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VOLUME MEASURES OF SERVICES AND SERVICES INDUSTRIES
DRAFT INTERNATIONAL GUIDELINES

PART ONE: WHOLESALE AND RETAIL TRADE
                   HOTELS AND RESTAURANTS
                   TRANSPORT, STORAGE AND COMMUNICATIONS

                   (ISIC SECTIONS G, H AND I)
                   (CPC SECTIONS 6 AND 7)

ISSUE PAPER:

PRINCIPLES AND CONSIDERATIONS IN DRAFTING
INTERNATIONAL GUIDELINES FOR ISIC SECTIONS G, H AND I,
AND CPC SECTIONS 6 AND 7

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Annex paper presented separately:

DRAFT INTERNATIONAL GUIDELINES ON VOLUME MEASURES FOR SERVICES
AND SERVICES INDUSTRIES
PART ONE: WHOLESALE AND RETAIL TRADE; HOTELS AND RESTAURANTS;
          TRANSPORT, STORAGE AND COMMUNICATIONS
          (ISIC SECTIONS G, H AND I; CPC SECTIONS 6 AND 7)

1. PURPOSE OF THE PAPER

General international guidelines on price and volume measures are set out in chapter XII of the Revised Blue book. There, a number of general issues are reviewed for recommendation, such as treatment of different qualities and quality changes over time, direct or indirect measaurement of prices and volumes, measures for non-market services and for gross value added, the scope of price and volume measures, measures of real income, etc.

More specific international guidelines are however to supplement the general principles of the Blue book, probably to be presented in the series of Handbooks for National Accounts from the UNSO. One area for which specific recommendations are regarded as particularly needed is the area of services. This paper and the annex paper, presenting draft international guidelines for one of the major parts of services, are meant to make a contribution to the purpose of providing for specific recommendations in this context. What is presented here should also be regarded as a follow-up on last year's paper to the Voorburg Group meeting held in Ottawa (entitled "Volume Measures in ISIC 6 and 7 Services Industries: Country Practices as a Basis for International Guidelines").

The present papers are aimed at serving several objectives. Above all, the annex paper is a first attempt to present appropriate international guidelines on price and volume measures in an exhaustive and systematic way for one major part of the services area. Through such guidelines and their implementation, an aim is to harmonize country practices to a much larger extent than is the case at present, as revealed in the UNSO questionnaire survey. Furthermore, an important spin-off might be the development of better services statistics as such. For many countries, a number of the recommended price or volume indices are not available today, and by recommending general use of double deflation new priorities might be needed in the statistical system of many countries, even among industrialized countries. Finally, quite another aim might also be considered: using the annex presentation as a standardized form of presenting guidelines for the whole range of services and services industries. The presentation of specific guidelines, by its very nature, should be set out in an exact format as possible rather than in general wording, and the annex presentation could be one such format found suitable in this context.

2. REFERENCES

Already in the outset of the paper, it should be stressed that the draft guidelines presented here are the product of continued efforts over time by the international organisations as well as from practical statistical work in the countries. This means that the following references have been taken into consideration as a departure in presenting the draft guidelines:
- Draft Revised Blue book, chapter XII in particular
- UN Manual on National Accounts at Constant Prices
- UNSO Questionnaire survey on present country practices, in particular for better-off countries

- Discussions at previous Voorburg Group meetings, at the ECE meeting of Working Party on Transport Statistics held in Geneva 1988 and at IARIW conferences in which relevant conference papers have been presented

3. PRINCIPLES AND CONSIDERATIONS

3.1 COVERAGE AND CLASSIFICATIONS

The draft guidelines are framed by using the recently adopted ISIC and CPC classifications. The similar paper for the Ottawa meeting covered major divisions 6 and 7 of the ISIC, Rev 2., reflecting the coverage taken in the UNSO Questionnaire survey. However, since the Statistical Commission of the United Nations has adopted ISIC, Rev.3 and also recommended for provisional use the product classification CPC, it is considered most appropriate to take these as basis for the coverage of the draft guidelines.

Thus, ISIC, Rev. 3 (rather than ISIC, Rev.2) will constitute the industry/activity breakdown, and CPC will constitute the breakdown of goods and services, in the classifications on which the proposed guidelines are drafted.

