壹、查編方法說明

一、查編沿革

台閩地區工業生產統計,創始於民國 42 年,其目的在於建立工礦業產銷查報制度,嗣後按月編製工業生產指數,迄今從未間斷。為使指數更具充分代表性,每隔 5 年進行基期改編,檢視工業產品分類,增查重要及新興產品與編製多種複分類指數,以提高統計用途。另鑒於台閩地區工廠家數、規模及產品結構等變遷快速,復利用本部工廠校正及營運調查建立之工業母體資料檔,重新抽選樣本,並擴大調查產品及樣本家數,期使查編指數更能符合近期工業產銷變動實況。

二、目的與用途

(一) 瞭解每月工業產銷存量消長情勢。

(二) 提供產業政策及經濟建設規劃應用。

(三) 提供業者調節產銷存及採取因應對策參考。

(四) 提供學術研究、經濟分析及編製其他經濟指標應用。

三、調查週期與對象

(一) 調查週期：每月調查。

(二) 調查對象：在台閩地區從事礦業及土石採取業、製造業（領有工廠登記證）、電力及燃氣供應業、用水供應業等 4 大行業之企業單位。

四、調查項目

依照當前工業生產結構，選取具有重要性、代表性、領導性及策略性之產品，計選查 1,595 項產品，分別調查各月之生產量、代客加工量、進貨量、內外銷量值、自用及耗損量、存貨量及生產量變動原因等。

調查項目之計算公式如下：

月初存貨量＋生產量＋代客加工量＋進貨量－代客加工交出量－內銷量－外銷量－自用及耗損量＝月底存貨量

五、抽樣方法

(一) 母體底冊：以本部工廠校正及營運調查清冊為母體檔。

(二) 抽樣方法：按企業規模及行業別，採用不同抽樣方法。

礦業及土石採取業、電力及燃氣供應業、用水供應業採全查。

公營企業單位全查。

製造業民營企業單位採「截斷抽樣法」，即利用母體資料之產品產值，分別按各產品之各工廠產值由大至小排序，凡各產品產值累計達 70%以上者，生產該產品之製造工廠，全部抽選列入調查。

六、調查方法

按各行業性質，採取不同查報方法。

(一) 礦業及土石採取業：由本部地礦中心查報彙總。

(二) 公民營製造業、電力及燃氣供應業及用水供應業：均由受查企業自行填報，以網路填報及郵寄通信為主，指派專人以電話、傳真、email 催報為輔進行調查。

七、資料處理方法

(一) 產品之歸類：根據經濟部統計處編印之工業產品分類共 1,595 項，將性質相同產品整併為 723 項產品群。

(二) 資料之處理：回表先以人工逐表逐項審核，再作詳細之電腦檢誤，俟確實合理後，始進行推計及編算各類指數。

八、推計方法

凡列為全查企業，按實際調查產銷存量加總；抽查部分採比例推計法，其推計公式：

$$\hat{Q}_{ti}=Q_{si}\times\frac{Q_{co}}{Q_{so}}$$

$\hat{Q}_{ti}$：計算期某產品產銷存量推計值　　Q_{co}：基期某產品生產量母體值

Q_{si}：計算期某產品產銷存量樣本值　　Q_{so}：基期某產品生產量樣本值

九、指數基期

生產量指數以 110 年為參考年，每年更換各產品項目權數，並以連鎖方式(chain-linked)銜接各年指數；其餘各項指數以民國 110 年為基期，每 5 年更換基期及權數。

十、指數分類

(一) 基本行業分類：

依照我國行業統計分類(第 11 次修正)，選定工業生產指數分類如次：

1. 大分類：礦業及土石採取業、製造業、電力及燃氣供應業、用水供應業等 4 大類。
2. 中分類：礦業及土石採取業 2 類、製造業 27 類、電力及燃氣供應業 1 類、用水供應業 1 類。

(6) 查編方法說明

3. 細分類：礦業及土石採取業 2 類、製造業 189 類、電力及燃氣供應業 2 類、用水供應業 1 類。

(二) 製造業特殊複分類：

1. 按產品用途分：最終需要財(分投資財、消費財)、生產財。
2. 按四大行業別分：金屬機電工業、資訊電子工業、化學工業、民生工業。

(三) 銷售量指數：就製造業之調查產品，依其性質歸併為 707 項主要產品，再按中分類編製銷售量指數。

(四) 存貨量指數：就製造業編報用之 707 項產品，剔除具時效性、客製化特性或季節性產品，僅選取與產業景氣相關性較高之 615 項產品，再按中分類編製存貨量指數，存貨率亦同。

