

Distr.
GENERAL

CES/AC.49/1999/20
26 August 1999

ENGLISH
Original: FRENCH

STATISTICAL COMMISSION and
ECONOMIC COMMISSION FOR EUROPE

INTERNATIONAL LABOUR ORGANIZATION

CONFERENCE OF EUROPEAN STATISTICIANS

Joint ECE/ILO Meeting on
Consumer Price Indices
(Geneva, 3-5 November 1999)

REVISION OF THE SWISS CONSUMER PRICE INDEX 2000:
PRINCIPAL METHODOLOGICAL AND TECHNICAL CHANGES

Contributed paper submitted by the Swiss Federal Statistical Office*

Summary

The Swiss consumer price index (CPI) is currently undergoing a complete revision. It will start on a new basis in the year 2000. Together with examining the conceptual and technical principles, we are carefully studying the objectives of a CPI and aligning them more with users' needs. Our idea is to construct a modular system of indices, comprised of a central module (CPI 2000) and supplementary modules. Regarding the CPI 2000, as methods of calculation we will adopt the Laspeyres chain index and the geometric mean at the basic aggregation level. The price collection system will also be markedly improved. The supplementary modules we intend to produce are: an index of medical insurance premiums, socio-economic indices, a harmonized consumer price index (HCPI) and modules more in line with the cost-of-living concept.

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I. Definition of the objectives and general orientation of the consumer price index

The context of the 2000 revision

1. The CPI, as hitherto defined, is the only indicator of the mean variation of prices of consumer goods and services in Switzerland. As a single instrument performing a variety of roles, it is expected to satisfy simultaneously the needs of the State, the National Bank, the social partners, enterprises and the public. It is used both as a reference guide for Swiss economic policy and for the purposes of salary and rent adjustments; it also serves as a deflator of nominal values.

2. In its present form, the CPI no longer meets users' needs in an optimum fashion. Users have clearly expressed their desire to have instruments for measuring price rises which are more suited to the multiple functions that a consumer price index is called upon to perform. The option of a "single" index, which has been retained thus far, no longer enjoys unanimous support.

3. At the same time, international discussion on the measurement of changes in the cost of living has clearly highlighted the principal weaknesses of a consumer price index and pointed out the biases implicit therein. To assess whether the criticisms levelled against it also apply to the Swiss CPI - and, if so, to what extent - the Swiss Federal Statistical Office commissioned three independent experts to take a critical look at the Swiss CPI and propose a number of measures to improve its general quality. The experts' findings broadly coincide with those reached by the Federal Statistical Office.

Objectives and general orientation of the 2000 revision

4. Should the principle of a single index be retained or should other instruments for measuring price rises be created for certain uses? Is the Swiss consumer price index a cost of living index? How can the requirements made be taken into account while preserving the transparency of the index? These are the main questions which arise in the present context. For the year 2000 revision, we have set the following guidelines:

- The Federal Statistical Office must continue to provide an instrument for measuring overall price rises that is capable of satisfying the needs of a variety of users (this will be the CPI 2000);
- Its construction must be based on the concepts of a consumer price index and not on those of a cost of living index;
- In order to respond better to users' needs, we intend to set up a modular system of indices comprising a central module, the CPI 2000, and a number of supplementary modules. The fundamental elements of this modularity will be the weightings, the contents of the standard basket, the calculation formulae and the concept of price measurement;

- The CPI 2000 central module will measure overall price rises and will be based on the same general principles as the CPI 93. It will differ from the latter, however, in several methodological respects: the introduction of a Laspeyres chain index and of the geometric mean; the extension of the standard basket to certain goods and services not covered in the CPI 93, such as private insurance schemes, financial services, second-hand goods; and the differentiated treatment of package holidays and the accommodation sector;
- The supplementary modules to be introduced must meet a particular demand and offer relevant additional information; the application of these modules will have to be clearly defined and delimited.

Table 1. Illustration of a modular system of indices and its applications

Modules	Principal functions
Consumer price index (central module)	Measurement of inflation Deflation of statistical series Indexation
Socio-economic indices	Analysis Social policy and income policy Deflation Indexation
Harmonized consumer price index (of the European Union)	International comparisons
Cost of living index (limited and enlarged basket)	Analysis Social policy (Indexation)

1/ The indexation function of a cost-of-living index is for the time being only theoretical. This module will be used above all for analytical purposes.

5. The establishment of a complete system of this kind cannot be envisaged for the year 2000. The revision currently under way is aimed rather at defining the theoretical and methodological features of such a system and at identifying the conceptual changes that have to be made with respect to the CPI.

II. Revision of the "CPI" central module

6. Among the many improvements suggested, two deserve particular attention: reorganizing the price collection system and changing the methods of calculation at the upper aggregation and basic aggregation level.

