF Cuneo, Letourmy and al., 2001]. In the case of education, the choice is more limited. Nevertheless, for health services, a quasi consensus pleads in favour of the number of persons cured, taking into account the type of therapy implemented. For education, the same line of reasoning leads to measuring the production through the number of students, given the grade level. The same is true for live shows where production also depends on the size of the audience [Broussolle, 2003]. The Eurostat workgroup for education has approved this approach: ‘the production of education is the quantity of teaching received by the students, adjusted to take into account the quality of the service given, for every type of teaching’. Consequently, for a definite grade the production of education depends on the number of students and on the amount of hours they receive. All things being equal, a decline in the number of students leads to a decrease in production. As prices are not available, the total value of production may be calculated relying on the average cost of training per student ².

The production in hospitals, following the same kind of analysis, may be counted through the number of persons cured, according to the relevant level of pathology (Diagnosis Related Groups). As evaluations of mean costs by diagnosis are becoming available in France, an estimate of the global production in value can be computed.

Quality Concerns

Seeming production and true production. Several analyses desire to go beyond the previous approach. They think it reveals only what we could name a seeming production, instead of a ‘proper production’.

The ‘proper production’ approach wishes to focus on the final result or outcome. Which means for health, considering the variation of health condition of the cured, or for education, a real shift in intellectual and vocational capabilities. These variations are deemed to express the real output, opposed to quantitative measures. Thus the production of health is commonly described as ‘the variation of condition of the cured, measured between their arrival day and their leaving day of hospital’ [Dervaux and Jacobzone, 1997]. Concerns drawn

to the outcome genuinely leads to focus on the quality of the output, or even sometimes to its efficiency. Ross [1997] thus notes 'the measure of the results of hospital services is tightly linked to the measure of the quality of services supplied'. Indeed in health and education quality is an important issue; yet problematic to characterize. For instance, speaking about education Beudaert [2004: 8] underlines that the quality debate becomes quickly complicated and fuzzy. As a matter of fact, while terms as quality and outcome are commonly used, they do not always encompass the same meaning, depending on whose author is writing.

Supplied quality and resulting quality. Lombrail and Naiditch [2001: 21] point out that the quality of medical care generally relies on three factors: care facilities (material and human means as well as their organisation), procedures (therapeutic practices) and finally the outcome (variation of health condition). Roos [1997] distinguishes the quality linked with the characteristics of the production technology and the quality resulting from medical care, which is the modification of the health condition. One may notice that in the two cases, the concept of quality is broader than the notion of results by itself. Furthermore, since the quality related to technological characteristics, refers to means implemented and also to procedures, at the end, one may match the two points of view. To do so, one only needs to suppose that the critical line separates the supply side (means and procedures), from the consumer side (variation of his condition). This categorisation applied to education, stands for an improvement in the training of teachers and a better adjustment of teaching equipment, on the supply side. On the demand side conversely, improvement of intellectual and vocational capabilities pertain to the variation of the recipient condition.

There are hence two aspects of quality, whether on the supply side, or on the final outcome's. From now, I shall refer to these aspects as supplied quality and final quality. The first designation pertains to the standard level of quality supplied by the service activity. The second one concerns the very changes of the recipient's capabilities. This twofold categorisation could also be interpreted in terms of predictable results and actual results.

As far as production measure issues are concerned, supplied quality only matters. When observers emphasise the import of the results in health and education, they wish to draw attention to quality issues. Indeed, no matter which valuation method is envisioned, quality is a significant issue at stake. The question then turns out to be which of the two, quality supplied or outcome quality, is the correct approach. Usually, because of realistic considerations, the production measure does not take into account the actual result. In the case

of health services for instance it is very difficult to assess the variation of the care user's condition [Cuneo Letourmy and al., 2001: 57]. But I want to show that, despite the practical difficulties mentioned, the reference to final result should be discarded for theoretical reasons.

Firstly, too better understand the explanation, the general case needs to be remembered, especially the notion that production refers to what is transferred to the recipient.

When the production of an ordinary product is measured, the economist looks at what is transferred and not at the modification of the beneficiary's status. No wonder, but some would argue that in the case of service industries, the service itself cannot be isolated from its recipient. It is certainly true in a practical way, and indeed no property rights are to be granted to service as such [Hill, 1999b]. Nevertheless, it does not prevent from analytically describing the service which is transferred [Broussolle, 2001]. Moreover, on the provider side the service is designed as a standard pattern. In health, where it is remarkably observable, medical processes follow protocols. The usual method may thus be followed in health and education.