十一、指數及存貨率公式

除生產量指數採用連鎖拉氏公式外，其餘各項指數均採用定基拉氏公式。

(一) 工業生產指數：為衡量工業部門產品生產量在某時間與參考年間之相對變動指標。據 109 年工廠校正及營運調查結果，各項產品係以附加價值為權數。附加價值＝生產價值－(原材物燃料耗用值＋電力費用＋其他中間投入費用)

$$I_{n,1} = L_{2,1} \times L_{3,2} \times \ldots \times L_{n,n-1} \times 100 = \prod_{k=1}^{n-1} L_{k+1,k} \times 100$$

$$\text{式中} \quad L_{t+1,t} = \frac{\sum Q_{i,t+1}\, P_{i,t}}{\sum Q_{i,t}\, P_{i,t}}$$

$Q_{i,t}$：t 期生產量　$Q_{i,t+1}$：t＋1 期生產量　$P_{i,t}$：t 期附加價值單價

(二) 銷售量指數：為衡量產品銷售量在某時期與基期之相對變動指標。

$$I_{0i} = \frac{\sum \frac{Q_i}{Q_0} \cdot Q_0 P_0}{\sum Q_0 P_0} \times 100 = \sum \frac{Q_i}{Q_0} \cdot W_0 \times 100 \qquad \text{式中 } W_0 = \frac{Q_0 P_0}{\sum Q_0 P_0}$$

Q_i：計算期銷售量　W_0：基期銷售價值權數

Q_0：基期銷售量　　P_0： 基期銷售單價

(三) 存貨量指數：為衡量產品存貨量在某時間與基期之相對變動指標。

$$I_{0i} = \frac{\sum \frac{Q_i}{Q_0} \cdot Q_0 P_0}{\sum Q_0 P_0} \times 100 = \sum \frac{Q_i}{Q_0} \cdot W_0 \times 100 \qquad \text{式中 } W_0 = \frac{Q_0 P_0}{\sum Q_0 P_0}$$

Q_i：計算期期底存貨量　　W_0：基期期底存貨價值權數

Q_0：基期期底存貨量　　P_0： 基期銷售單價

年存貨量指數係以每月存貨量指數平均計算。

(四) 存貨率：製造業按大、中行業別分別計算各期存貨率，以呈現存貨與銷售間消長，藉以觀察景氣變化。

$$r_i = \frac{\sum Q_{vi} \times P_{si}}{\sum Q_{si} \times P_{si}} \times 100$$

Q_{vi}：計算期期底存貨量　　Q_{si}：計算期銷售量　　P_{si}：計算期銷售單價

年存貨率係以每月存貨率平均計算。

十二、編輯內容

年報分為工業生產、銷售、存貨等 3 大部分編報，茲分述如次：

(一) 生產部分：為本年報之重點，計有工業各大中細分類指數 3 種，製造業季節調整後生產指數中分類 1 種，特殊複分類指數 2 種，另編列各業附加價值比例、各業生產價值及主要工業產品生產量(與銷售量值及存貨量併列)等 3 種。

(二) 銷售部分：除編有製造業銷售量指數外，另編各中業別銷售價值及主要工業產品銷售量值(與生產量及存貨量併列)各 1 種。

(三) 存貨部分：編列製造業存貨量指數、存貨率及主要工業產品存貨量(與生產量及銷售量值併列)各 1 種。

十三、編布日期

(一) 每月 23 日公布「工業生產統計」初步統計，逢例假日另訂。

(二) 於翌月 19 日編製較詳細之工業生產統計及確定數，公布於經濟部統計處網站供各界查詢使用。

(三) 每年 3 月出版「工業生產統計年報」電子書，公布全年修正數。

十四、應用體例

本年報大多採用度量衡分制單位，資料因四捨五入關係，部分總計數字與細項數字

(8) 查編方法說明

之和容有尾數之差。

各表採用符號或簡字之代表意義如次：

ⓟ	初步統計數	0	數值不及半單位
ⓡ	修正數	…	數值尚未發布
		—	無數值或數值無統計

I、INTRODUCTORY NOTES

1. Historical Background

The compilation of industrial production statistics began in 1953 to establish the mining and industrial data reporting system. Since then the data collected under this program without interruption. The series of industrial production indexes are revised once every five years and the classifications of industrial products are scrutinized in order to make the indexes of greater representative. Meanwhile, the new important products are added and special classification of products are enriched and regrouped in order to increase the usability of the statistics. In addition, Taiwan saw its quick changes in the number of industrial factories, their sizes, and the structure of products. To make the industrial production index best reflect the latest development in industrial production and sales, samples were redrawn and the sampling was based on the production and sales data obtained from the Factory Registration Status Survey.

