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METHODOLOGY FOR MEASURING INFLATION IN THE RUSSIAN FEDERATION

Contributed paper submitted by the State Committee on Statistics
of the Russian Federation*

1. Introduction

Since prices for both producer and consumer goods and services are rising in Russia in all sectors of the economy, the problem of measuring the increase is being tackled in statistical practice in a comprehensive fashion. Accordingly, the Russian State statistical bodies have for the last few years (and more specifically since the price liberalization in January 1992) been addressing the task of building a system of price indices for all sectors of the economy.

Fundamental to the building of a system of price indices reflecting inflation in sectors of the economy was the establishment of uniform methodological approaches to the recording of prices and the calculation of price indices. Such methodological approaches were formulated as follows:

Monitoring of prices for a sample population of core enterprises;

Formation of sets of representative goods and services with maximum harmonization of the items used (development of a nomenclature applicable to all sectors of the economy);

Uniform temporal parameters for recording prices of goods and services (at the end of the reporting month);

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Uniform principles for weighting and an annual revision of weights;

Calculation formula common to the whole system of price indices.

Common approaches to calculating the system of price indices enable the greatest possible precision in comparing price movements in all sectors of the economy.

At present Russian State statistical bodies have the following system of price indices:

Indices of consumer prices for goods and services;

Price indices for industrial producer enterprises;

Price indices for raw and other materials acquired by enterprises for their own main production;

Price indices in capital construction;

Price indices for the output of agricultural enterprises;

Indices of tariffs in goods transport;

Indices of tariffs for communications services provided to corporate bodies;

Price indices for the housing market;

Price indices for loading/unloading operations at river ports.

Since a consumer price index is viewed in international practice as an index characterizing inflation, we feel that the actual methodology used in compiling the index needs to be examined in more detail. It should be borne in mind here that the methodology for constructing other price indices in the Russian Federation is identical, in terms of its key parameters, to that used for compiling the index of consumer prices, as stated above.

2. Basic methodological principles governing the construction of the consumer price index (CPI)

2.1 The methodology for calculating the CPI is constantly being improved, and this is largely to be explained by the substantial deceleration of inflation and consequently the greater need for precise calculations.

In the context of Russia's federal system, changes in prices and tariffs are monitored both for the Russian Federation as a whole and separately for each constituent entity of the Federation (republics, territories, oblasts and autonomous areas - 89 regions in all).

Price information is gathered in all capitals of the republics (as part of the Russian Federation), territories, oblasts and autonomous areas and also, by sampling, in district centres chosen for their representativeness of

the socio-economic and geographical situation in the regions and the availability of goods and services on the consumer market - a total of 350 towns and cities.

2.2 The CPI is calculated using information derived from two sources:

Data on price changes gathered from monthly recording of prices and tariffs on the consumer market;

Data on the pattern of actual consumer spending by the public over the preceding year, calculated on the basis of figures from sample surveys of households.

2.3 The decelerating rates of inflation made it possible, after four years of gathering information about prices on a weekly basis, to switch from weekly to monthly recording of prices. The switch was accompanied by an extension of the range of representative goods and services from 280 to 400 in the current year. This broadening of the range was an objective requirement because, in the context of decelerating price growth, the price changes needed to be tracked more precisely and to a higher standard.

After the August crisis and the acceleration of inflation, however, weekly recording of prices for the most important foods, medicines and tobacco products, as well as petrol, was reinstituted.

2.4 The process of monitoring prices of goods and paid services on the consumer market and calculating the CPI involves the following steps:

Selection of core enterprises in the distributive trade and services sectors;

Selection of representative goods and services;

Recording of prices and tariffs;

Establishment of a set of weights for calculating the CPI;

Calculation of the CPI;

Calculation of average prices and tariffs for goods and services;

Determination of the value of, and changes in the value of, a selection of 25 basic food items constituting the minimum subsistence level (replacing the selection of the 19 most important food items calculated up to 1997);

Calculation of the reference value of the basket of essential items (37 items).

2.5 For the purpose of recording prices, large, medium-sized and small trade and services enterprises situated both in the central part of each town or city and on its outskirts were chosen so that the monitoring would cover enterprises operating under a variety of conditions.

The selection includes a representative range of trade and services enterprises of all forms of ownership and legal status (State-run, municipal, private, mixed and voluntary associations or organizations), as well as urban markets for food and non-food consumer items.

