編　製　方　法　說　明

消費者物價指數

一、查編沿革：

民國43年本總處應聯合國亞洲暨遠東經濟委員會之建議，會同行政院經濟安定委員會及經濟部，邀請統計專家與經濟學者集會研討，決定將臺灣省各重要市鎮零售物價指數暨公務員生活費指數，合併改編為「臺灣省都市消費者物價指數」。一面飭由臺灣省政府主計處(現行政院主計總處中部辦公室前身)，舉辦民國43年至44年之臺灣省各縣市薪資階級家計調查，作為權數資料之依據；一面由縣市增查各項零售物品價格，籌劃改編，並於47年7至12月試編半年，計選取商品150項，內容分為食物、衣著、居住、交通通訊、醫藥保健、教養娛樂暨什項等7大類，計算公式採用加權總值式，結果尚稱完妥，於48年1月起正式編布，是為本指數之編布由來。

民國52年，本處鑒於臺灣地區經濟發展甚為快速，國民生活水準逐年提高，原編指數已不能適應經濟結構與消費型態之變遷，乃飭由臺灣省政府主計處研訂改進方案，送行政院統計制度改進工作小組研討修正通過，並自56年1月起試編1年，57年1月正式編布，以替代舊編指數，其編布事宜，比照臺灣區躉售物價指數查編辦法，由臺灣省政府主計處及臺北市政府主計處會同辦理。

民國60年為配合臺灣地區躉售物價指數，採用同一基期，以便於比較，並求指數更為正確與完備，由本處重予改編，併與躉售物價指數同時發布。民國63年因經濟迅速發展，消費型態改變，再擴充商品項目，增加中、小分類，改以60年為基期，自64年1月正式編布。嗣後每五年即改換基期一次，並隨當時經濟發展及家庭消費型態，擴充查價項目，以提高指數代表性。85年基期改編，指數改採點銜接法，以86年12月為銜接點，已發布指數不再重新計算，基期(85)年平均指數為100。95年基期因查價地區調整，不再區分都市與鄉村，遂自97年2月起停編「都市消費者物價指數」，另自100年2月起編布低(可支配所得最低20％家庭)、中(可支配所得中間60％家庭)、高(可支配所得最高20％家庭)三種所得層級別消費者物價指數(資料自97年1月起)。100年基期增編按購買頻度別分類指數並公布項目群指數指數，指數計算沿用點銜接方式，以101年12月為銜接點。105年基期起，鑑於國內經濟型態與消費結構的快速變化，105年基期起項目權數結構之檢討修訂，由每5年改為按年變更，相關修訂作業之主要參考資料由家庭收支調查改為國民所得(NI)家庭消費。

二、編製目的與用途：

(一)編製目的：為衡量臺灣地區一般家庭購買消費性商品及服務之價格水準變動情形。

(二)主要用途：

1.衡量通貨膨脹之重要指標，並供測度實質所得或購買力之用。

2.作為公私機關調整薪資及合約價款參考。

3.調整稅負（所得稅、贈與稅、土地增值稅、遺產稅）之依據。

三、查價項目：

依照民國105年臺灣地區家庭消費型態，在17個查價縣市各選查368個項目群。

四、指數分類：

(一)基本分類指數：除編算總指數外，下分7個大類，40個中類及62個小類之分類指數。

(二)商品性質別：分商品類及服務類2個大分類，其下並細分10個中類之分類指數。

(三)購買頻度別：分「每月」、「每季(不含每月)」至少購買1次及「每季購買不到1次」等3種頻度。

五、指數基期：

以民國105年全年平均指數＝100。

六、權　　數：

(一)購買點權數：將查價商店區分成8種型態(百貨公司、超市、量販店、連鎖便利商店、市場、特定商店、其他實體商店及網路商店)，每一查價項目中，於各商店型態之支出所占比率即為購買點權數。

(二)地區權數：以查價縣市代表區域之民國105年平均每戶消費金額乘上當地105年年中總戶數為地區權數。

(三)項目權數：以民國105年臺灣地區家庭消費結構為權數，並按年變更(除蔬菜、水果二類項下之細項權數外，餘同年各月均固定)。

(四)變動權數：蔬菜和水果兩類權數雖各月固定，但其下細項採按月變動權數編算，以103、104及105年3年各月平均銷售值計算各月權數，並按年變更。

七、價格查報：

(一)查價地區：新北市、臺北市、臺中市、臺南市、高雄市、桃園市、新竹市、基隆市、嘉義市等9個主要代表縣(市)及宜蘭縣、苗栗縣、南投縣、雲林縣、屏東縣、臺東縣、花蓮縣、澎湖縣等8縣縣治所在地及其主要城鎮為查價地區。

