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## DATA QUALITY

### Contributed paper submitted by the State Committee on Statistics of the Azerbaijan Republic

#### Summary

This paper is devoted essentially to the process of data collection and to possibilities for enhancing the quality of the information gathered.

#### Introduction

1. Responsibility for the development of a wide range of inflation indicators rests with the Price Statistics Division of the State Committee on Statistics of the Azerbaijan Republic. A most important place among these indicators is occupied by the monthly consumer price index (CPI). As of January 1995 the consumer price index was officially introduced as the principal instrument for measuring inflation in Azerbaijan and the Price Statistics Division is required to compile a high-quality CPI; quality management is defined in this connection as a "process of constant improvement, subject to systematic evaluation, taking into account the needs of users". How far this task is accomplished is determined by assessing the accuracy, timeliness, effectiveness and relevance of the statistics obtained with reference to pre-established goals.

2. The construction of a consumer price index is a complex process that requires solving a whole series of important tasks prior to publication of the index. In particular, considerable efforts are called for at the stage of designing a new CPI, since a complete revision of the Azerbaijani consumer price index is now being undertaken.
3. Weights are to be determined and goods selected on the basis of the results of a survey of consumer expenditures. After the requisite results of this survey are obtained, a variety of decisions must be taken with respect to the new CPI: the number of goods to be included in the index sample; the primary items of the sample for which prices are to be recorded; and the method of selecting trade outlets. In addition, the price collection system will be substantially improved and the requirements for and qualifications of the price collectors clearly defined, while a new computer system will also be created to process the data for calculating the new CPI to a modern technical standard. Along with an analysis of the conceptual and technical principles, a careful study is being made of the purposes of the CPI, with greater attention devoted to users' demands. The importance of these decisions is also dictated by the fact that they relate to the process of gathering and ensuring the quality of the data. At the initial stages of the design of a CPI these questions are sometimes not given enough attention, although they are extremely significant for the overall success of the exercise.

### **Identification of data requirements**

4. International requirements and practice regarding the calculation of a consumer price index attach paramount importance to the information on prices used for this purpose. Primary information on prices is the basis of all index calculations. It is essential for the compilation of the initial indicators in a system of individual price indices.
5. The consumer basket used for calculating the CPI is a uniform sample, for all regions of the Azerbaijan Republic, of the goods and services most frequently consumed by the public, as determined by the State Committee on Statistics. Items have been selected taking account of their relative importance for public consumption and their representativeness in reflecting movements in prices for homogeneous goods, as well as of their continued availability for sale.
6. More than 24,000 individual prices are entered in the database each month to calculate the CPI. As regards the more specific content of this enormous amount of data, as well as the procedures of collection and quality control, the following aspects may be singled out.
7. Obviously, not all the 24,000 prices change every month. In July 2003, for example, there were changes in only 26% of them. The prices of approximately 6% of the goods and services in the overall basket are still centrally controlled. This applies, in particular, to petrol, natural gas, electricity, rents, and so on. The reliability of such data is checked each month.
8. Information on prices is gathered by 72 professionally trained collectors in the capital and other large regions of the republic. Regional indices are aggregated for the country as a whole on the basis of each region's share of the total population. Price information is gathered from all possible locations in which each good is regularly sold to the general public, including large shops, booths and department stores, and agricultural and informal markets (street trading). The outlets are situated in various parts of a city and vary in size. Two to three prices are recorded for each good or service in various shops in the city centre and three to four prices are recorded

in those on the outskirts. In Baku up to 12 prices are recorded for each kind of good. Price collectors do not obtain data by mail. The telephone is also rarely used for this purpose. Price observations are made at approximately 9,500 outlets - 3,500 in the capital and about 6,000 in other regions - covering all marketing channels. The largest number of price quotations (8 to 10) is collected for the "food goods" group. The smallest number of quotations is collected for the "rent, water, heating, electricity" group, where prices and tariffs are established centrally. Six to seven price quotations are obtained on average for each of the other groups. In the selection of key enterprises in the services sector, attention has been given to those offering the public the largest range of services.

9. Unlike with a survey of consumer expenditures, for which the interviewer has to make several visits to particular households within quite a short time frame, the CPI compilation requires the price collector to visit trade enterprises on a regular basis over specific periods of time. Depending on the type of goods included in the sample, data collection may be undertaken weekly (food goods), monthly, quarterly or even less frequently (centrally controlled prices and tariffs). Price collection forms have to ensure accurate recording of price data by the interviewer for a specific good and enable the information received to be processed.

### **Selection of price collectors**

10. The selection of price collectors is extremely important for ensuring the overall quality of the price data. After determining and specifying the kinds of data required a decision must be taken on the qualifications needed for the price collectors who will be engaged in gathering the data.

11. For gathering accurate data on prices, the price collector should possess a variety of different skills, including being literate, capable of understanding the purposes of the programme and following the complex data collection rules. He should also have some diplomatic abilities to help him communicate with different people, including shop managers or owners and directors of enterprises in the services sector, as well as to establish the cooperation necessary for obtaining price data. Moreover, price collectors have to show persistence in the collection of data and understand how to apply the complex rules to solve problems that may arise, such as the unavailability of prices or product substitution, and so on. One of the most important qualities of a price collector is scrupulousness, i.e. he should show special thoroughness in the collection and recording of data on all price-determining aspects of a particular good. Although this quality is often taken as self-evident, it should be noted that only a small number of people have the capacity to concentrate their attention on the task to be performed in all circumstances.

