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INTERNATIONAL STANDARDS ON CPI: THE PURPOSE DETERMINES THE CONCEPTUAL BASIS OF THE INDEX*

Invited paper submitted by International Labour Office

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International standards on CPI: The purpose determines the conceptual basis of the index

History of international standards on CPI

1. It has been the long-standing tradition of the International Labour Office (ILO) to ensure that the international standards on the topic reflect current best practices and methodological advances. The first ILO resolution was adopted in 1925 by the Second International Conference of Labour Statisticians (ICLS), and subsequent revised resolutions were adopted by the Sixth (1947), Tenth (1962), Fourteenth (1987) and Seventeenth ICLS.

2. At the time of the 1925 resolution, the main reason for compiling a CPI was its use for adjusting wages to compensate for changes in the cost of living. The first set of standards therefore referred to "cost-of-living" indices rather than CPIs.

3. Later on, a distinction was drawn between the concept of a 'cost-of-living index', designed to measure the change in the cost of maintaining a given standard of living, and the concept of a 'pure price index' designed to measure the change in the cost of purchasing a specific set, or 'basket', of consumer goods and services. For this reason, the Tenth International Conferences of Labour Statisticians in 1962 decided to adopt the more general term 'Consumer Price Index' which may be understood to refer to both concepts.

4. More recently the CPIs originally compiled to enable adjustment of wages to compensate wage earners for changes in the prices of goods and services purchased, have been used as a general measure of price inflation for the household sector as a whole. In this process it became clear that the main use of the index have implications on various aspects in the CPI design and that one single index could not perform equally well for all of its purposes,

5. Therefore the 2003 resolution recognizes that a set of indices may be required to meet the needs of different users and that the type of index compiled, the range of goods and services covered, its geographic and household coverage, as well as the concept of price and the formula to be used, should be determined by the main use for which the CPI is intended. The following sections present the relevant guidelines of the 2003 resolution on each of these issues.

Objectives and types of the CPI

6. The resolution, at the very beginning, defines the measurement objectives of the index and states that it may be:

   (i) to measure the change in the consumer prices of a fixed basket of consumer goods and services of constant quality and characteristics, with the products in the basket being selected to be representative of

households' expenditure during a year or other specified period. Such an index is called a fixed-basket price index

or, alternatively,

(ii) to measure the change in the cost of maintaining a constant standard of living. This concept is called a cost-of-living index (COLI).

7. These measures may differ because the same level of living standard may be maintained by purchasing many different baskets of goods and services. An index defined as a measure of the change in price of a fixed set of goods and services with constant quality and characteristics, is an index of price change only. It does not take into account the changes in consumption patterns that consumers make in response to relative price changes. It could, however, serve as an approximation to a cost-of-living measure.

Uses of CPI

8. The CPI is used for a wide variety of purposes, the two most common ones being: (i) to adjust wages as well as social security and other benefits to compensate, partly or completely, for changes in the cost of living or in consumer prices; and (ii) to provide an average measure of price inflation for the household sector as a whole.

9. The resolution indicates that both fixed-basket price index and COLI could be used for the adjustment purpose. In case of the former, the payments would be adjusted for the changes in the consumer prices while, in the case of the later, for the changes in the cost of living.

10. There are no clear guidelines on which of the two types of index should be given preference as a means of measuring inflation. There are two diametrically opposed views. One view is that a clear distinction needs to be made between a fixed-basket index and COLI and that a fixed-basket is preferred as a means for measuring inflation. A second view is that a COLI does provide precisely that information which is required of an inflation measure.

11. The arguments for the first view are as follows: The fixed basket approach adheres to the principle of a straightforward comparison of prices, therefore only indicating a change in prices, whereas a cost-of-living index provides information about how, given price changes and the substitution processes, expenditure would have to change to maintain the original standard of living or level of utility. A fixed basket is therefore a pure price index, while a cost-of-living index is an index which may show change even when all prices stay at the same level. As such, the latter cannot be considered as an appropriate measure of inflation.