Two observations should be made here: First, the overall coverage of this paper comprising ISIC, Rev.3 sections G, H and I is slightly enlarged from ISIC, Rev.2 major divisions 6 and 7, as some repair services have been included with wholesale and retail trade. Second, it is proposed that both aspects of services and services industries be covered in the draft guidelines. This means that groups of CPC are treated in a specific manner, while not being so in the Ottawa paper and the UNSO questionnaire survey.

3.2 LEVEL OF AGGREGATION

It is proposed that ISIC 3-digit groups and CPC 4-digit classes are used in presenting the draft international guidelines.

The rationale for this choice is to provide for reasonably detailed guidelines. It is also considered desirable to apply a uniform aggregation level all through the ISIC and CPC sections, although the recommended price and volume indices are not always independently developed for each particular case. In the Ottawa paper, 19 industries were specified as a frame reflecting the questionnaire survey. One major dividing line cutting across the main transport industries was the breakdown on passengers and freight. The latter distinction is still considered imperative, and should be featured properly in the context of products (CPC), but is not directly of relevance to industries (ISIC). The distinction on passenger and freight transportation appears at the CPC 4-digit level, thereby a main reason for this choice.

Thus, the draft guidelines are specified for all 29 ISIC 3-digit groups and 86 CPC 4-digit classes. A majority of these specifications relates to wholesale and retail trade. However, since this industry is hardly disaggregated at all in the national accounts,

there is felt here to be a strong case for guidelines also at a higher aggregation level. Consequently, it is proposed in the draft guidelines to have two versions in the case of wholesale and retail trade, one for national accounts purposes and another for satellite accounts purposes. While the latter reflects the uniform and overall detailed classifications (ISIC 3-digit and CPC 4-digit levels), the former version is simply related to the three ISIC divisions at 2-digit level, i.e. sale of motor vehicles etc. (ISIC 50), respectively other wholesale trade (ISIC 51) and retail trade including some related repairs (ISIC 52).

CPC items are not applicable in the aggregated version, from the very fact that commodity flows (of goods) are approached, and not the CPC service groupings. However, countries not having a commodity-flow system are inclined to base volume measures of these three industries on industry-related indicators rather than commodity-related indicators. These indicators might be used either at top aggregated level or by aggregating details from an approach such as the one proposed for the satellite accounts purposes.

3.3 UNIFORM OR FLEXIBLE METHODS

The question of adopting uniform or flexible methods has been discussed at previous meetings of the Voorburg Group. It has been concluded that different methods of approximation may provide better results, and that it would not be appropriate to strive for uniformity in all service industries. This view has also been pursued in drafting the annex paper, i.e. the draft guidelines open up for flexible methods in general. It should be admitted, however, that uniformity is taken to overrule flexibility in one sense, by the recommendation to use double deflation throughout the whole area as the main method for volume measurement of the respective industries' value added.

In the draft guidelines, this aspect of uniform or flexible methods could also be seen as finding coherent solutions. Thus, uniformity is more or less applied within coherent sets of services or services industries, e.g. for most wholesale trade, most retail sale, passenger transportation, parts of freight transportation, rentals, most supporting services to transport, communications, etc.

3.4 METHODS FOR ACTIVITIES AND/OR SERVICES

It was stressed (but not developed further) in the Ottawa paper that volume measures should be considered both from an industry and a commodity (product) point of view. In presenting draft guidelines, a short-cut to value added in constant prices without dealing with or reflecting on volume output by commodity must be considered a sort of last resort, not to be recommended. The basic principles for partitioning into price and volume of the various products are underlined in the draft Blue book and need not be repeated here.

There is however one point that is to be emphasized, following

from the heavy weight put on double deflation and the commodity-flow method in the draft guidelines. By making this kind of proposal, it should also be an incentive to improving the national accounts. The quality of the national accounts very much depends on whether product data exist as a fundament, data that enable supply and disposition of the various products (goods and services), input-output data, make and use matrices and the like. The link from products to industries' value added is obtained when volume measures of the latter distinguish between gross output volume measures and input volume measures. By the same token, it should be both convenient and reasonable to discuss volume measures separately by industry or activity and by product.

