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Producer price index for services

Pricing methods

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1. Introduction

The term ‘pricing method’ in the context of compiling price indices would probably be regarded by most price statisticians as a common concept. However when one attempts to find a definition for this concept, or indeed a definition for various types of ‘pricing methods’, the inadequacy of the current literature becomes apparent. This is particularly true in the case of producer price indices for service industries (SPPI), where defining pricing methods is crucial in many respects.

This paper aims to review references to ‘pricing methods’ in the current literature in respect to SPPI, and to develop a list of criteria which may help to distinguish between different pricing methods used in SPPI and how they relate to the ideal goal of pricing to constant quality.

1.1 What are pricing methods?

This paper is about pricing methods, for which the following definition is proposed:

‘the use of a specific type of information on prices to represent the evolution of price in price index compilation. The specific type of information specifies the method.’

As this sounds quite abstract an example is informative: the unit value method is the use of income divided by quantities sold as price information in price index calculation.

The ideal pricing method is *transaction pricing*, which is the use of actually paid prices of individual transactions that are repeated in every survey period. Price index theory is built on the assumption that this ideal pricing method is used or sufficiently approximated. However pricing methods in practice, and especially in that of SPPI, stray from this ideal. The closer a pricing method is to transaction pricing the better. Therefore, a pricing method can be rated according to how it compares to transaction pricing.

Before we discuss pricing methods at more length, it is important to distinguish them from *pricing mechanisms*. The definition of pricing mechanism is the way in which a price comes about between economic actors. An important difference with pricing method is that a pricing mechanism is in place between economic actors, while a pricing method is employed by statisticians.

A pricing mechanism is a limiting condition for the statistician in his options for choosing a pricing method. Pricing methods are therefore ‘downstream’ from pricing mechanisms. Pricing mechanisms are in turn ‘downstream’ from the *nature of the product*. See table 1 for examples of these three concepts. The appendix offers more discussion on of the nature of the service and the pricing mechanism.

A pricing method is solely concerned with *what* type of data is used to measure / estimate the evolution of prices. It does not pertain to subsequent treatment like (elementary) index compilation and aggregation and other issues in PPI development like sampling or questionnaire design. These issues do not convey difficulties that are specific for services, so they do not deviate from standard practice of manufacturing PPI’s. Pricing method is also not concerned with preceding phases in SPPI development when the goal regarding coverage of the SPPI is decided, like in- or exclusion of subcontracting, taxes, subsidies, import, and export.

Table 1: Examples of the service nature, pricing mechanism and pricing method relationship

	Nature of the service*	Pricing mechanism	Pricing method
Car rental	Standard	Commercial list price, with an occasional discount	Sample of some of the list prices
Construction	Some product details determinable only during delivery	The exact final price is known only long after product delivery.	Prices of a fixed set of inputs (including profit) are combined.
Legal services	Service is strictly tied to an asset.	Percentage fee of the value of the asset that the service pertains to	Unit value of hourly charge-out rates, dividing total income by worked hours
Passport	A national monopoly	Regulation: government specifies prices	Downloading documents stating obligated prices

*As far as relevant for pricing

1.2 Why pricing methods are pivotal in SPPI development

Pricing method is a key issue for services price statisticians because theoretical or practical problems cause transaction pricing to be unfeasible. The main causes, which are interrelated, are:

1. Unique product transactions are not periodically pricable and have to be reduced to a standardised replicable unit;
2. Complex products have to be reduced to manageable units (e.g. telephony);
3. There is limited knowledge about complex products whereby the issue of pricing to constant quality becomes (too) difficult;
4. Classifications and information for a weighting scheme are not available down to the product level, while the goal is often only the estimation of top aggregates;
5. Limited human resources;
6. Representativeness of a small product panel is problematic.

