

Description of Methods Used in Compilation of Wholesale Price Index

1. Historical Notes

The Wholesale Price Indices (WPI) started in February 1946. In accordance with the Program of Survey and Statistics of Commodity Prices laid down by the Directorate General of Budget, Accounting and Statistics (DGBAS), Executive Yuan, the Office of Statistics in Taiwan Administrator's Headquarters compiled the Taipei WPI by selecting 50 items of commodities in six groups, adopting the simple geometric mean formula with the first half year of 1937 as the base. After the Taiwan currency reform in 1949, two additional series of Taipei WPI with June 15, 1949 and the first half year of 1950 as bases were compiled respectively. In 1954, the DGBAS invited representatives of related agencies, scholars and experts (both Chinese and foreigners) to meeting and decided to replace thirteen items out of the original fifty for compiling a new index with the whole 1952 as the base.

In order to coordinate with the nation's economic development plan and meet the increasing requirements of all concerned, the base was revised to 1956 in 1957, and the aggregate supply of commodities of Taiwan in 1956 was used as weight. The index, which comprised of 179 items of priced commodities in 11 groups, was published in January 1959, and started to adopt the Laspeyres Weighted Aggregate Formula.

Since Taipei Municipality has become a special municipality under direct control of the Executive Yuan in July 1967, the WPI in Taiwan was jointly compiled by the concerned departments of both Taipei Municipality and Taiwan Province. With the average of 1963 to 1965 as the base and 382 selected items in 12 groups, new index was published officially in January 1968.

During 1970, for avoiding the difficulties of joint compilation, the DGBAS decided to take over the work. The year of 1966 and its transaction value in Taiwan Area were used as base and weight respectively. With 586 selected items in 12 groups, WPI was published in January 1971. It was the first time to add the special group indices and to use computer in compilation of the index. In order to match the changes of the economy and production structure, the base period is revised once every five years, meanwhile the groups and priced items are adjusted as see fit.

In rebased year 1981, we used the total supply value of commodities as weights, while added export commodities to WPI and started to compile the indices by stage of processing. In rebased year 1991, to avoid widespread misconceptions about the meaning of "wholesale", we altered to survey the prices received by producers from whoever makes the first purchase, the WPI was directly compiled by using domestic wholesale, export and import price indices and published in Oct. 1993. From the base year of 1996, we introduced the relative importance to compile the indices; the link period is next Dec. of base year. From the base year of 2016, the Wholesale Price Indices will be rebased every 2-3 years instead of every 5 years to reflect the production situations more finely and representatively. The WPI still used point linking method for compilation, and adopted 2019 weights since 2021. The rebased index was released from February 2021 using January 2021 data. The Domestic Products of WPI (compiled from Domestic Sales Excluding Imports, as well as Exports) and PPI (Producer Price Index, data starting in 2021 Jan) were too similar, therefore cease to publish after 2020 Dec.

2. Purpose and Uses

(1) Purpose

The wholesale price index is to measure the average changes of selling prices received by producers for their outputs, such as raw materials, semi-finished products and finished products.

(2) Uses

- ① For financial decision-making and academic researches.
- ② As a reference for a deflator for GDP and I/O Tables.
- ③ The basis for the revaluation and appraisal of assets.

3. Priced Items

The following figures show the numbers of selected items, based on economic structure of 2019:

	Domestic Wholesale	Import	Export	Total
Numbers of Items	596	304	295	1,195

4. Grouping

(1) Basic Grouping

Wholesale Price Index, based on the “Standard Industrial Classification System of The Republic of China(Rev. 10,2016)”, is divided into 4 major groups, 30 sub-groups 81 groups and 96 small groups.

(2) Special Grouping

① Grouping by stage of processing

② Grouping by waygoing

5. Base Period

The base period is 2016.

6. Weights

(1) Respective weights in the Wholesale Price Index:

	Weights
Domestic Wholesale Price Index	257.00
Import Price Index	340.98
Export Price Index	402.02
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Wholesale Price Index	1000.00

(2) The weights of commodities for compiling the Domestic Wholesale Price Index:

For manufacturer, in 2019, Industrial Production Statistics, National Accounts Statistics and data provided by relative associations are referred for weighting.