Secondly, final result may diverge from the service supplied.

Because of the particularities of service industries, one has to very carefully distinguish the service transferred and its effects. As Hill [1977: 377] emphasised 'some care is needed to avoid confusing the service itself with the benefits resulting from the service, especially with health and education services'. This observation is legitimated by the fact that the benefits of the service entirely belong to the consumer. As a matter of fact, the consequences of a service are partly autonomous from the activity of the producer. As in information services, in health and education, there is some uncertainty about the results [De Bandt 1998]. All things being equal, the actual result depends on the final user. The same therapy, or the same training, may have different results, even an adverse one, depending on whom they were applied. Meanwhile, we may add according to Naiditch, Durieux and Lairy [2001: 38] that 'there is no straight relation between a hospital mortality ratio and the quality of medical care'. This surprising statement is easily explained when other factors, like the patients themselves, are taken into account.

These arguments legitimate a measure that relies on supplied quality, rather than on final result. At this point, it is necessary to turn to assessing the service transferred and the variation of quality as opposed to shifts in prices or costs.

How to Assess an Improvement in Quality?

One must keep in mind that the variation of quality to be scrutinised is the variation of supplied quality.

The measure of production in health and education should be adjusted with the improvement in supplied quality, rather than with the true modification in care condition or intellectual status. This point of view may appear surprising, since it seems to disregard the tangible effects of the actual supply. This lack of concern is however only a seeming one. In fact, effects of supply are taken in consideration in predictable results, which is supplied quality. There is obviously a strong link between improvement of supplied quality and final results. An enhancement in medical technology (supplied quality) induces statistically an enhancement in the condition of cured people [Lombail and Naiditch, 2001: 21]. As a matter of fact, the statistical relation: quality supplied → effective quality is no doubt stronger than the reverse one.

This perspective has a non-trivial consequence. It means that an enhancement of supplied quality that would not bring an enhancement of actual results (no change in recipient status), should nonetheless be counted as an improvement of volume produced. The quantity of service transferred would have increased even if no tangible rise in result were noticeable. For instance, it would be the case if an upgrade in the training of teachers or more pedagogical tools or improvement in classroom organisation... did not bring any significant progress in tests results or the exam achievement ratio. An increase in the quality of therapy, which would not change the mortality ratio, should be perceived the same way. For instance, when the number of patients in the hospital room is reduced, it is a quality enhancement that has to be taken into account, even if therapeutic ratios are not affected.

The volume-price separation and supplied quality. Supplied quality is strongly linked to the means and procedures utilised. Thus, all things being equal, when resources implemented increase production costs per unit, supplied quality increases. Then it is necessary to separate, the part of pure price variation and the part that may be attributable to the rise of service volume. Two ways may be followed to evaluate this volume - price division.

- The first solution could be to take advantage of efficiency indicators that would allow comparing the pay-off in results and the raise of costs ³.

In the case of education, Beudaert [2004] notes: ‘the ideal would be to have studies showing the real impact of resources on results’. He adds: ‘this would mean that, in fact, the result eventually determines quality, and the estimate of quality through the resources implemented is legitimated by their alleged impact on results’. As may be noticed, Beudaert speaks about supplied quality since alleged results are mentioned. Finally, the result is not forgotten in the study, but it is the foreseen results, not the recorded result. Studies like caesareans by lying-in hospitals [Naiditch and Chalé, 2001] or mortality ratio by hospitals [Naiditch, Durieux and al., 2001] are not appropriate indicators. They are necessarily ambiguous, because they proceed by backward induction. They infer starting considerations from the results, despite contingent contexts. In fact, they rather pertain to an assessment of comparative efficiency of every actor in health services, following a perspective of ranking or benchmarking⁴. Research studies implemented to validate the market entry, of a new medical technology or a procedure, are of great help to assess the supplied quality. In other words, we need forecasting standardised studies, which measure the result for a specific action in a controlled environment.

In the field of education, two suggestions may be considered to compute the quality effect: the decrease of the average number of students per class, or the increase of the achievement ratio.

Even if analyses about the number of pupils per class are not always conclusive, it is almost certain that an extreme number is detrimental to the quality of education, hence to the volume actually transferred to each student. It is thus an interesting suggestion to follow with pragmatic potential, especially since the increase of the mean cost per student may be associated to the falling number per class. A model of ‘overload’ proposed by Hill in 1975 seems therefore appropriate. This pattern assumes that the total production of a class is not equally proportional to the number of students, but it follows a concave function of the pupils. At first, the production increases in parallel with stocks, but when some threshold is crossed, the volume produced declines. A drop in the stocks of students will have a qualitative impact, only for classes falling below the threshold. Conversely, those already under the threshold will not experiment any qualitative effect, no more than a quantitative one. Beudaert [2004] adapts the model to the case of secondary schools in France for the 1983-99 period. He finds an average quality impact per year of 0.2 point. This figure may be compared to the overall increase of volume produced, computed according to stocks weighted by grade costs. This

gives an estimate ranging between 1.3 per cent to -0.9 per cent, depending on the year [Beudaert, 2004: 7].