(二)查價日期：

1.蔬菜、水果及水產品等價格較易變動項目：須自行發布消費者物價指數之直轄市(新北市、臺北市、臺中市及高雄市)分5組，每月共查15次，查價日為每旬逢2、5、8之日(逢2及8各查2組、逢5查1組)；其他主要代表縣(市)分3組，每月共查價9次，查價日為每旬逢2、5、8之日；其他代表縣每月查價3次，查價日為每旬逢5之日。

2.其他項目：須自行發布消費者物價指數之直轄市分5組，每月共查價5次，查價日為每旬逢5之日(上旬及下旬各查2組、中旬查1組)；其他主要代表縣(市)分3組，每月共查價3次，查價日為每旬逢5之日；其他代表縣(市)於每月15日查價1次。

(三)查價單位：各查價地區之當地縣（市）政府主計處。

八、計算方法：

(一)編算程序：

各縣市花色價比(specification price relatives)→ (經購買點加權) →
各地區項目價比→(經地區加權)→ 全國項目價比 →(經項目加權)→ 類指數及總指數

(二)指數公式：採用拉氏公式計算，指數計算方式係先將各查價縣市所查花色價比先按購買點權數加權平均得各地區項目價比，再以地區權數加權得到項目價比，再以項目權數加權即得指數，其中查價縣市所查各花色價比除房租、公用事業、醫療、規費等無法產生替代行為者仍採算術平均計算外，餘皆採幾何平均。

1.計算各地區項目價比：$\frac{P_{y.m,j,k}}{P_{y-1.12,j,k}}=\left[\prod_{o}\left(\frac{P_{y.m,j,k,o}}{P_{y-1.12,j,k,o}}\right)^{W_{j,k,o}}\right]^{\frac{1}{\sum_{o}W_{j,k,o}}}$

2.計算項目價比：

$$\frac{P_{y.m,j}}{P_{y-1.12,j}}=\frac{\sum_{k}\frac{P_{y.m,j,k}}{P_{y-1.12,j,k}}\bullet W_{j,k}}{\sum_{k}W_{j,k}}$$

3.計算指數：

$$I_{y.m/105}=\frac{\sum_{j}\frac{P_{y.m,\,j}}{P_{y\,-\,1.12,\,j}}\bullet(P_{y\,-\,1.12,\,j}\bullet Q_{105,\,j})}{\sum_{j}P_{y\,-\,1.12,\,j}\bullet Q_{105,j}}\times I_{y\text{-}1.12/105}$$

j 表項目，k 表查價地區，o 表查價花色，P 表價格，Q 表數量，$P_{y\text{-}1.12}$表 y-1年12月之價格。

$\frac{P_{y.m,j,k,o}}{P_{y-1.12,j,k,o}}$ 為 y 年 m 月 j 項目 k 查價地區 o 花色對 y-1 年 12 月之價比。

$\frac{P_{y.m,j,k}}{P_{y-1.12,j,k}}$ 為 y 年 m 月 j 項目 k 查價地區對 y-1 年 12 月之價比。

$\frac{P_{y.m,j}}{P_{y-1.12,j}}$ 為臺灣地區 y 年 m 月 j 項目對 y-1 年 12 月之價比。

$W_{j,k,o}$ 為 j 項目 k 查價地區 o 花色基期年之購買點權數。

$W_{j,k}$ 為 j 項目 k 查價地區基期年之地區權數。

$P_{y-1.12,j} \cdot Q_{105,j}$ 為 j 項目 105 年每戶每月平均消費量以 y-1 年 12 月價格衡量之消費值。

$I_{y-1.12/105}$ 為 105 年指數為 100 之 y-1 年 12 月指數。

$I_{y.m/105}$ 為 105 年指數為 100 之 y 年 m 月指數。

(三)年指數：年指數為各月指數之簡單算術平均(取2位小數)。

(四)查價項目缺貨缺價之處理：

改查性質相類似之新花色牌號價格，並以漲跌率推算其基期價格，估算方法如下：

$$\text{新查商品基期價格} = \frac{\text{原查商品基期價格}}{\text{原查商品缺貨缺價時前一計算期價格}} \times \text{新查商品前一計算期價格}$$

九、指數發布：

當月結束後5個工作日內（如遇春節或較長連假，將酌予調整）發布上月物價變動新聞稿，並公布於本處網站(http://www.dgbas.gov.tw)及中華民國統計資訊網(http://www.stat.gov.tw)，詳細結果則刊載於物價統計月報電子書。

