

# **TECHNICAL NOTES IN THE REBASING OF CONSUMER PRICE INDEX TO BASE YEAR 2012 AND ADOPTING THE CHAIN METHOD IN THE 2012-BASED CPI**

## **1. Identification of the Base Year**

The base period is the period, usually a year, at which the index number is set to 100. It is the reference point of the index number series. The CPI is now rebased to 2012 base year from the current 2006 base year.

The year 2012 was chosen as the next base year because it was the latest year when the Family Income and Expenditure Survey (FIES) results were made available. It is also in accordance with the PSA Board Resolution No.1, Series of 2017-146, which approved the synchronized rebasing of the price indices to base year 2006 and every six (6) years thereafter.

## **2. Determination of the Market Basket**

Market basket refers to a sample of goods and services, which is meant to represent the totality of all the goods and services purchased by households relative to a base year.

Determining the right market basket is crucial because inadequate representation of the typical basket will give wrong signals as to the behavior of prices, a very important factor in economic planning.

To determine the commodities that will form the market basket for the 2012-based CPI, the updating of the 2006 basket through the Survey of Key Informants was conducted from 07 October to 15 November 2013. The survey was conducted nationwide to store managers, sellers or proprietors and were asked of the most commonly purchased items or commodities. The commodities are grouped according to the 2010 Philippine Classification of Individual Consumption According to Purpose (COICOP) which is based on the United Nations COICOP.

## **3. Determination of the Household Consumption Patterns (Weights)**

This activity involves assigning weights to the commodity groups/sub-groups. This reflects the consumption priorities of households and the way they allocate resources to meet their needs. Weight is a value attached to a commodity or group of commodities to indicate the relative importance of that commodity or group of commodities in the market basket.

The weights for the 2012-based CPI were derived from the expenditure data of the 2012 FIES, a survey that covered around 50,000 sample households nationwide. The weight for each item of expenditure is a proportion of that expenditure item to the total national expenditure. The total (all items) national expenditure weights is equal to 100.

The 2012 FIES expenditure data were used to directly estimate the 2012 CPI weights at the national and regional levels. However, the 2012 FIES estimates for the expenditure data at the provincial level were not directly utilized in estimating the CPI expenditure weights as the data at the provincial/city level may not be reliable with the use of the households' master sample (MS) that was utilized in selecting the 2012 FIES sample households. The MS was drawn using regions as domains in generating estimates in all the household surveys of the PSA starting July 2003.

The provincial/city expenditure data were derived using the model-based method in small area estimation procedures using the regional expenditure data as the control total for all the expenditure data within the specific region. Using these estimates, the weight for each item of expenditure is computed as a proportion of that item of expenditure to the total national expenditure. A raking procedure was done to adjust the weights of the provinces so that the provincial weights when added up will equal to the regional weights.

#### **4. Monitoring of Prices of Items in the Market Basket**

This involves establishing baseline information for prices of the items in the base year and monitoring the prices of the items on a regular basis. Collection of data for the CPI is done by the provincial staff of the PSA. Except for food, beverage and tobacco (FBT) in NCR and petroleum products which are monitored on a weekly basis, price collection is generally done twice a month. First collection phase is done in the first five days of the month while the second phase is on the 15<sup>th</sup> to 17<sup>th</sup> day of the month. Data are collected from the sample outlets (outlets or establishments where prices of commodities/services are collected or quoted) which were chosen using the following criteria:

- a. Popularity of an establishment along the line of goods to be priced - this means the sample outlet is publicly noted in the locality for selling goods included in the CPI market basket and the outlet is patronized by a large segment of the population.

- b. Consistency and completeness of stock

*Consistency of stock* - the outlet has a constant, steady or regular stock of commodities listed in the CPI price collection forms as well as of those commodities of the same kind and belonging to the same commodity group.

*Completeness of stock*- the sample outlet carries in its stock many if not all of the items included in the CPI price collection forms relative to the other outlets in the area.

