



مركز الإحصاء
STATISTICS CENTRE

Industrial Producer Price Index

Methodology

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Overview

Statistics Centre of Abu Dhabi (SCAD) is the official authority responsible for calculating and issuing the Industrial Producer Price Index (PPI) in the Emirate of Abu Dhabi, which is issued periodically every quarter. The PPI is a statistical economic index that measures the change in industrial production prices (manufacturing industries) between two time periods: the base period, when the index value is set at 100, and the comparison period when prices are compared to the prices of the base period.

The Producer Price Index achieves several goals of interest to economic decision and policy-makers, business people, and national account compilers, and to complement what the SCAD seeks in building the index system, whether those related to prices of all kinds or the development of production for various economic activities.

The methodology used in calculating the Industrial Producer Price Index is considered one of the international methodologies consistent with the recommendations of the International Monetary Fund (IMF) and international best practices in this field.

Importance

The Industrial Producer Price Index is an important economic index that constitutes an important input in planning and research in various economic fields. The Industrial Producer Price Index provides quarterly estimates of the rates of change in a variety of economic fields and is useful for a variety of purposes, including:

- Determining the trends of the producer price index within the Emirate of Abu Dhabi to assist decision-makers, policy-makers, and researchers in planning and making decisions that support the industrial sector.
- An economic indicator that tracks changes in industrial producer prices, where the government uses this number to process and draft economic policies and plans.
- Another economic chain employs the producer price index as a deflation factor. It is used to adjust economic time series for price changes in national accounts and convert them into constant prices.
- A tool for tracking price escalation in sales and purchase contracts, especially in contracts where the future date (point) of payment is specified. An escalation item is included in commercial contracts to consider potential increases in input prices and monitor their effect on input prices. It is used by international economic organizations, such as the IMF, as an evaluation and comparison tool.

Objectives

- Providing the necessary data to help decision-and policy-makers and researchers to plan and make decisions that support the industrial sector.
- Providing the necessary data for processing and drafting economic policies and plans.
- Providing the data required to process the time series of economic data.
- Tracking changes in sale and purchase contracts.

Concepts and Definitions

Industrial Producer Price Index: a statistical tool for measuring the relative change in the prices of the basket of goods and services of industrial producers.

Price: the market value of a unit of material or service, expressed in monetary terms. It can be defined as the value paid for a particular material or service.

Quarterly relative price change: The increase or decrease rate in the basket items average prices of the current quarter compared to the basket items average prices of the previous quarter or the same quarter of the previous year.

Source: is a productive economic establishment from which the prices of goods/ services of the Industrial Producer Price Index basket are collected.

Base Period: The year in which the residential rental price index equals 100. The base period serves as a benchmark for future periods, allowing economists to judge rates of increase and decrease in prices compared to that year.

Comparison Period: the "current" or most recent period for which the index was calculated. However, the term is used to refer to any period that is being compared to the base period.

Base period Prices: are the prices of goods and services in the period designated as the base period, with which current prices are compared.

Laspeyre Equation: is a mathematical equation developed by statisticians (Laspeyre) to calculate price index numbers.

Relative importance: the ratio resulting from dividing the total household consumption expenditure on a good/service by the total household consumption expenditure on all goods and services.

Coverage (Geographical- Statistical Units)

The Industrial Producer Price Index covers all activities of the manufacturing sector in the Emirate of Abu Dhabi. It represents all manufacturing activities at the second digit level according to the International Standard Industrial Classification of All Economic Activities (ISIC4). A total of 23 industrial activities were selected to represent the manufacturing sector, where data are collected from 65 sources representing these activities across the Emirate of Abu Dhabi.

Frequency

The Industrial Producer Price Index report is issued on a quarterly basis.

Classifications

The International Standard Industrial Classification of All Economic Activities (ISIC4) is used, which represents all the manufacturing activities at the second level attached to a total of 23 activities that have been selected:

Table 1: Manufacturing activities at the second level

ISIC4	Manufacturing Industry
10	Manufacture of food products
11	Manufacture of beverages
13	Manufacture of textiles
14	Manufacture of apparel
15	Manufacture of leather and other related products
16	Manufacture of wood, wood products, and cork, except for furniture; manufacture of items from straw and plaiting materials
17	Manufacture of paper and paper products
18	Printing and reproduction of recorded media
19	Manufacture of coke and refined petroleum products
20	Manufacture of chemicals and chemical products
21	Manufacture of pharmaceuticals, chemical, and botanical pharmaceutical products
22	Manufacture of rubber tires and tubes as well as renewing and rebuilding the external surfaces of rubber tires
23	Manufacture of other non-metallic minerals products
24	Manufacture of base metals
25	Manufacture of formed metal products, except machinery and equipment
26	Manufacture of computers and electronic and optical products
27	Manufacture of electrical equipment
28	Manufacture of machinery and equipment unclassified elsewhere
29	Manufacture of motor vehicles, trailers, and semi-trailers
30	Manufacture of other transportation equipment
31	Manufacture of furniture
32	Other manufacturing industries
33	Repair and installation of machinery and equipment

Main Data Sources

The main source of data is a field survey conducted by SCAD's Price and Income Statistics Section, which collects the prices of 284 products from 65 establishments representing economic activity at the second digit level. The sample of establishments is distributed in Abu Dhabi and Al Ain, with 52 in Abu Dhabi and 13 in Al Ain.

