

Outline of the 2005-base Consumer Price Index

1 Characteristics of the index

The Consumer Price Index (CPI) is calculated to measure the average price movements of goods and services purchased by households throughout the country. It reflects changes of the cost of purchasing goods and services in a fixed “market basket”, but is not designed to measure changes of the cost of living attributed to changes in the consumption structure of households.

2 Scope of the index

As the CPI is designed to measure changes of prices that affect the consumption life of households, the household living expenditures are scope of the CPI. (However, religious contributions, donations, money gifts, other obligation fees and remittances are excluded from the scope of the CPI.)

Consequently, the CPI does not cover non-living expenditures (such as income taxes and social insurance premiums) and disbursements other than expenditures (such as savings, security purchases, and property purchases such as land and houses).

As regards the housing cost of owner-occupied dwellings, the rental equivalence approach (imputed rent) is applied.

3 Index formula

The index is calculated as the weighted arithmetic mean with fixed base (Laspeyres' formula). The formula to calculate the index of the current period (I_t) is shown below.

$$I_t = \frac{\sum_{i=1}^n P_{ti} q_{0i}}{\sum_{i=1}^n P_{0i} q_{0i}} \times 100 = \frac{\sum_{i=1}^n \frac{P_{ti}}{P_{0i}} w_{0i}}{\sum_{i=1}^n w_{0i}} \times 100$$

I : index

p : price

w : weight (= pq)

i : item

0 : base period

q : quantity

(= pq)

t : observation period

4 Index reference period and weight reference period

Both the index reference period and the weight reference period are the calendar year 2005.

5 Items to be priced

The number of items priced for the computation of the index is 584 including 4 items of imputed rent for owner-occupied housings. Items are selected in consideration of the relative importance of each item to the total living expenditures, representativeness of price movements and feasibility of price data collection, in order to represent the price movements of all the goods and services purchased by households.

* In terms with “midpoint year review”, “TV sets (CRT)” is integrated into “TV sets (LCD)”, and “Media for audio recording” into “Recordable DVD media”. Moreover, three items, “Beer-flavored alcoholic beverages”, “Washing & Drying machines”, and “TV games (portable)” are newly included in January 2008.

So the number of items priced for the computation of the index is 585 from January 2008.

6 Price data

(1) Prices are collected in the monthly Retail Price Survey (fundamental statistical survey) in principle. In this survey, prices are collected in 167 cities, towns and villages. Prices are surveyed in principle once a month on Wednesday, Thursday or Friday of the week including the 12th of each month. As for fresh food - i.e., fresh fish and shellfish, fresh vegetables, fresh fruits - and cut flowers, price data are collected three times a month: the middle prices during the three consecutive days ending on the survey dates (Wednesday, Thursday or Friday of the week including the 5th, 12th or 22nd of each month) are selected. The prices of fresh food and cut flowers are calculated as simple arithmetic means of those three middle prices.

Survey districts for house rents are established in the sampled municipalities. The information on monthly rents and floor spaces are collected from all households living in rented houses located in the districts. The rent per unit (3.3 square meters) for each category is obtained by dividing the total monthly rents by the total floor spaces.

The current survey districts have been newly established between January and March 2008 with the use of enumeration districts of the 2005 Population Census of Japan. To eliminate the gaps in results caused by replacing survey districts, the indices are multiplied by link coefficients.

(2) The prices in the price reference period for each item are calculated, in principle, as the simple arithmetic mean of prices from January to December 2005. That of fresh food, however, is calculated as the weighted arithmetic mean using monthly weights.

(3) For the three items “Desktop PCs”, “Notebook PCs”, and “Cameras”, as it is difficult to collect prices of products with an equivalent quality continuously because of rapid quality changes, average prices and number of units sold derived from scanner data of all products, collected from major electric appliance shops across the country are used for compiling price indices instead of traditional price collection at outlets. Hedonic method is applied to compile price indices.

7 Weights

The weights assigned to items are mainly calculated on the basis of average expenditures per household per month for each municipality, derived from the 2005 average of the Family Income and Expenditure Survey (fundamental statistical survey). For fresh food, however, monthly weights are calculated from not only the expenditure by item in 2005, but also the quantity purchased of each month for 2004 and 2005. (The total weights for three categories of fresh food - i.e. fresh fish and shellfish, fresh vegetables, fresh fruits - are fixed throughout the year.)

8 Computation of index

(1) Procedure of the computation

First of all, the sub-indices of the most detailed groups are calculated by aggregating item indices (Pt/Po) with weights assigned to each item. Then, the sub-indices of the minor groups are calculated by aggregating the sub-indices of the most detailed groups with weights assigned to each group. The sub-indices for middle groups, ten major groups and the general index are calculated by the same procedure.

As for the general index for the whole country, item indices for each municipality are calculated and then the average item indices for the whole country are calculated as the weighted arithmetic means using weights assigned to each municipality. Then, the sub-indices for middle groups and ten major groups and the general index are calculated with weights of the whole country. Indices for regions are also calculated in the same manner.

(2) Computation of annual, semi-annual and quarterly average indices

The average indices for a calendar year except the fresh food are calculated as the simple means of the monthly indices from January to December, while for fresh food, they are calculated as the weighted arithmetic means using monthly weights.

The averages for the fiscal year, the quarter and the half-year are calculated in the same manner.

(3) Computation of the rate of change

Rate of change from the previous period can be calculated as follows.

$$\begin{aligned} \text{Rate of change (\%)} &= \frac{I_t - I_{t-1}}{I_{t-1}} \times 100 \\ &= \left[\frac{I_t}{I_{t-1}} - 1 \right] \times 100 \end{aligned}$$

I_t : index of the observation period

I_{t-1} : index of the previous period

9 Organization and publication

General index, sub-indices for ten major groups and middle groups are compiled for 72 areas, that is the whole country, 8 municipality groups by population size, 10 districts, 4 metropolitan areas, 47 cities with prefectural government and 2 major cities: Kawasaki-shi and Kitakyushu-shi.

Sub-indices for goods and service groups and item indices are compiled for the whole country and Ku-area of Tokyo. Indices by characteristics of households, Indices by characteristics of items are also compiled for the whole country.

In addition, “chained Laspeyres index” and “midpoint-year basket index” are compiled for the whole country and Ku-area of Tokyo, and Indices for total households are compiled for the whole country as the supplementary indices.

10 Publications

The monthly consumer price index is released, in principle, at 8:30 A.M. on Friday of the week including the 26th of each month. The index figures of the preceding month for the whole country, and the preliminary figures of the current month for Ku-area of Tokyo are released. The average index figures for the calendar year and the fiscal year are released when the monthly figures for December and March are released.