12. The argument for the second view is as follows: The COLI is a price index whose weights change to reflect changes in consumer preferences. It is intended to measure the change in the cost of maintaining a given standard of living and takes into account substitutions in response to changes in relative

prices. However, it can "also be interpreted as measuring the change in the value of a fixed basket of goods and services where the fixed basket is a particular blend of the baskets in the two periods compared" (Hill, 1997). A COLI is preferred because in practice fixed-basket indices may be biased estimates of inflation (especially in the indices with weights that are updated infrequently) and therefore are measuring changes in the value of a basket of goods and services that is no longer representative.

Scope of the index

13. The resolution provides guidelines on the she scope of a CPI, defined in terms of the type of households, geographic areas, and the categories of consumer of goods and services acquired, used or paid for by the reference population, for the two main uses of the CPI.

14. The recommendation is that for an index primarily used for adjusting money incomes, the appropriate target population should limited to a relevant group of households, such as wage and salary earners. For this use, all consumption expenditures by these households, at home and abroad, should be covered. The geographic coverage of the consumption expenditure should be defined as covering all consumption expenditure of the reference population residing the country (resident consumption).

15. If the primary use of the CPI is to measure inflation in the domestic economy, the scope should be defined to cover consumption expenditures made within the country by both residents and those temporarily present (domestic consumption), rather than the consumption expenditures of households resident within the country.

Households	**Place of acquisition**	**Domestic Consumption**	**Resident Consumption**
National, Resident	In the country	yes	yes
National, Resident	Abroad	no	yes
National, Non-resident	In the country	yes	no
National, Non-resident	Abroad	no	no
Foreign, Resident	In the country	yes	yes
Foreign visitors	In the country	yes	no

Acquisition, use and payment

16. Consumption expenditure could be defined in three different, conceptually valid approaches, namely acquisition, use and payment. The differences between the three approaches are most pronounced in dealing with products for which the times of acquisition, use and payment do not coincide, such as owner-occupied housing, durable goods and products acquired on credit.

17. In general, the "acquisition" approach is regarded as the most appropriate when the primary purpose of the index is to serve as a macroeconomic indicator while the "payment" approach is the most appropriate when the

primary purpose of the index is for the adjustment of compensation or income. Where the aim of the index is to measure changes in the cost of living, the "use" approach may be most suitable. [1]

Owner-occupied housing

18. Under the acquisition approach, , the purchase of owner-occupied dwellings is treated in the same way as the purchase of other major consumer durables (such as cars and furniture) and the consumption expenditure on owner-occupied housing is based on the value of the new dwellings acquired in the weights reference period Under the "payment" approach, the consumption expenditure is based on the amounts actually paid out for housing

19. Under the "use" approach the consumption expenditure are based on estimated cost of using an owner-occupied dwelling

20. Expenditures on owner-occupied housing may also be regarded as capital investment and excluded from the index.

Other difficult goods and services

21. Own-account consumption, remuneration in kind and/or goods and services provided without charge or subsidized by governments and non-profit institutions serving households should be excluded from the indexation index and from the inflation index that is limited to the monetary consumption. They should however be included in the scope of the cost of living index.

22. The resolution does not make any explicit recommendation regarding the treatment of goods and services acquired on credit. For these items, the associated interest payments should not be included in an acquisitions index as they bear no direct relationship to actual quantities of goods or services acquired by households during the period, but should be included in a payments index

Sources of weights

23. Information on the composition of household consumption expenditure can be obtained from a number of sources, the two main sources being the results from household expenditure surveys (HESs) and national accounts estimates on household consumption expenditure(NA). The resolution suggests that the results from an HES are more appropriate for an index defined to cover the consumption expenditures of reference population groups resident within the country, while national account estimates are suitable for an index defined to cover consumption expenditures within the country.

24. Estimation of weights for ***second hand goods*** is controversial. One view, which fits in the established standards for the National Accounts is that

[1] The decision regarding the approach to follow and its practical application will be based also on the costs and the acceptability of the decision to the users. A combination of two or three approaches is, of course, possible.

weights should be based on a net acquisitions (acquisitions less sales) basis. According to this approach if all second-hand goods originated from members of the reference population group, then the net expenditures would correspond to dealer margins plus taxes. Another view is that the weights for second hand goods should be based on acquisitions without netting sales. The argument for the later is that in order for the CPI to reflect the average price experience of households, the weights have to reflect the importance that the respective product groups have in their consumption. In calculating these 'average weights' it does not matter how the households obtain the funds used to pay for the expenditures, thus a 'netting out' of second hand goods will not be appropriate. Netting out the purchases of such goods for the purpose of calculating weights would substantially underestimate the importance of the second hand purchases for an average household and thus the actual price experience of a significant proportion of households and purchases will be ignored.