12. Also of great significance are the price collector's personal qualities. It is essential for the price collector to be honest and aware of the importance of his work in recording prices for the calculation of a quality CPI. Potential candidates should have an interview with senior officials to determine their fitness for the duties of a data collector. Such interviews help to exclude individuals who are overly argumentative or have a difficult character or who are too shy to ask questions from the list of candidates. They also make it possible to identify candidates having the professional qualities that contribute to promoting understanding with the managers of trade outlets, as well as those whose excessive self-assurance is likely to cause their

non-acceptance by informants. Unfortunately, however, determining a person's character during an interview is a complicated matter. Definite conclusions about a price collector's personal traits can be made only after a certain period of time on the basis of an analysis of the quality of the data gathered by him and the results of his work.

13. A matter for concern is that price collectors may present imprecise information. Such cases occur even in the most developed countries, and Azerbaijan is no exception. The selection of price collectors who perform their work honestly is an important factor for the smooth operation of an effective data collection programme.

14. Price collectors are staff of the State Committee on Statistics of the Azerbaijan Republic. They regularly undergo professional training at conferences organized by staff of the central office. These conferences are held at least twice a year and are devoted largely to the following matters:

- clarifying cases of erroneous interpretation connected mainly with the goods descriptions used;
- providing help in solving technical problems as and when they arise;
- encouraging price collectors to make efforts to improve the reputation of the State Committee on Statistics of the Azerbaijan Republic among trade enterprises and offering them help in this regard.

15. A short manual on the recording of consumer prices has also been prepared to facilitate the work of price collectors.

### **Data processing and publication of the index**

16. Data collection is not an end in itself: if the data cannot be processed, analysed and reproduced in a format that can be understood by users, the efforts made to gather the data are pointless and simply a waste of time.

17. For effective data processing the price collectors have to realize the importance of the timely collection of data on prices and their submission for verification to the central price statistics division. If questions arise with respect to the description or price of a good it is essential for there to be enough time to make a repeat visit with a view to clarifying any questions in the submission of the price registration form (or report) for verification. Upon completion of the recording of prices for all goods, the reports are sent to the central office for processing.

18. Beginning in 1999 the regions have not simply supplied the Statistical Committee with one general report monthly from all price collectors covering all goods and services; each price collector sends his own report weekly giving prices for food products and at the end of the month giving prices for the whole list of goods and services covered. To process this information the State Committee's Price Statistics Division has created special tabular files for each region to store price data for the month. The weekly price information is carefully checked as it arrives and is entered on PCs. If errors or sharp price changes are detected, the staff of the Price

Statistics Division contact the regional price collectors by telephone and seek clarification of all the factors giving rise to such changes. They calculate the average prices over the four-week period by area at the end of the month only when they are sure of the accuracy of the information obtained from all price collectors. The monthly information processed in this way for the whole republic (2,400 records) for the preceding month constitutes the reference-period data, and that for the current month is used as the reporting-period data for calculating the CPI.

19. Beginning in 2002 each of the officials of the Price Statistics Division of the State Committee on Statistics of the Azerbaijan Republic has been accompanying price collectors quarterly to trade outlets, where they conduct observations. The main purpose of such accompaniment is to ensure that the price collectors follow the procedures and instructions established for gathering price data. Although the inspector is not assigned the role of a tutor, he invariably provides instruction when he notices mistakes. The mechanism also operates in the reverse direction, since the price collector can ask the inspector relevant questions. This mechanism has proven highly successful. In particular, problems have been identified which arise with some price collectors in particular regions or are related to specific aspects of price collection. In each case the appropriate measures are taken and, for example, new instructions are issued if general difficulties are encountered in the gathering of data. Problems arising with individual price collectors are considered by the director of operations in the given district and in the central price statistics office. The inspectors devote particular attention to data gathered by new price collectors who do not have extensive work experience. These checks on data quality help the new price collectors to obtain useful information and to improve the quality of their data collection operations. Knowing that the data gathered by them will be thoroughly checked on a regular basis, the price collectors are more attentive to the business of data collection.

20. Procedures for sorting data will be developed in the course of the work on the revision of the CPI to identify prices requiring quality control. Since the financial and human resources necessary for conducting quarterly large-scale quality checks are not always available, a systematic control procedure will be devised allowing for the price data gathered by each collector to be checked every two or three months. The check may be applied to prices characterized by anomalous stability or variability. Price data will be entered with the code of the corresponding price collector, and information gathered by new price collectors may be subjected to more frequent verification. Data on goods for which price collection involves greater difficulties may be subjected to more frequent verification than data for other goods.

## **Conclusion**

21. Quality is a cornerstone of statistical work and the State Committee on Statistics of Azerbaijan bears responsibility for the quality and reliability of CPI calculations. Quality in the process is defined in terms of its “constant improvement”, and hence a major part of the work in the quality management system has involved a review of work done and the planning of future work.

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