A Briefing on the Rebased Colombo Consumer Price Index (Base 2021=100) for Sri Lanka Department of Census and Statistics

The Colombo Consumer Price Index (CCPI) with an index reference period 2013=100 was updated to a new index reference period of 2021= 100. The updated CCPI will be released monthly commencing from February 2023 on the last working day of each month covering the urban areas of the Colombo District. The updated CCPI will have weights based on consumer expenditure in 2019. The index compilation methods reflect international standards and best practice.

1.Background

A Consumer Price Index serves a number of purposes. It is an indicator to measure the changes in the general level of consumer prices and used as one of the key indicators of inflation. A Consumer Price Index is also used for socio-economic analysis and policy purposes, mainly in the determination of monetary and income policies. It is used in the analysis of the trends in wages and other monetary incomes, for indexation of salaries and wages etc. Also, the price index is used in the preparation of national accounts.

The index reference year 2021 will be the fifth series of the CCPI, the first, second, third and fourth series had an index reference years of 1952, 2002, 2006/7 and 2013 respectively. Regularly updating the CCPI will guarantee that it remains representative of current consumption patterns. With the new CCPI, the weights and representative basket of goods and services have been updated to reflect current consumption expenditure of households in the urban areas of Colombo district.

2. Geographic Coverage

Coverage of House Holds in Colombo District urban areas:

The geographical coverage of the CCPI (Base 2021=100) is same as that of in CCPI (Base:2013=100) and it covered urban areas of the Colombo District, i.e. Colombo Municipal Council, Dehiwala–Mt. Lavinia Municipal Council, Moratuwa Municipal Council, Sri Jayawardenapura Municipal Council, Kaduwela Municipal Council, Kolonnawa Urban Council, Seethawakapura Urban Council, Maharagama Urban Council, Kesbawa Urban Council and Boralasgamuwa Urban Council.

3. Features

The CCPI (Base 2021=100), is based on data from the Household Income and Expenditure Survey (HIES) conducted in 2019. The HIES 2019 included all types of consumption expenditures by households, and was broadly representative of all households in the Colombo district urban areas. The main features of the CCPI are as follows:

3.1 Index reference period: The index reference refers to that period where the index equals 100. The year 2021 is the index reference period for the CCPI. The Colombo urban areas average monthly value of the base period expenditure level on the basket of goods and services in the CCPI (Base 2021=100) is Rs. 91,880.34. This expenditure level is 52.21% greater than the index reference period expenditure level of Rs. 60,364.73 in the previous index (2013=100).

3.2 Weight reference period: Weight reference period is the period covered by the expenditure survey. Weight reference period is year 2019. Because it is based on HIES 2019. To reflect international recommendations and best practices, the weights refer to each item's share in the average consumption expenditures of all urban area households. The HIES covered 12 months during 2019 and captures seasonal expenditure patterns.

3.3 Price reference period: Price reference period is the period for which prices are used as denominators in the index calculation. Since year 2019 was not considered as normal due to certain events, an average of the two-year period from January 2018 to December 2019 was considered as the price reference period.

3.4 Market Basket of Goods and Services: The CCPI (Base 2021=100) basket contains 105 sub classes of goods and services which are further categorized in to 12 groups using the internationally recommended Classification of Individual Consumption According to Purpose or COICOP. The average household expenditure and percentages for the 12 groups in the CCPI (Base 2021=100) are given in Table 01. The share of the food category is 26.23% while the share of the Non – food category is 73.77%.

3.5 Expansion of representative items in the basket:

With the rebased CCPI, the number of representative items has increased from 392 to 426. The HIES was used to select the representative goods and services that comprise the basket.

3.6 Price collection: The price collection of the index (Base 2021=100) has covered 10 price collection centers in Peliyagoda, Maradana, Wellawatta, Dematagoda

Grandpass, Kirulapone, Nugegoda, Rathmalana, and two Dedicated Economic Centers namely Narahenpita and Rathmalana. Purposive sampling methods have been used to select the representative varieties for which prices are collected. For each representative variety, detailed specifications are developed that include all the price determining characteristics. This ensures not only that a price for the same variety is collected over time, but also allows for the selection of a replacement item when needed.

3.7. Index calculation: CPIs are calculated in two stages. First, elementary indexes are calculated for each of the elementary aggregates. Second, higher-level indexes are calculated by taking weighted averages of the elementary price indexes. Elementary indexes will be compiled using the geometric mean or Jevons formula. The 2020 CPI Manual notes that geometric averaging is preferred when weights are not available for the individual prices in the CPI elementary indexes. The geometric price index, known as the Jevons price index, is calculated either as the ratio of the geometric average prices or as the geometric average of the price relatives.