2. Purpose and Uses

A monthly survey is conducted to collect dynamic data on the change in value and quantity of the industrial production, shipment and inventory. Based on the survey data, population values & quantities are estimated, and indexes of various natures are compiled. The statistics turned out in this way are designed to measure on the going trends of monthly industrial production, shipment, and inventory as well as the economic reconstruction achievements; they are also taken as a reference for policy makers in regulating and setting economic development plans in industrial production and trade activities.

3. Interval and Objects of the Survey

(1) Interval: The survey as mentioned above is conducted once a month.

(2) Objects: Objects of the survey include enterprises of the mining & quarrying, manufacturing, electricity & gas supply, and water supply.

4. Scope of Survey

Industrial products included in the survey are selected according to their importance, representative, leading and strategic natures. In order to fully

reflect the changes in quality and quantity of the industrial production and sales, and to facilitate the compilation of statistics in alternative classifications, 1,595 items of industrial products are selected in the survey. Data collected in the survey are pertaining to the volume of production, volume of products proceeded on consignment basis for customers, volume of purchases, value and volume of domestic sales and exports, volume of products used by itself and damages, volume of inventory, and reasons for production changes. Relationship of entries in the questionnaires can be shown in the following equation:

volume of inventory at the beginning of a month
＋volume of a company's production during the month
＋volume of products proceeded on consignment basis for customers
＋volume of purchases
－delivery of proceeded products on consignment basis
－volume of domestic sales
－volume of exports
－volume of products used by itself and damages
＝volume of inventory at the end of the month

5. Sampling Method

(1) Population rosters: Using the results obtained from the Factory Registration Status Survey as database to draw samples.

(2) Sampling: Different sampling methods are applied to different industries and different sizes of enterprises.

① Enterprises falling into mining & quarrying, electricity & gas supply, water supply industries are all subjects to survey.

② Public enterprises, including state-own and other city-own enterprises, are all subject to survey.

③ Private enterprises are partly selected as samples for survey by way of "cut-off sampling". The sampling procedure is as follows:

Based on the production value of products of manufacturing and which obtained from Factory Registration Status Survey, factories' products were listed in order by their production value. Production value of the factories was accumulated from the largest one down to

the smallest one. Factories were included in the survey when their accumulated production value was over 70% of the total production value of a particular product.

6. Survey Method

Different objects are subject to different survey methods.

(1) The data source of mining and quarrying major division is from Geological Survey and Mining Management Agency, MOEA.

(2) Public and private enterprises as well as business operators of electricity & gas supply and water supply are required to fill out the survey questionnaires by themselves. Mail communication and internet submitting are the main ways of reporting, and the auxiliary methods are using telephone, fax and email to communicate with the surveyed factories by assigned specialists.

7. Data Processing

(1) Classification of products: The products covered by the survey are based on the Classification for Industrial Products, which was compiled by the Department of Statistics, MOEA. The 1,595 items, the surveyed products, after having been combined by equivalent nature, are reclassified into 723 items.

(2) Data processing: All completed questionnaires enumerator are reviewed first manually on production, sales and inventory as well as the computer code numbers. Then, use computer system to check the data. If the data are evaluated reasonably, they will be inputted into computer and then print out on all the desired reports.

8. Estimation of Population

For the part of strata of which all enterprises are enumerated, the production population or shipment are calculated on the summation of collected data concerned. For the other part of which only samples are surveyed, the total production of a parameter is estimated by the way of “ratio estimation”. The formula is as follows:

$$\widehat{Q}_{ti}=Q_{si}\times\frac{Q_{co}}{Q_{so}}$$ where

$\widehat{Q}_{ti}$: estimated production or shipment or inventory of product *i* for the given period

Q_{si}: sample production or shipment or inventory of product *i* for the given period

Q_{co}: population production of product *i* for the base period

Q_{so}: sample production of product *i* for the base period

9. Base Year

Except for the production index, which refers to the annual chain index in 2021, the revision period for the weight structure of each product item is every year, and linked to each year index in chain-linked; Other indexs are based on the base year is 2021 for all fixed indexes, with the base period changed every five years.

10. Types of Indexes

(1) By industrial classifications:

The industrial production indexes are classified according to the Industry Statistical Classification System of The Republic of China (11th version) into the following three kinds:

① Major division indexes: The four major divisions are mining & quarrying, manufacturing, electricity & gas supply, and water supply.

② Sector indexes: There are 2 sectors for mining & quarrying, 27 sectors for manufacturing, 1 for electricity & gas supply, and 1 for water supply.

