Explanation of the 2000 Base Input-Output Price Index of the Manufacturing Industry by Sector (IOPI)

April 2009

Research and Statistics Department
Bank of Japan

For an outline of the revision to the 2000 base, please refer to the paper "Revision of the Input-Output Price Index of the Manufacturing Industry by Sector (IOPI) to 2000 base" released in September 2005, in the Input-Output Price Index of the Manufacturing Industry by Sector section of the Bank of Japan (BOJ) website, http://www.boj.or.jp/en/theme/research/stat/pi/iopi/index.htm.

Table of Contents

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 covers prices of goods used for production and those 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 on to various sectors of the manufacturing industry,[1] 3) as a deflator which transforms nominal output value into real quantities.

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 the prices of raw and intermediate materials (including scrap and by-products used for production), fuel and energy consumed in the production processes in each sector of the manufacturing industry.[2, 3, 4] The values of the intermediate sector for the manufacturing industry at purchasers' prices in the *I-O Tables* published by the Ministry of Internal Affairs and Communications (MIC) are used as its weights.

The Output Price Index is an aggregation of the prices of manufactured products (including scrap and by-products) of each sector in the manufacturing industry.[5, 6] The values of domestic products

[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 the domestic market and imports are included.
[4] See Reference 1.
[5] In the *I-O Tables*, the values of scrap and by-products are subtracted from both outputs and inputs. In the IOPI, however, the values are included both in the Input and Output Price Indexes, since it is not possible to place negative weights in the Input Price Index.
[6] Manufactured products in the scope of the Output Price Index cover final goods and intermediate materials, and

for the manufacturing industry sector at producers' prices in the *I-O Tables* are used as its weights.

The IOPI is compiled by excluding consumption tax.[7] The IOPI is the gross-weighted base index, which includes internal trade within each sector.

For an overview of the relationship between the IOPI and the Corporate Goods Price Index (CGPI), see Appendix 1. The structure of the *I-O Tables* for Japan is attached as Reference 2.[8]

3. Coverage

Both the Input and the Output Price Index cover goods related to production activities in the manufacturing industry. They are goods consumed in the production processes in 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 included in the Input Price Index, although they are also consumed in the production processes as well as goods.

All price data in compiling the IOPI come from *commodity* indexes in the CGPI.[9] Therefore, commodities which are not covered by the CGPI are also not included in the IOPI. For details of the price data, see section 7.

The input and output value covered by the 2000 base IOPI are shown in row (b) in the following table.

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are shipped to the domestic and foreign market.

[7] Up to the 1995 base index, the domestic and imported products in the Input Price Index and domestic products in the Output Price Index were compiled including consumption tax, while exported products in the Output Price Index did not include consumption tax. The different compilation procedure between the Input and Output Price Indexes caused fluctuations in the Output/Input Price Ratio Index when the rate of consumption tax was changed. To avoid this problem, from the 2000 base index, both Input and Output Price Indexes are compiled excluding consumption tax.

[8] The Corporate Goods Price Index (CGPI) is one of the price statistics compiled by the Bank of Japan, consisting of the Domestic Corporate Goods Price Index (DCGPI), Export Price Index (EPI) and Import Price Index (IPI). For details, see the "Explanation of the Corporate Goods Price Index (CGPI)" on the BOJ website.

[9] Up to the 1990 base index, an additional survey to supplement price data besides those transferred from the Wholesale Price Index (revised to Corporate Goods Price Index in 2000 base) was conducted. To reduce the burden on price reporters and improve the efficiency of compiling the statistics, the additional survey was abolished from 1995 base index and the *commodity* indexes in the CGPI became the sole source for price data in compiling the index.

	Input Price Index	Output Price Index
Input or output value in the 2000 I-O Tables (a) <trillion yen>	163.5	305.5
Input or output value covered by the index (b) <trillion yen>	141.3	282.3
Input or output value excluded from coverage (a)-(b) <trillion yen>	12.2	23.2
Coverage (b)/(a) <percent>	92.5	92.4

Notes:
1. The figure is the aggregation of the input value of raw and processed materials, fuel and energy toward the manufacturing industry sector in the *2000 I-O Tables*, which include scrap and by-products.
2. The figure is obtained by subtracting, from the above figure, the values of goods for which price data cannot be collected. 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 *2000 I-O Tables*, which include scrap and by-products.
4. The figure is obtained by subtracting, from the above figure, the values of goods for which price data cannot be collected. The weights of the Output Price Index are calculated as one-thousandths of the figure.

