



مركز الإحصاء
STATISTICS CENTRE

Industrial Producer Price Index Methodology 2024

Table of Contents

1. Overview.....	4
1.1. Introduction.....	4
1.2. Concepts and definitions.....	4
1.3. Abu Dhabi special considerations.....	4
1.4. Classifications and standards applied.....	4
1.5. Available breakdown	5
1.6. Importance and objectives of the indicator.....	5
2. Indicator information.....	6
2.1. Geographical coverage.....	6
2.2. Statistical population.....	6
2.3. Periodicity.....	6
2.4. Timeliness.....	6
2.5. Units.....	7
2.6. Reference period.....	7
3. Methodology.....	7
3.1. Alignment to international standards.....	7
3.2. Data sources.....	7
3.2.1. Survey data.....	7
3.2.1.1. Collection method.....	7
3.2.1.2. Sample design.....	8
3.2.2. Administrative data.....	8
3.3. Data validation and editing.....	8
3.3.1. Data validation.....	8
3.3.2. Missing data adjustments.....	9
3.4. Data processing	9
3.4.1. Linking different datasets.....	9
3.4.2. Index weights.....	10
3.4.3. Statistical calculation method.....	10
3.4.4. Seasonal adjustment.....	11
3.4.5. Chain linking.....	11
4. Special cases.....	11

5. Outputs and quality.....	11
5.1. Dissemination and accessibility.....	11
5.2. Length of available dataset.....	11
5.3. Methodology changes	11
5.4. Data coherence and comparability.....	12
5.5. Data accuracy and potential sources of errors.....	12
5.6. Revision policy.....	13
5.7. Limitations of dataset.....	13
6. Institutional environment.....	13
7. Glossary.....	13

1. Overview

1.1. Introduction

The Statistics Centre of Abu Dhabi (SCAD) is the official authority responsible for calculating and issuing the Industrial Producer Price Index (IPPI) in the Emirate of Abu Dhabi, which is issued periodically every quarter. The IPPI is a statistical economic index that measures the change in industrial production prices (manufacturing industries) over time.

The IPPI serves a variety of goals and is used by policymakers, businesses, and national account compilers, and is key building block in SCAD's system of important economic indices for prices, production, and other areas.

The methodology used by SCAD in calculating the IPPI is closely aligned with the recommendations of the International Monetary Fund (IMF) where possible. Nevertheless, SCAD is currently undertaking a major review of its approach to ensure the IPPI is consistent with latest international best practices, including a planned change from quarterly to monthly dissemination frequency.

1.2. Concepts and definitions

A price index is a statistical tool that allows the comparison of the prices of a common set of products or product groups over time. The IPPI measures the change in industrial production prices (manufacturing industries) between periods. The IPPI basket is a fixed basket of products that is considered representative of producers output in Abu Dhabi. As such, the IPPI published by SCAD follows the concept of an output price index, measuring the prices that are passed on to buyers. This contrasts with an input price index, which only considers the cost of inputs into the production process, but not company profits or administrative costs. The compilation of the Abu Dhabi IPPI follows the key concepts and definitions outlined in Producer price index manual, theory and practice published jointly by the ILO, IMF and other international organizations.

1.3. Abu Dhabi special considerations

It should be noted that Abu Dhabi is an emirate and one of 7 emirates in UAE, therefore certain limitations apply in collecting and obtaining data. The IPPI however is based on a survey tailored to the emirate of Abu Dhabi and administrative data are available specifically for the Abu Dhabi region, therefore the IPPI compilation can be considered as accurate as otherwise for a national entity and is not subject to particular constraints.

1.4. Classifications and standards applied

SCAD aligns its data collection and processing, where possible, with ILO standards described in Producer price index manual, theory and practice. The Abu Dhabi IPPI adheres to the International Standard Industrial Classification of all Economic Activities (ISIC4), the latest revision of the internationally used industrial classification. This ensures consistency and comparability with other countries' IPPI indices.