3.5 COMPLEXITY AND CHOICE OF DIRECT OR INDIRECT MEASURES

When it comes to methodology and the choice between direct and indirect volume measures, both the draft Blue book and previous Voorburg Group discussion strongly tend to favor indirect volume measurement. In general, deflation is considered better than extrapolation.

This conclusion is especially valid in a complex situation. Normally, a situation is soon seen complex enough to call for indirect measurement of volumes. Two reasons are cited in the draft Blue book for such a preference. First, available data tend to be representative rather than comprehensive. This fact calls for estimation from a sample of goods and services, and for which price relatives tend to be less variable or volatile than the corresponding quantity relatives (which may range from zero to infinity !). Second, a series may contain complete information on quantities but not on prices. By deflating current value series by price indices the quantity information on new (and dis-appearing) products which is incorporated in the series at current values is correctly reflected in the derived indirect volume measures.

In the draft guidelines, direct volume extrapolation is viewed as appropriate only in the cases in which less complexity prevails or for similar reasons. Such a case could be where only one single product (or product group) is involved, e.g. sales of motor vehicles or sales of auto fuels. In such cases, it is easier to comprehend the requisite information for either the price or quantity estimation, thereby leaning to a direct rather than indirect estimation of volumes involved.

3.6 PRACTICAL IMPLEMENTATION

The detailed draft guidelines, although not particularly refined, might be hard or impossible to implement in the short run. However, the perspective of the proposed guidelines should be a long one. One reason is quite obvious, present methods may need to be changed (adjusted or amended), and a change by itself is often considered a process over time. A change might in some cases involve several steps, e.g. developing new measures in stages from high to finer aggregation levels.

There might be countries which are not much inclined to make changes in methodology; inter alia, countries might view present methods as satisfactory for their own purposes. However, the draft guidelines also involve the important aspect of international comparisons. There are reasons to believe that the different use among countries of methods involved in volume measurement, might in some cases account for serious deviations in the results in main aggregates of the national accounts, such as GDP growth rates.

3.7 STATISTICAL CAPABILITIES

Present country practices reveal that statistical capabilities of the countries indeed play a very significant role. On the one end of the range we find developed countries with integrated input-output data and well-established statistical sources including adequate price and volume indicators. Less equipped are developed countries without integrated input-output data for the present, but with a good possibility to improve in future. The situation generally is less favorable in most developing countries, but still for this wide group of countries variations occur to a considerable extent, and certainly will continue to do so (also by having input-output data or not).

The draft guidelines are based on a relatively high ambition level. Thus, what is proposed in the draft guidelines, generally reflect the present-day situation of the most advanced countries, coupled by coherent solutions. It may not be correct to say that the most advanced countries of today will meet great challenges for the future in this field. However, a major dividing line is represented by the presence or not of the commodity-flow method. In fact, the proposed guidelines suggest that countries have developed a situation whereby the commodity-flow method could be used. It is left open for discussion whether or not separate guidelines should be worked out for countries not having adopted (or have no plans for making provision for) commodity flow capabilities in their national accounts.

However, as already mentioned, supplementary volume measures are proposed for value added of ISIC industries that are not normally specified in the production accounts of the national accounts, referring to the case of wholesale and retail trade by ISIC groups. Introducing a satellite version to accompany the aggregate treatment of national accounts for these industries, the rationale would be to offer detailed volume measures for this major part of the economy, details that national accounts traditionally do not provide. The proposal entails that CPC trade services and ISIC wholesale and retail industries according to these classifications could be brought into volume terms by using appropriate price deflators, for the most part industry-related price deflators. The aggregate level for the satellite version would be the one proposed otherwise in the draft guidelines, i.e at the ISIC 3-digit and CPC 4-digit level.

