Explanation of the 1995 Base Input-Output Price Index of the Manufacturing Industry by Sector

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For an outline of the revision to the 1995 base, please refer to *Revision of the Input-Output Price Index of Manufacturing Industry by Sector (IOPI) to 1995 base* released on July 2000, at the reports and resarch papers download corner of the Bank of Japan <BOJ> website <http://www.boj.or.jp/en/ index.htm>.

1. Purpose and use

The Input-Output Price Index of the Manufacturing Industry by Sector (IOPI) focuses on the prices of products in the manufacturing industry. The IOPI consists of the input price index and the output price index, which comprises prices of goods used for production and made by production, respectively.

The IOPI can be used: 1) for a comparative analysis of price fluctuations in inputs and outputs for various sectors of the manufacturing industry, (i.e., analysis of fluctuations in output/input price ratio), 2) for an analysis of price fluctuations being passed through among various sectors of the manufacturing industry[1], 3) as a deflator for nominal output values of the manufacturing industry.

2. Structure

The IOPI is composed of three series of indexes: 1) input price index, 2) output price index, and 3) output/input price ratio index. The output/input price ratio index is calculated by dividing the output price index by the input price index.

The input price index is an aggregation of prices for raw and intermediate materials (including scrap, waste, and by-products used for production), fuel, and energy consumed in production processes of each sector in the manufacturing industry.[2,3] The values of intermediate sector for the manufacturing industry at purchasers' prices in the *I-O Tables* published by the Ministry of Public Management, Home Affairs, Posts and Telecommunications (MPHPT) are used as its weights.

The output price index is an aggregation of prices for manufactured products (including scrap, waste, and by-products) of each sector in the manufacturing industry.[4,5] The values of domestic products for the manufacturing industry sector at producers' prices in the *I-O Tables* are used as its

[1] Users should be aware that services are not included in the IOPI, when analyzing corporate profit structure.
[2] For an explanation of the sector classification in the IOPI, see section 4.
[3] Both domestic products shipped to domestic market and imports are included.
[4] In the *I-O Tables*, the values of scrap, waste, and by-products are subtracted from both outputs and inputs. In the IOPI, however, since it is not possible to place negative weights in the input price index, the values are included both in the input and output price indexes.
[5] Final goods and intermediate materials, shipped to domestic and foreign market are covered.

weights.

The IOPI includes excise tax, with the exception of exported products in the output price index. In other words, domestic and imported products in the input price index and domestic products in the output price index include excise tax, while exported products in the output price index do not include excise tax.

Up to the 1990 base index, both the gross-weighted base index, which includes internal trade within each sector, and the net-weighted base index, which excludes it, had been compiled. However, the net-weighted base index has been abolished from the 1995 base, because the demand for such data was notably low compared to the substantial workload required for its compilation.[6]

For an overview of the conceptual relation between the IOPI and the Wholesale Price Index (WPI), see Appendix 1. The structure of the *I-O Tables* for Japan is attached as Reference 1.[7]

3. Coverage

Both the input and the output price index cover goods related to production activities of the manufacturing industry. They are goods consumed in the production processes of the manufacturing industry and goods produced by the manufacturing industry, respectively. Because of the definition of the index, services (e.g., finance and insurance, transportation, communications services) are not covered in the input price index, although they are also consumed in the production processes as well as goods.

The method of data collection for the IOPI has been changed from the 1995 base index. An additional survey to supplement data besides those transferred from the WPI survey have been abolished. Hence, “commodity” indexes in the WPI became the sole source for price data in

[6] Upon abolishing the net-weighted base index, further disclosure has been made regarding the structure of the IOPI including the net-weighted base index at the reports and statistics corner of the BOJ website (currently only in Japanese). Users can manipulate the indexes (including compilation of the net-weighted base) easily by using this information according to their own needs. For more details, please contact Price Statistics Division, Research and Statistics Department, Bank of Japan (Tel: +81-3-3279-1111 ext. 4060).

[7] The Wholesale Price Index (WPI) is one of the price statistics compiled by the Bank of Japan, consisting of the Domestic Wholesale Price Index (DWPI), Export Price Index (EPI), and Import Price Index (IPI). For details,

compiling the index. Therefore, commodities not covered by the WPI are also not covered by the IOPI. For details of the data collection method, see section 7.

Also, up to the 1990 base index, when a certain output or input had been excluded from the index for some reason, the inputs used for the output or the outputs produced from the input were also excluded to maintain consistency between input and output price indexes. But this adjustment has been discontinued from the 1995 base index, because the workload required was too large compared to its benefit in improving the accuracy of index.

The input and output values covered by the 1995 base input and output index are shown in row (b) in the following table.[8]

	Input price index	Output price index
Input or output values in the *1995 I-O Tables* (a) <trillion yen>	166.7[1]	313.3[3]
Input or output values covered by the index (b) <trillion yen>	148.0[2]	280.4[4]
Input or output values excluded from coverage (a)-(b) <trillion yen>	18.7	32.9
Coverage (b)/(a) <percent>	88.8	89.5

Notes:
1. The figure is an aggregation of the input values of raw and processed materials, fuel, and energy toward the manufacturing industry sector in the *1995 I-O Tables*, which include scrap, waste, and by-products.
2. The figure is obtained by subtracting the values of goods for which price data cannot be collected from the above figure. The weights of the input price index are calculated as one-thousandths of the figure.
3. The figure is obtained from the domestic production of the manufacturing industry sector in the *1995 I-O Tables*, which include scrap, waste, and by-products.
4. The figure is obtained by subtracting the values of goods for which price data cannot be collected from the above figure. The weights of the output price index are calculated as one-thousandths of the figure.

see *Explanation of the Wholesale Price Index* at the FAQ corner of the BOJ website.

[8] For detailed information on the change in coverage due to the change in price collection method for the IOPI, see *Revision of the Input-Output Price Index of Manufacturing Industry by Sector (IOPI) to 1995 base* at the reports and research papers download corner of the BOJ website. For details of the coverage by sector classification, see Table 1; *Input and output values covered by IOPI and I-O Tables*, at the FAQ corner of the BOJ website.

For details of the input and output values covered by the IOPI and their correspondence to the *I-O Tables*, see Appendix 2.