Voorburg Group

The Voorburg Group is the main international discussion forum for SPPI. Its output on prices reflects the industry-by-industry approach of National Statistical Institutes (NSI's). In line with this approach, the systematic framework of the Group is industrial classification, namely the ISIC. Treating classification as given, two types of difficulties in the development of SPPI emerge from the Group's collective papers as main issues, these are: What is the nature of a service? What pricing method is used?

The industry-by-industry approach focuses attention on the definition of the services and the industry, putting the pricing method employed for the industry at second place. But for a number of industries the definition of service and industry classification are not particularly complicated, debatable or different between countries. For these industries, pricing method is the main topic of interest.

Moreover, for industries where the definition of the service is debatable, pricing methods have been a decisive factor in SPPI development nonetheless. Service definitions have often been chosen based on data availability which corresponds to pricing method. For instance, the not SNA-compliant 'transfer of

risk' concept of insurance is adopted (Bathgate, 2004), because no pricing method is available for prices according to the 'pooling of risk' concept. Another example is the definition of Frequent Flyer Miles in air transport as either service provision for a zero price, or as marketing expenditure (and thus excluded from the index) based on pricing method (Page, 2004)¹. Ideally the definition of services is the first step of the SPPI development process. It is then independent of pricing methods chosen later.

Within the Voorburg Group literature, as there is no systematic framework for defining pricing methods, they are usually described in adhoc fashion with catchy terminology. A result is that the information value of a statement like 'we use method X for industry so-and-so' is very limited. It has to be followed by an exact and long explanation of what method X means for this particular PPI. A more systematic and generally accepted framework could ease communication about pricing methods considerably. The topic of SPPI is maturing fast. It is therefore a logical step forward from the specific into a more general view.

PPI Manual

The PPI Manual (IMF, 2004) deals with theory and practice, where practice is mostly understood as how practice should be as a consequence of theory. It only treats practice 'in practice' in chapter 10. Pricing method is consequently not a key issue in the PPI Manual. In fact, what is defined above as pricing method is spread out under different names in different chapters in the PPI Manual:

- Chapter 1. In 'Overview of steps necessary for developing a PPI', pricing method is mentioned as a part of step 5 'Collecting and editing the prices'.
- Chapter 3. Pricing methods are called 'Price coverage',
- Chapter 6. Pricing methods are called 'Approaches for unique products' in a paragraph 'Other variables' of the section 'Collection procedures'; and 'Definition of price observation' in a paragraph on timing and frequency of price collection.
- Chapter 10 consist of case studies of industries, a number of which services.

In this unsystematic treatment the term *specification pricing* is used twice (in paragraphs 1.327 and 6.83) with two different and irreconcilable meanings.

This lack of interest in pricing methods may stem from the fact that pricing method is not a key issue in the more traditional manufacturing PPI's. It is not a key issue there because transaction pricing is either possible, or, more often, the pricing method is so close to transaction pricing that it is not necessary to address explicitly how the pricing method differs from transaction pricing. Bias in the resulting index as a consequence of this difference is assumed to be too small to pay much attention to.

OECD/Eurostat Task Force on Services Prices

The OECD/Eurostat Task Force on Services Prices recognises pricing method as a key issue. One of the four chapters of their Methodological Guide for developing SPPI (OECD and Eurostat, 2005) is devoted to pricing methods. This is effectively the first internationally coordinated attempt to describe pricing methods themselves. Also for the first time, explicit comparisons of national practices were documented (see the industry-wise descriptions in chapter 4 of this manual). This lead to comparisons of methods for

¹ It is possible to construct an index without in-depth knowledge of the nature of a service, even though this is to be discouraged greatly, but it is not possible to compile an index with knowledge of the nature of a service but without

which classification and terminology turn out to be quintessential. For example, consider the following quote taken from OECD and Eurostat (2005): “In essence [this] approach -despite deviation in terminology- seems almost identical with the methods of the other countries”.

As this guide has gone to considerable effort to explain the main characteristics of the most common terms used for pricing methods in SPPI, the resultant terms are used in the remainder of this paper. We therefore refer the reader to chapter 2 of the OECD/Eurostat guide for an explanation of the various pricing methods.