25. The resolution indicates that the expenditure weights for second-hand goods could be based either on the net expenditure of the reference population on such goods, or the gross expenditure. The two approaches might be regarded as correct for different purposes of the index. For an index intended to be used in macro analysis, the first approach might be considered as appropriate as the acquisitions cancels the sales of second hand goods. For the index intended to measure changes in the cost of living, a micro-economic perspective and the second approach might be more relevant

26. The resolution does not provide any specific guidelines regarding the weights for ***goods and services totally or partially subsidized*** by the government and non-profit institutions serving households. The alternatives are to use (i) the gross expenditure and the full, unsubsidised, price of such products as basis for estimating weights and observing price changes for the index, and (ii) the expenditures net of reimbursements and the nominal price paid by the household. The argument for the second approach is that the CPI does not aim to measure total inflation, but just that part affecting the private households

Elementary Aggregate Indices

27. In previous ILO resolutions on the CPI, the appropriateness of the different formulae for computing elementary aggregates, and their application in relation to the main use/purpose of the index, was not discussed. The 2003 resolution recognises that there are many different formula that could be used for calculation of elementary indices and indicates that the choice of formula depends on the purpose of the index and conceptual basis of the index.

28. The recommendation is that the GM formula be used, particularly where there is a need to reflect substitution within the elementary aggregate, especially for an index whose main purpose is to measure changes in the cost of living, or where the dispersion in prices or price changes within the elementary aggregate is large. The RAP is regarded as most appropriate for elementary aggregates that are homogeneous and where consumers have only limited opportunity to substitute, especially in an index whose focus is on the inflationary experience of households.

Upper level indices

29. The upper level indices could also be calculated by using several types of formulae. The resolution acknowledges the fact that for compilation of a timely index, the only practical option is to use a formula that relies on the weights relating to some past period. One such formula is the Laspeyres-type index.

30. For some other purposes of the index which could be produced with a time lag it may be appropriate to calculate the index retrospectively by using an index number formula that employs both base-period weights and current-period weights, such as the Fisher, Törnqvist or Walsh index. These superlative" index number formula are regarded as one of the best proxies of an ideal index.

31. It should be noted that the Laspeyres-type indices used as a COLI assume that no important quantity changes take place in response to changes in relative prices, between the base period and the current period. It thus has an upward bias, usually described as 'substitution bias'.

32. With respect to "the pure price indices" desirable for some purposes, it should be noted that some of the superlative indices, like the Walsh index, are also *pure* price indices. The fact that a Walsh is both a superlative and a pure index throws light on the interrelationships between COLIs and pure price indices. Pure price indices do not have to diverge from COLIs and are not biased as estimators of COLIs. Bias is only likely to arise when the relative quantities used in a pure price index favour one of the periods at the expense of the other, as in a Laspeyres or Paasche index.

Quality changes

33. The resolution recommends that, as far as possible, the same item should be priced in each period as long as it is representative The CPI should measure price change unaffected by changes in the quality/utility of the goods and services purchased. As in practice, products that can be observed at different time periods may differ with respect to package sizes, weights, volumes, features and terms of sale as well as other characteristics, it is necessary to monitor the characteristics of the products being priced to ensure that the impact of any differences in price-relevant or utility-relevant characteristics can be excluded from the estimated price change. The price of the products whose quality/utility has changed should be adjusted so that pure price change can be estimated.

34. A particular case of quality change (associated with or without a price change) is when a new style replaces an old one that is no longer available. In these cases, the consumer is obliged to pay the price of the new model or variety. The change in price may accurately reflect the change in quality, but consumers that would prefer not to have the new model with additional features, will consider themselves worse off. Under the fixed basket approach, it may be appropriate to treat the change as a change in quality and not as a price change. However, for an index designed to measure changes in the cost

of living (utility, satisfaction), this may be treated as a price change, because the consumer had no control over the change in the product and may not have wanted the change. The resolution does not provide any specific guidelines regarding this particular case.

Bibliography

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