4. Classification

There are two classification systems in the IOPI. One is the sector classification and the other is the commodity grouping. The sector classification is a classification system based upon which production sector the inputs go to or outputs come from, in the input and output price index. The commodity grouping is a classification system based upon what kind of commodities the inputs or outputs are, in the input and output price index.

There are two layers in the sector classification; "manufacturing industry sector" and "major sector," which correspond to the classification level "13 sectors" and "aggregated major group" in the *I-O Tables*, respectively.[9] Each sector has three layers of commodity groupings; "aggregated major commodity group," "major commodity group," and "commodity group," which correspond to the classification level "aggregated major group," "major group," and "basic sector" in the *I-O Tables*, respectively.[10,11]

For "manufacturing industry sector" of the input price index and the output price index, there are also sub-indexes of "domestic product"s and "imported product"s, and those of "domestic product"s and "exported product"s, respectively.

The output/input price ratio index is obtained by dividing the output price index by the input price index. It is calculated for "manufacturing industry sector" and "major sector."

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[9] The IOPI covers only the manufacturing industry sector among the "13 sectors" of the *I-O Tables*.

[10] There is an exception in "major sector" of the output price index. It has only two layers of commodity groupings: "major commodity group" and "commodity group." This is because sector classifications in the output price index correspond to commodity groupings by definition of the IOPI. Hence, "major sector" is equal to "aggregated major commodity group" and "sector" is equal to "major commodity group." In other words, the classification by production activities (i.e., sector classification) corresponds to the classification by output products (i.e., commodity grouping), because each sector only produces commodities which belong to the sector.

[11] Up to the 1990 base index, the IOPI had three layers of sector classifications: "manufacturing industry sector," "major sector," and "sector." Since the demand for "sector" index was notably low compared to the substantial workload required for its compilation, it has been abolished from the 1995 base. However, the weights of each "sector" are available in Table 6; *Weights*, at the FAQ corner of the BOJ website.

The number of sector classifications and commodity groupings in the 1995 base index are as follows:

	Major sectors	(Sectors)[1]	Aggregated major commodity groups	Major commodity groups	Commodity groups
Input price index	14	(47)	18	58	326
Output price index	14	(47)	14	47	312

Note: 1. The indexes of sectors are not calculated.

From the 1995 base index, creation of original groupings in some categories for the IOPI through modification of the *I-O Tables* (such as dividing or combining groups, or changing the name of groups) has been abolished. The groupings of the *I-O Tables* are directly adopted by the IOPI to facilitate ease of use for those who make their own indexes.

For a list of sector classifications and commodity groupings, or their numbers etc., see appendices 3 and 4, respectively. [12]

5. Base year and year for calculation of weights

Current base year, which is also the year for weight calculation, for the index is 1995.[13] It is revised every five years, in principle.

6. Criteria for selecting commodity groups

A "commodity group," which corresponds to the "basic sector" in the *I-O Tables* as explained in section 4, is taken into the index depending on whether its price data are covered as "commodity" by the WPI. If there is a "commodity" in the WPI which corresponds to a certain "basic sector" in

[12] For changes in classifications by the revision of the IOPI from 1990 base to 1995 base, see *Revision of the Input-Output Price Index of Manufacturing Industry by Sector (IOPI) to 1995 base* at the reports and research papers download corner of the BOJ website. For more details, see tables 2 through 4; *Changes in the number of sector classifications, commodity groupings, and commodities*, *Changes in sector classifications and commodity groupings*, and *Changes in the number of commodity groups*, at the FAQ corner of the BOJ website.

[13] As an annual index is calculated by taking a simple arithmetic mean of monthly indexes rounded to the first decimal place, there might be some cases in which the index of the base year is not 100.0.

the *I-O Tables*, the "basic sector" is adopted by the IOPI as "commodity group." If this is not the case, the " basic sector" would not be taken into the IOPI.[14,15]

7. Price data (Selection of commodities)

All price data for the IOPI come from the WPI. Indexes of "commodity"s in the WPI, which are the smallest units of index, are directly adopted by the IOPI to compile "commodity group" indexes.

The total number of selected commodities amounts to 1,232 for the input price index and 1,253 for the output price index. For details, see Appendix 4.[16,17]

In the Domestic Wholesale Price Index (DWPI), which is the main component of the WPI, stages for the price survey of "commodity"s are selected so that they reflect the supply and demand condition of the "commodity" most vividly. Hence, some data for the DWPI are collected from wholesalers, or manufacturers and their weights vary among "commodity"s.[18]

In the Import Price Index (IPI) and the Export Price Index (EPI), which are also the components of the WPI, prices of imports and exports at the Japan port of importation and exportation are surveyed. The prices surveyed are FOB (free on board) and CIF (cost, insurance, and freight), respectively.

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[14] For the criteria of commodity selection in the WPI, see *Explanation of the Wholesale Price Index* at the FAQ corner of the BOJ website.

[15] Up to the 1990 base index, there were two conditions for selecting "commodity group": 1) its input or output values are no less than 1/1,000 of that covered by the "sector" it belongs to in the input or output price index; 2) its input or output values are no less than 1/100,000 of that covered by the "manufacturing industry sector" in the input or output price index. If a "basic sector" in the *I-O Tables* does not fulfill either of these conditions, it won't be adopted as "commodity group" for the IOPI. However, since these conditions seldom worked as binding constraints, they were abolished from the 1995 base index.

[16] There are some cases where one "commodity" of the WPI corresponds to plural "commodity group"s in the IOPI. For example, when a "commodity" (e.g., "blouses") corresponds to two "commodity group"s (e.g., "woven fabric apparel" and "knitted apparel"), it is adopted by both "commodity group"s and counted as two "commodity"s. The number of these "commodity"s is 33 in the input price index and 107 in the output price index, respectively. When a "commodity" (e.g., "copper ingots") is adopted by both "domestic product" and "imported (exported) product" under a certain "commodity group" in the input (output) price index (e.g., "copper" in the input price index), it is also counted as two.

[17] For changes in the number of commodities due to the revision of the IOPI, see Table 5; *Changes in the number of commodities*, at the FAQ corner of the BOJ website.