For non-manufacturers (Agriculture, Forestry, Fishing, Water Supply, etc.): Year books of Agriculture, Forestry, Fishing, Water Supply and Electricity are referred for weighting.

(3) The weights of commodities for compiling Import and Export Price Indices can be found in the explanation of the respective indices in this publication.

(4) According to the month sale average from 2017 to 2019, the weight of fresh vegetables and fruits are monthly varying weights.

7. Pricing

(1) Price Surveyed

The prices of domestic manufactured goods are reported by designated companies every month by mail or through Internet Reporting Systems, whereas prices of Agriculture, Forestry and Fishing goods are obtained from the digital transmission data dispatched by Council of Agriculture (and its Fisheries Agency) and Taipei Agricultural Products Marketing corporation.

The prices of import and export goods are directly provided by the Import and Export Price Indices surveys.

(2) Pricing criteria

The designated companies are required to report the actual selling prices of selected commodities with the same specification (in principle, price after adjustment for rebate, tax, shipment, etc.) around the 20th of the month.

8. Computation

(1) Formula: The general index and group indices are computed by the derived from of Laspeyres Weighted Aggregate Formula.

① Average price relatives:

$$\frac{P_{i,j}}{P_{2020.12,j}} = \frac{1}{n_j} \sum_k \frac{P_{i,j,k}}{P_{2020.12,j,k}}$$

i: current period j: priced item k: brands

P: price Q: quantity

n_j : Number of brand for the jth item.

② Index:

$$I_{i/2016}^{2019CH} = \frac{\sum_j \frac{P_{i,j}}{P_{2020.12,j}} (P_{2020.12,j} \cdot Q_{2019,j})}{\sum_j (P_{2020.12,j} \cdot Q_{2019,j})} \times I_{2020.12/2016}^{2016CH}$$

$P_{2020.12,j} \cdot Q_{2019,j}$: total supply volume of 2019 basket for commodity j, valued at December 2020 price

$I_{2020.12/2016}^{2016CH}$: the price index for December 2020 with 2016 basket and 2016 as the base period

$I_{i/2016}^{2019CH}$: the chain price index for i period with 2019 basket and 2016 as the base period.

(2) The yearly index is the arithmetical average of the monthly indices, rounded to nearest hundredth.

(3) Treatment for lack of priced 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:

Estimated price of substitute commodity at base period	=	$\frac{\text{Price of substitute commodity at period prior to current one}}{\text{Price of originally surveyed commodity at period just prior to running out of supply}}$	×	Price of originally surveyed commodity at base period
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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) in news release, The e-book "Price Statistics Monthly" with the detailed figures is made available immediately at the time of release; please see <https://eng.dgbas.gov.tw> or <https://eng.stat.gov.tw> for details.

Description of Methods Used in Compilation of Import / Export Price Index

1. Historical Notes

Taiwan Area is an island economy, therefore foreign trade has strong relationship with its economic development. In October 1953, to meet the requirements for the management of foreign exchange assets and the allocation of import/export quotas, the Bank of Taiwan selected major items of import and export goods and compiled the priced data of these selected items, obtained from the domestic wholesale markets or from the production sites, into the import and export indices. Due to the change in responsibility of the sponsoring organization, the compilation job switched from one agency to another for several times. In 1969, the job was taken over by the Board of Foreign Trade, the Ministry of Economic Affairs, which followed the existent approach.

In 1974, the compilation was suspended due to methodological and managerial problems. The Directorate-General of Budget, Accounting and Statistics (DGBAS) was nominated to compile the import/export price indices. In view of the growing importance of the index series entailed in the fast economic growth and the quick expansion of foreign trade, the DGBAS accepted the responsibility and engaged in collection of related data at home and abroad to prepare for production of a set of new index series. An one-year trial compilation was launched in 1977. After several reviews, scholars and experts assessed that results of the experimental compilation were satisfactory. The official issue began in September 1978.

