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**Methodological approaches to measuring core inflation in
the CIS countries**

Prepared by the Interstate Statistical Committee of the Commonwealth of Independent States (CIS)

Summary

The paper presents information on the methodological approaches to measuring core inflation by the national statistical offices of the CIS countries. General methods of measuring core inflation and specific procedures used in the statistical practices of the CIS countries are described.

Introduction

At present, price statistics relies on a rather wide system of indicators to reflect the price situation on consumer markets. The main element of this system is the Consumer Price Index (CPI).

Keeping in mind that CPI is not an all-inclusive comprehensive indicator that could be used to describe all impacts of price changes on human well-being and a country's economy, a set of additional price indices has been elaborated to reflect specific issues of price changes in consumer markets.

To avoid the possibility of using certain indices for the wrong purposes, each index should have a specific name. The names of indices should agree with the terminology accepted in international statistical practices to exclude the incorrect interpretation of specific price indices, to ensure their international comparability, and to avoid confusion among users of statistical data.

1. Core inflation in the system of consumer price indices

Price statistics in the CIS countries is developed as a system based on common methodological approaches; it relies on the application of international standards and, at the same time, it is user oriented and provides statistical data for economic analysis and forecasting. The methodological basis of consumer price statistics is the “Consumer Price Index Manual: Theory and Practice” (ILO, IMF, OECD, Eurostat, UN ECE, World Bank, 2007) that was adjusted to account for the peculiarities of the CIS countries’ economies.

At present in the majority of the CIS countries, various consumer price indices are being constructed and applied to reflect price dynamics on the consumer markets of these countries.

In addition to an overall CPI, additional group indices are being constructed. To better reflect consumer price dynamics, the following indices are being constructed: CPI for goods, CPI for food products, CPI for nonfood products, CPI for services, and other more disaggregated price indices.

In addition to indices mentioned above, a **core CPI** is constructed to measure **core inflation**.

Also a CPI is being constructed for items not included in the basket of goods and services used to calculate core inflation.

A consumer price index (CPI) measures changes in the price level of consumer goods and services purchased by households for nonproductive consumption. It is a ratio of the cost of a fixed basket of goods and services in prices of the current period to their cost in prices of the previous (base) period.

Unlike CPI, the measure of core inflation being a component of the overall CPI, excludes short term price changes caused by certain factors of an administrative, event-driven, or seasonal character.

A measure of core inflation makes it possible to assess the inflation trend by reducing the impacts of supply shocks, seasonal price fluctuations, and price regulation for certain products.

Among well known methods for measuring core inflation there are some that are most common - which are used in some CIS countries. These methods are used in addition to calculating official price indices:

- excluding a variable set of goods (services)-representatives;
- excluding a fixed set of goods (services) - representatives;
- using moving averages;
- computing the trimmed mean;
- computing median inflation, etc.

Core inflation is measured by the majority of the CIS national statistical offices. Most of the CIS NSOs have chosen to measure core inflation by excluding fixed sets of goods (services)-representatives from CPI. The applied methodology is mainly based on the exclusion of seasonal goods and services with administratively regulated prices, and gasoline and some other fuels. This method is rather common in international statistical practices. It enables the comparability of price index time series and is comprehensible to the general public.

At the same time, in some European countries, given the peculiarities of life of population, core inflation measures calculations exclude mortgage payments, payments for energy, and most of the costs associated with owner-occupied housing.

2. Main methodological approaches to measure core inflation in CIS countries

The objective of the core inflation measurement is to reveal long-term trends of consumer prices that would not be subject to sharp fluctuations caused by supply shocks, seasonal factors, and the administrative regulation of prices.

The measure of core inflation shall meet the same requirements as other statistical indicators. The core inflation indicator should be as informative as possible, relying on a sustainable methodology which is valid over a long period of time; calculations should be done simultaneously with other consumer price indices on the basis of the same primary data.

In an ideal situation, the core inflation measure should be unbiased relative to the CPI in the medium and long term. If average core inflation rate differs greatly from the official inflation rate for a long period of time, it means that not only temporary shocks but some trend features have been filtered.

Thus, the measure of core inflation can provide inadequate information for the purpose of monetary policy. In addition, substantial and long term differences

between measures of core inflation and official inflation may result in lack of economic agents' trust in the core inflation measure as an indicator of inflation dynamics for psychological reasons, even when discrepancies are predictable.

The calculation of the core inflation measure assumes the following steps:

- composing the basket of goods (services);
- determining weights;
- computing the core inflation measure.

Calculation of the measure of core inflation (core CPI) is done on the basis of a market basket of consumer goods and services used for the compilation of the all-item CPI with the exclusion of certain product groups and goods and services whose prices are to a large extent regulated and/or are subject to seasonal fluctuations.

Usually, fruit and vegetables are excluded from the **food product** list due to their seasonal price volatility which substantially impacts CPI throughout the whole year both downwards and upwards.

Fuels (including gasoline) are excluded from the **nonfood product** list as their prices, in addition to seasonal volatility, are subject to administrative regulation.

The following items are excluded from the list of **services purchased by households**, as their prices are often impacted by administrative decisions of the government: some services of passenger transport, communication services, almost all types of housing and utility services, some legal and banking services, funeral services, etc. The lists of excluded items may be country specific depending on social and economic factors in each country.

It should be noted that the lists of most volatile and seasonal goods and services always include fruit and vegetables and, with rare exceptions, fuel and electricity. In many countries prices for fuel and energy are regulated. So, for measuring core inflation the most often excluded items from the CPI product basket are:

- food products (especially fruit and vegetables);
- services with administratively regulated prices;
- fuels.