[18] About 30% of the 3,400 price data in the DWPI are wholesalers' selling prices. For details of the method in selecting stages within distribution processes for price survey, see Japanese version of *Explanation of the Wholesale Price Index* at the reports and statistics corner of the BOJ website. For information, please contact Price Statistics Division (Tel: +81-3-3279-1111 ext. 4060).

As all price data for the IOPI are obtained from the WPI, users should be aware that these price data include those collected from producers or wholesalers and those on CIF or FOB basis even they are called input prices or output prices for the manufacturing sector.

Up to the 1990 base index, additional collection of price data had been undertaken exclusively for the IOPI when there were no corresponding price data in the WPI. From the 1995 base index, the price collection method for the IOPI has been changed. Additional collection of price data was abolished with the aim of compiling the IOPI more efficiently; establishing maximum accuracy under minimum cost and reduced burden on price reporters.[19] "Commodity" indexes of the WPI became the sole source for price data in compiling the index.

Further, since the method of converting "contract currency basis" price data to "yen basis" in compiling the EPI and IPI has been changed from the January 2000 figures, the IOPI has changed its method accordingly.[20]

For details of the correspondence between "commodity group"s and "commodity"s in the IOPI, see Table 7; *Correspondence between commodity groups and commodities,* at the FAQ corner of the BOJ website.

8. Weights

8.1. Weight calculation for sector classifications at the layer "commodity group" and above

In both input and output price indexes, the weights of classification for "commodity group" and the layers above are calculated based on the *1995 I-O Tables.* For the input price index, the values of the intermediate sector for the manufacturing industry at purchasers' prices in the *I-O Tables* are used as its weights. For the output price index, the values of domestic products for the manufacturing industry sector at producers' prices in the *I-O Tables* are used as its weights.

[19] Price survey for about 1,800 data has been abolished. At the same time, the report of the survey to the Management and Coordination Agency (currently Ministry of Public Management, Home Affairs, Posts and Telecommunications), required by the 8th article of the Statistics Law, has been withdrawn.

[20] For details, see *Revision in the treatment of foreign exchange rate movement in compiling the WPI and the IOPI, and in the publication form of "Ten-day index of the WPI"* at the reports and statistics corner of the BOJ website.

The weights for both input and output price indexes are expressed as one-thousandths of input and output values for the manufacturing industry sector, down to the third decimal place. The weights above the layer of "commodity group" are calculated by aggregating the weights of "commodity group."

The weight calculation method for these sector classifications in the current index is the same as the indexes up to the 1990 base. For weights of sector classifications and commodity groupings, see Appendix 3.[21]

8.2. Weight calculation of "commodity" which consists "commodity group"

"Commodity group" consists of "domestic product" and "imported (exported) product." "Commodity" indexes of the DWPI, IPI, EPI and their weights are used to construct these indexes.[22]

In combining the "domestic product" and "imported (exported) product" to construct the "commodity group" index, the ratio between domestic commodity group and imported (exported) commodity group calculated from the *I-O Tables* of the base year are used. In other words, the weights of "domestic product" and "imported (exported) product" of the "commodity group" are not the sum of "commodity" weights in the DWPI, IPI (EPI).

For the process of index calculation in detail, such as for "domestic product," "exported/imported product," and "commodity group," see section 9.2.

9. Index calculation

9.1. Index formula

The index formula is the Laspeyres formula (relative method), which is the weighted arithmetic

[21] For changes in weights due to the revision of the IOPI from 1990 base to 1995 base, see *Revision of the Input-Output Price Index of Manufacturing Industry by Sector (IOPI) to 1995 base* at the reports and research papers download corner of the BOJ website. For more details, see Table 6; *Weights*, at the FAQ corner of the BOJ website.

[22] For example, when there are three "commodity"s, which correspond to a certain "commodity group," weighted as 3,2, and 1 in the DWPI, respectively, the index of "domestic product" is calculated by using the weights of 3,2, and 1.

mean based on the fixed value-based weights for the base period.

Laspeyres formula (relative method)

$$I_{t,0}^{L} = \frac{\sum p_{t,i} q_{0,i}}{\sum p_{0,i} q_{0,i}} = \sum \frac{p_{t,i}}{p_{0,i}} w_{0,i}$$

where:

$I_{t,0}^{L}$ is the price index at current period *t* compared with base period 0, compiled using the Laspeyres formula,

$p_{t,i}$ is the price of element *i* at current period *t*,

$p_{0,i}$ is the price of element *i* at base period 0,

$w_{0,i}$ is the value-based weight of element *i* at base period 0,

$q_{0,i}$ is the quantity of element *i* at base period 0.

On the actual index calculation of the IOPI, $p_{t,i}$ and $p_{0,i}$ are obtained from the WPI "commodity" indexes.

9.2. Index calculation process

The process of index calculation is as follows. Indexes are rounded to the first decimal place.

<Index calculation process from "commodity" to "commodity group">

a. "Commodity" indexes of the IOPI, which are transferred from the WPI (i.e., DWPI, IPI, and EPI), are multiplied by their weights for the WPI to obtain the weighted indexes of "commodity"s. Then, they are aggregated at "domestic product, " "imported product," or "exported product" level to obtain the weighted indexes of its level.

b. The weighted indexes of "domestic product"s, "imported product"s, and "exported product"s are divided by the corresponding commodities' total weights for the WPI to obtain the indexes of "domestic product"s, "imported product"s, and "exported product"s, respectively.

c. Divide the weights of “commodity group”s (derived in section 8.2.) into domestic goods and imports (exports) using the ratio of these components calculated from the *I-O Tables* of the base year.

d. Multiply the “domestic product,” “imported product,” and “exported product” indexes obtained in step b. by the weights calculated in step c. to get the weighted indexes of “domestic product”s, “imported product”s, and “exported product”s.

e. In the input price index, the weighted indexes of “domestic product”s and “imported product”s are aggregated to obtain the weighted indexes of “commodity group”s. In the output price index, the weighted indexes of “domestic product”s and “exported product”s are aggregated to obtain the weighted indexes of “commodity group”s.

f. The weighted indexes of “commodity group”s are divided by the weights of “commodity group”s to get the indexes of “commodity group”s.