2. Ordering pricing methods

2.1 Criteria to classify pricing methods

The pricing method is a property of a SPPI in operation. It is therefore useful to start out with existing PPI's in real practice and see how they can be ordered by their pricing methods. This entails that they are ordered according to criteria that examine the information used as price information in SPPI compilation and how close this approximates the ideal of repeated transaction pricing for identical quality service products.

The alternative to a classification is to find definitions for all pricing methods. It may seem attractive to define a pricing method based on its most striking characteristic, in an *ad hoc* way and irrespective of other methods. However the disadvantage of defining instead of classifying is that a set of independently defined pricing methods can have overlap and omissions. A classification leads always to an allocation of an item to one and only one class.

In setting up a classification for pricing methods, it quickly turns out that two main criteria have to be applied regarding the information used as price information in PPI compilation, namely:

- What is the target object of measurement? and
- What is the meaning of the data to the respondent?

A) What is the object of measurement?

- a. Real transaction(s) (e.g. *unit values*)
- b. A model transaction held constant
 - i. A model that was really transacted (e.g. *fictitious repricing of a transaction that occurred in the base period or before*)
 - ii. A fully fictitious model
- c. Output components
 - i. All components of a transaction (e.g. *prices exist for all components of a bundled service*)
 - ii. Some components of a transaction
- d. Hourly charge-out rates
- e. Input components

price information.

- i. All input components related to one output transaction (e.g. *wages + profit margin + other costs*).
 - ii. Some input components related to one output transaction (e.g. *construction PPI: materials + wages*)
- f. Unclear (e.g. *estimate of general price change*)

B) What is the meaning to the respondent of the data that are used as price information?

- a. Real transaction prices (e.g. *scanner data*)
- b. List prices with assumption of exact correspondence with transaction prices (e.g. *postage stamps, price list in a barber shop*)
- c. List or tender prices with assumption of approximate correspondence with transaction prices (e.g. *list of standard hourly charge-out rates*)
- d. Company data that are not output prices; no correspondence with any one single transaction price.
Examples are:
 - i. Turnover and quantities sold (e.g. *unit value for telecommunication*)
 - ii. Input prices with mark-up (e.g. *between hourly wage and billable hour*)
 - iii. Percentages of asset values, charged for services related to the assets.
- e. An estimate by an expert from the respondent company made only for the statistical survey; fictitious information.

The two classifications based on these two main criteria can be crossed with one another, forming a matrix of pricing methods.

Matrix 1. Two main classifications of pricing methods can be crossed, resulting in a matrix of possible pricing methods. Examples are given in the matrix.

		Object (target) of measurement					
		Real transaction	Model transaction	Output components	Hourly charge-out rates	Input components	
Meaning to the respondent of the data surveyed	Real transaction prices	Scanner data, contract pricing	(Real prices in model)	Subscription for telephony	Truly paid hourly charge-out rates	(True hourly wages)	
	List prices Assumed equal to transaction prices	Postage stamp		Fuel surcharge in road haulage	Standard hourly charge-out rates	Diesel fuel in transport	
	List prices Assumed not equal to transaction prices		List prices in model	Standard price per mile		Prefab parts in construction	
	Company data that are not output prices	Turnover and amount sold	(Perfectly homogenous U-V)	U- V's in model	U-V for telecom	Realised hourly charge-out rates	
		Input with mark-up		Wage * Mark-up in model		Hourly wage * mark-up	
		Percentages fees		%-age fee in model	FISIM part of a loan		
	An expert estimate			Expert estimates total project prices			

Additionally, the following three aspects are of interest.

C) How long is delivery compared to the length of the survey period?

- a. Start and finish within one survey period
- b. Longer than one survey period
 - i. Repeat service (e.g. *daily cleaning*)
 - ii. Long provision (e.g. *construction project*)

D) At what moment compared to delivery does a price enter the index?

