Chapter 6 Linking of old and new indices

1 Method of linking old and new indices

Old and new indices are linked to enable time series comparison for every index grouping. The old base indices are linked to 2015-base indices as explained below.

(1) Linking of old and new indices

Old and new indices are linked in each category (area, group and item) by dividing indices whose base year indices are 100 by yearly average indices in the next base year. Therefore, for indices having their base year indices before 2015 as 100, this procedure must be repeated after every revision. In these cases, rounding is performed only at the final stage, where the 2015-base is 100, because rounding errors would accumulate if rounding was performed in every link.

In tabulation, link coefficients, which are calculated by multiplying all reciprocals of yearly average indices used for the link to 2015-base index, are calculated and link is done by dividing old-based indices by these coefficients.

Example: The case when 2000-base indices are linked to 2015-base indices.

$$\text{2015-base linked index} = \text{2000-base index} \times \frac{100}{\text{2005 average index (2000-base)}} \times \frac{100}{\text{2010 average index (2005-base)}} \times \frac{100}{\text{2015 average index (2010-base)}}$$

Therefore, the link coefficient is obtained by multiplying all reciprocals of the yearly average index figures for the new base years in the each old base as shown below.

$$\text{Link coefficient} = \frac{\text{2005 average index (2000-base)}}{100} \times \frac{\text{2010 average index (2005-base)}}{100} \times \frac{\text{2015 average index (2010-base)}}{100}$$

Using this link coefficient, the 2000-base index is linked to the 2015-base index as follows:

$$\text{2015-base linked index} = \text{2000-base index} / \text{Link coefficient}$$

(2) Link to groups and items in 2015-base

　　The link principally applies to 2015-base groups and items. For the association between the new and old base groups and items, refer to "IV 6 Table of correspondence of groups and items in 2015-base and 2010-base."

(3) Link to areas in 2015-base

　　The link principally applies to 2015-base areas. When 2015-base area codes do not correspond to those of the 2010-base, the correspondence shown in the table below is used.

2015-base area code		2010-base area code	
43100	Kumamoto-shi	43201	Kumamoto-shi

2 Range of linked indices

　　The range of linked indices is as follows:

(1) Basic classification indices

　　The following indices are calculated for Japan, the Ku-area of Tokyo, city groups, districts, major metropolitan areas, cities with prefectural governments (excluding the Ku-area of Tokyo) and the government ordinance-designated cities (Kawasaki-shi, Hamamatsu-shi, Sakai-shi and Kitakyushu-shi).[31]

	Japan[32], Ku-area of Tokyo			City groups[33],area, major metropolitan areas, cities with prefectural governments[34], government ordinance-designated city[35]	
	Monthly	Quarterly	Yearly/F yearly	Monthly	Yearly/F yearly
All items All items less fresh food	Since January1970	Since January - March 2000	Since 1970	Since January1970	Since 1970
All items, less fresh food and energy	Since January1970	Since January - March 2000	Since 1970		
All items, less food (less alcoholic beverages) and energy	Since January1970	Since January - March 2000	Since 1970	Since January 2005	Since 2005
All items, less imputed rent	Since August1946	Since January - March 2000	Since 1947	Since January1970	Since 1970
10 major groups[36]	Since January1970	Since January - March 2000	Since 1970	Since January1970	Since 1970
Subgroups (including analytical series	Since January1970		Since 1970	Since January1970	Since 1970
Minor groups	Since January1970		Since 1970		
By item	Since January 1970		Since 1970		

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[31] Okinawa District and Naha-shi were included since 1975-base.

[32] The indices for Japan before 1962 represent those of all cities (that corresponds to the present classification of "cities with population of 50,000 or more").

[33] "Small cities B, towns and villages" was calculated since 2010-base.

[34] The Ku-area of Tokyo is excluded.

[35] Hamamatsu-shi and Sakai-shi were calculated since 2010. There is no linked index to Sagamihara-shi.

[36] 5 major groups were reclassified to 10 major groups when 1980-base index was calculated.

(2) Indices for goods and services groups

As for the indices of Japan and the Ku-area of Tokyo, yearly average, fiscal yearly average and monthly figure are calculated from 1970, and quarterly average from 2010.

However, "House rent, private (wooden)," "House rent, private (non-wooden)," "Imputed rent (wooden)" and "Imputed rent (non-wooden)" have been calculated from 2010.

(3) Indices aggregated based on baskets of specific household groups

The following indices are calculated for Japan:

a) Subgroup Index for Total Households

....Yearly average from 2000, and monthly figure from 2010.

b) Subgroup Index by Yearly Income Quintile Groups of Worker's Households

....Yearly average from 1990 and monthly figure from 2010.

c) Subgroup Index for Retired Elderly Households (age 60 and over)[37]

....Monthly figure and yearly average from 2010.

d) 10 Major Group Index by Age Groups of Household Head

....Yearly average from 2010.

e) 10 Major Group Index by Types of Tenure of Dwelling

....Yearly average from 2010.

