

Producer Price Indices of Manufacturing, Mining and Quarrying Output for Exports: Definitions, Principles, and Development of the Indices

A. Introduction

As of June 15, 2016, the CBS publishes the price index of total manufacturing, mining and quarrying output for exports, as well as price indices for divisions and classes. The price index of total manufacturing, mining and quarrying output for exports, together with the price index of manufacturing output for the domestic market, comprise the total manufacturing output. The structure and weights of the index reflect the value of the manufacturing output for exports in 2015. The index is structured according to the *Standard Industrial Classification of All Economic Activities 2011*¹ (which was adapted to the international classification ISIC Rev. 4) as well as at detailed levels of products according to a product classification.² The index, which is quarterly, is calculated based on the average of 2015=100.0 points. The indices will be published each quarter and will be used to adjust value series of manufacturing for export, to present them in constant prices, and to calculate the manufacturing production index. These indices will replace the use that has been made thus far of foreign trade price indices.³

The index was developed in accordance with recommendations of international organizations (IMF, OECD). According to the recommendations, the coverage of producer price indices should be extended to exports and the service industries.⁴

B. Definition of the Index⁵

The price index of manufacturing output for exports measures the changes in prices received by producers in Manufacturing for products and services they produce that are intended for export. The basket includes products and services of fixed quality and quantities, and that have defined export destinations, such that the changes in the index over time are generally due to price changes.

C. Uses of the Index

- Adjustment of value series of manufacturing output for exports, which are calculated in current prices, and presenting them in constant prices, along with the producer price index of manufacturing output for

¹ CBS. (2012). *Standard Industrial Classification of All Economic Activities 2011*. Tech Pub. No. 80. Jerusalem: Author.

² The international product classification CPC Rev. 2.

³ From 2009 through 2015, price indices were published for some of the industries. These were used together with producer price indices for exports for the purpose of adjustment and in foreign trade export price indices.

⁴ According to recommendations of the IMF (2006). *Israel: Report on the Observance of Standards and Codes in Producer Price Index*, p. 69. <https://www.imf.org/external/pubs/ft/scr/2006/cr06125.pdf>

⁵ The definition and principles of the index accord with the principles as presented in the international manual for producer price indices: International Monetary Fund (2004). *Producer Price Index Manual*. Washington, DC: Author.

the domestic market, which is used for adjustment of value series of manufacturing production for the domestic market. All of this enables the adjustment of total manufacturing output. Thus, the total manufacturing output can be presented in constant prices.

- The recommendation of the international organizations and manuals is to use producer price indices for adjustment, and to prefer them over price indices for export of foreign trade. The latter are unit value indices that are obtained from administrative data (customs exports records) and which measure the average value per unit of goods. Because they are liable to also include quantity and quality changes, they are less suitable for this use.
- Calculation of the manufacturing production index and estimation of the product in national accounting
- International comparisons
- Research and analysis of price changes and comparisons among the various markets

D. Population of the Index

The population of the index includes establishments⁶ having high export revenues relative to the products they produce. The index also includes transactions between daughter companies. In order to avoid inclusion of price indices that were established due to taxation concerns (transfer prices), these transactions are examined to establish whether they took place under market conditions, i.e., under conditions identical to third-party transactions. Or, if possible, the final price to the customer in the consumption country is measured.

E. Classification of the Index

The index is structured according to the *Standard Industrial Classification of All Economic Activities 2011*. Its structure matches the divisions and classes in this classification. At the levels of product groups, the products, and determination of the weights, it is structured according to the principle of product classification. According to this principle, a product is classified according to its character – which is determined according to the raw material from which it is made or according to its destination and use – rather than according to its source (the establishment and the industry into which the establishment is classified). From this perspective, the usual principle used for price indices is different from the usual principle used for manufacturing indices (i.e., according to industry classifications). According to this principle, all of the establishment's activities are classified into one industry: the industry in which most of its activity takes place, without relating to the different types of products.

F. The Sample

A survey was conducted in 2015 to determine the structure and weights of the index, with the goal of obtaining data on the distribution of sales for export by

⁶ Establishment – Performs one main activity at one site that and keeps separate accounts. According to the *Standard Industrial Classification of All Economic Activities 2011*.

products and by destinations for 2014, as well as to broaden the sample of establishments reporting on prices for the index. The 2014 survey of manufacturing indices served as a sampling frame. (This is the largest sample conducted by the CBS in the area of manufacturing. It is not an administrative survey and includes the large exporters.)