- a. During delivery
 - i. As delivery progresses
 - ii. At the start
 - iii. At the end (e.g. *shipment prices*)
- b. Before delivery starts; when contract is signed (e.g. *order prices*)
- c. After delivery is finished (e.g. *construction*)

E) How many real transactions are covered in one piece of price information?

- a. One (e.g. *contract pricing*)
- b. More than one (e.g. *unit value*)
- c. None (e.g. *model pricing*)
- d. Unclear (e.g. *indicator of general average price change, standard hourly charge-out rates*)

Let us consider the pricing methods recognised by the SPPI Guide (given in *italics* below) in the light of the classifications above.

- *Direct use of prices of repeated services*. The object of measurement is the real transaction. Mostly prices are taken from a list that and are assumed to equal transaction prices. Contract pricing concerns surveying real transaction prices.
- *Unit values* are company data that are not prices; they are figures of turnover and quantities sold. Only a perfectly homogenous unit value (which doesn't exist in practice), would correspond to real transaction prices. Unit value indices are used mostly to estimate a standardised model transaction or an output component (e.g. for telecommunication). Unit values of hourly charge-out rates can be calculated, but these are more typically categorised as pricing based on working time.
- *Component pricing* corresponds to most pricing methods that have only some output components of the underlying service as the object of measurement. In some cases, when the object of measurement is some output component, the method is still classified as unit value or percentage fee method (company data that are not prices) because the meaning to the respondent of the data surveyed is in these cases more decisive for its assignment to a pricing method than the object of measurement.
- *Percentage fees* is a peculiar kind of company data that are not prices.
- *Model pricing* pertains to the object of measurement; the data used to estimate the price of a model can come in many forms.
- *Pricing based on working time* is a separate, much debated, object of measurement which generally equates in the context of this paper to the use of hourly charge-out rates for billable hours worked for a client. No matter which kind of data is used to estimate these hourly charge-out rates, they are classified in this separate category.

Matrix 2. The pricing methods recognised by the SPPI Guide and their relation with the two main classifications of pricing methods.

		Object (target) of measurement				
		Real transaction	Model transaction	Output components	Hourly charge-out rates	Input components
Meaning to the respondent of the data surveyed	Real transaction prices		<i>Direct use of prices of repeated services</i>		<i>Component pricing</i>	<i>Pricing based on working time</i>
	List prices	Assumed equal to transaction prices				
		Assumed not equal to transaction prices				
	Company data that are not output prices	Turnover and amount sold	<i>Unit values</i>			
		Input with mark-up	<i>Model pricing</i>			
		Percentages fees	<i>Percentage fees</i>			
An expert estimate			<i>Model pricing</i>			

Ideally matrix 2 would serve as a method for determining the quality of a chosen pricing method. However the only thing that can truly be said is that each method is trying to approximate the ideal of transaction pricing in the top left hand corner. To this end, the matrix does provide a means to assist with this analysis. The following section explores these issues further by focusing in depth at model pricing and hourly charge-out rates.

3. In-depth look at hourly charge-out rates and model pricing

3.1 Hourly charge-out rates

3.1.1 A class of pricing methods

When we consider the criteria B, D and E from section 2 we can see that hourly charge-out rate is a class of pricing methods, not one unique method. With the B criteria (i.e. what is the meaning to the respondent of the data that are used), three main cases can be identified: standard hourly charge-out rates (i.e. list prices), truly paid hourly charge-out rates and realised hourly charge-out rates. Standard hourly charge-out rates are the easiest but are furthest removed from real transaction pricing. We can classify standard hourly charge-out rate in criteria D as b) (before delivery starts) and in criteria E as c) or d) (no real transactions or unclear). Let's take an example in order to clarify the difference between "realised" and "truly paid" hourly charge-out rates:

For one specific project in computer services, the hourly charge-out rate (after negotiation with the client) is 100 euros, estimated time is 10 hours and realized time is 8 hours. The price of the contract is 1000 euros (100*10), the truly paid hourly charge-out rate is 100 (can be different of standard hourly charge-out rate with the negotiation) and the realised hourly charge-out rate is 125 euros (1000/8).