Prices at small wholesale markets are also recorded.

The price information noted for each good or service is entered on a separate sheet in the record of consumer prices for goods and services (at least five values for each good).

2.6 An important feature of the CPI basket is the degree of flexibility in how it is formed.

The consumer basket for the CPI calculation is a representative sample of groups of goods and services most commonly consumed by the public and it is uniform for all regions of the Russian Federation.

The basket includes goods and services in massive consumer demand and also certain non-essential goods and services (passenger vehicles, gold jewellery articles, passenger vehicle maintenance, etc.). The goods and services are chosen in the light of their relative importance for public consumption, their representativeness in terms of reflecting movements in prices for homogeneous goods and their constant availability for sale. This solution is made at the federal level and remains unchanged for a considerable period of time (generally not less than a year).

At the regional level, specialists provide an overall description of the group of goods on the basis of representative items with specific consumer characteristics that occupy an important position on the consumer market in the town or city concerned and are expected to be offered for sale over a lengthy period.

2.7 When the consumer market is not supplied with goods and services equally in large and small towns, the local statistical bodies are entitled to draw up their own list of goods and services to record prices, selecting them from the general list for the Russian Federation.

The regional statistical bodies can also extend the list of goods and services. In this case, the price information recorded for goods not included in the established compulsory list is not taken into account in calculating the CPI at the regional and federal levels.

This method makes it possible to preserve the representativeness of the district level in calculating price indices for the most important goods and services, as well as a composite index of consumer prices as a whole by region, and at the same time substantially reduces the likelihood that this indicator will be distorted by numerous adjustments for missing information when the supply of goods in small towns is unstable.

2.8 In the context of a continuing rise in prices, monthly recording of prices for representative goods and services is carried out at the end of the reporting month (from the 22nd to the 25th). For goods and services whose

prices are not subject to sharp changes, the recording may be done earlier, but no more than one or two days before the established dates. This method of information collection at the end of the month permits fuller evaluation of price rises over the month as a whole.

In a context of decelerating inflation rates, requirements as to the quality of the price information gathered are greater, and as a result the rules governing price recording are stricter, as well as requirements governing substitutions of goods and trading enterprises where prices on the list of monitored goods are recorded.

2.9 Monitoring of price levels and movements was expanded to cover paid education services starting in 1997; until recently paid education did not exist in Russia.

In addition, systematic monitoring of prices has been organized for the primary (new) and secondary (resold) housing market.

A question which now arises is that of including price indices for the housing market in the CPI, as well as indices showing prices and tariffs for both State-owned and private housing.

2.10 The CPI calculation is made at monthly and quarterly intervals, as well as cumulatively for the period since the beginning of the year. The CPI is calculated monthly in relation to the previous month, the corresponding month of the previous year and December of the previous year, and as a running total from the beginning of the year compared with the corresponding period of the previous year.

Price indices for the quarter, half-year and period since the beginning of the year are calculated by the "chain" method, i.e. by remultiplying the monthly consumer price indices.

3. Seasonal adjustment of the CPI

3.1 One of the most important problems addressed by Russian statisticians in compiling the CPI is that of taking account of the seasonal component for seasonal products.

Observation of prices and tariffs on the consumer market shows that the prices of some goods and services, especially certain kinds of fruit and vegetable produce, are subject to marked seasonal variations during the year. These variations are generally cyclical in nature.

A number of methods of seasonal adjustment are now already being used for the CPI calculation in Russia, one of them being the substitution of goods.

3.2 This method is used when prices for seasonal goods which are lacking at certain times of the year are replaced in due proportion by the prices of similar or equivalent goods in the corresponding group which are available at the time in question. For example, prices for particular types of seasonal goods falling in the clothing and footwear groups are recorded only during the

periods of heavy sales of these goods. In off-season periods of the year the last available price from the period of heavy sales of the good is reused (without any change until the beginning of the next season). In some cases the price is indexed on the basis of changes in prices for similar kinds of summer or winter clothing or footwear items, or else it is indexed on the basis of the growth rate in overall prices in the relevant group of goods.