(4) Indices by the characteristic of items

The following indices are calculated for Japan:

a) Indices of Goods Groups Classified According to Elasticity to Living Expenditure

....Yearly average from 1980, monthly figure from 2010.

b) Indices of Annual Purchase Frequency Classes

....Yearly average from 1980, monthly figure from 2010.

(5) Other indices

a) Prewar base index

The yearly averages of prewar base indices[38] on five major groups ("All items," "All items, less imputed rent," "Food," "Housing," "Housing, less imputed rent," "Fuel & light," "Clothes" and "Miscellaneous") is calculated for the Ku-area of Tokyo from 2015.

To calculate the prewar base index, firstly, the 5 major group indices are calculated based on the current price index by item, whereupon the index is multiplied by the conversion rate for the prewar base.

b) 2010-base conversion subgroup index

To facilitate the use of the data (e.g. relation to other 2010-base economic indices), 2010-base

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[37] There is no linked index for the Retired Elderly Households (age 65 and over).

[38] The pre-war base index is based on the years from 1934 to 1936. The pre-war base indices in 2015-base year can be directly compared with the pre-war base indices calculated in base years up to 2010.

converted subgroup indices, which are calculated by multiplying 2015 average indices (2010-base) by 2015-base indices and divided by 100, are calculated from January 2017 to July 2021.

The monthly, yearly average and fiscal yearly average indices are calculated for Japan and the Ku-area of Tokyo.
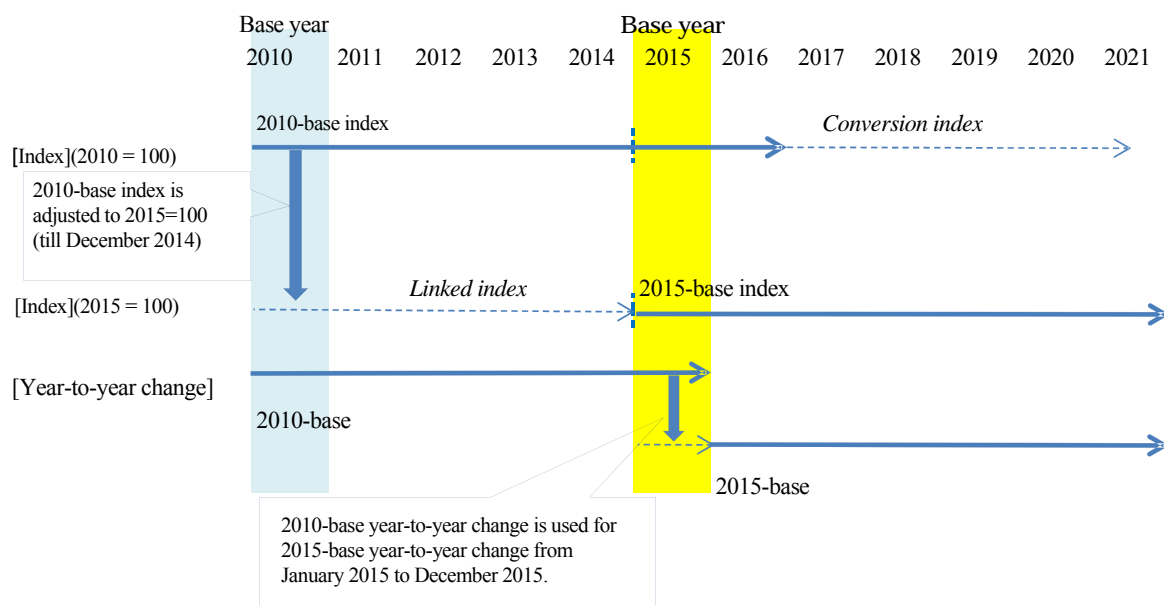
3 Notes on the use of linked indices

(1) Relation between upper level and lower level groups

Since indices are linked individually for areas, and each grouping of all items, groups and items, the linked index for the upper level group may not correspond to that calculated from lower level groups, even in the same year or month.[39]

(2) Treatment of the rate of change

The rates of change such as month-to-month, year-ago month and year-on-year ratios are published figures in each base-period and not recalculated by linked indices. Of the rates of change in the base year, the change from the previous year, previous fiscal year, previous month of January and the same month of the previous year from January to December are figures calculated from indices in the old base. Therefore, the rate of change does not always match figures calculated by linked indices.

(Image)

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[39] There may be missing items in the upper level group due to the absence of linked indices for the items removed during a base revision, or the indices of groups or items in the lower level group may not match their counterparts in the upper level even after being averaged with weights.