In the case of the DCS, the Jevons price index is defined as the ratio of the unweighted geometric mean prices, for the two periods, 0 and t, to be compared:

$$I_J^{0:t} = \frac{\prod(p_i^t)^{\frac{1}{n}}}{\prod(p_i^0)^{\frac{1}{n}}}$$

The Jevons index can measure long-term price change directly or by chaining together short-term price changes. The direct Jevons, illustrated in the formula above, calculates long-term price change each period by comparing the average price of the item in the current period (t) with the average price of the item in the reference period (0). With the chained Jevons, which is used by the DCS, long-term price change is calculated by chaining together short-term (month to month) price changes. The formula for the chained Jevons is as follows:

$$I_{Jc}^{0:t} = \prod\left(\frac{p_i^t}{p_i^0}\right)^{\frac{1}{n}} = \frac{\prod(p_i^1)^{\frac{1}{n}}}{\prod(p_i^0)^{\frac{1}{n}}} \frac{\prod(p_i^2)^{\frac{1}{n}}}{\prod(p_i^1)^{\frac{1}{n}}} \ldots \frac{\prod(p_i^t)^{\frac{1}{n}}}{\prod(p_i^{t-1})^{\frac{1}{n}}} = \frac{\prod(p_i^t)^{\frac{1}{n}}}{\prod(p_i^0)^{\frac{1}{n}}} = \prod\left(\frac{p_i^t}{p_i^0}\right)^{\frac{1}{n}}$$

This short-term ratio is multiplied by the item's estimated cost of base period spending in the previous month to obtain the current-period estimate of the cost of base period spending

assigned to the item. As before, the CPI is the sum of the current period estimated cost of base period spending divided by the spending in the fixed base period.

For the calculation of upper-level indexes, the DCS uses the Young formula. When the expenditure weights are not price updated for the relative change in price between the weight and index reference periods, this resulted in a fixed weights index known as the Young index. With the Young index, expenditure shares are fixed in the weight reference period.

The DCS uses the Modified Young formula. The CPI measures the relative change in prices across time. Long-term price change can be measured either directly or by chaining together short-term price change. Both produce the same results. A Young index calculated by chaining short-term price relatives to form long-term price change is known as the Modified Young formula. The Modified Young (short-term formula) is preferred over the Direct (or long-term) Young formula because it is more flexible. The formula for the Modified Young is:

$$I_{MY}^{0:t} = \sum w_j^b I_j^{0:t-1} I_j^{t-1:t} \ , \quad \sum w_j^b = 1$$

The short-term formulation weights each short-term price relative (current price compared with previous period price) by its previous expenditure share (weight in previous period). The previous period expenditure share is equivalent to the base period value share, updated for price change to the previous period, thus providing a better representation of the dynamic nature of the weighting structure. The short-term formulation facilitates the introduction of new transactions without having to impute base period prices. When two successive prices for the replacement transaction are available, it can be used in place of the transaction that is no longer available. If a price is missing, the short-term price change of similar items can be used (as opposed to long-term price changes) for purposes of imputation. Another advantage of the short-term formulation is that it is much easier to deal with quality changes. Finally, the short-term formulation facilitates data validation, as it is the short-term change in price that identifies extreme price movement.

3.8 Value of one Index Point: Monthly average per household Consumption expenditure of this index which is based on the year 2021 is Rs. 91,880.34 and the value of one index point is Rs. 918.80 (Rs. 91,880.34/100).

Comparison of key characteristics between the Colombo Consumer Price Index with Base 2013=100 and Base 2021 = 100 are summarized in Table 02 below.

Table 01. Comparison of Colombo Consumer Price Index weights by main categories (Base 2021=100) and (Base 2013=100)

Main Categories	CCPI (Base 2021 =100)		CCPI (Base 2013 =100)	
	Value of Expenditure (Rs.)	Weight (%)	Value of Expenditure (Rs.)	Weight (%)
Total consumption expenditure	91,880.34	100.00	60,364.73	100.00
Food and Non-Alcoholic beverages	24,102.73	26.23	17,044.70	28.24
Non food	67,777.61	73.77	43,320.03	71.76
Non-Food				
1. Alcoholic beverages, Tobacco and Narcotics	1,536.32	1.67	620.31	1.03
2. Clothing and footwear	2,017.95	2.20	1,383.22	2.29
3. Housing, Water, electricity and fuel	29,000.11	31.56	19,306.27	31.98
4. Furnishing, Household equipment & Routine Household maintenance	3,193.97	3.48	1,533.73	2.54
5. Health	3,673.86	4.00	2,650.13	4.39
6. Transport	11,528.18	12.55	6,401.11	10.61
7. Communication	2,718.78	2.96	1,993.16	3.30
8. Recreation and culture	1,799.85	1.96	785.87	1.30
9. Education	4,679.85	5.09	3,538.72	5.86
10. Restaurant and Hotels	4,700.84	5.12	3,101.87	5.14
11.Miscellaneous goods and services	2,927.90	3.19	2,005.31	3.32

Table 02- Comparison of key characteristics between Colombo Consumer Price Index (Base 2021 = 100) and the Colombo Consumer Price Index (Base 2013=100)

Special features	CCPI (2021=100)	CCPI (2013=100)
1. Index reference	2021=100	2013 = 100
2. Weight Reference	year 2019, January to December	year 2012 July to June 2013
3. Geographical coverage	Urban areas of Colombo district	Urban areas of Colombo district
4. Target household units	All households in urban areas of Colombo district	All households in urban areas of Colombo district
5. Size of household unit	3.8	3.9
6. Average monthly Consumption Expenditure	Rs. 91,880.34	Rs. 60,364.73
7. Value of one Index point	Rs.918.80	Rs. 603.65
8. Major Groups	12	12
9. Sub Groups	105	105
10. Total number of items	426	392
11. Percentage of total weight		
i. Food	26.23	28.24
ii. Non-Food	73.77	71.76
12. Price Collection centers	10	14