3.3 Besides the technique of substitution of goods, one of the methods of seasonal adjustment now being used is that of calculating the weighted average price for potatoes. In this case the weighted average price of potatoes is calculated taking into account the gradually rising share of new potatoes in total sales (during the summer) and the correspondingly declining proportion of potatoes from the previous year's crop. With this method, the price of new potatoes begins to be included in the calculation of the weighted average only during the period of large sales of that product. This method makes it possible, to a certain extent, to establish a link between the prices of potatoes from the current year's crop and the prices of potatoes from the previous year's crop.

3.4 In the Russian Federation, during the period of high rates of inflation exacerbated by sharp and irregularly spaced leaps in prices, it was impossible to identify trends and patterns in seasonal price variations.

Since the first year following the period of high inflation that accompanied price liberalization was 1994, during which prices rose by a factor of 3.2, as against 26.1 and 9.4 in 1992 and 1993, respectively, experimental calculations to reveal the nature of the trends in price movements, and also to define seasonal coefficients (indices), were made for the period 1994-1996. Since 1997 the CPI has also been calculated with a seasonal adjustment.

A monthly seasonally adjusted CPI is published once a year at the beginning of the year following the reporting year.

3.5 In the proposed method of seasonal adjustment, price indices which even out the influence of the seasonal factor are calculated for particular goods as the ratio of the index of prices for the reporting month to the seasonal coefficient for that month in respect of each specific good.

The seasonal coefficient for each reporting month of the current year is defined as the ratio of the monthly average index of prices of the base year for each good to the monthly indices of prices for that same year. The average monthly price index for each good is calculated as the geometric average value of the twelfth root of the annual average price index for the same good.

3.6 Using seasonal indices in calculating consumer price indices gives a CPI which excludes the seasonal bulge, i.e. seasonal price variations are smoothed out, and this is especially important in the context of moderate inflation.

Here it must be noted that the within-year (monthly) adjustment of price indices for the seasonal component maintains the value of price rises as a whole for the year.

3.7 In the process of developing seasonal coefficients, the movement of prices on the consumer market for the entire range of representative goods and services was analysed. As a result of this analysis, 38 items were selected from the overall range of representative goods and services; for these items, the seasonal factor has hitherto not been taken into account or not fully reflected in the CPI calculation.

Work on analysing price information and determining the influence of the seasonal component for individual types of goods and services on the value of the composite consumer price index shows that it is changes in the prices for the fruit and vegetable product group that have the greatest influence on changes in the CPI owing to the seasonal factor.

It has also been established that for this same group of products there are definite patterns in the cycle of seasonal variations in prices, and hence in the indices, which are repeated from one year to the next.

At the same time, the nature of the price movements for individual types of food products (other than fruit and vegetables), as well as for non-food goods and services shows that in a context of more extensive application of the method of substitution of individual types of goods and services, it is also possible to even out the seasonal factor which influences the overall level of the CPI.

It was thus found that the influence of seasonal variations in the prices of selected goods and services, apart from fruit and vegetable products, on the seasonal component of the composite consumer price index is insignificant, and use of the method of calculating seasonal indices or coefficients for the CPI for these items is not worthwhile.

4. Introduction of paperless technology for collecting information on prices

The Russian statistical bodies have now embarked on what is for them a new development, namely the collection of primary information about prices on the consumer market using minicomputers. This new development has been greatly facilitated by specialists of the United Kingdom's Office of National Statistics and Eurostat.

Using paperless technology to collect information about prices helps not only to improve the quality of the information gathered and reduce the time required for its collection and processing, but also to enhance markedly the performance of price collectors and substantially reduce expenditures on the printing of report forms and postal charges for sending them to all areas of the Russian Federation.

As part of the conversion to paperless technology, a training seminar was held in August of this year in Russia for specialists of 89 regional statistical committees. The specialists trained at the seminar (one or two representatives from each constituent entity of the Russian Federation) made arrangements for the training of price collectors locally. The process of introducing the new technology for collecting information on prices began in October of this year.

The conversion to paperless technology will be implemented in full as from the year 2000.

5. Conclusion

Work is continuing in Russia on refining the current methodology for collecting price information and calculating both a consumer price index and a whole set of price indices. The main underlying principle here is still a systemic approach to the construction of price indices for all sectors of the economy.

Moreover, since the Russian statistical bodies for the time being do not have an aggregated price index reflecting inflation as a whole, one of the challenges is to develop the methodology for an indicator to characterize inflation in general.