4. DRAFT INTERNATIONAL GUIDELINES PROPOSED

4.1 FORM AND LAYOUT

One of the purposes of this effort has been to find an adequate format for the presentation of the draft guidelines, that also might be considered as a standard for the whole area of services. The format proposed in the annex contains the following characteristics:

- draft guidelines for activities and products (i.e. for industries and services) are presented together in a ·combined way
- identification and valuation are made explicit in a three-way presentation: by presenting contents, current-price valuation basis and valuation in volume terms
- main deflation method by activity (for value added) is indicated
- type of volume indicator is indicated
- main focus on volume measures and volume indices, rather than price measures and price indices
- price indices specified as deflators in most cases, otherwise implicit when direct volume measures are used (extrapolation)

The presentation is made exhaustive and provides users with easy access to the respective detailed guidelines. In this part one of the services, very few problems have been encountered in attaching CPC 4-digit classes rather than the most detailed 5-digit sub-classes to the ISIC 3-digit groups. If this is considered a major problem for the remaining part of services, one might of course consider using the CPC 5-digit level. This remains to be discussed in light of the experience with the remaining draft guidelines.

4.2 DOUBLE DEFLATION

In the draft guidelines it is recommended that countries apply the double deflation method. In part one of the services industries, this method has been proposed uniformily for all but one of the 29 ISIC groups.

The rationale for proposing the wide use of double deflation lays in the recommendation of the revised Blue book, and the view expressed by the Voorburg group that the double deflation method is better than the single indicator method and that guidelines should reflect the position of the better-off countries rather than that of some "average" country.

It is recalled from the Ottawa paper that slightly more than 1 out of 3 countries practice double deflation today in ISIC 6 and 7 services industries. This is improved to nearly 1 out of 2 when it comes to developed countries as a block. But in referring to the so-called better-off countries in the paper, a more narrowly selected group of countries has been defined, basically from present national accounting data coverage in the OECD national accounts publications. These are the 12 OECD countries been classified as better-off-countries:

Australia, Canada, Denmark, Finland, France, FRG Germany, Japan, Netherlands, Norway, Sweden, United Kingdom, United States

It is seen from the UNSO questionnaire survey that a majority of these better-off-countries use the double deflation method in any of the industries in part one covered by the services survey. This is an indication of empirical support for the proposal, and even more so by learning that double deflation tends to be used throughout all activities when first being used. The draft guidelines therefore recommend countries that do not apply the double deflation method today, to make efforts to upgrade their methodology at this vital point.

The only exception in the draft guidelines, for which single deflation is viewed to be sufficient, is in the satellite version for retail sale not in stores (ISIC 525). Leaving out major inputs such as rents and energy in most instances of this group, not to mention the data base for collecting input data, justify deflating value added directly by gross output deflator in this case.

4.3   VOLUME INPUT MEASURES

Two different aspects of volume input measures are involved here. One aspect is directly related to the estimation of the input component of value added double deflation. The other aspect is more indirectly, through the use of input indices as proxies to the estimation of gross output.

For developing volume input measures of the first aspect, one general method has been proposed in the draft guidelines: to deflate input flows by relevant price indices. It is recommended to restrict to this procedure and not attempt to make direct volume estimation. The draft guidelines do not deal explicitly with the price indices needed in the case of intermediate consumption, rather than call for relevant or appropriate price indices in each particular case. It is proposed in the draft guidelines that major inputs should be specified and deflated, thereby leaving to countries finding a satisfactory solution to the stratification problem. The next step is to decide on what price indices to use for each input item specified.

The second aspect of input measures approaches the volume output measures which is further commented in the remaining part of this paper. Again, both the draft revised Blue book and previous discussions of the Voorburg Group has stated that in measuring volumes of gross output (and value added), output-type approaches are better than input-type approaches in general.

Recognizing however, that output indicators may be difficult or impossible to come about for certain items, it is proposed in the draft guidelines to resort to input measures as proxies for output measures in estimating some of the gross output items. These proxies refer to cost or input price indices of industry groups, or more specifically, wage rate index of a relevant industry group. What is considered a relevant industry group,

would either be the industry in which the CPC item is a characteristic service item, or as proposed for many of the supporting services to transport, the transport industry group to which the CPC item is to support. In order to restrict the use of input proxies to a limited number of items, efforts have been made to establish connections to similar groups. Two types of connections are proposed in the draft guidelines: one that avoids input proxy by linking up the output measures of connecting activities, e.g. travel agencies and passenger transport and hotel accommodation services, or freight transport agency services and freight transportation, while the other type of connection just substitutes for the proposed volume measure for another CPC item (particularly in cases of minor importance).