For details of the input and output value covered by the IOPI and their correspondence to the 2000 *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 production sectors in which inputs are consumed or outputs are produced. The commodity grouping is a classification system based upon commodities which are consumed or produced, in the production sectors.

There are two levels in the sector classification; *manufacturing industry sector* and *major sector*, which correspond to the classification level *13-sector classification* and *major aggregated sector*

classification in the *I-O Tables*, respectively.[10] Each sector has three levels of commodity groupings; *aggregated major commodity group*, *major commodity group* and *commodity group*, which correspond to the *major aggregated sector classification*, *medium aggregated sector classification* and *basic sector classification* in the *I-O Tables*, respectively.[11]

For the *manufacturing industry sector* of the Input Price Index and the Output Price Index, there are also sub-indexes of *domestic products* and *imports*, and those of *domestic products* and *exports*, respectively.

The Output/Input Price Ratio Index is calculated only for *manufacturing industry sector* and *major sector*.

The number of sector classifications and commodity groupings in the 2000 base index are as follows:

	Major sectors	(Sectors)	Aggregated major commodity groups	Major commodity groups	Commodity groups
Input Price Index	14	(54)	18	65	322
Output Price Index	14	(54)	14	54	321

Note: The indexes of sectors are not calculated.

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

[10] The IOPI covers only the manufacturing industry sector among the *13- sector classification* of the *I-O Tables*.

[11] There is an exception in *major sector* of the Output Price Index. It has only two levels 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.

[12] For changes in classifications by the revision of the IOPI from 1995 base to 2000 base, see the paper "Revision of the Input-Output Price Index of the Manufacturing Industry by Sector (IOPI) to 2000 base" at the Input -Output Price Index of the Manufacturing Industry by Sector section of the BOJ website, http://www.boj.or.jp/en/theme/research/stat/pi/iopi/index.htm. For more details, see Tables 2 through 4; "Changes in the number of sector classifications, commodity grouping, and commodities," "Changes in sector classifications and commodity groupings" and "Changes in the number of commodity groups," at the same section of the BOJ website mentioned above.

5. Base Year and Year for Calculation of Weights

The current base year for the index, which is also the year for weight calculation, is 2000.[13] In principle, it is revised every five years.

6. Criteria for Selecting Commodity Groups

A *commodity group*, which corresponds to the *basic sector classification* in the *I-O Tables* as explained in section 4, is taken into the index depending on whether the CGPI covers its price data as *commodity*. If there is a *commodity* in the CGPI which corresponds to a certain *basic sector classification* in the *I-O Tables*, the *basic sector classification*s is adopted in the IOPI as *commodity group*. If this is not the case, the *basic sector classification* would not be taken into the IOPI.[14]

7. Price Data (Selection of Commodities)

All price data for the IOPI come from the CGPI. Indexes of *commodities* in the CGPI, which are the smallest units of index, are directly adopted in the IOPI to compile *commodity group* indexes.[15]

Specifically, the *commodity group* of the Input Price Index (which covers domestic products shipped to the domestic market and imports) is calculated by re-classifying the Domestic Corporate Goods Price Index excluding Consumption Tax and the Import Price Index (compiled in terms of yen). On the other hand, the *commodity group* of the Output Price Index (which covers domestic products shipped to the domestic market and exports) is calculated by re-classifying the Domestic Corporate Goods Price Index excluding Consumption Tax and the Export Price Index (compiled in

[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. In particular, as an annual Output/Input Price Ratio Index is obtained by taking a simple arithmetic mean of monthly indexes, which is calculated by dividing the Output Price Index by the Input Price Index, this probability is higher than that of the Input Price Index and the Output Price Index.

[14] In the 2000 base CGPI, the criteria of commodity selection is as follows. For the DCGPI, the commodities, whose transaction values are no less than 1/10,000 (¥24.6 billion) of the total transaction value for the index (i.e., the total producers' shipment value of domestic products for the domestic markets), are selected. For the EPI and IPI, the commodities, whose transaction values are no less than 5/10,000 (¥24.0 billion) of the total transaction value for the indexes (i.e., the total export and import values), are selected.