Some recommend [Konijn and Kleima, 2000] to control quality with the variation of the upper level passing ratio, or possibly, the variation of the exam achievement ratio. This suggestion is fairly appealing, but faces several drawbacks.

Above all, one should notice that these hints are not supplied quality indicators, but efficiency ones (final result). An indicator of supplied quality should be built in a prospective way. It should pertain to the variation of exam or upper level passing ratio, due to some modifications in resources or procedures, all other things being equal. Shifts in the final result are not necessarily linked to supplied quality variations, other parameters may be involved. They may be due to a change in the students' inner capabilities but in the institutional environment as well. For instance, when propositions from the teachers' committee about upper level passing move from mere suggestion to mandatory decision, it obviously influences the ratio, but not the supplied quality. In fact, the variation of the passing ratio influences the supplied quality only through its impact on the 'overload' of classes.

Next, when the idea is generalised to production measure, that is when global production of a class is evaluated through the flow of promotions, and not through the stocks taught, another drawback appears. The students staying in a class another year are not taken into account, which is not adequate. It is true that when using stocks of students to measure production, if the overall passing ratio increased, the result would be a decrease in production [Beudaert, 2004]. This idea seems amazing and shocking. Nevertheless, if nothing has changed in the 'production process', the improvement noticed in achievement is due to a change in external phenomena, hence external from transferred service. *Nolens volens*, total production of service has decreased.

- The second method to estimate the separation between price and volume is to rely on the cost of service per unit.

Production in hospitals may be assessed through the number of persons cured⁵, adjusted to each type of pathology. The Program of Medical Information System, which has been developed in France since the 1980's, allows now to evaluate costs for standardised pathology. It may certainly be improved [Henriet, 2001; Paris, Renaud and Sermet, 2002], but it is not the purpose of this paper to evoke this problem. In the case of education, the number of students per grade may be multiplied by the cost for each grade⁶. When these parameters

are available a split between volume and price may be computed. As a first step, it is possible to calculate the price variation by comparing the change in the total cost while keeping constant the structure of production (number of treatments for each item). In a second step, while keeping constant the structure of cost per unit of the reference year, it is possible to calculate an evolution of the global production volume ⁷.

Such a calculation only catches a structural quality effect: that is the evolution of quality related to a twist of the training or health framework. For instance, this indicator encapsulates an increase in the general level of education, or a better access for more people to specific therapies. It is already a noteworthy step ahead.

This approach nevertheless also allows taking into account an improvement in quality stemming from the development of new services. When the taxonomy is accurate enough, and we can say it is true for Diagnosis Related Groups (600 items available), regular updates of the taxonomy provide invaluable information on the progresses in treatments. Some entries are added, some are removed, this renovating process may illuminate improvements in quality. New lines could be interpreted as an increase in volume supplied, following the same way as it is done for new goods in the consumer price index.

According to these principles, Balsan [2002] computes, for the 1997-2000 period, a split between volume and price for medical care, surgery and obstetrics, in France. He shows, as expected, that when the quality effect is really taken into account, the increase in prices is reduced comparatively to the figures provided by National Accounts. Hence, the real output of health increases noticeably faster than National Accounts indicate.

Nevertheless, the subtleties of this measurement technique using costs are curtailed. Indeed, they implicitly presume that the quality of production remains even for each item (a single level of education or a DRG), that is for the large majority of them. On the mid term basis, this hypothesis falls short. To go further, it should be necessary, to apply the principles of the first measurement technique, in order to adjust the supplied quality of each single level. Another possibility would be a thorough analysis of the origin of costs per pathology drift.

What About Obsolescence?

An inclusive study cannot avoid a last issue, albeit hardly ever evoked. In services industry, as in other sectors, the value of quality improvements decreases with time. It is obsolescence.