<Index calculation process above the layer “commodity group” in the manufacturing industry sector[23,24]>

g. The weighted indexes of “commodity group”s calculated in step e. are aggregated at the upper next classification level to obtain the weighted indexes of “major commodity group”s. [25]

h. The weighted indexes of “major commodity group”s are divided by the each corresponding weight of “major commodity group”s to obtain the indexes of “major commodity group”s.

i. The weighted indexes of “aggregated major commodity group”s are obtained by the same

[23] For the index calculation of “major sector” in the input price index, step g. is slightly different because the weights used in step g. are fractions of “manufacturing industry sector.” The weights should be replaced by those within the “major sector.” The step g. for “major sector” is as follows.

First, the indexes of “commodity group”s calculated in step f. are multiplied by the corresponding weights of the “commodity group”s within the “major sector” to obtain the weighted indexes. Second, they are aggregated at the upper next classification level “major commodity group” to obtain the weighted indexes of “major commodity group”s within the “major sector.”

The steps following h. is quite the same and the index obtained in step l. will be that of the “major sector.”

[24] The indexes of “domestic product”s and “imported (exported) product”s for the “manufacturing industry sector” in the input (output) price index are calculated by dividing the total of weighted indexes of “domestic product” and “imported (exported) product” obtained in step d., by the corresponding total weight.

[25] To avoid accumulation of statistical errors in the process of compiling higher level indexes from lower ones, weighted indexes, instead of final indexes are used during the computation process.

calculation process as the "major commodity group" described in step g.

j. The indexes of "aggregated major commodity group"s are obtained by the same calculation process as the "major commodity group" described in step h.[26]

k. The weighted index of "manufacturing industry sector" is obtained by the same calculation process as the "aggregated major commodity group" described in step i.

l. The index of "manufacturing industry sector" is obtained by the same calculation process as the "aggregated major commodity group" described in step j.

The annual average indexes in terms of calendar and fiscal year are obtained by taking the simple arithmetic mean of monthly indexes.

No seasonal adjustment is undertaken for the indexes.

10. Publication

10.1. Publication schedule and publication means

Major monthly index series of the IOPI; indexes of "manufacturing industry sector" and "major sector," "aggregated major commodity group" for "manufacturing industry sector" in the input and output price index, and those of "manufacturing industry sector" and "major sector" in the output/input price ratio index are released at 8:50 a.m. (currently only in Japanese) on the day announced in advance. Other detailed index series are released on the next day at 8:50 a.m. (available in Japanese and English).

The date for publication of major index series is as follows:

Monthly index

The seventh working day of the following month (one day after the WPI publication), in principle.[27]

[26] In the output price index, the indexes of "aggregated major commodity group"s obtained in step j. is equal to the indexes of "major sector"s as described in footnote 10.

[27] Up to the 1990 base, the date of release for the monthly index was the "third working day counting from the 11th

Annual average index (calendar or fiscal year)

The day when the index of the last month of the year (December or March) is released, in principle.

The publication schedule for the next six months is available on the BOJ website and is updated at the middle or end of March, June, September and December. The schedules released in these months are from April to September, July to December, October to March, and January to June, respectively. The publication schedule for the next four weeks is also available on the BOJ website. They are updated every Friday. All release schedules are available at the release schedule corner of the BOJ website.

Major index series are released on a paper basis by the monthly report (currently only in Japanese). The report will also be available at the reports and statistics corner of the BOJ website at the time of release. All index series, including detailed ones, will be available at the download corner of the BOJ website at 8:50 a.m. on the next day of the major index series' release.

Most of the index series are also presented in the *Price Indexes Monthly* (published at the middle of every month), the *Economic and Financial Data on CD-ROM* (published every spring) and the *Bank of Japan Financial and Economic Data* on CD-ROM (published every spring). Major index series are presented in the *Financial and Economic Statistics Monthly* (published at the end of every month).[28,29]

Public Information Division, Public Relations Department, Bank of Japan will answer inquiries about index figures (Tel: +81-3-3279-1111 ext. 4641). Price Statistics Division, Research and Statistics Department, Bank of Japan will answer inquiries about index compilation (Tel: +81-3-

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of the following month." From the 1995 base, the release date has been moved up to the "seventh working day of the following month"; one day after the WPI publication, in principle. The publication date has moved a few days earlier, because the price survey exclusively for the IOPI had been abolished, and days needed for processing these data were no longer necessary.

[28] The *Price Indexes Monthly* does not cover the indexes of "domestic product"s, "imported product"s, and "exported product"s, which are the components of "commodity group"s, because of limitation in space. However, all index series including the above mentioned ones, are available at the long-term time-series data download corner of the BOJ website and the above mentioned publications provided by CD-ROM.

[29] The *Bank of Japan Financial and Economic Data* on CD-ROM is published by Diamond, Inc. (Tel: +81-3-5778-7242), and the other publications are published by Tokiwa Sohgoh Service Co., Ltd. (Tel: +81-3-3270-5713).

3279-1111 ext. 4060). Answers to "Frequently Asked Questions (FAQ)" are provided on the BOJ website (currently only in Japanese).

10.2. Retroactive revision of published indexes

The published indexes of the IOPI, not only those for the latest month but also those for the preceding months, may be revised along with the WPI. When the WPI is revised because a major error has been found in its price data, the IOPI will be revised accordingly as soon as possible.[30] The announcement of the revision will be distributed to the press and also be posted on the reports and statistics corner of the BOJ website.

11. Linked index

The linked indexes are series of indexes extending retroactively beyond the base year of the current indexes to fulfill the needs for a long-tern continuous index series. The 1995 base linked index extends up to 1990. In order to cope with the change in index-developing method made upon the revision to the 1995 base, the 1995 base linked index adopts a new 1990 base index, which is compiled under the same method as the 1995 base. The 1995 base linked index is available for the index classification level "manufacturing industry sector" and "major sector" from January 1990.[31]

The linked indexes are calculated monthly by using link coefficients computed for each index series using the 1995 base and the new 1990 base indexes. The annual averages of the linked indexes in terms of calendar and fiscal year are obtained by taking simple arithmetic means of the monthly indexes.

The calculation formula for the 1995 base linked index is as follows:

[30] The WPI stipulates cases in which the indexes will be revised immediately. A typical case would be that the error found is so large that the index of "all items" would be affected. For details, see *Explanation of the Wholesale Price Index* at the FAQ corner of the BOJ website.

