

Methodology

Producer Price Index

Manufacturing Sector– 2020

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First: Background of Producer Price Index

1.1 Introduction

Since its inception, Dubai Statistics Center (DSC) has been committed to provide statistical, social, economic and demographic data for decision makers, policy makers and those interested in research studies of all types. DSC also seeks to keep pace with the rapid and continuous development in the field of research, developing its technical capabilities with a view to attaining high levels in this field, to match those of statistical entities in several other developed countries.

Producer Price Index (PPI) is an important indicator related to economic performance; as it reflects the ability of national products to compete, based on the commercial capacities of the local economy. The more competitive the domestic products are, the better the trade balance.

PPI is an important tool in the preparation of national account estimates fixed prices as well as in checking consumer prices in relation to the prices of locally produced items.

In light of available data collected for the purposes of calculating industrial production indices, the available figures were prepared and processed, according to ISIC4 which renders the calculation of PPI in the current period in order to prepare a more comprehensive PPI, as well as serving as an input in the preparation of the industrial production index in the future.

1.2 Survey Objectives

- The producer price index used to monitor changes in the prices of domestic commodities that used in markets, as well as the consequent identification of the prices trends, market conditions.
- PPI is an important tool in the preparation of national accounts through ridding the national gross income from the impact of prices changes.

- PPI also used as important indicator that reflects the extent of progress and development that occurs to the local productive sector in a period compared to another period.

Second: Target Population and Survey Sample Frame

2.1 Target Community

- The survey focus on all industrial establishment operating in the Emirate of Dubai and mainly in the manufacturing industries sector, as stipulated by International Standard Industrial Classification of Economic Activities ISIC 4, in a way that ensures coverage of all selected items in index calculation of produce prices according to its economic activities. The key requirements of the selected establishment can be summarized into the following:
 - Engagement in manufacturing activities.
 - Continuous production activity.
 - Open the establishment to the public (the prices collections will not include establishment that serves or sell only to a particular category of individuals or require membership or limited to certain persons or authorities).
- The establishment operating within the manufacturing section includes: manufacturing industries, as follows:

Section C - Manufacturing

- 10 Food products
- 11 Beverages
- 12 Tobacco products
- 13 Textiles
- 14 Wearing apparel
- 15 Leather and related products
- 16 Wood and of products of wood and cork, except furniture
- 17 Paper and paper products

- 18 Printing and reproduction of recorded media
- 19 Refined petroleum products
- 20 Chemicals and chemical products
- 21 Pharmaceuticals, medicinal chemical and botanical products
- 22 Rubber and plastic products
- 23 Other non-metallic mineral products
- 24 Basic metal products
- 25 Fabricated metal products, except machinery and equipment
- 26 Computers, electronic and optical products
- 27 Electrical equipment
- 28 Machinery and equipment n.e.c.
- 29 Motor vehicles, trailers and semitrailers
- 31 Furniture
- 32 Other manufacturing industries
- 33 Repair and installation of machinery and equipment

Based on this categorization, the statistical reports categorized and issued according to the same details of section and divisions mentioned above. It is worth mentioning that the survey currently covers only the manufacturing divisions as shown in the title, and later we would be working on covering all the other sections.

Third: Survey Sample

Research source samples was selected to cover the activities of the manufacturing industry at the level of the Emirate of Dubai, since the aim of the research is to cover the activities included in the PPI calculation. Therefore, production sources for these activities provided as far as possible by using the general frame of the industrial establishments operating in the Emirate of Dubai.

The industrial establishment is selected according to the following rules:

- Comprehensive census of all establishments engaged with activities are not available in other establishment.
- If there are more than three establishments for each activity, the sampling method will be based on the number of establishments within each activity. The number of establishments in the frame were 8,892 so the sample size will be determined within the same activity by covering 3% of the operating establishment.
- The survey sample updated according to 2017 production weights. The number of selected establishments reached 167 establishments covering 492 items.

Forth: Stages of the Survey

Survey stages include the following set of operations:

- Sample design and selection.
- Design the survey Form.
- Preparation of the Instructions Manual.
- Test and develop forms, instructions, software and data, as well as the collection and processing procedures.
- Preparation of fieldwork stage; for example, the preparation of equipment and software, data collection instructions, field and desk audit rules, automated matching rules and the preparation of the coding manual.
- Collecting and entering data for selected items and services.
- Data auditing and coding.
- Clean up data from errors
- Database finalization.
- Extraction of PPI for the manufacturing sector.
- Publishing results.

Fifth: Main Documents of the Survey

Survey documents included all forms and instruction manuals for supervisors, researchers, rules of auditing and automated conformity rules. The following is a summary of the most important documents:

5.1 Survey Form

In order to reach the objectives of the survey, a special form designed and finalized after tested, reviewed and translated by specialists, taking into account the preparation of the form program and the audit process. The form contains the following main parts:

1. Establishment Code.

2. Establishment Serial No.

3. Identifiers/Metadata:

- Establishment Commercial Name
- License number.
- Licensing Entity
- Name of the establishment's owner or director.
- Main business Economic activity (in detail).
- Number of employees.