Description of Methods Used in Compilation of Consumer Price Index

1. Historical Notes

In response to the recommendation of the United Nations Economic Committee for Asia and Far East (UNECAFE), the Directorate-General of Budget, Accounting and Statistics (DGBAS), Executive Yuan, in coordination with the Commission on Economic Stability and the Ministry of Economic Affairs, consulted statistical experts and economists and decided to combine the index of retail prices in major cities and townships of Taiwan Province and the index of living cost of government employees into the "Index of Urban Consumer Prices for Taiwan Province" in 1954. To carry out the program, the DBAS of Taiwan Provincial Government(now is Directorate-General of Budget Accounting, and Statistics, Central Taiwan Division), was assigned to conduct a salary-earner's family budget survey for 1954-1955 at counties and cities in Taiwan Province, with the results to be used to arrive at the weights. Consumer goods to be priced were increased as a part of the preparation for the compilation reform. A pilot project was launched to do experimental compilation for a period of six months from July 1958. The project is based on prices of 150 items of goods and services which were classified into seven groups , such as Food, Clothing, Housing, Transportation & Communication, Health, Education and Recreation, and Miscellaneous etc. The indices, adopting the Laspeyres weighted aggregate formula, produced a set of fairly comprehensive, satisfactory results. The official publication began on January 1959. This is the origin of the Consumer Price Index(CPI).

In 1963, finding that the index series were no longer able to reflect the changes in industrial structure as well as in consumption pattern due to quick economic development and a continued rise in living standards, the DGBAS instructed the DBAS to prepare an improvement plan which was subsequently submitted to and approved with some modification by the Commission on Improvement of Statistical System (CISS) of the Executive Yuan. After an experimental compilation period from January to December 1967, the index series were officially published in January 1968 to replace the formers. Following the practice applied to the wholesale price indices, the DBAS of Taiwan Province and the DBAS of Taipei Municipality were required to jointly compile the CPI series.

In 1971, the DGBAS reformed the compilation of the CPI series to make the base period conforming to that for the Wholesale Price Index (WPI) series and also to improve the accuracy and enhance the comprehensiveness of the compilation results. The CPI series were published concomitantly with the WPI series. In 1974, to go in line with quick economic expansion and a change in consumption, the number of priced commodities was increased again, with more groups and subgroups are added to the series and the base period shifted to 1971. The revised CPI series were officially published in January 1975. Subsequently, the base period was changed once every five years and the priced commodities were expanded in order to accurately reflecting the price trends.

From the base year of 1996, the DGBAS introduced the relative importance to compile the indices; the link period is next December of base year. In the base year of 1996, the pricing localities were adjusted; the DGBAS no longer distinguish between the urban and rural area thus the compilation of urban CPI was not available since February 2008. In the base year of 2011, the DGBAS began publishing the indices classified by Frequency of Purchase Group and Elementary Aggregation, which were calculated upon the link period, December 2012. In order to go in line with the current expenditure structure of households, from the base year of 2016, the CPI will be rebased annually according to Household Final Consumption Expenditure instead of deriving from the Family Income/Expenditure Survey, which was calculated upon the link period, December 2017.

2. Objective and Uses

(1) Objective

The CPI measures the changes in prices of goods and services purchased for consumption purpose.

(2) Uses

① As an indicator of inflation and as a means used to compute real income or purchasing power.
② As the base to adjust the payment and make contracts by public and private agencies.
③ As the base to adjust the tax deductions (income tax, gift tax, land value tax and estate tax etc.)

3. Items Priced

According to the family consumption pattern in 2016 in Taiwan Area, 368 items of commodities and services are selected for pricing in 17 surveyed cities or counties.

4. Index Classification

(1) Basic Group: Contains a general index and the indices for 7 groups, 40 subgroups, and 62 small groups.

(2) Special Group

① Indices classified by commodity and service group, which contain the indices for 2 groups, 10 subgroups.

② Indices classified by frequency of purchase group, which contain the indices for 3 groups.

5. Base Period

The base period is 2016.

6. Weights

(1) Outlet-type Weights: the average consumption expenditures per household per item in 2016 of each outlet type. The outlets priced are classified to 8 different types (i.e. department store, supermarket, hypermarket, convenient store, wet market, specific store, other store and online shop).

(2)Area Weights: the average consumption expenditures per household in 2016 of each locality multiply by the midyear numbers of household.