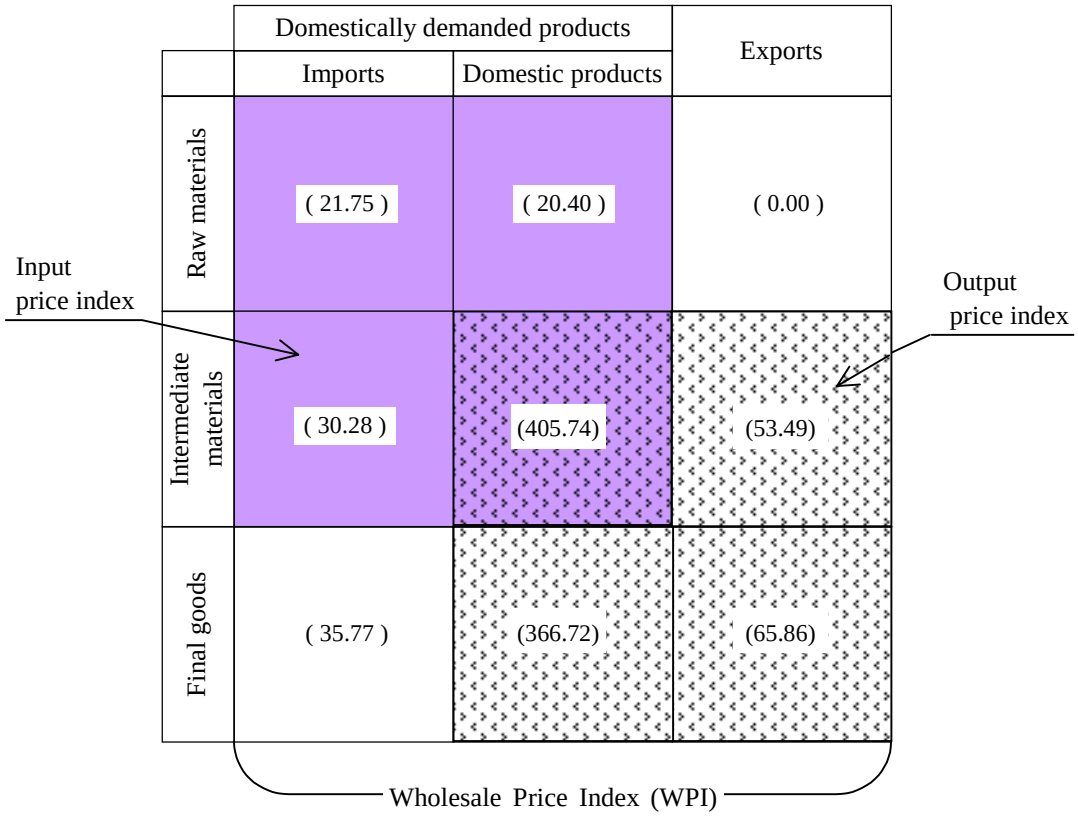
[31] Index series of the new 1990 base can be obtained from the long-term time-series data download corner of the BOJ website as well as other statistics series. Details of the new 1990 base index, such as classification, selected commodities, and weights, can be obtained from the FAQ corner of the BOJ website.

$$\text{1995 base linked index} = \text{new 1990 base index} \times \underbrace{\frac{\text{annual average index in 1995 on a 1995 base (= 100)}}{\text{annual average index in 1995 on a new 1990 base}}}_{\text{(link coefficient)}}$$

Upon calculation of the new 1990 base index, no adjustments are made to cope with the change in the classification of the index upon revision to the 1995 base. Users should be aware that the nature of linked index is not strictly homogeneous in this respect.

(Appendix 1)

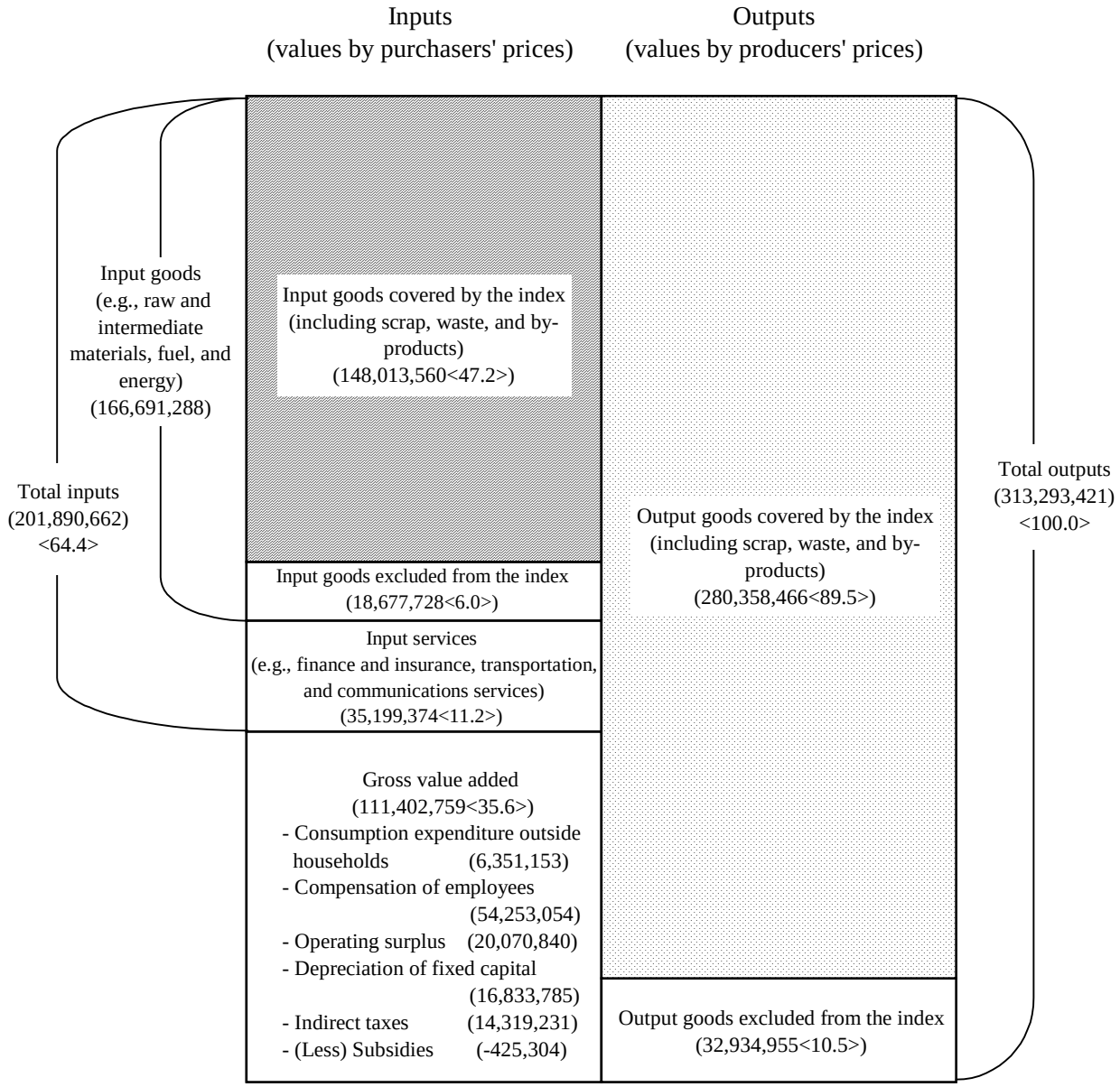
Conceptual relation between IOPI and WPI



