

## IV Outline of the Regional Difference Index of Consumer Prices

### 1. Scope of the index

As for the regional difference index of consumer prices, the annual average indices are compiled for 51 cities consisting of cities with prefectural governments and government-ordinance-designated cities (Kawasaki-shi, Hamamatsu-shi, Sakai-shi and Kitakyushu-shi), taking the average of 51 cities as a base of comparison (=100). For each area, “all items, less imputed rent”, “food” and “all items, less rent” are compiled.

### 2. Price data

The price data for calculating the index are retail prices collected by the RPS.

### 3. Weights

The weights are calculated using national average expenditure by item per household in the year concerned, which is obtained from the Family Income and Expenditure Survey (FIES). The weights are made in the same way as the CPI.

### 4. Average prices

The annual average prices of each city are calculated using an arithmetic mean of the values from January through December, based on the price data mentioned in section 2. The prices of fresh food, however, are calculated using the arithmetic mean weighted by monthly weights.

Average prices for 51 cities are calculated using the weighted harmonic mean, as shown below.

$$\begin{aligned}
 p_i &= \frac{\sum_j \alpha_j p_{ij} q_{ij}}{\sum_j \alpha_j q_{ij}} = \frac{\sum_j \alpha_j p_{ij} q_{ij}}{\sum_j \alpha_j \frac{p_{ij} q_{ij}}{p_{ij}}} \\
 &= \frac{\sum_j \alpha_j e_{ij}}{\sum_j \frac{1}{p_{ij}} \alpha_j e_{ij}}
 \end{aligned}$$

where  $p$  : annual average price  
 $q$  : quantity per household  
 $e$  : expenditure per household  
 $\alpha_j$  : proportion of households for reference city to Japan  
 $i$  : item  
 $j$  : city

### 5. Formula

The index is calculated as follows.

$$I_l = \frac{\sum_i \frac{p_{il}}{p_i} w_i}{\sum_i w_i} \times 100$$

where  $w$  : weight (Japan)  
 $l$  : comparison area (city)

“Retail Price Survey (Structural Survey)” launched in 2013. Then, the regional difference index of consumer prices, compiled from this, is scheduled to be calculated and released every year. With the introduction of this, the above index was ended and will not be calculated and released from 2014.