The price collection system: from a "militia" system to a professional system

7. From May 1993 up to the present, prices have been collected by commune officials. Considering their poor remuneration and the little time available to the staff employed, the communes have generally performed work of good quality. The weaknesses of the present system of price collection therefore stem from the overall organization of collection rather than from individual performance. The main weak points are as follows:

- *The present system suffers from a lack of coordination and methodological uniformity between the regions involved in price collection.* Practices with regard to modification of the set of items and quality adjustment vary from one region to another, although the problems encountered are more or less the same. While the investigators have to abide by certain rules, they are given some latitude. This arrangement guarantees flexibility in the system but also creates the risk of leaving too much room for subjectivity. The various practices will first of all have to be harmonized in order to improve the system.
- *Quality controls in the field are insufficient.* Annual interviews conducted with commune investigators and regular telephone contacts are not enough. These must be intensified and supplemented by checks in the field.
- *Price collection must take place more often at sales outlets.* At present, some questionnaire forms are either sent by mail, completed by telephone or else left at sales outlets and recovered later. Although they help to save time, these procedures are inadequate.
- *There is not enough routine training for investigators.*

8. In order to improve the quality of the observations of prices, a professionalization of price collection is envisaged and one of the following three options will be selected:

- **Option 1: "improvement of the present system of price collection".** This option is viable only if commune investigators together show clearly their willingness to carry on this activity, if they agree to work to the standard that has been set and if they rigorously follow the established guidelines and "rules of the game". For its part, the Federal Statistical Office will cover all staff costs of the communes related to price collection.
- **Option 2: "outsourcing of price collection".** This solution involves delegating the work of price collection to a polling institution with the requisite know-how.
- **Option 3: "mixed system".** This last option is a compromise between the preceding two solutions. It was put forward for the following reason: four price collecting regions calculate their own consumer price indices (Basel, Geneva, Zurich and Bern) and want to continue to work with the Federal Statistical Office in the price collection process. It might be

possible to go on working with these four regions, in which price collection is already professionalized, and to outsource the work of price collection for the twelve other regions, at the same time making sure that the activities are properly coordinated.

9. These three options, entailing different standards and different costs, are all designed to improve markedly the quality of the observations of prices. The "outsourcing" option is undoubtedly the one that offers the most advantages because a number of additional tasks, such as some of the training, quality control and data processing (data entry and coding), can be delegated. It is also without any doubt the most expensive option. Choosing between these options means finding the optimum relationship between costs and quality.

10. Before reaching a decision, we need to clarify further certain points. We are therefore not as yet in a position to choose definitively the form that the new price collection system will take.

Methods of calculation: the Laspeyres chain index and the geometric mean

11. The introduction of these two methods of calculation will make it possible to a certain extent to correct the substitution bias both within and between item categories.

12. **The geometric mean**, as compared with the other methods of calculation used for basic aggregation and also in taking account of substitution at the disaggregated level, offers two additional advantages: firstly, it is less sensitive to extreme values and thus relatively well suited to heterogeneous expenditure items; secondly, it has the property of transitivity, which is of paramount importance in chaining.

13. The condition for using the geometric mean can, however, prove problematical in some areas of activity. Its properties, and the economic considerations arising therefrom, make it necessary for the products contained in item categories to be substitutable with one another. Although the Swiss market is generally competitive, some areas of activity have not yet been liberalized. We are thinking in particular of the energy sector, the health sector, public transport and postal services. As the elasticity of substitution in these sectors is closer to 0 than to 1, the application of the geometric mean to these expenditure items is likely to underestimate price rises.

14. For these expenditure items, we replaced the current mean of price relatives with the geometric mean and observed the differences in the results. The underestimation produced by the geometric mean is actually very small, or even negligible. Consequently, it will be generally applied to all items in the standard basket. When compiling the standard basket at the more detailed level, we will endeavour to make the items as homogeneous as possible so as to reduce any underestimation to the maximum.

15. The calculation of a **Laspeyres chain index**, with annual updating of the weightings and of the contents of the standard basket, serves to improve the representativeness of the pattern of household consumption in the index. To obtain the necessary information, it is planned as from the year 2000 to hold annual surveys of household income and consumption. In addition to improving the representativeness of the contents and weights of the standard basket, the Laspeyres chain index allows for more frequent and regular changes in methodological procedures.

16. A Laspeyres chain index does not, unfortunately, present only advantages. The problems of additivity, of departure from the concept of pure changes in prices and the risks of bias entailed by cyclical and seasonal price changes are well known. Nevertheless, we consider that the annual updating of the standard basket and of the weighting scheme is a key element in improving the meaningfulness of the consumer price index and that the advantages are generally speaking far greater than the drawbacks.