In order to match the changes of trade economic composition, the base period is revised once every five years, in the meanwhile the groups and priced items are also adjusted. From the base year of 1996, we introduced the relative importance to compile the indices; the link period is next Dec. To accommodate with the fast altering industrial structure and evolving products, the import/export price indices will be rebased every 2-3 years instead of every 5 years from the base year of 2016 in order to reflect the production situations more finely and representatively. The import/export price index still used point linking method for compilation, and adopted 2019 weights since 2021. The rebased index was released from February 2021 using January 2021 data.

2. Purpose and Uses

(1) Purpose

The import/export price index is measure the fluctuations of import / export prices in Taiwan Area.

(2) Uses

- ① As one of the important indicators for fiscal and economic policies, and for academic studies.
- ② As a reference for management of foreign exchange assets and allocation of quotas;
- ③ As a reference for regulation of the demand and supply of import/export commodities and as an input for analysis of concerned institutions.

3. Priced Items

According to the trade composition of 2019 in Taiwan Area, 304 major import items and 295 major export items are selected for pricing.

4. Index Classification

The import/export price indices arranged by the standard classification and those by supplementary classifications in order to meet the needs in variety of analysis and research.

(1) Indices by Standard Classification

Standard classification has been reclassified according to the Harmonized Commodity Description and Coding System (HS). Sections and chapters with less than 3 items will not be published.

① Import Price Indices:

The series includes a general index and group indices for 18 sections and 65 chapters of import goods, with 15 sections and 28 chapters released.

② Export Price Indices:

The series includes a general index and group indices for 15 sections and 55 chapters of export goods, with 14 sections and 27 chapters released.

(2) Indices by Supplementary Classification

The series also includes indices arranged by Usage.

5. Base Period

The base period is 2016.

6. Weights

Since the base period 2019, the customs-clearing values of import (or export) goods of 2019 in Taiwan Area, including re-imports (re-exports), are used as the weights, with the value of import (export) items outside the sample being added proportionally to that of surveyed items similar in attributes and price trends.

7. Pricing

(1) Pricing Method

The prices are reported by selected importers and exporters every month by mail or through Internet Reporting System.

(2) Coverage of the survey

The sample covers major importers and exporters in Taiwan Area.

(3) Pricing Criteria

The price, based on the CIF value for imports and the FOB value for exports, is taken from the transaction on or closest to the 20th each month. If there is no such transaction, the price occurring recently or the price of the previous month is used instead.

8. Computation

(1) Formula: The general index and group indices are computed by the derived Laspeyres Weighted aggregate formula.

① Average price relatives:

$$\frac{P_{i,j}}{P_{2020.12,j}} = \frac{1}{n_j} \sum_k \frac{P_{i,j,k}}{P_{2020.12,j,k}}$$

i: current period j: priced item k: brands

P: price Q: quantity

n_j : Number of brand for the jth item.

② Index:

$$I_{i/2016}^{2019CH} = \frac{\sum_j \frac{P_{i,j}}{P_{2020.12,j}} (P_{2020.12,j} \cdot Q_{2019,j})}{\sum_j (P_{2020.12,j} \cdot Q_{2019,j})} \times I_{2020.12/2016}^{2016CH}$$

$P_{2020.12,j} \cdot Q_{2019,j}$: total supply volume of 2019 basket for commodity j, valued at December 2020 price

$I_{2020.12/2016}^{2016CH}$: the price index for December 2020 with 2016 basket and 2016 as the base period

$I_{i/2016}^{2019CH}$: the chain price index for i period with 2019 basket and 2016 as the base period.

(2) Yearly Index:

The yearly index is derived from the arithmetical average of monthly indices, rounded to nearest hundredth..

(3) Treatment for lack of priced items:

If the commodity 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:

$$\begin{array}{l} \text{Estimated price of} \\ \text{substitute} \\ \text{commodity at base} \\ \text{period} \end{array} = \frac{\begin{array}{l} \text{Price of substitute} \\ \text{commodity at period prior to} \\ \text{current one} \end{array}}{\begin{array}{l} \text{Price of originally surveyed} \\ \text{commodity at period just} \\ \text{prior to running out of supply} \end{array}} \times \begin{array}{l} \text{Price of originally} \\ \text{surveyed} \\ \text{commodity at base} \\ \text{period} \end{array}$$

(4) Exchange Rate

For a commodity whose price is denoted by a contracted foreign currency, the price is converted into one measured in terms of the New Taiwan Dollar (NT\$) by the average exchange rate of the NT\$ against the contracted foreign currency for the period. The monthly average currency rates of bank's selling and buying is applicable to the conversion for the import/ export commodities.