Notes: 1. Figures denote the weights of each component according to the classification by stage of demand in the 1995 base WPI, expressed as one-thousandths down to the second decimal place.
2. Shadows denote area covered by the input price index of IOPI.
3. Shadows denote area covered by the output price index of IOPI.

(Appendix 2)

Correspondence between input and output values covered by IOPI (1995 base) and 1995 I-O Tables



Notes: 1. Figures in parentheses ( ) denote values in million yen.
2. Figures in brackets < > denote percentages to the total outputs.

Sector classifications, commodity groupings, and weights

1-1. Input price index (by sector classification)

Major sector		
	Sector	(Weights)
Foods		(119.413)
	Foods	(90.598)
	Drinks	(20.856)
	Feeds and organic fertilizer, n.e.c.	(5.759)
	Tobacco	(2.200)
Textile products		(31.723)
	Textile products	(11.195)
	Wearing apparel and other textile products	(20.528)
Pulp, paper and wooden products		(65.820)
	Timber and wooden products	(17.816)
	Furniture and fixtures	(14.204)
	Pulp, paper, paperboard and processed paper	(20.359)
	Paper products	(13.441)
Chemical products		(78.034)
	Chemical fertilizer	(1.436)
	Inorganic basic chemical products	(5.543)
	Petrochemical basic products and intermediate chemical products	(24.918)
	Synthetic resins	(12.062)
	Synthetic fibers	(2.399)
	Medicaments	(10.528)
	Final chemical products, n.e.c.	(21.148)
Petroleum and coal products		(31.045)
	Petroleum refinery products	(25.946)
	Coal products	(5.099)
Ceramic, stone and clay products		(26.659)
	Glass and glass products	(4.605)
	Cement and cement products	(14.321)
	Pottery, china and earthenware	(2.371)
	Other ceramic, stone and clay products	(5.362)
Iron and steel		(61.985)
	Pig iron and crude steel	(23.607)
	Steel products	(24.243)
	Steel castings and forgings and other steel products	(14.135)
Non-ferrous metals		(24.819)
	Non-ferrous metals	(6.174)
	Non-ferrous metal products	(18.645)
Metal products		(45.031)
	Metal products for construction and architecture	(18.913)
	Other metal products	(26.118)
General machinery		(87.761)
	General industrial machinery	(31.957)
	Special industrial machinery	(33.946)
	Other general machines	(9.156)
	Machinery for office and service industry	(12.702)
Electrical machinery		(169.786)
	Household electric appliance	(33.077)
	Electronic equipment and communication equipment	(98.545)
	Heavy electrical equipment	(17.193)
	Other electrical machinery	(20.971)
Transportation equipment		(151.951)
	Motor vehicles	(135.886)
	Ships and repair of ships	(8.438)
	Other transportation equipment and repair of transportation equipmen	(7.627)
Precision instruments		(11.253)
	Precision instruments	(11.253)
Other industrial products		(94.720)
	Publishing and printing	(30.261)
	Plastic products	(34.965)
	Rubber products	(9.804)
	Leather, fur skins and miscellaneous leather products	(3.057)
	Miscellaneous manufacturing products	(16.633)

1-2. Input price index (by commodity grouping)

Aggregated major commodity group		
	Major commodity group	(Weights)
Agriculture, forestry and fishery		(57.324)
	Crop cultivation	(41.283)
	Livestock and sericulture	(6.352)
	Forestry	(8.847)
	Fisheries	(0.842)
Mining		(43.557)
	Metallic ores	(6.572)
	Non-metallic ores	(8.952)
	Coal	(4.157)
	Crude petroleum and natural gas	(23.876)
Foods		(43.248)
	Foods	(41.370)
	Drinks	(1.580)
	Feeds and organic fertilizer, n.e.c.	(0.227)
	Tobacco	(0.071)
Textile products		(25.311)
	Textile products	(20.012)
	Wearing apparel and other textile products	(5.299)
Pulp, paper and wooden products		(74.577)
	Timber and wooden products	(17.469)
	Furniture and fixtures	(3.456)
	Pulp, paper, paperboard and processed paper	(39.903)
	Paper products	(13.749)
Chemical products		(106.684)
	Chemical fertilizer	(1.287)
	Inorganic basic chemical products	(14.239)
	Petrochemical basic products and intermediate chemical products	(43.871)
	Synthetic resins	(20.599)
	Synthetic fibers	(4.481)
	Medicaments	(2.404)
	Final chemical products, n.e.c.	(19.803)
Petroleum and coal products		(18.103)
	Petroleum refinery products	(14.038)
	Coal products	(4.065)
Ceramic, stone and clay products		(24.515)
	Glass and glass products	(9.750)
	Cement and cement products	(5.262)
	Pottery, china and earthenware	(1.698)
	Other ceramic, stone and clay products	(7.805)
Iron and steel		(104.855)
	Pig iron and crude steel	(15.981)
	Steel products	(64.913)
	Steel castings and forgings and other steel products	(23.961)
Non-ferrous metals		(52.180)
	Non-ferrous metals	(23.880)
	Non-ferrous metal products	(28.300)
Metal products		(40.332)
	Metal products for construction and architecture	(0.810)
	Other metal products	(39.522)
General machinery		(44.296)
	General industrial machinery	(21.193)
	Special industrial machinery	(9.569)
	Other general machines	(9.918)
	Machinery for office and service industry	(3.616)
Electrical machinery		(138.328)
	Household electric appliance	(9.779)
	Electronic equipment and communication equipment	(88.899)
	Heavy electrical equipment	(10.338)
	Other electrical machinery	(29.312)
Transportation equipment		(89.703)
	Motor vehicles	(84.261)
	Ships and repair of ships	(2.551)
	Other transportation equipment and repair of transportation equipmen	(2.891)
Precision instruments		(6.008)
	Precision instruments	(6.008)
Other industrial products		(97.545)
	Publishing and printing	(25.206)
	Plastic products	(48.979)
	Rubber products	(14.005)
	Leather, fur skins and miscellaneous leather products	(1.772)
	Miscellaneous manufacturing products	(7.583)
Electricity, gas and heat supply		(30.745)
	Electricity	(28.847)
	Gas and heat supply	(1.898)
Water supply and waste disposal services		(2.689)
	Water supply	(2.689)