③ Detailed industry indexes: There are 2 detailed industry for mining & quarrying, 189 for manufacturing, 2 for electricity & gas supply, and 1 for water supply.

(2) By special classification for manufacturing:

① By use of products: There are production indexes for final demand goods, including investment goods and consumer goods, and producer goods.

② By four groups: There are production indexes for metal & machinery industry, information & electronic industry, chemical industry, and food, textile and other industry.

(3) Indexes of producer's shipment: Indexes are calculated for sectors on the

basis of 707 major manufacturing items.

(4) Indexes of producer's inventory: Indexes of producer's inventory are calculated for sectors on the basis of the 707 products used in the manufacturing industry, excluding time-sensitive, customized or seasonal products, only select 615 products that are highly correlated with the industrial prosperity, inventory ratio is the same.

11. Index and Inventory Ratio Formula

In addition to the production index using the chained index of Laspeyres formula, the rest of the indexes use the fixed index of Laspeyres formula. The indexes are calculated by the following:

(1) Industrial Production Index:

$$I_{n,1} = L_{2,1} \times L_{3,2} \times \ldots \times L_{n,n-1} \times 100 = \prod_{k=1}^{n-1} L_{k+1,k} \times 100$$

$$\text{where} \quad L_{t+1,t} = \frac{\sum Q_{i,t+1}\, P_{i,t}}{\sum Q_{i,t}\, P_{i,t}}$$

$Q_{i,t}$：production quantity for the t period

$Q_{i,t+1}$：production quantity for the t+1 period

$P_{i,t}$：unit price of value added for the t period

(2) Indexes of Producer's Shipment:

$$I_{0i} = \frac{\sum \frac{Q_i}{Q_0} \cdot Q_0 P_0}{\sum Q_0 P_0} \times 100 = \sum \frac{Q_i}{Q_0} \cdot W_0 \times 100 \quad \text{where } W_0 = \frac{Q_0 P_0}{\sum Q_0 P_0}$$

Q_i：shipment quantity for the given period

Q_0：shipment quantity for the base period

W_0：weight of shipment value for the base period

P_0： unit price of shipment for the base period

(3) Indexes of Producer's Inventory:

$$I_{0i} = \frac{\sum \frac{Q_i}{Q_0} \cdot Q_0 P_0}{\sum Q_0 P_0} \times 100 = \sum \frac{Q_i}{Q_0} \cdot W_0 \times 100 \quad \text{where } W_0 = \frac{Q_0 P_0}{\sum Q_0 P_0}$$

Q_i：inventory quantity at the end for the given period

Q_0：inventory quantity at the end for the base period

W_0：weight of inventory value at the end for the base period

P_0： unit price of shipment for the base period

The annual inventory index is calculated by the average of the monthly inventory index.

(4) Inventory Ratio:

$$r_i = \frac{\sum Q_{vi} \times P_{si}}{\sum Q_{si} \times P_{si}} \times 100$$

Q_{vi}：inventory quantity at the end for the given period

Q_{si}：shipment quantity for the given period

P_{si}：unit price of shipment for the base period

The annual inventory ratio is calculated by the average of the monthly inventory ratio.

12. Contents

The publication includes three parts, namely: production, shipment and inventory.

(1) Production: This part is the focal point of the publication. The statistical series is arranged in many aspects, including 3 kinds of major industry (division, sector, detailed) production indexes, 1 kind of sector seasonal adjusted indexes of manufacturing, and 2 kinds of special classifications of industrial production indexes. In addition, the statistical series also compiled proportions of manufacturing value added by sector industry, production value by detailed industry, and production quantities of principal industrial products.

(2) Shipment: Indexes for the manufacturing divisions are compiled. Also included in the part are shipment values of manufacturing by sector industry and shipment quantities and values of principal industrial products.

(3) Inventory: Inventory indexes and inventory ratio for the manufacturing

divisions are compiled. Also included in the part are inventory quantities of principal industrial products.

13. Publication Date

(1) Preliminary industrial production statistics is released on the 23rd day of each month.

(2) After formal survey is completed, a detailed “Industrial Production Statistics” is compiled before the 19th day of the next month. The latest data is available on the website of Department of Statistics, MOEA.

(3) E-book “Yearbook of Industrial Production”, which contains historical data and revised current year data, will be published in March yearly.

14. Statistical Notes

The measuring units used in this publication are in metric system. The figures of total items in this issue may not agree with the sum of detail due to omitting the decimal fraction less than 0.5 and counting all the others.

Special symbols used in the publication represent the following meanings:

ⓟ	preliminary estimate	0	less than a half unit
ⓡ	revised figure	…	not yet published
		—	zero or not available