4. Establishment address:

- Community Name.
- Community Number.
- Parcel ID.
- Makani Number.
- Street name.
- Building name/Owner.
- Location in building.

- P.O .Box
- Telephone Number.
- Fax Number.
- E-mail.
- Website.

5. Information of Respondent:

- Name of Respondent.
- Telephone number.
- Mobile number.
- E-mail.
- Alternative contact name.
- Telephone number.
- Mobile telephone number.
- E-mail.

6. List of activities

7. Specification of Selected Items:

- Item code.
- Item Specification - Brand.
- Commercial Item Code.
- Sales unit.

8. Prices and quantities produced.

5.2 Instruction Manual

The instruction manual includes all definitions and concepts used in the survey and detailed instructions for the researchers, in addition to providing a detailed explanation of all the questions and concepts contained in the form. Its various sections and the classifications used for each of them, in addition to instructions on how to complete the data in a manner affording the highest degree of accuracy. The manual also includes the basic audit rules to be follow in verifying the forms, as well as the review mechanisms, rules for desk auditing and automated matching rules.

5.3 Coding Manuals

These manuals include the following codes:

- Guide to coding economic activities according to ISIC4.
- Directory of Dubai area codes and their names.
- Symbol analysis guide.
- Production stage codes.

5.4 Preparation of software to be use

- Entry programs.
- Compliance and electronic auditing programs.
- Required output programs.

Sixth: Survey Staff

6.1 Functional structure of survey personnel

The staff involved in the technical, administrative and fieldwork parts of the survey organized as follows:

Tasks of the technical supervisor

- Supervise the training of the researchers in fieldwork.
- Provide work supplies (forms, devices and stationery) for researchers.
- Distribute work among field researchers and ensure compliance with the periodic pricing plan.
- Periodically accompany the researcher on field visits to ensure the accuracy of his method in interviewing respondents, correct method of collecting such data and adherence to carrying the work ID card while conducting field tours.
- Conduct field visits to the production sources by taking random samples of each researcher's forms.

- Conduct ongoing meetings with the researchers, directing them in response to queries or obstacles that may face them, following up on the process of their field visits, evaluating their performance and addressing cases of rejection, if any.
- Design forms - or records for the receipt and delivery of forms - in order to control their movement.
- Maintain desk auditing data by verifying the accuracy of the researcher's method of completing forms before entering them, ensuring that the researcher complies with the specifications required for items and services, in addition to monitoring the accuracy of the numbers on the forms, ensuring that they include all the required data and that the progress of the research work runs on schedule.
- Prepare progress reports relevant to the project for submission to the Department.
- Check forms and data entered on handsets, notifying the researcher of any errors or technical problems that hinder the flow of the input process.
- Commitment to data entry of time plan.
- Prepare the final reports and outputs of the survey.

Tasks of the field researcher

- Receive the establishment's sample.
- Undertake field visits to the establishments, according to the field visit schedule.
- Commitment to updating all the forms and ensuring their comprehensiveness (prices, specifications, codes, etc.) as contained in the Manual for each item before leaving the establishment. Inspect the item and ensure that it is available at the source of production - not to simply rely on third-party data, to record the prices personally of available items, on each visit.
- Deliver completed forms to the supervisor promptly, in accordance with the relevant schedule.
- Commitment to the survey time plan.
- Notify the field supervisor of difficulties and obstacles facing the researcher in the field and participate in solving them.

- Adhere to carrying the work card and commit to wearing the relevant uniform during fieldwork.
- Commitment to the confidentiality of data, using it for statistical purposes only.

6.2 Selection of Researchers

Since the researchers working in the survey are from the ranks of the department staff, nine (9) of them were selected to work on the survey at various supervisory and executive levels. A plan for training the researchers developed and they trained prior to commencing data collection from the field, including the definition of the survey, its objectives, data collected and collection mechanisms. They also trained practically on the data entry program, relying on the user manual as a work reference.

6.3 Researcher Training

- General background of the DSC and the survey, its importance and objectives.
- Environment, health and safety standards and fieldwork quality.
- The art of dealing with the public.
- Security and confidentiality of information.
- Basic principles for collecting data from industrial establishments.
- Use of PPI Program.

Seventh: Fieldwork Phase

Fieldwork conducted in two phases:

7.1 Inventory of production sources phase

A special form designed for the sources of production, to fill in by the field researcher directly after the supervisor's distribution of the brief on the sources of production and their locations, as follows:

- Provide the researchers with the frame of the establishments to visited, including their names and addresses.