[15] See footnote 9.

terms of yen).[16]

The total number of selected *commodities* amounts to 1,240 for the Input Price Index and 1,253 for the Output Price Index. For details, see Appendix 4.[17]

In the Domestic Corporate Goods Price Index (DCGPI), which is the main component of the CGPI, each stage for the price survey of *commodities* is selected from the transaction stages between companies, so as to reflect the price developments caused by the supply and demand condition of the *commodities* most vividly. Hence, price data for the DCGPI are collected from wholesalers or manufacturers, and the proportion of the two is different in each *commodity*.[18]

In the Import Price Index (IPI) and the Export Price Index (EPI), which are also the components of the CGPI, 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.

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

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[16] In the CGPI, the *commodity* index is unpublished when it is not possible to obtain three surveyed prices from plural participating corporations to protect the privacy of the price reporters (for more detail, see the "Explanation of the 2000 Base Corporate Goods Price Index (CGPI)" at the Explanation of the 2000 Base Corporate Goods Price Index (CGPI) section of the BOJ website, http://www.boj.or.jp/en/type/exp/stat/pi/excgpi01.htm). Therefore, the *commodity* indexes in the CGPI, which are used to calculate the *commodity group* indexes of the IOPI, remain unchanged from the latest index published for the unpublished period. Further, the indexes of the IOPI remain 100.0 where the commodity index in the CGPI is unpublished from the base year.

[17] There are some cases where one *commodity* of the CGPI corresponds to plural *commodity groups* in the IOPI. For example, when a *commodity* (e.g., "blouses") corresponds to two *commodity groups* (e.g., "woven fabric apparel" and "knitted apparel"), it is adopted in both *commodity groups* and counted as two *commodities*. The number of these *commodities* is 81 in the Input Price Index and 149 in the Output Price Index, respectively. When a *commodity* (e.g., "copper ingots") is adopted in both *domestic products* and *imports* (*exports*) 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.

[18] About 15% of the 5,500 price data in the DCGPI are wholesalers' selling prices. For details of survey stages within distribution processes for price survey, see the "Explanation of the 2000 Base Corporate Goods Price Index (CGPI)" at the Explanation of the 2000 Base Corporate Goods Price Index (CGPI) section of the BOJ website, http://www.boj.or.jp/en/type/exp/stat/pi/excgpi01.htm.

8. Weights

8.1. Weight Calculation for Sector Classifications at the Commodity Group Level and Above

In both Input and Output Price Indexes, the weights of classification for *commodity group* and the levels above are calculated based on the *2000 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.

The weights for both Input and Output Price Indexes are expressed as one-thousandths of input and output value for the manufacturing industry sector, down to the third decimal place. The weights above the level of *commodity group* are calculated by aggregating the weights of *commodity group*.

8.2. Weight Calculation of Commodity which Constructs Commodity Group

A commodity group consists of *domestic products* and *imports* (*exports*).[19] *Commodity* indexes of the DCGPI, IPI, EPI and their weights are used to construct these indexes.[20, 21]

To combine the *domestic products* and *imports* (*exports*) 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 products* and *imports* (*exports*) of the *commodity group* are not the sum of *commodity* weights in the DCGPI and IPI (EPI).

For the process of index calculation in detail, such as for *domestic products*, *imports* (*exports*) and *commodity group*, see section 9.2.

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[19] The Input Price Index consists of *commodity group* (*domestic products*) and *commodity group* (*imports*) and the Output Price Index *commodity group* (*domestic products*) and *commodity group* (*exports*), respectively.

[20] In the actual index calculation, the weights used are one-thousandths of the sum of the DCGPI, EPI and IPI, which are the same as for the weights of the reference index (Average Index for Domestic Corporate Goods, Exports and Imports <AIDEI>) of the CGPI.

[21] For example, when there are three *commodities*, which correspond to a certain *commodity group (domestic products)* weighted as 3, 2 and 1 in the DCGPI, respectively, the index of *domestic products* is calculated by using the weights of 3, 2 and 1.

9. Index Calculation

9.1. Index Formula

The index formula is the Laspeyres formula, which is the weighted arithmetic mean based on the fixed value-based weights for the base period.

Laspeyres formula

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

where:

$P_{t,0}^{L}$ 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.