CPC classifications is used in the product level

1.5. Available breakdown

SCAD publishes the 2- digit ISIC IPPI for the manufacturing categories of ISIC4, and Mining and quarrying activities. The following 24 industries are covered by the Abu Dhabi IPPI:

- 06 Extraction of crude petroleum and natural gas
- 09 Mining Support Services Activities
- 10 Manufacture of food products
- 11 Manufacture of beverages
- 13 Manufacture of textiles
- 14 Manufacture of wearing apparel
- 15 Manufacture of leather and related products
- 16 Manufacture of wood and of products of wood and cork, except furniture, manufacture of articles of 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, medicinal chemical and botanical products
- 22 Manufacture of rubber and plastics products
- 23 Manufacture of other non-metallic minerals products
- 24 Manufacture of base metals
- 25 Manufacture of fabricated 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
- 33 Repair and installation of machinery and equipment
- 35 Electric power generation, transmission and distribution
- 36 Water collection, treatment, and supply

1.6. Importance and objectives of the indicator

The IPPI provides quarterly estimates of the rates of change in the output prices of manufacturing industries. It is one of the most important statistical indicators as it influences policy and private sector decisions and is used as input into further statistical analysis.

The main objectives of the IPPI are the following:

- 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.

Main uses of the IPPI include:

- Determining the trends of the IPPI within the Emirate of Abu Dhabi to assist decision-makers, policymakers, and researchers in planning and making decisions that support the industrial sector.
- Short term indicator of inflation
- Tracking changes in industrial producer prices, to aid government to process and draft economic policies and plans.
- Adjusting economic time series for price changes in national accounts to convert them into constant prices.
- Price escalation in sales and purchase contracts, especially in commercial contracts where the future date (point) of payment is specified.
- Feeding economic analysis by international economic organizations, such as the IMF, where it is used as an evaluation and comparison tool.

2. Indicator information

2.1. Geographical coverage

The IPPI covers the Emirate of Abu Dhabi.

2.2. Statistical population

The statistical population of the IPPI is all the factories and establishments which classified in the ISIC4 under the codes: (09-33) and located in the Emirate of Abu Dhabi, IPPI reflects price changes of products sold by factories that are based in Abu Dhabi. Price changes of products imported into Abu Dhabi or sold in Abu Dhabi by non-resident businesses are not within scope.

2.3. Periodicity

The Industrial IPPI is on a quarterly basis.

Mid- term Enhancement

Given the importance of the IPI and to better align with IMF recommendations and global best practices, we are currently enhancing our methodology to increase the publication frequency from a quarterly to a monthly basis.

2.4. Timeliness

The IPPI is issued during the following quarter after 45 days from the end of the reference quarter.

Mid-term Enhancement

Reduce the issued day to 30 days after reference month.

2.5. Units

The IPPI is an index that equals 100 in its base year (currently 2021).

2.6. Reference period

Price reference period: The reference period for price data collection is each calendar quarter.

Index reference period: Overall, the reference period for comparing price changes is the base year (currently 2021).

Weight reference period: The weights are based on the business survey conducted in 2019, and national accounts for the same period.

3. Methodology

3.1. Alignment to international standards

The compilation of the IPPI broadly follows, where possible, the recommendations outlined in Producer price index manual, theory and practice published jointly by the ILO, IMF and other international organizations. This means that procedures for data collection and validation, data imputation and indexation can be reconciled with the methodology outlined therein and is broadly consistent with other national statistics offices' best practices. Certain areas where SCAD falls short of international best practices are currently being addressed, such as increased periodicity, timeliness and sampling and collection method enhancements.

¹ See <https://www.imf.org/en/Data/Statistics/cpi-manual>

3.2. Data sources

To collect the necessary data for compiling both the Industrial Production Index (IPI) and the Industrial Producer Price Index (IPPI), SCAD utilizes administrative data for industrial activities classified under codes 06, 08, 35, and 36. For the remaining manufacturing activities (codes 10-33), SCAD collects survey data.