An innovation brings at the beginning a significant contribution to the 'volume' produced, but when it becomes standard its value falls, and so does the volume of provided service. This phenomenon is well known in the industrial sector, but also affects service industries. In health or education, when some improvements which, at the beginning were qualitative leaps, become too common, they are depreciated. Because market prices are not available, an estimate of the phenomenon is very difficult to give. Nevertheless, the phenomenon being linked to productivity, the fall in the average hospital stay duration for a given pathology, could represent an approximation of the obsolescence. In the field of education the phenomenon is less obvious. However, the revision of approved syllabuses is most likely related to it.

CONCLUSION

The latest researches in the fields of health, social assistance and education prove that knowledge about services increases, despite noticeable complications. The paper nonetheless underlines several drawbacks and proposes some prospects.

For its price consumer's index in health and social assistance, EU has decided to take into account net price, social subsidies included, instead of gross prices. This choice seems inaccurate because it distorts the meaning of a price index. A price index, as an inflation indicator, should not solely illustrate the evolution of cost of living or actual consumer's expenditures.

Concerning production measuring, the article emphasises the idea of implementing a similar approach in services and industry, namely output measures. For instance, it is desirable that the production, in health or education, should be computed through output indicators instead of input costs. The number of people cured or students educated could be such indicators. However, differing from some observers' suggestions, the paper proposes not to take into account the variation of the recipients' condition. This perspective is akin to the work of Demotes-Mainard [2003]. For output issues, supplied quality rather than effective result matters. Effects of a service belong in all ways to the recipient. Variation in quality should thus be taken into account through variation of the supplied quality, instead of the actual result.

Two ways are possible to consider quality. The first relies upon detailed studies that connect the improvement of techniques and processes with their expected results. It concerns

validation studies similar to the type preceding the entry to market of medical specialities. The second relies on a split of the global ‘turnover’ evolution (based on costs per pathology or per grade level). This method emphasises the structural quality improvement, which stems from the distortion towards a better quality of the consumption. The two approaches are paired and would benefit to be combined, because they do not illuminate the same features of quality improvement.

Given the huge attention that quality factors are benefiting in education or health, studies pertaining to production have a tendency to drift toward analyses concerning efficiency or performance. There is indeed a strong link between efficiency and quality, but it is necessary to separate the measure of production, from the measure of efficiency. The two approaches are surely relevant, but they do not lead to the same computed values. It would be erroneous to mix them up. Efficiency studies are convenient to rank, they intend to compare practises and results. Production measures aim at giving an inclusive picture, adding every production, whether efficiency is high or low.

NOTES:

- ¹ The Combined Activity Index is based on a panel of French public hospitals. Each particular therapy is classified according to the national list of Diagnosis Related Group and corresponds to a standard mark of activity. The total score influences the budget of hospitals.
- ² There are two conceptions of the measure of the average cost. One consists in dividing the global cost by the number of students. It gives the average recorded cost that varies from year to year, depending on the number of students. The second is computed through the number of hours of training planned for each grade, taking into account the average cost for each hour of teaching. The number of students does therefore not influence the latter computed value. In the perspective of the paper the second conception is more relevant.
- ³ Vanoli 2003 illustrates this kind of perspective in the case of equipment goods.
- ⁴ However in this very perspective, when benchmarking relies on costs by pathology, it is crucial to adjust medical costs by pathology with the variation of provided quality. It would facilitate to avoid the danger noted by Henriet (2002: 23): ‘if no care is taken or no control is done for quality, this price system [cost by pathology] may lead to a decrease in care quality, because the implicit struggle on price drives the hospitals to give up quality’.
- ⁵ Unfortunately data gives the number or duration of stays.
- ⁶ Usually the global expenditures of public administrations is utilised (Beudaert 2004). This indicator could be improved to converge with the approach implemented in health. It is preferable to multiply the official number of hours for each grade by the cost of an hour. This perspective would take into account the volume of education transferred and avoid potential colinearity between parameters. Managerial costs could be added, on a conventional allocation basis.
- ⁷ This computation is like splitting the change of the global index in two parts that can be multiplied. The first part is a Paasche’s index (coefficients based on current year) calculated on prices. The second part is a Laspeyre’s index (coefficients use the reference year) based on volumes.

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Box n°1

Health and social assistance services

This cluster has got number 85 in the French 2003 taxonomy, it encompasses:

85.1 Activities concerning human health.

85.2 Veterinary activities.

85.3 Social assistance (*action sociale*).

- * 85.3A Residential care for disabled children.
- * 85.3B Residential care for children with disorders.
- * 85.3C Residential care for disabled adults.
- * 85.3D Residential care for the elderly.
- * 85.3E Other social housing.
- * 85.3G Child day care services and kindergartens.
- * 85.3H Vocational rehabilitation, protected workshops.
- * 85.3J Home support.

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