Questionnaires

A special form was designed to collect prices and quantities of industrial production based on the data required from the establishment. The form is sent to the sources on a monthly basis.

Sample Design

The survey uses the Probability Proportional to Size (PPS) sampling method in which a size measure is available for each establishment unit before sampling and where the probability of selecting a unit is proportional to its size, in the case of the Industrial Producer Price Index, the economic establishment is usually measured by its revenue. In addition, when choosing the sample economy by the sampling method proportional to the size, a greater probability or opportunity was given for selecting the establishments with the largest revenue.

Establishments from the Economic Surveys of 2011 were approved for use in the calculation of weights for the Industrial Producer Price Index according to the classification ISIC4, and 284 products that represent economic activities were identified.

Data Collection

Prices data are collected monthly through field visits or by e-mail communication according to prior coordination with the establishment and the explanation of the form items and the data required by trained enumerators.

Data Editing

This process includes data entry verification, whereby industrial producer prices are linked to the quantities produced every month. In addition, the prices collected in the current month are compared to the prices collected in the previous month at this stage to avoid entry errors and errors in collecting the prices of products that do not meet the required specifications. The editing stages can be summarized as follows:

- **Desk Editing of Prices:**
 1. Following up and daily discussion of the enumerator before he goes to the field to collect data.
 2. The prices collected by the enumerators in the field and the data sent by e-mail are tracked and monitored before being entered and then compared to the previous months. If any unjustified difference in the prices is observed, whether in the increase

or decrease, they shall be returned to the source, whether in the field or by e-mail, to avoid any errors.

3. Automated editing rules for price changes have been set that displays the good/ service whose prices exceed the predefined limit of percentage change. The limits set are based on data from previous years of the establishments.

- **Resolving Price Issues:**

The following are some of the cases that are dealt with during the desk editing for prices:

1. First Case: when the price is not available from a specific source during the monthly or quarterly collection process, the values of these prices are estimated by comparing them to previous quarters, and if the material disappears from the market, it is replaced by a material of comparable price and specifications.
2. Second case: In the event of closure of the establishment for any reason, the reasons for closing are studied and to find out whether the reasons are internal or external and then a decision is made either to find an alternative establishment to replace the closed establishment or to fix the price in the event that there is another establishment representing the sector Economic.

Sometimes it is difficult to determine a price for the service provided by the establishment (such as the maintenance of ships that depends on the volume of maintenance). In this case, the expert in the establishment is directly asked about the rate of change in prices.

Indicators Calculation

First: Calculation of Weights

The Industrial Producer Price Index basket weights are important variables in the index calculation process. The Industrial Producer Price Index was based on the results of an economic survey implemented by the Industry and Business Statistics using a sample representative of the Emirate of Abu Dhabi. The following main points were considered during the weights calculation process:

- The weight of the economic activity according to (the second level of the industrial classification) is based on the total revenues of all establishments.
- The establishment's weight in economic activity was calculated by dividing the establishment's revenues by the revenues of all establishments.
- Following the first visit to the sample establishments and determination of the main important goods and services produced within each establishment, the establishment's weight was distributed over its main commodities based on the production value of each good/ service.
- The following equation was used to calculate the weight based on revenue:
Establishment's Weight = Establishment's total revenues / Grand total of revenues for all establishments * 100
- Weights are updated whenever the necessary data are available. SCAD seeks to update the weights every two years.

Second: Data Processing

Classification, coding, application of editing and validation rules, approval of raw data, imputation of missing values, and inter-linking of variables from multiple sources are all part of the data processing stage. In addition, depending on the imputation and treatments methods included in the International Monetary Fund's Producer Price Index Manual, calculating weights and computing aggregate results from the main and subsidiary data.

Third: Calculation of the Index

The producer price index is calculated according to the mathematical formula of the Laspeyre formula. The Index is based on the weights of the base year (2012).

$$PPI_L = \sum \frac{P_{1i}}{P_{0i}} \times W_{0i}$$

PPI = Industrial Producer Price Index

P_1 = Current price

P_0 = Base year price

W_0 = Weight for the base year

The quarterly average product price is obtained by calculating the average of the product price during the three months. Then the price relative is calculated at the product level within each establishment. Next, the higher levels are compiled through the weights of the products within the same economic activity.

Fourth: Calculation of the Relative Change

The relative change in the index number for the current quarter compared with the previous quarter is calculated according to the following equation:

$$R = \frac{PPI_c}{PPI_p} * 100 - 100$$

R = Quarterly or annual rate of change

PPI_c = Index for the current quarter

PPI_p = Index for the previous quarter / the same quarter of the previous year

Timeliness

The Industrial Producer Price Index is issued during the following quarter after the end of the reference quarter.

Dissemination

Data for the Industrial Producer Price Index are published on Abu Dhabi Statistics Centre website.



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