The first sampling frame included 1,325 export establishments. The sub-sample included 313 large export establishments, which constituted 25% of all exporters from the sample of manufacturing indices and 90% of the total export sales. Ultimately, 271 establishments were sampled from the frame. The sampling method used was a stratified sample by class (4 digits), and by size of exporter in terms of its sales for export. Each class was divided into size strata by total sales in the following manner:

- Over \$100,000,000 – take-all stratum;
- \$10,000,000 – \$100,000,000 – high probability of participating in survey;
- \$2,000,000 – \$10,000,000 – medium probability of participating in survey;
- Less than \$2,000,000 – not included in the sample.
- Establishments reporting in the ongoing quarterly sample were all included in the sample.

Determination of the industries in the sample – Removal of divisions and classes having relatively low export revenues.

The sample included approximately 140 establishments which, in the framework of the index, provided ongoing reporting of prices in the industries that were developed in the past, as well as approximately 130 new establishments that had not reported on prices.

G. The Prices Measured in the Index

The main purpose of an export price index is using it to adjust value series of manufacturing outputs. The prices relate to detailed definitions of products and destination countries, such that the index will reflect price changes only and not changes stemming from the type of transaction, diversion of exports to another destination, or differences in product quality. The prices refer to the time the transaction took place or the contract was signed, not to the time of supply (which can be at another time). Net FOB prices at the port of origin are used, which exclude transport and insurance, with the deduction of discounts and agent fees. In cases in which the establishment reports CIF prices, which include insurance and transport, the transport and insurance costs are deducted from the price. The prices are quoted in various currencies and are converted to NIS according to the quarterly average exchange rate published by the Bank of Israel.

H. The Index Weights

The weights in the index reflect the value of the sales for export of the industries, the establishments, and the products, which were measured during the base period of the index. The index weights were calculated based on two main sources: data from the survey of manufacturing indices, which were

based on yearly summaries for 2015 of monthly data on sales for export by division and class, as well as on data from a special survey that was conducted in 2015 in 271 establishments with large exports, which collected data on prices for export and their distribution by product groups and destination countries in 2014.

The survey data were used to determine the structure of the index and the weights of the product groups and products, as well as the weights of the products according to destination country. Data obtained from manufacturing indices produced at the CBS on revenues from sales for export by division and class for 2015 were used to determine the weights at the level of division and class, with the following corrections:

Manufacturing indices are determined according to industry classifications, whereas price indices are determined according to the principle of product classifications. The difference is that in industry classifications, the establishment is classified into a particular industry in accordance with its main activity, and the value of its sales is included in that industry without taking into account the types of products. In contrast, according to product classification, the value of the establishment's sales is distributed among divisions and classes according to the types of products. In accordance with this, revenue was moved between divisions according to the survey data, and the weights were determined after the moves. The survey was conducted for 2014 data and the data were adjusted to 2015 prices.

The weights of the product groups were determined according to the total revenues of all establishments that reported on the groups that were defined based on the survey. The weight of a product by destination country was determined according to the total revenues of the establishments that reported on the product for the destination country.

I. The Survey for Determining the Structure and Weights of the Index

The survey was conducted in the last quarter of 2015 by means of questionnaires that were sent via mail, fax, or e-mail. The respondents were asked to fill in data on the distribution of sales for export during 2014 by products and destinations. The new respondents were asked to fill in an additional table that included definitions of products, destination countries, prices, and conditions of sale, for the purpose of measuring the prices.

The response rate for the survey was high: 90% of the establishments reported the distribution of sales by product groups and destinations. The new respondents filled out data consisting of detailed definitions of products that were of relatively large importance in the sales, destination countries, prices, and conditions of sale. Of the remaining 10% that did not report, half were refusals and half did not fit the criteria or had closed.

J. Base Period and Linkage to the Previous Series

The development of export indices began gradually, industry by industry, and the indices began to be published in 2009. In order to link the calculated indices according to Base: Average 2015=100.0, , one must multiply the previous series by a chaining coefficient that is the average index for 2015 divided by 100.

K. Publication of the Index

The producer price indices of manufacturing, mining and quarrying output for exports, which are quarterly, are published on the 15th of the month (two and a half months after the end of the quarter). In the first quarter of 2016, producer price indices of manufacturing, mining and quarrying output for exports were published for the first time. The indices are published according to division and grouped classes. Some of the classes cannot be published separately due to reasons of statistical confidentiality.

The indices are published according to the classifications in the *Standard Industrial Classification of All Economic Activities 2011*, and relative to the average of 2015=100.0 points.

The indices are published on the CBS website, www.cbs.gov.il, in the *Price Statistics Monthly*, and in media releases on March 15, June 15, September 15, and December 15 of each year.

L. Updating the Index

The index will be updated at least once every 5 years, similar to the policy established for the producer price index of manufacturing output for the domestic market. The update will include updating the index's structure and weights, product groups, products, and destination countries, as well as updating the reporting establishments.

Ongoing updates are made to the index as a result of establishment closures, changes in destination countries, and product changes.