Please note that “truly paid hourly charge-out rate” is closer to “real transaction price of a component of pricing mechanism” than to “real transaction price of the product”. When we consider criteria D (items a,b,c) and E (items a,b only) with truly paid and realised hourly charge-out rate, we can obtain 10 combinations in theory ($3*2*2 - 2$ because it is impossible to consider realised hourly charge-out rate before the delivery of the product starts). There are fewer possibilities in practice after visits to respondent firms. For truly paid hourly charge-out rates and items a) and c) of the criteria D, aggregation is a difficult task. It is difficult or even impossible to obtain this kind of information. In fact, truly paid hourly charge-out rates during and after delivery of the product are not key variables for the firms (after the beginning of the project, realised time is a key variable for a firm, not estimated time).

3.1.2 Two main cases

If we focus our attention on several contracts (E item b, it is better to consider a homogeneous group of contracts than one contract), we can distinguish two main cases:

- i. Truly paid hourly charge-out rate / before delivery starts
- ii. Realised hourly charge-out rate / during delivery

The choice according to criterion D (before or during the delivery) is closely linked with the aim of the survey. National Accountants prefer adherence to the accrual principle, i.e. prices enter the index during delivery. Short-term analysts give priority to “before delivery starts”, i.e. when the contract is signed. A problem is that the resulting indices may be very different according to this criteria. Let's look at an example to illustrate this :

- o Quarter 1 : Truly paid hourly charge-out rate = 100, estimated time = realised time = 10
- o Quarter 2 (the same product...virtual example) : truly paid hourly charge-out rate = 100, estimated time = 10, realised time =8 (the productivity rises).
- o With (i), the value of index would be 100. With (ii), the value of index would be 125 without productivity adjustment.

3.1.3 Conclusions

We can try to draw some conclusions :

- 1) Hourly charge-out rate is not a unique pricing method.
- 2) It is crucial for the price statistician to address explicitly the details of the hourly charge-out rate method used to monitor the evolution of prices. Accordingly, the guidelines for the respondent firms must be clear and explicit.
- 3) It is not good to mix different hourly charge-out rate pricing methods for one industry. As truly paid hourly charge-out rates are different from realised hourly charge-out rates and as the average length of the contract may be important (> 2 quarters in business and management consultancy for example), it would be dangerous to mix these methods.
- 4) Perhaps it would be better to consider the short-term analyst's point of view: it seems more plausible to monitor truly paid hourly charge-out rates by client and not some kind of virtual price taking into account realised time. If we aggregate truly paid hourly charge-out rates for all the components of the pricing mechanism, we are close to a good model pricing approach. In order to calculate an index for national accountants, we can apply a time lag after considering the average length of the projects.

- 5) When writing PPI papers for the Voorburg Group, it is useful to detail the approach taking into account these criteria. Two hourly charge-out rate approaches can be very different between countries.

3.2 Model pricing

3.1.4 *The best class of methods?*

With hourly charge-out rates, we focus our attention not on the product but on a component of the pricing mechanism. This is a major drawback for monitoring the price evolution as it is far from the ideal of transaction pricing. When each product is unique (it would be more appropriate to speak of uniqueness of transactions), model pricing seems a good approach if we want to consider first and foremost the product and if we want to keep the product constant over time. For this reason, the model pricing approach has the favour of price statisticians. However, when we take into account the previous criteria listed in this paper, it is more accurate to speak of a class of model pricing approaches than of a single model pricing method.