(3) Group and Item Weights: the weights of the groups are largely based on the Household Final Consumption Expenditure of National Income. The weights of the priced item are mainly derived from the expenditures per household in 2016 obtained from the Family Income/Expenditure Survey (including interview survey and diary survey). In addition, both of the weights of groups and items are constant every month of the same year except each item of fresh vegetable and fruit.

(4) Varying Weights: all items of vegetables and fruits use monthly varying weights which are obtained from the sales value data for 2014, 2015 and 2016 but the group weights keep constant.

7. Pricing

(1)Price Localities:

9 cities (i.e. New Taipei, Taipei, Taichung, Tainan, Kaohsiung, Taoyuan, Keelung, Hsinchu and Chiayi) and main towns and townships in 8 counties (i.e., Yilan, Hualien, Miaoli, Nantou, Yunlin, Pingtung, Taitung, and Penghu) are selected for pricing.

(2) Date of Pricing:

The date of pricing is determined by the feature of the priced items. For the 9 surveyed cities, it may be priced 9 to 15 times a month (i.e., on the days in the month whose last digit happen to be 2(2 observations), 5, or 8(2 observations)) or 3 to 5 times a month (i.e., on the 5th (2 observations), 15th and 25th (2 observations) days of the month). For the 8 surveyed counties, it may be priced once a month (i.e., on the 15th day of the month) or 3 times a month (i.e., on the 5th, 15th, and 25th days of the month).

(3) Reporting Agency:

The Office (Department) of Budget, Accounting and Statistics of a surveyed county (or city) is designated as the reporting agency.

8. Computation

(1) Procedure of compilation：

Specification price relatives →(weighted by Outlet-type Weights)
→Elementary aggregation →(weighted by Area Weights)
→Regional aggregation →(weighted by Item Weights)
→CPI and Indices of Groups

(2)Formula: The general index and group indices are computed according to the derived form of Laspeyres weighted aggregate formula in following steps:

① Elementary aggregation: For non-substitutable items, such as residential rent, utilities, medicines & medical care and official fees, Carli indices are compiled. All CPI elementary indices except above-mentioned items are Jevons indices. (Carli index: unweighted arithmetic mean of price relatives. Jevons index: unweighted geometric mean of price relatives.) In this stage, the Outlet-type weights are applied.

$$\frac{P_{y.m,j,k}}{P_{y-1.12,j,k}} = \left[\prod_{o} \left(\frac{P_{y.m,j,k,o}}{P_{y-1.12,j,k,o}} \right)^{W_{j,k,o}} \right]^{\frac{1}{\sum_{o} W_{j,k,o}}}$$

②Regional aggregation:

$$\frac{P_{y.m,j}}{P_{y-1.12,j}} = \frac{\sum_{k} \frac{P_{y.m,j,k}}{P_{y-1.12,j,k}} \bullet W_{j,k}}{\sum_{k} W_{j,k}}$$

③ Index:

$$I_{y.m/16} = \frac{\sum_{j} \frac{P_{y.m,j}}{P_{y-1.12,j}} \bullet (P_{y-1.12,j} \bullet Q_{16,j})}{\sum_{j} P_{y-1.12,j} \bullet Q_{16,j}} \times I_{y-1.12/16}$$

j: item k: locality o: price quote Q: quantity

$W_{j,k,o}$: outlet-type weight $W_{j,k}$: area weight P: price

$P_{y-1.12}$: the price for December of the y-1 year

$P_{y-1.12,j} \bullet Q_{16,j}$:average consumption expenditure of a family in 2016 basket for each item, valued at December of the y-1 year price.

$I_{y-1.12/16}$: the price index for December of the y-1 year in the 2016-base.

$I_{y.m/16}$: the price index for m month of the y-1 year in the 2016 base.

(3) The yearly index is the arithmetic average of the monthly indices.

(4) Treatment for Lack of Priced Items:

Ordinary Items:

If the item of a specific brand is out of supply on market, a similar commodity bearing a different brand is priced and the adjustment should be made according to the following formula:

$$\text{Price of substitute commodity at base period} = \frac{\text{Price of originally surveyed commodity at base period}}{\text{Price of originally surveyed commodity at period prior to current one}} \times \text{Price of substitute commodity at period prior to current one}$$

9. Publication

The monthly index is published on the 5th working day (subject to postponement due to Chinese Lunar New Year or other consecutive public holidays) after the end of the reference month in news release. The e-book "Price Statistics Monthly" with the detailed figures is made available immediately at the time of release; please see http://eng.dgbas.gov.tw or http://eng.stat.gov.tw for details.