Notes: 1. Weights are expressed as one-thousandths of the input value for the manufacturing industry sector covered by the IOPI.
2. n.e.c. denotes not elsewhere classified.

2. Output price index

Aggregated major commodity group = Major sector	Major commodity group =Sector	(Weights)
Foods		(114.650)
	Foods	(70.894)
	Drinks	(30.392)
	Feeds and organic fertilizer, n.e.c.	(3.406)
	Tobacco	(9.958)
Textile products		(36.422)
	Textile products	(11.114)
	Wearing apparel and other textile products	(25.308)
Pulp, paper and wooden products		(63.492)
	Timber and wooden products	(16.024)
	Furniture and fixtures	(13.962)
	Pulp, paper, paperboard and processed paper	(19.270)
	Paper products	(14.236)
Chemical products		(89.961)
	Chemical fertilizer	(1.552)
	Inorganic basic chemical products	(6.940)
	Petrochemical basic products and intermediate chemical products	(21.217)
	Synthetic resins	(10.904)
	Synthetic fibers	(2.629)
	Medicaments	(22.430)
	Final chemical products, n.e.c.	(24.289)
Petroleum and coal products		(36.328)
	Petroleum refinery products	(32.878)
	Coal products	(3.450)
Ceramic, stone and clay products		(34.660)
	Glass and glass products	(6.296)
	Cement and cement products	(17.101)
	Pottery, china and earthenware	(3.616)
	Other ceramic, stone and clay products	(7.647)
Iron and steel		(56.819)
	Pig iron and crude steel	(4.914)
	Steel products	(39.466)
	Steel castings and forgings and other steel products	(12.439)
Non-ferrous metals		(21.247)
	Non-ferrous metals	(4.979)
	Non-ferrous metal products	(16.268)
Metal products		(44.674)
	Metal products for construction and architecture	(11.502)
	Other metal products	(33.172)
General machinery		(82.873)
	General industrial machinery	(31.811)
	Special industrial machinery	(34.337)
	Other general machines	(7.771)
	Machinery for office and service industry	(8.954)
Electrical machinery		(179.764)
	Household electric appliance	(31.477)
	Electronic equipment and communication equipment	(105.786)
	Heavy electrical equipment	(20.284)
	Other electrical machinery	(22.217)
Transportation equipment		(116.907)
	Motor vehicles	(106.899)
	Ships and repair of ships	(6.710)
	Other transportation equipment and repair of transportation equipmen	(3.298)
Precision instruments		(13.602)
	Precision instruments	(13.602)
Other industrial products		(108.601)
	Publishing and printing	(43.529)
	Plastic products	(31.662)
	Rubber products	(11.473)
	Leather, fur skins and miscellaneous leather products	(3.331)
	Miscellaneous manufacturing products	(18.606)

Notes: 1. Weights are expressed as one-thousandths of the output value for the manufacturing industry sector covered by the IOPI.
2. n.e.c. denotes not elsewhere classified.

(Appendix 4)

The number of sector classifications, commodity groupings, and commodities

1. Input price index

Sector classifications	Aggregated major commodity groups	Major commodity groups	Commodity groups			Commodities		
				Domestic products	Imports		Domestic products	Imports
General manufacturing industry	18	58	326	298	160	1,232	966	266
	Agriculture, forestry and fishery	4	28	12	17	53	23	30
	Mining	4	11	6	9	24	8	16
	Foods	4	41	38	25	172	123	49
	Textile products	2	15	15	12	110	79	31
	Pulp, paper and wooden products	4	18	18	7	105	90	15
	Chemical products	7	56	53	26	162	129	33
	Petroleum and coal products	2	10	10	6	21	15	6
	Ceramic, stone and clay products	4	16	16	2	50	48	2
	Iron and steel	3	17	17	7	63	53	10
	Non-ferrous metals	2	10	10	5	54	39	15
	Metal products	2	10	10	4	53	49	4
	General machinery	4	26	26	10	100	90	10
	Electrical machinery	4	28	28	13	134	110	24
	Transportation equipment	3	5	4	2	9	7	2
	Precision instruments	1	6	6	6	32	25	7
	Other industrial products	5	25	25	9	84	72	12
	Electricity, gas and heat supply	2	2	2	0	4	4	0
	Water supply and waste disposal services	1	2	2	0	2	2	0
Foods	14	37	136	121	71	543	413	130
Textile products	14	29	98	95	49	399	319	80
Pulp, paper and wooden products	17	41	149	147	66	632	515	117
Chemical products	17	43	163	152	79	619	487	132
Petroleum and coal products	14	24	63	59	32	257	206	51
Ceramic, stone and clay products	16	41	140	137	61	576	471	105
Iron and steel	14	34	92	88	45	417	328	90
Non-ferrous metals	15	38	113	110	54	504	408	96
Metal products	15	38	128	126	56	563	469	94
General machinery	15	40	155	153	63	660	561	99
Electrical machinery	15	39	159	158	72	683	567	116
Transportation equipment	17	44	163	160	74	721	597	124
Precision instruments	15	36	129	128	61	617	517	100
Other industrial products	17	46	186	178	92	787	631	156