The major difficulty with model pricing is to keep on the one hand the product constant for price comparisons and on the other hand to keep these models up to date with the market. Before speaking of the more usual model pricing approaches, we can detail the criteria for this class of methods. The most important characteristic (the definition?) of model pricing approach is found in the A criteria: the object of measurement is “a model transaction held constant”. There are two different cases: a model that was really transacted on the one hand, a fully fictitious one on the other. The respondent can furnish list prices, other information than prices (e.g. mark-up, we will return to this) or estimations of the price (fictitious information). Thus the items for criteria B can be c, d or e. Linked with this, none or more than one real transaction are covered in one piece of “price information”: item b and c are the most usual for criteria E for the model pricing approach. Criteria D is crucial: the most usual case in model pricing is “before delivery starts; when the contract is signed”.

3.1.5 In fact, the “pure model pricing method” (pure in the sense that we focus our attention on one product and this product is constant over time) would be defined with these criteria as: list prices (item c for criteria B), no transactions (E item c), before delivery starts (D item b). Of course, this “pure approach” has several major disadvantages: we monitor the evolution of list prices and not market prices and we don’t respect the accrual principal. But at least we consider the product (although virtual). The evolution of market prices

The price statistician would keep his attention on a single product but has to estimate the price evolution of the whole market. How is it possible to do that with model pricing? Perhaps it would be possible, although difficult, if we accept to consider a homogeneous class of products and not only one product. If we want to do this, it would be better to consider “a model that was really transacted” than “a fully fictitious model”. In the first case, the firm has a starting transaction price. The major challenge for the firm is to update this price over time. One solution is to ask the firm for an “expert estimate of the price” (item e of B criteria). In the case of estimation, the item for criteria D would be b and c for criteria E. It is important to consider that for the firm, the “feeling of the evolution of price” is linked with the period of the signing of contracts and not with product delivery. (If the price is asked at delivery of the product, several aspect are mixed like the realised time and the realised margin ratio).

Is using expert estimates the best solution? When using estimated prices, it would be better if the price statistician has some information about the process of the estimation. One possible solution is to detail the components of the pricing mechanism of the product in the first period when the product was really transacted. We can measure the costs of each component of the pricing mechanism and the margin ratio when the contract was signed (in the first period). Over time, the firm can update the costs of each component and the margin ratio. We can classify this method in item d)ii of criteria B. In order to update margin ratios, the firm can consider contracts that belong to the same class of products as the initial contract (business and management consultancy in human resources for example). By the way, we try to estimate the evolution of “market prices” but we can’t say that the object of measurement is constant over time.

3.1.6 Conclusions

As we did for the hourly charge-out rate approach, we can try to draw some conclusions about model pricing:

- 1) An important aspect of model pricing is on the one hand to focus attention on current products and on the other hand to keep the products constant over time for price comparisons. This is a crucial difference with hourly charge-out rates.
- 2) If we consider a “pure model pricing approach”, it would be impossible to estimate the evolution of market prices. If the first aim were the evolution of market prices, it would be impossible to keep the product strictly constant. Alternatively, we can consider a “class of homogenous products”. Perhaps this can be regarded as other criteria (criteria F): the homogeneity of the object of the measurement. For example, a pricing method would score as ‘heterogeneous data’ if the average margin ratio of all contracts signed during the survey period is used to update the margin ratio in a model.
- 3) It is crucial to keep in mind that with model pricing, we aim to measure the evolution of the price (in most cases) when the contract is signed. The short-term analyst would be happy but not the national accountants. The mark-up during delivery of product is one of the key indicators for the firms but this indicator mixes several aspects. It is difficult with this kind of indicator to approximate a price paid by the client.

4. Conclusions and future work

The SPPI manual being developed by the OECD and Eurostat has made the first attempt to define pricing methods used for SPPI. This paper has gone a step further in attempting to identify criteria which can better explain a pricing method and thus allow them to be classified. Clearly this paper only represents a first attempt at this effort and thoughts from the Voorburg group are thus sought on the usefulness of the ideas presented.