3.2.1 Survey data

The primary data source for the manufacturing activities (codes 10-33) in ISIC4, is a field survey conducted by SCAD, which collects quantities and prices for the Industrial Producer Price Index (IPPI) and Industrial Price Index (IPI) baskets. Each variety within the baskets is collected from at least three different establishments to representing economic activities at the second level of ISIC4. The sample distributed across the three main regions in Abu Dhabi emirate: Abu Dhabi region, Al Ain region, and Al Dhafra region.

3.2.1.1 Collection method

SCAD designed a questionnaire to specifically collect prices and quantities of industrial production based on the data required for the compilation of both the Industrial Producer price Index (IPPI) and the Industrial Production Index (IPI). The questionnaire is sent to selected Establishments on a monthly basis.

Price and quantity data are collected through field visits or by e-mail, communication following prior coordination with the enterprise and explanation of the form by trained enumerators.

Mid-term Enhancement

SCAD is in the process of developing a new web portal specifically designed to collect prices and quantities of industrial production from all active industrial enterprises in the Abu Dhabi Emirate. This data, essential for compiling the Industrial Producer Price Index (IPPI) and Industrial Price Index (IPI), will be collected in cooperation with the IDB on a monthly basis. Additionally, an extensive and detailed questionnaire will be administered annually to update the basket and weights for the products. This questionnaire will be sent to all enterprises within the target population that have a production line (IN license), For the rest of the target population, data will be collected in person through enumerator visits.

3.2.1.2 Sample design

The IPPI & IPI survey utilizes a stratified sampling approach for each two-digit economic activity (ISIC4) within the target population (10-33). A cutoff sample is used in each two-digit industrial economic activity. The cutoff thresholds are determined by their proportional weight in the industrial sector (from national accounts), this ensures that industries with higher economic importance receive a larger representation, often exceeding 85%.

The industrial survey results from 2022 serve as the basis for designing and selecting the IPI & IPPI enterprise sample, as they include production values. The Economic Survey results from 2022 and the Enterprise Register (2023) are utilized to fill gaps in the Industrial Survey 2022 results, ensuring a high level of coverage.

The contribution of the enterprise within its industry sector (2-digit ISIC4) is used as a measure of size, which influences their chances of being selected in the sample. Therefore, enterprises with more production are more likely to be sampled

3.2.2 Administrative data

The Abu Dhabi IPI is relies on administrative data for activates (06, 08, 35, 36).

3.3. Data validation and editing

3.3.1 Data validation

The data validation process begins with data entry verification. 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 validation stages at the SCAD office can be summarized as follows:

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(flags) for price changes have been set that displays the good whose prices exceed the predefined limit of percentage change. The limits set are based on data from previous month of the establishments.

3.3.2 Missing data adjustments

Where value and volume data for a product exists, missing price information is replaced by the item unit value to form a price proxy (this is done by dividing the value by the volume).

Certain products or services require additional treatment, especially in the case of temporary or permanent unavailability for non-seasonal items.

- **Temporary unavailability:** when the price of item is not available from a specific source during the monthly or quarterly collection process, the values of these prices are estimated by reflecting the change in the prices for the similar establishment's prices.
- **Permanent unavailability of item:** if a product or material is missing for 3 consecutive collection periods or more and it is not seasonal item, it is considered as permanently unavailable and is replaced by a quality of comparable price and specifications. An adjustment factor is derived by generating overlapping price series for the old and new item.
- **Permanent unavailability of establishment:** In the event of closure of the establishment, depending on the reasons for shutdown (e.g. internal or external reasons) the closed establishment is either replaced by an alternative establishment from the same ISIC4 industry, or the prices collected from the closed establishment are projected forward in line with price movements in the closest subgroup (only if no suitable alternative establishment can be found).
- **Special complexity of product:** Sometimes it is difficult for the establishment to clearly define a price for the product or service offered (e.g. the maintenance of ships, which depends on the volume of maintenance). In this case, the expert in the establishment is directly asked about the rate of change in prices

3.4. Data processing

The IPPI is compiled from the validated survey data, and administrative data for specific active (06,08, 35, and 36) . SCAD applies weights to each ISIC4 manufacturing industry (as well as corresponding sub-groups and products), reflecting their relative importance versus other industries and product, and compares the outcome to the historical IPI series (including the reference year data) to construct the index and relevant growth rates.