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 <https://eng.dgbas.gov.tw> or <https://eng.stat.gov.tw> for details.

Description of Methods Used in Compilation of Producer Price Index

1. Historical Notes

The Producer Price Index (PPI) used point linking method for compilation, and started in February 2021 using January 2021 data. From the base year of 2016, the PPI will be rebased every 2-3 years along with WPI to reflect the production situations more finely and representatively.

2. Purpose and Uses

(1) Purpose

The producer price index is to measure the average changes of selling prices received by domestic producers for their output.

(2) Uses

- ① For financial decision-making and academic researches.
- ② As a reference for a deflator for GDP and I/O Tables.

3. Priced Items

According to the structure of productions and sales in Taiwan, the PPI covers 639 items.

4. Grouping

Producer Price Index, based on the “Standard Industrial Classification System of The Republic of China(Rev. 10, 2016)”, is divided into 4 major groups, 30 sub-groups 81 groups and 96 small groups.

5. Base Period

The base period is 2016.

6. Weights

(1) The weights of commodities for compiling the Domestic Producer Price Index:

For manufacturer, in 2019, Industrial Production Statistics, National Accounts Statistics and data provided by relative associations are referred for weighting.

For non-manufacturers (Agriculture, Forestry, Fishing, Water Supply, etc.): Year books of Agriculture, Forestry, Fishing, Water Supply and Electricity are referred for weighting.

(2) According to the month sale average from 2017 to 2019, the weight of fresh vegetables and fruits are monthly varying weights.

7. Pricing

(1) Price Surveyed

The prices of domestic manufactured goods are reported by designated companies every month by mail or through Internet Reporting Systems, whereas prices of Agriculture, Forestry and Fishing goods are obtained from the digital transmission data dispatched by Council of Agriculture (and its Fisheries Agency) and Taipei Agricultural Products Marketing corporation. The prices of export goods are directly provided by the Export Price Indices surveys.

(2) Pricing criteria

The designated companies are required to report the actual selling prices of selected commodities with the same specification (in principle, price after adjustment for rebate, tax, shipment, etc.) around the 20th of the month.

8. Computation

(1) Formula: The general index and group indices are computed by the derived from of Laspeyres Weighted Aggregate Formula.

① Average price relatives:

$$\frac{P_{i,j}}{P_{2020.12,j}} = \frac{1}{n_j} \sum_k \frac{P_{i,j,k}}{P_{2020.12,j,k}}$$

i: current period j: priced item k: brands

P: price Q: quantity

n_j : Number of brands for the jth item.

② Index:

$$I_{i/2016}^{2019CH} = \frac{\sum_j \frac{P_{i,j}}{P_{2020.12,j}} (P_{2020.12,j} \cdot Q_{2019,j})}{\sum_j (P_{2020.12,j} \cdot Q_{2019,j})} \times I_{2020.12/2016}^{2016CH}$$

$P_{2020.12,j} \cdot Q_{2019,j}$: total supply volume of 2019 basket for commodity j, valued at December 2020 price

$I_{2020.12/2016}^{2016CH}$: the price index for December 2020 with 2016 basket and 2016 as the base period (refer to the domestic products of WPI).

$I_{i/2016}^{2019CH}$: the chain price index for i period with 2019 basket and 2016 as the base period.

(2) The yearly index is the arithmetical average of the monthly indices, rounded to nearest hundredth.

(3) Treatment for lack of priced 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:

Estimated price of substitute commodity at base period	=	$\frac{\text{Price of substitute commodity at period prior to current one}}{\text{Price of originally surveyed commodity at period just prior to running out of supply}} \times$	×	Price of originally surveyed commodity at base period
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Price of originally surveyed commodity at base period

9. Publication

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