- Provide the researchers with the necessary forms so that each establishment shall have a unique form.
- Researchers shall visit these facilities and complete the forms through direct interviews.
- Researchers shall list the most important items, services and prices available in those establishments according to the instructions given.
- Researchers shall submit completed forms to the supervisor promptly.
- The forms reviewed and audited by the supervisor.
- Data entered directly after the completion of the checks and coding.

7.2 Selection of items and adoption of sources phase

The items and services included in the calculation of the PPI selected after the completion of the sources inventory, according to the following parameters:

- Selection of items, which constitute more than 70% of the establishment's production value.
- Considering the continuity of product production for a lengthy period.
- Considering the exact description of the items and services, including units of measurement.

7.3 Product price collection phase

A special form designed to collect the producer prices, which include the items and services selected in the sources inventory phase, according to the following determinants:

- Provide researchers with the frame of the selected establishments.
- Provide the researchers with the necessary forms so that each establishment shall have a unique form.
- Researchers shall visit these establishments and complete the monthly data for the prices of the items and services selected.
- Researchers shall submit completed forms to the supervisor promptly.

- Prices reviewed and audited by the supervisor.
- Data entered upon completion of the auditing/checking and coding process.
- Review and audit entered data.

7.4 Field Audit

A series of administrative and field procedures provided to achieve a high level of accuracy, through:

- Studying field reports submitted and responding to the queries directly.
- Holding periodic meetings with field researchers to obtain their views on commodity prices in the different locations.
- Continuing to monitor researchers' performance in the field.
- Preparing comparisons and matching prices of randomly selected items to test the performance of the field researchers.
- Field test of the frame of collecting data.
- Supervisory field inspections include:
 - Interview attendance.
 - Examining the internal interconnection of data.
 - Screening using a random sample.
- Provide records to control the movement of the form, both field and desk auditing.
- Receipt of all required forms.

Eighth: Data Processing Stage

8.1 Desk Audit

Upon collecting field data, a logical review of the data performed by the researchers.

Office audits can be summarized by ensuring the following:

- Prices represent the required month.
- Prices are in the required currency.
- Prices are product prices.

- Prices collected from all required sources.
- Conduct a quick review of the registered price to assess if they seem reasonable.
- The description of the item or unit of measurement is not to be changed, nor the source switched without the supervisor's knowledge.

8.2 Automated Audit

In light of the extraction of entry reports, errors occurring during the process of collecting and entering price data corrected. Audit reports aim to:

- Ensure that all prices and other items are included.
- A comparison are made between the prices of a given category for the same source over two consecutive months, providing a note of any price difference of $\pm 5\%$ and above (specifying the percentage).

Among the most important observations that should also focused on during the development of automated auditing programs include:

- Existence of unreasonable changes in the price of a certain item compared to the price of the same item in the previous month.
- Price for a certain item disappearing.
- Existence of a large variation in the prices of the same item over the same period between different sources.
- Follow up on the appearance and disappearance of items and services

8.3 Display and publish outputs

PPI results displayed by:

- Smart statistical systems.
- PPI report and bulletin.
- Periodic press releases that review the highlights of the survey.

Ninth: Main Definitions

- Data Collection Sources:** Locations where Commodities and services produced.
- Price Index:** The average proportional changes in the prices of a certain category of commodities and services between two periods.
- Laspeyres Formula:** The mathematical equation (developed by Statistician Laspeyres) which calculates the index by using the price levels weighted by the base quantities (weights).
- Producer Price:** The producers' prices are defined as the prices received by the producer from the buyer for a unit of a commodity or service, from which the value-added tax is deducted, or any tax that are added to the buyer's invoice, non-inclusive of any transport costs.
- Manufacturing:** Physical and chemical transformation of materials, items, or ingredients to form new products and materials. The transferred materials are mostly raw materials from agriculture, mining, quarrying or products of other manufacturing industries, specialized maintenance of industrial and commercial machinery and equipment. Repairing such is within the manufacturing industry, but the repair of computers and personal and household commodities not considered within the manufacturing industry. Assembling parts resulted by manufacturing industries is considered a manufacturing industry.

Base Period:	The period that compared to the current period.
Weights:	It represents the relative distribution of manufacturing industries values within the country according to the main categories, sections, and groups that are components of commodities according to the International Standard Industrial Classification of All Economic Activities, Rev.4. The weights used in calculations that use the Laspeyres Equation.
Base Prices:	The period that compared to the current period.
Commodity Frame:	The category of commodities that are part of the producer's prices system classified according to the International Standard Industrial Classification of All Economic Activities, Rev.4.
International Standard Industrial Classification for All Economic Activities (ISIC):	The international reference for productive activities. The main purpose of this classification is to provide a range of categories for activities that can used to collect and classify statistics according to these activities in a format designed for the purpose of economic analysis. Classification consists of a coherent and consistent structure of economic activities based on an internationally agreed-upon set of concepts, definitions, principles and classification rules.

Tenth: Improvement plans

- Working to increase the coverage of the PPI shall to include all industry sectors.
- Follow up on new international classifications, instructions and methodologies.