17. Chaining will be effected annually in the month of December, as from December 2001.

III. Definition of the supplementary modules

18. It is intended, in the medium and long term, to calculate various indices to answer a number of specific questions: What is the influence of change in medical insurance premiums on real household income and on the cost of living? What is the rate of increase in the cost of living for certain population groups? What impact would the use of "superlative" index formulae have on the inflation rate? What would be the rate of increase in the cost of living measured in accordance with the requirements for the European Union's harmonized consumer price index? What is the value of the "true" cost-of-living index and how can it best be approximated in practice?

19. These questions are certainly familiar, but the answers are less easy to find. The explanations relating to most of the modules described below constitute only a first theoretical approach; a considerable amount of work still has to be done before the modules can be produced.

Index of medical insurance premiums

20. Compulsory medical insurance premiums are transfers by households to social insurance schemes and therefore do not form part of private consumption as understood in national accounting. To the public, and more specifically to persons with independent means, trade unions and consumers' associations, this exclusion remains largely incomprehensible. How, indeed, can the reasons for this be explained to them when compulsory medical insurance premiums have not stopped rising in recent years, reducing commensurately household budgets and the share of their income that households can devote to consumption?

21. We always have been, and still are, against any change in the nature of the consumer price index. On the other hand, we believe that providing additional information, in the form of a module, may constitute an important source for measuring the real purchasing power of incomes and for defining an incomes policy.

22. We therefore intend to proceed with constructing an index of medical insurance premiums, which is expected to be introduced during the year 2000. How this module could be used and coupled with the CPI to move closer to the cost-of-living concept will be studied at a later stage. It will, in particular, be one of the main constituents of the "enlarged-basket" cost-of-living index.

Socio-economic indices

23. The idea underlying the creation of these modules is that price changes are not the same for all population groups. Some groups of households with specific patterns of consumption and purchasing habits may experience a rise in their cost of living which differs from that measured by the CPI.

24. The calculation of socio-economic indices ideally requires the construction of specific standard baskets and weighting schemes, as well as a selection of retail outlets and particular items. We will limit ourselves initially to calculating differentiated weightings, insofar as these differ significantly from the weights used in the central module. These socio-economic indices will primarily concern persons with independent means and single-parent families.

Modules calculated by means of "superlative" index formulae

25. The production of a so-called "superlative" (Törnqvist or Fisher) index is envisaged in the medium term, essentially for analytical purposes and in connection with the future establishment of the "cost-of-living index" module. It can only be done retrospectively, given that these formulae require current-period weightings.

26. This module will differ from the CPI 2000 only as regards the calculation formulae and the weightings they require; the other methodological elements will remain the same. It will thus be possible to reveal substitution biases at the higher level.

Harmonized consumer price index (HCPI) of the European Union

27. The inflation rate is a key indicator for evaluating our competitive position and for the Swiss National Bank's monetary policy. Although not a member of the European Union, Switzerland maintains very close relations with it and must therefore have an instrument to measure change in prices according to common methodologies and procedures.

28. The fundamental difference between the Swiss CPI and the HCPI lies in the geographical coverage (the reference population) and the demographic coverage (types of households considered). The HCPI is based on the domestic concept and the Swiss CPI on the national concept. To calculate an HCPI, a change of weighting will therefore be necessary, and this will entail the following adaptations:

- the exclusion of expenditures by Swiss residents abroad;

- the inclusion of expenditures by non-residents in Switzerland;
- the inclusion of consumption expenditures by people living in institutional households (homes, student residences, etc.).

29. The methodological and technical changes incorporated in the CPI 2000 central module are already a first step towards harmonization. However, aside from the extensions of coverage, the production of an HCPI will involve making numerous adaptations, albeit on a smaller scale than for the measurement concept but nevertheless not negligible, in the Eurostat rules and guidelines. These concern, for example, the periodicity of price collection and the way in which missing observations are dealt with. For these reasons and owing to financial considerations, it will not be possible to introduce an HCPI before 2002-2003.

"Cost-of-living index" (COLI) modules

30. In addition to introducing "superlative" index formulae, the move towards a cost-of-living concept calls for prices to be measured according to the use concept and for the standard basket to be expanded to include compulsory expenditures, such as medical insurance premiums and direct taxes.

31. There is, in our view, not just one cost-of-living index but several, each of them being based on a different variable. For the construction of this supplementary module, we have selected two variables, namely private consumption expenditure and income.

- A COLI based on private consumption expenditure aims to measure price increases as a whole. Its scope is identical to that of the CPI.
- A COLI based on income serves to measure change in the disposable income of households. It includes transfer payments, represented in particular by the "index of medical insurance premiums".
- The construction of an ideal cost-of-living index, incorporating all the necessary ingredients at the theoretical level, is not our primary objective. The intention is rather to move towards it in stages, the first step being to identify the most appropriate method of integrating medical insurance premiums.

33. By way of conclusion, the diagram below provides an overview, which is far from definitive, of the system that we would like to introduce and the principal methodological changes relating to each module.

Figure 1: Representation of the modular system of indices and principal methodological changes for each module