3.4.1. Linking different datasets

Linking different datasets is not applicable to this publication as each manufacturing activity are compiling from only one source either survey or Admin data.

3.4.2. Index weights

The IPPI basket weights are important variables in the index calculation process. The following main points were considered during the weight calculation process:

- The weight of the economic activity according to the second level of ISIC4 is based on the total revenue per industry relative to the total revenue across all industries accordance to the national accounts in the base year.
- The weight of the enterprise is based on its total revenue relative to the total revenue of all enterprises in the same industry sector (2 dijet_ISIC4). The following equation was used to calculate the weight based on revenue: Enterprise's Weight = Enterprise's total revenue / Grand total of revenue for all enterprises in the industry sector * 100
- Following the first visit to the sample enterprises and determination of the main important goods produced within each enterprise, the enterprise's weight was distributed over its main commodities based on the production value of each good.
- Weights are updated whenever the necessary data are available. SCAD has last updated its IPI index weights in 2019 in line with the base year, however SCAD seeks to increase the update frequency to annually bases, as per ILO recommendations and international best practices.

3.4.3. Statistical calculation method

The index calculation follows the initial data editing and processing, which includes the following steps:

- data classification and coding process
- application of editing and validation rules
- approval of raw data
- imputation of missing values

Once the data is approved for statistical processing, 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. The IPPI is calculated according to the Laspeyres formula:

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

PPI = Industrial Producer Price Index

P₁ = Current price

P₀ = Base year price

W₀ = Weight for the base year

Finally, the growth rates (relative change or IPPI inflation) is calculated by comparing the reference quarter with the previous quarter, 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

3.4.4. Seasonal adjustment

SCAD does not disseminate a seasonally adjusted IPPI index.

3.4.5. Chain linking

SCAD does not currently produce a chain linked to IPPI.

4. Special cases

The APPI follows a similar concept as the industrial IPPI but is published separately and currently not related to the IPPI publication covered by this methodology document. Like the industrial IPPI, it follows an output price concept whereby prices of agricultural products faced by buyers are analyzed. A key difference is the data source: The APPI is fully based on administrative data from ADAFSA, whereas the IPPI is mostly survey based. A separate document exists for the APPI, detailing its methodology and classification – see APPI methodology documentation.

In general, both indices try to follow similar PPI compilation guidelines set out by the IMF.

5. Outputs and quality

5.1 Dissemination and accessibility

Data for the IPPI are published in excel format on the SCAD website. The pdf document highlights some key points with regard to the latest data and contains a chart of overall IPPI performance over the recent past. The excel file contains the full dataset for ISIC4 2-digit manufacturing industries for the reference period and a comparison to the previous year.

A brief methodology overview is included in each pdf publication. SCAD is also currently rolling out a metadata table for each indicator including key information on various indicator dimensions.

5.2. Length of available dataset

The IPPI dataset consists of a time series at the 2-digit ISIC4 detail for selected manufacturing industries, starting in 2012.

5.3. Methodology changes

No changes have been made to the Abu Dhabi IPPI since its inception in 2012.

A methodological reviewed in 2022, which updated the index and weight reference years to 2019 and the base year to 2021.

5.4. Data coherence and comparability.

When comparing the Abu Dhabi IPPI to other countries or regions' price indices, users should be aware of potential differences in concepts (such as input price vs output price measurement) as well as differences in compilation methods. In general, SCAD follows internationally recommended classification and indexation methodologies to facilitate cross-country comparisons. One key difference is the industry coverage – Abu Dhabi only publishes an IPPI for manufacturing industries but no whole-economy IPPI like most countries (i.e. based on a full set of ISIC4 industries including services). SCAD is working on expanding its industry coverage to obtain a more broad-based PPI in line with other countries.