It is the opinion of the authors that in order to obtain full value from international cooperation in the field of SPPI some form of classification of pricing methods presented in Voorburg group papers using independent criteria such as those presented in this paper could be very useful. For example, if the components of criteria A to E listed in section 2 of this paper could be refined and agreed by the Voorburg group, then the description of pricing methods in all future papers could reference these criteria.

For example, the criteria could be used in the following manner to support the work of the Voorburg group:

- for the mini-papers and their session, the pricing methods are presented with this list of criteria;
- for the principle papers, comparison between countries' pricing methods are made through reference to the criteria, allowing the author and/or discussant to summarise the similarities and differences of pricing methods for several countries.

Additionally, the authors imagine a future paper on the linkage between nature of services, pricing mechanism and pricing method.

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Appendix: Classifications of pricing mechanisms and the Service on criteria that have implications for the aptness of pricing methods.

There are numerous reasons why transaction pricing does not work for a particular service. The aptness of different pricing methods is determined, or rather limited, by two factors:

- the nature of the services that they pertain to and
- the pricing mechanisms by which the prices come about.

Hereunder these two factors are classified into classes of common implications for the aptness of pricing methods. For instance, services are split into three groups; one of these groups is the ‘non-unique, repeated services’; being non-unique has (rather nice) implications for the feasibility of transaction pricing.

Classifications of services

A) Uniqueness of transaction²; do the production activities depend on one client?

- a. Not unique (e.g. *transport*)
- b. Unique to one client
 - i. Repeatable at different time (e.g. *a contract for daily cleaning for a specific office building can be re-tendered*)
 - ii. Unrepeatable (e.g. *design of the Sydney Opera house*)

B) Is the service value related to length of provision?

- a. Continuous provision (e.g. *rental homes, telephony network access, storage, life insurance*)
- b. Service meant to help pass time (e.g. *theatre*)
- c. Service meant to save time³ (e.g. *restaurants, transport*)
- d. Length of provision doesn't matter, mostly: faster is better

C) Can one transaction entail repeated delivery or production?

- a. No repetition
- b. Repetition
 - i. Repetition needed (e.g. *daily cleaning for a specific office building*)
 - ii. Repetition expected (e.g. *food industry*)
 - iii. Repetition optional (e.g. *car fleet management*)

D) Is the definition of the activity, client, output or product controversial?

- a. Definitions not (very) debatable
- b. Margin industry (e.g. *trade, advertisement placement, banking*)
- c. Unclear definitions, see for instance Statistics Canada (2004) and Diewert (2003) (e.g. *free provision of TV entertainment mixed with advertisements; indecisiveness between ‘assumption of risk’ and ‘pooling of risk’ for insurance*)

² Uniqueness of a product is a complicated issue; when is a product unique? One bundled air transport services from a regional airport in one country to a regional airport in another country can be unique. Taxi transport is unique. Still, these examples are not considered unique, as the criterion to judge uniqueness is *whether production activities only take place for one client at his demand*.

³ It would cost you time/effort to do it by your self. This is the traditional meaning of the word ‘service’: the work of servants.

Classifications of pricing mechanisms

A) Is the price determined under market forces?

- a. Free market
 - i. Without market differentiation
 - ii. With market differentiation (price discrimination)
 - iii. Special case like oligopoly or monopoly.
- b. Regulated market (e.g. *part of post, certification of wills, testing*)
- c. Intra company transfer prices
- d. Non-market by nature; government (e.g. *passports, national defence*)

B) Is the price determined in a deviant way?

- a. Nothing special
- b. Ad valorem
- c. Success fee (e.g. *lawyers, consultancy*)
- d. Implicit prices like margins (e.g. *trade, advertisement, banking*)
- e. No prices (e.g. *Armed forces*)

C) Moment of price setting compared to production/provision of product

- a. Before
- b. During
- c. After (e.g. *construction*)

D) Moment of paying compared to production/provision of product

- a. Before
- b. During
- c. After