Input proxies in the form of employment measures are all together avoided in the draft guidelines. The rationale for this is of course the dual principal preferences of deflation and output approach rather than extrapolation and input approach (in which category employment exists). This is, however, not to disregard employment indicators as volume indices substitutes in early estimations like in quarterly or provisional national accounts versions, especially when gross value indicator is constructed the other way round by inflating from both price and volume indices. That situation is not actually brought into the draft guidelines, taking instead as a basis that value basis in current prices exists (value indicators at least). Guidelines on how to construct these current values or indicators are presumably to be included in the general handbook on service statistics.

Input proxies are used to estimate volume output for the following 22 CPC classes:

7113	Pushing or towing services by rail
7214	Towing and pushing services by sea-going vessels
7224	Towing and pushing services by non-sea-going vessels
7330	Transportation via space
7421	Storage services of frozen or refrigerated goods
7422	Storage services of liquids or gases
7429	Other storage or warehousing services
7430	Supporting services for railway transport
7441	Bus station services
7442	Highway, bridges and tunnel operation services
7443	Parking services
7449	Other supporting services for road transport
7451	Port and waterway operation services
7452	Pilotage and berthing services
7453	Navigation aid services
7454	Vessel salvage and refloating services
7459	Other supporting services for water transport
7461	Airport operation services
7462	Air traffic control services
7469	Other supporting services for air transport
7490	Other supporting and auxiliary transport services
7529	Other telecommunication services

Although about 25 per cent of all CPC classes are listed with

reference to input proxies, these are among the minor items, consisting of storage, minor parts of transport and telecommunications, and in particular, various supporting services for transport. In addition, some other items, such as items of rentals, refer to input proxies as a second-best method when relevant rental price indices are not possible to use.

4.4 VOLUME OUTPUT MEASURES BASED ON DIRECT EXTRAPOLATION

It is proposed in the draft guidelines that the direct extrapolation method be used in a relatively limited number of cases. When using direct volume indicators, these are based on physical quantities. The other possibility is to make use of employment measures (numbers employed, man-hours data, etc.), however not recommended, since they represent input rather than output, not even full input (full input costs), and furthermore, the productivity change element is missed when using this input-based method.

Direct volume extrapolation is proposed for the following 11 CPC classes:

6111	Sales of motor vehicles
6121	Sales of motorcycles and snowmobiles and related parts and accessories
6130	Retail sales of motor fuel
7112	Freight transportation by railways
7131	Transportation of fuels via pipelines
7139	Transportation of other goods via pipelines
7321	Mail transportation by air
7322	Transportation of containerized freight
7329	Transportation of other freight by air
7411	Container handling services
7419	Other cargo handling service

The method of direct volume extrapolation is confined to less than 15 per cent of the number of CPC classes. In fact, extrapolation is confined to items of freight transportation and cargo handling and some items of wholesale and retail trade in the satellite accounts version. Furthermore, not all items of freight transportation are treated in this way, as there are cases for which deflation and use of price indices (freight rates, etc.) have been considered more appropriate.

The rationale for including relatively few classes within direct volume extrapolation has already been referred to with the general principles. The list of extrapolation items relates to situations in which a low degree of complexity is involved: (1) sale of motor vehicles and motorcycles, (2) sale of automotive fuel, (3) freight transportation services and (4) pipeline transportation services. In most of these cases there are readily available physical indicators, such as number of motor vehicles (registered or sold), number of litres fuel sold, freight transported in ton-kilometres and similar measures also for transport via pipelines.

In some of the CPC classes it is considered appropriate to use

substitutes, rather than go for the deflation method. This means that use is made of the volume indicator belonging to one similar CPC item (see 7321, 7322 and 7329; 7411 and 7419).

When comparing the draft guidelines with the conclusions from the UNSO questionnaire survey on page 30 of the Ottawa paper, there are deviations on two major points. First, while the UNSO survey listed direct volume measures and number of passenger-kilometres as the majority method in all modes of passenger transport, the draft guidelines rather recommend indirect volume measures through deflation and use of CPI components or similar price indices for all items of passenger transportation. Second, the UNSO survey reported on using number of telephone calls, telexes, telegrams, number of postal articles etc. as volume indicators in a majority of countries, while instead recommending price deflators in the draft guidelines.