- c. Permanency of outlet - the outlet is an established store or stall in the market area. It should not be an ambulant or transient vendor in order that the collection of data can be done for the succeeding survey rounds.
- d. Geographical location- the outlet is conveniently located and is accessible to the majority of consumers in the area.

## 5. Computation of the CPI

Below are the steps in the computation of CPI using 2012 as the base year:

### **Step 1: Compute the monthly average price for each commodity**

$$\text{Monthly Average Price of Commodity} = \frac{\text{Outlet 1 (1}^{\text{st}} \text{ Phase) Price + Outlet 1 (2}^{\text{nd}} \text{ Phase) Price + Outlet 2 (1}^{\text{st}} \text{ Phase) Price + Outlet 2 (2}^{\text{nd}} \text{ Phase) Price + Outlet 3 Price + Outlet 4 Price + Outlet 5 Price + Outlet 6}}{8}$$

### **Step 2: Compute the price relative (PR) for each commodity**

$$\text{PR} = \frac{\text{Current Month Average Price}}{\text{Previous Month Average Price}}$$

### **Step 3: Compute the index for 5-digit group (Sub-Class)**

Step 3.1: Compute the geometric mean of price relatives for each 5-digit group

$$\text{GM}_{\text{PR}} = \left( \prod_{i=1}^n \text{PR}_i \right)^{1/n}$$

Where:

$\text{GM}_{\text{PR}}$  = Geometric mean of price relatives

$\text{PR}_i$  = Price relative of each commodity

$n$  = number of commodities under the 5-digit group

Step 3.2: Compute the index for 5-digit group

$$I_{5\text{-digit,current month}} = (GM_{PR}) * (I_{5\text{-digit,previous month}})$$

Where:

$I_{5\text{-digit,current month}}$  = Index of the 5-digit group (sub-class) for the current month

$GM_{PR}$  = Geometric mean of price relatives

$I_{5\text{-digit,previous month}}$  = Index of the 5-digit group (sub-class) for the previous month

**D. Compute the index for 4-digit group (Class):**

$$I_{4\text{-digit}} = \frac{\sum_{i=1}^n (W_{(5\text{-digit})i}) (I_{(5\text{-digit})i})}{\sum_{i=1}^n (W_{(5\text{-digit})i})}$$

Where:

$I_{(4\text{-digit})}$  = index of the 4-digit group

$W_{(5\text{-digit})i}$  = weight of 5-digit group

$I_{(5\text{-digit})i}$  = index of the 5-digit group

**E. Compute the index for the 3-digit group (Group):**

$$I_{3\text{-digit}} = \frac{\sum_{i=1}^n (W_{(4\text{-digit})i}) (I_{(4\text{-digit})i})}{\sum_{i=1}^n (W_{(4\text{-digit})i})}$$

Where:

$I_{(3\text{-digit})}$  = index of the 3-digit group

$W_{(4\text{-digit})i}$  = weight of the 4-digit group

$I_{(4\text{-digit})i}$  = index of the 4-digit group

**F. Compute the index for the 2-digit group (Division):**

$$I_{2\text{-digit}} = \frac{\sum_{i=1}^n (W_{(3\text{-digit})i}) (I_{(3\text{-digit})i})}{\sum_{i=1}^n (W_{(3\text{-digit})i})}$$

Where:

- $I_{(2\text{-digit})}$  = index of the 2-digit group
- $W_{(3\text{-digit})i}$  = weight of the 3-digit group
- $I_{(3\text{-digit})i}$  = index of the 3-digit group

**G. Compute the index for All Items:**

$$I_{\text{all items}} = \frac{\sum_{i=1}^n (W_{(2\text{-digit})i}) (I_{(2\text{-digit})i})}{\sum_{i=1}^n (W_{(2\text{-digit})i})}$$

Where:

- $I_{\text{all items}}$  = index for All Items
- $W_{(2\text{-digit})i}$  = weight of the 2-digit group (Division)
- $I_{(2\text{-digit})i}$  = index of 2-digit group (Division)