Although there is a prevailing approach to measuring core inflation in the CIS countries, there are differences in details in realization of this approach related to the specificities of the economies, different degrees of government's interference into pricing in various countries.

The main principle of calculating measures of core inflation is to determine a fixed set of items to be excluded monthly from the consumer product basket used to calculate an official all-item CPI.

In the table below one will find short descriptions of approaches to measuring core inflation by the NSOs of the CIS countries (according to the published methodological explanations for measuring core inflation).

Country	Methodological approaches to measuring core inflation (core CPI)
Azerbaijan	Core CPI is calculated by excluding seasonal goods and services with administratively regulated prices (utilities, transport and communication services, banking services, etc.), fuel.
Armenia	Core CPI is calculated by excluding goods that demonstrated price growth in the international markets or the increase in prices was due to weather conditions (e.g. in some years the calculations were done with the exclusion of utility prices or agricultural products, the prices for which increased due to unfavorable weather conditions)
Belarus	Core CPI is calculated by excluding some food products, vegetables, fruit, tobacco products, some subsidized medications, gasoline, diesel fuel, utility and housing services, medical services, postal services, subscription charges for a home telephone line, higher education services, funeral services, charges for kindergarten services, etc.
Kazakhstan	Core CPI is calculated by excluding certain items from the official CPI product basket: fruit and vegetables, gasoline and coal, diesel fuel, utility and housing services, railroad transport, communication). At the same time core CPI is computed using the method of exclusion of price changes from the ordered series of CPI components (5 highest rises and declines in prices; 8% of highest rises and declines, all but the median). These methods are used for analytical and forecast purposes. Use of all these methods in complex provides efficient system of measures reflecting monetary "behavior" of inflation.

Kyrgyzstan	Core CPI is calculated by excluding from the group “Food products and non-alcoholic beverages” milk and fruit and vegetables with prices affected by seasonal factors, and sugar; from the group “Alcoholic beverages and tobacco products” - some items with administratively regulated prices. Excluded from the group of nonfood products and services are such items as lubricants, some materials for housing maintenance and repair, electricity, gas and other fuels, services of passenger transport and communications, and other services with regulated prices.
Russia	Core CPI is calculated by excluding: fruit and vegetables, fuel (including gasoline), services where pricing is regulated by the government (some passenger transport services, communication services, banking services, legal services, funeral services)
Tajikistan	Core CPI is calculated by excluding seasonal products, utility services, transport services, funeral services, etc., and fuel.
Turkmenistan	Data and methodology are not published
Uzbekistan	Data and methodology are not published
Ukraine	Core CPI is calculated by excluding a fixed set of items from the CPI basket. The following items are excluded: seasonal goods, processed food products, services with regulated prices.

Weights for computing the measure of core inflation are determined on the basis of population consumption expenditure structure for the base year (previous year in the majority of countries) obtained from household budget survey with the exclusion of items not used in the core CPI calculation. The structure of household consumption expenditure reflects the distribution of items by kinds of utilization in a set period of time. With that, the weights of the remaining items are normalized so that they sum up to 1 (or 100%). It means that the price index of each item included in the calculation of core inflation gets extra weight in comparison with the all-item CPI calculation.

The calculation of core CPI is done similarly to all-item CPI using **Laspeyres price index for the previous month:**

$$I_{t/t-1} = \frac{\sum_{j=1}^n p_{j,o} q_{j,0} * i_{j,t/d}}{\sum_{j=1}^n p_{j,0} q_{j,0} * i_{j,t-1/d}}$$

where:

$I_{t/t-1}$ – core CPI for a set of consumer goods (services)

$p_{j,o} q_{j,0}$ – share of household expenditures on purchasing item j of total expenditures on the basket (weight of the base period);

$i_{j,t/d}$ – individual item price index in the reference month to December of the previous year;

$i_{j,t-1/d}$ – individual item price index in the previous month to December of the previous year;

t – current period;

$t-1$ – previous period;

n – number of goods (services)

3. Conclusion

Using core inflation as an operational indicator for monetary policy imposes severe restrictions on the method of calculating the measure of inflation.

Information on the core inflation should be available not later than official consumer price index data. The calculation technique for obtaining the core inflation measure should make it possible to provide timely and reliable information on price dynamics. Therefore, this technique should be clear and reliable. Timeliness is important to explain monetary policy to economic agents. The calculation of the core inflation measure using the exclusion method can be done simultaneously with official CPI, something which favors this method.

Core inflation, year T, country N

growth, %

	To the previous month					
	Jul	Aug	Sept	Oct	Nov	Dec
CPI	0,17	0,24	0,19	0,27	0,52	0,66
Core CPI with exclusion of growth of prices for items:						
fruit, vegetables, gasoline, and coal	0,21	0,34	0,44	0,34	0,48	0,61
fruit and vegetables	0,20	0,34	0,43	0,40	0,48	0,61
fruit and vegetables, utility and housing services, railroad transport, communication, gasoline, diesel fuel, coal	0,21	0,29	0,54	0,41	0,49	0,63
Core CPI with exclusion of price changes:						
five highest rises and declines in prices	0,15	0,21	0,26	0,26	0,40	0,66
8% of highest rises and declines in prices	0,14	0,19	0,23	0,24	0,34	0,49
all but the median	0,03	0,10	0,14	0,16	0,22	0,36