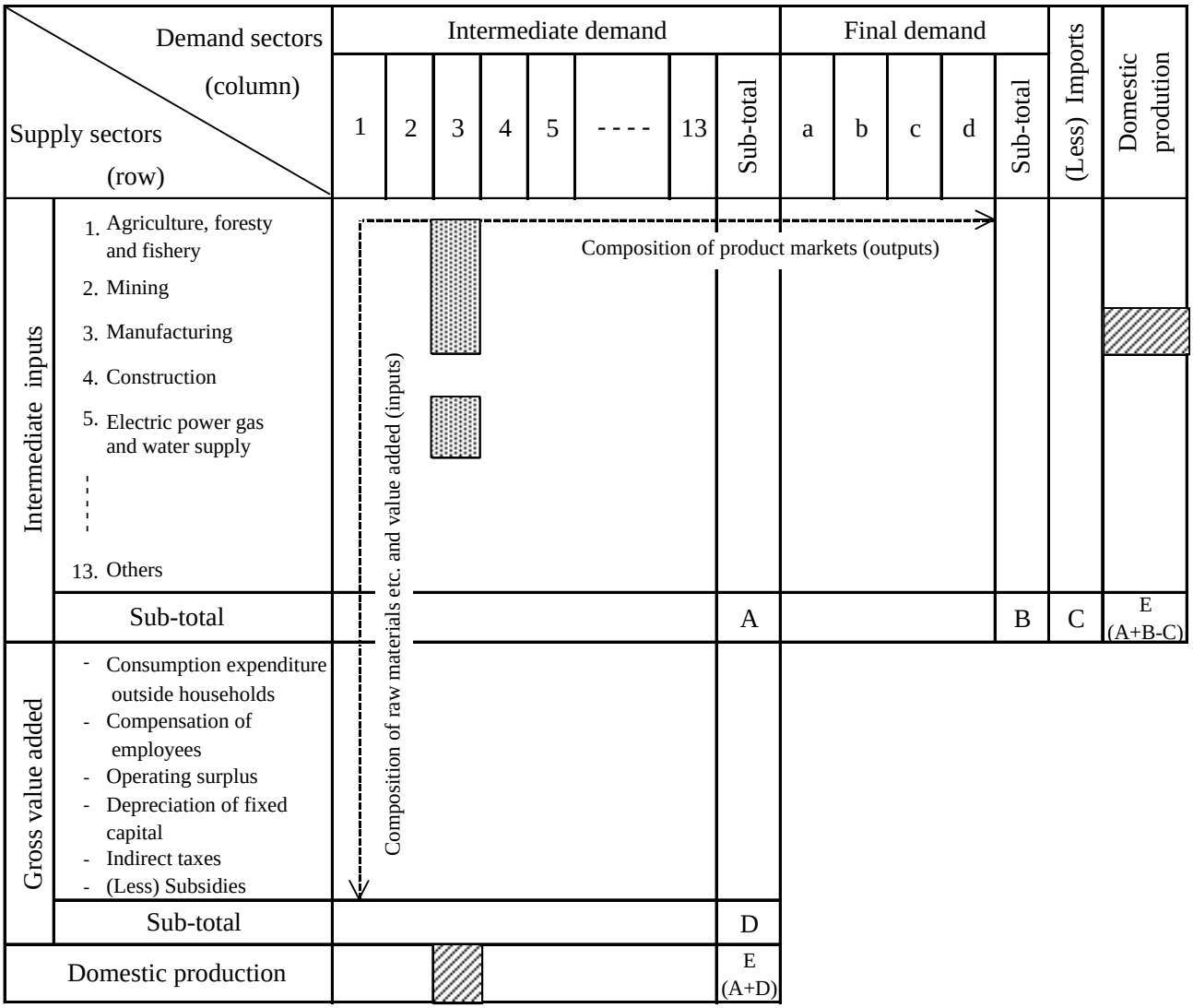
2. Output price index

Sector classifications	Aggregated major commodity groups (= Major sectors)	Major commodity groups (= Sectors)	Commodity groups			Commodities		
				Domestic products	Exports		Domestic products	Exports
General manufacturing industry	14	47	312	310	125	1,253	1,038	215
	Foods	4	43	43	0	139	139	0
	Textile products	2	15	15	4	87	79	8
	Pulp, paper and wooden products	4	18	18	5	96	90	6
	Chemical products	7	57	57	27	181	140	41
	Petroleum and coal products	2	12	12	1	19	18	1
	Ceramic, stone and clay products	4	18	18	8	58	50	8
	Iron and steel	3	20	20	9	77	61	16
	Non-ferrous metals	2	9	9	5	45	36	9
	Metal products	2	12	12	5	62	57	5
	General machinery	4	30	30	17	143	106	37
	Electrical machinery	4	32	32	22	177	126	51
	Transportation equipment	3	12	10	8	38	27	11
	Precision instruments	1	7	7	6	41	29	12
	Other industrial products	5	27	27	8	90	80	10

Notes: 1. When one commodity corresponds to plural commodity groups, they are counted as different commodities. Also, when one domestic product and one imported (exported) product share a same commodity name within a single commodity group, they are counted as two commodities.

(Reference 1)

Structure of I-O Tables
(by "13 sectors" classification)



Notes: 1. Sectors in row and column of the *1995 I-O Tables* are stratified by five classification levels, from the lowest classification level "basic sector" to the most aggregated classification level "13 sectors." The numbers of categories in each classification level are as follows. The numbers in parentheses ( ) denote the numbers only for the manufacturing industry sector:

	Numbers of sectors in row		Numbers of sectors in column	
(1) Basic sectors	519	(327)	403	(242)
(2) Minor groups	186	(109)	186	(109)
(3) Major groups	93	(47)	93	(47)
(4) Aggregated major groups	32	(14)	32	(14)
(5) 13 sectors	13	(1)	13	(1)

2. Coverage of the IOPI is as follows:
   (1) Input price index covers shadows ▒ and values of scrap, waste, and by-products.
   (2) Output price index covers either one of the shadows ▒ and values of scrap, waste, and by-products, because two shadows ▒ in the table are identical.