5.5. Data accuracy and potential sources of errors

Data accuracy describes how closely the statistical indicator resembles the true value of the concept it measures; in this case the producer price changes in the Abu Dhabi economy. It is important to recognize that some items in the IPPI basket are more important than others. Therefore, SCAD makes use of the business survey to derive relative weights that determine how certain products impact the overall IPPI. The business survey is periodically used to update IPPI weights, to ensure the relative importance in the IPPI calculation remain relevant and reflective of real-world developments.

A number of sampling and non-sampling errors can arise along the design, collection, and calculation stages. SCAD takes several measures to mitigate errors as follows:

- **Sampling:** SCAD is planning to increase its sample size to be more representative of the emirate of Abu Dhabi. While a certain degree of sampling error cannot be avoided when taking a sample of observations as opposed to recording all quantities or all items in Abu Dhabi, raising the sample size can mitigate the bias substantially.
- **Data collection:** SCAD tries to minimize collection errors by periodically following up with establishments to ensure clarity on filling out the questionnaires. Well-trained enumerators and statisticians follow a strict validation procedure that requires passing several data checks before the data is submitted for data processing by the statistical office.
- **Data processing:** SCAD is continuously aligning the methodology with international standards and best practices, but certain scope for errors remains as it is difficult to perfectly account for quality changes in certain product groups, and available index formulas may slightly over or understate the true amount of quantity changes.

Accuracy tends to increase at higher levels of geographic and product aggregation due to the larger sample sizes of price data. Moreover, any distortions that can arise at elementary product indices (e.g. during price/quantity collection and editing, or in making quality adjustments) are more likely to cancel out on the aggregate level.

5.6. Revision policy

As per global standards, the original, non-seasonally adjusted IPPI series are revised only in special circumstances, such as correction of significant errors. However, the index reference/base period (i.e. the period in which the index equals 100) is changed periodically, resulting in a fully revised time series.

5.7. Limitations of dataset

The industrial IPPI expresses price changes of a large number of commodities in a single index number, and the composite price movement of the index is dependent on its approach, in this case the fixed quantities of the IPPI basket that are proportional to the revenues of manufacturing establishments in Abu Dhabi. Consequently, considerations about the quality of the IPPI relate to the chosen concepts of IPPI compilation in the base year .

The IPPI focuses on tracking aggregate producer price developments and does therefore not accurately reflect price changes by different types of businesses, or by businesses that sell products in Abu Dhabi but are located elsewhere. It also exclusively focuses on manufacturing industries and cannot be used to draw conclusions about producer prices in other economic sectors.

Finally, the IPPI uses fixed weights based on base year quantities and therefore may omit some of the changes that have taken place in the production process since then, such as changing importance of the recorded products or new emerging services and materials.

6. Institutional environment

Statistics Centre – Abu Dhabi (SCAD), as the competent government entity in charge of organizing statistical activities in the emirate, plays a pivotal role in supporting decision-makers, and policymakers in Abu Dhabi. The statistical activities in the emirate are organized by SCAD, with its strategic partners in the Statistical System of Abu Dhabi. The Law entrusts SCAD with the task of developing and organizing statistical in Abu Dhabi Emirate.

7. Glossary

Industrial producer price index:

A statistical tool for measuring the relative change in the prices received 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.

Relative Price Change:

The increase or decrease rate in the basket items average prices of the current period compared to the basket items average prices of the previous period or the same period of the previous year.

Source:

is a productive economic enterprise from which the prices and quantity of production of goods of the IPPI basket are collected.

Base Period:

The base period is usually understood to mean the period with which all the other periods are

compared. The term may, however, have different meanings in different contexts. Three types of base period may be distinguished:

- The price reference period
- The weight reference period
- The index reference period

Comparison Period:

The period that is compared with the base period, usually the price reference or index reference period. It is also widely used simply to mean the later of the two periods being compared. The exact meaning is usually clear in the context.

Laspeyres Equation:

A mathematical equation developed by statistician Laspeyres to calculate price index numbers.



مركز الإحصاء
STATISTICS CENTRE

الرؤية: ببياناتنا نمضي نحو غدٍ أفضل
Vision: Driven by data for a better tomorrow



www.scad.gov.ae



adstatistics