Reasons for making these switches are two-fold: complexity has increased a lot in passenger transportation compared with transportation of goods, and the majority of better-off-countries have certainly found price deflators more appropriate than quantity indicators to reflect this increased complexity and to handle the quality issue more satisfactorily. The experience of the most advanced countries has also played a decisive role in the case of post and telecommunication services.

4.5 VOLUME OUTPUT MEASURES OBTAINED FROM DEFLATION

The second main group of volume output measures is obtained from deflation, i.e. indirectly from deflating gross output value indicators (representing current values) by relevant price indices. This second group consists of the remaining 85 per cent of CPC classes and is thus the method recommended for use in most cases.

Recall from chapter 4.3 that 25 per cent of the CPC items are involved with input price indices, in principle not regarded as particularly relevant price indices, leaving about 60 per cent of the CPC items in the main category of methodology: deflation by output price indices. One further requirement should be imposed in order to define the relevant main category: deflation by relevant output price indices. That requirement should be the use of special rather than general price indices. In the draft guidelines, this is satisfied except for some very few items of the satellite trade industry version: the exceptions being commission agents' services and other wholesale (using total wholesale price index as deflator) and retail sale in non-specialized stores and retail sale of second-hand goods in stores (using total price index for retail sale).

In proposing appropriate special price indices to be used for deflating gross output value indicators, the primary source would be the Consumer Price Index (CPI) material being available in most countries. For various blocks of CPC items, the CPI material should be utilized, either by finding appropriate CPI components

or using appropriate price indices for retail sale (reclassified CPI material). Furthermore, in cases of minor importance, the draft guidelines resort to using same deflator as in a closely related CPC item, the rationale being that representativeness calls for wider use. CPI deflators may still be appropriate in cases where services are provided to several user categories, at least when household consumption is the largest of these categories (e.g. passenger fares for private households and businesses represented by the appropriate CPI component).

In total, CPI deflators are proposed for 29 CPC classes, or one third of total items of the CPC services of part one. Six blocks of items are envisaged for which CPI indices are recommended:
- specific retail sales items (7)
- passenger transportation items (6)
- hotels and restaurants items (6)
- post and telecommunication items (4)
- repairs etc. items (4)
- travel agencies and tourist guides items (2)

Some of the CPI deflators are used for several items (hotel and motel accommodation; beverages serving services with and without entertainment; postal and courier services; travel agencies and tourist guides).

Other special price indices than CPI deflators are proposed for 23 CPC classes, or one fourth of total items of the CPC services of part one. These items constitute the following blocks:

- specific wholesale trade items (8)
- rentals items (4)
- freight transportation items (4)
- remaining hotels and restaurants items (3)
- remaining post and telecommunications items (3)
- non-scheduled passenger transportation item (1)

Efforts should be made to establish special price indices and to avoid resorting to general price indices at a high aggregation level. One implication of recommending the use of price indices as a main way to arriving at volume measures for services, is that statistical authorities in the countries may need to upgrade their capability on price statistics. This might be a two-fold upgrading: constructing new price indices in fields that are not covered today, and improving on the quality of the existing price indices. It might be experienced that even the services part of CPI should be developed further to meet these guidelines, at least to build into the items involved a wider set of representative price observations.

4.6 STRATIFICATION

In order to set a high aspiration level for the quality of the

estimates, it is important to handle all the specifics in a detailed and stratified way. In general, stratification is taken care of technically either within the indices or indicators used, or through other procedures involving weights. In the draft guidelines, the need for stratification is referred to in various items, and in particular for the industry items. Apart from that, stratification is also managed through the statistical system or framework chosen for the estimation, i.e. from the proposal to apply fairly detailed ISIC and CPC specifications.

Appropriate weights for the composition of the proposed indicators may be difficult to find. However, this task is seen easier when using price indices than direct quantity indicators. This is due to characteristics pointed out in the draft Blue book. Therefore, the weighing procedure is not particularly restricted in finding a relevant weighted price index for a CPC item. In fact, the product specifications and list of sub-groups might serve as a basis for selecting the weights. It is recalled that price observations at this detailed level is likely to be less susceptible to change variations than direct volume observations. The question of full or partial coverage is therefore a more relaxed and less restricted one in dealing with prices than with quantities.