In the actual index calculation of the IOPI, $p_{t,i}$ and $p_{0,i}$ are obtained from the CGPI *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 CGPI (i.e., DCGPI, IPI and EPI), are multiplied by their weights for the CGPI to obtain the weighted indexes of *commodities*. Then, they are aggregated at *domestic products*, *imports* or *exports* level to obtain the weighted indexes of its level.

b. The aggregated weighted indexes of *domestic products*, *imports* or *exports* are divided by

the corresponding *commodities*' total weights for the CGPI to obtain the indexes of *domestic products*, *imports* or *exports*, respectively.

c. Divide the weights of *commodity groups* (derived in section 8.1.) into *domestic products* and *imports* (*exports*) using the ratio of these components calculated from the *I-O Tables* of the base year.

d. Multiply the *domestic products*, *imports* or *exports* indexes obtained in step b. by the weights calculated in step c. to acquire the weighted indexes of *domestic products*, *imports* or *exports*.

e. In the Input Price Index, the weighted indexes of *domestic products* and *imports* are aggregated to obtain the weighted indexes of *commodity groups*. In the Output Price Index, the weighted indexes of *domestic products* and *exports* are aggregated to obtain the weighted indexes of *commodity groups*.

f. The weighted indexes of *commodity groups* are divided by the weights of *commodity groups* to acquire the indexes of *commodity groups*.

<Index Calculation Process above the Commodity Group Level

in the Manufacturing Industry Sector[22, 23, 24]>

g. The weighted indexes of *commodity groups* calculated in step e. are aggregated at the next classification level above to obtain the weighted indexes of *major commodity groups*.[25]

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[22] 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 the 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 groups* calculated in step f. are multiplied by the corresponding weights of the *commodity groups* 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 groups* 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*.

However, for *commodity group* "reuse and recycling", *commodity groups* are established for each *manufacturing industry sector*/*major sector* since commodities differ depending on where they are directed to.

[23] In the Output Price Index, the indexes of *aggregated major commodity groups* obtained in step j. is equal to the indexes of *major sectors* as described in footnote 13.

[24] The indexes of *domestic products* and *imports* (*exports)* for the *manufacturing industry sector* in the Input (Output) Price Index are calculated by dividing the total of weighted indexes of *domestic products* and *imports* (*exports*) 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,

h. The weighted indexes of *major commodity groups* are divided by each corresponding weight of *major commodity groups* to obtain the indexes of *major commodity groups*.

i. The weighted indexes of *aggregated major commodity groups* are obtained by the same calculation process as the *major commodity groups* described in step g.

j. The indexes of *aggregated major commodity groups* are obtained by the same calculation process as the *major commodity groups* described in step h.

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 Output/Input Price Ratio Index is obtained by dividing the Output Price Index by the Input Price Index and rounded off the first decimal place.

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.

weighted indexes, instead of final indexes are used during the computation process.

10. Publication

10.1. Publication Schedule

Details of the publication schedule are as follows:

Monthly indexes[26] (preliminary figures)	In principle, the tenth working day of the month following the survey month. When scheduled retroactive revisions take place, the 11th working day in April and October (released along with the monthly preliminary figures for March and September indexes).
Monthly indexes (final figures)	At the time of publication of the next month's "preliminary figures" indexes.
Yearly indexes (calendar year, fiscal year bases)	Calendar year indexes (preliminary figures, final figures) are published along with the monthly indexes for December; the fiscal year indexes along with those for March.

The index publication and detailed accompanying figures are released at the 8:50 a.m. on the publication date.

For information regarding the release schedule, "Releases Scheduled for the Next Four Weeks" and "Statistical Releases and Publications Scheduled for the Next Six Months" can be found in the Release Schedule section on the BOJ website, http://www.boj.or.jp/en/type/schedule/index.htm.

Releases Scheduled for the Next Four Weeks	Details of upcoming releases for the next four weeks. Revised at the end of each week.
Statistical Releases and Publications Scheduled for the Next Six Months	Details of forthcoming releases for the next six months (April – September, July – December, October – March of the following year, January – June of the following year). Released at the end of March, June, September, and December respectively.

[26] Up to 1995 base index, only the final figures are complied. However, in order to improve the convenience for users, both the preliminary and final figures are released for each surveyed month. from the 2000 base index.

10.2. Media of Publication

The index publication and accompanying figures in detail are released on the "Releases" and "Long-term Time-series Data" of the IOPI in the Price section of the BOJ website, http://www.boj.or.jp/en/theme/research/stat/pi/iopi/index.htm.

Published index series are available in the following publications:

Price Indexes Monthly	In principle, published on the seventh working day after the release of the Corporate Services Price Index (CSPI).
Bank of Japan Statistics	Published every year (April).

For any inquiries related to price indexes or other published data, please contact the following departments at the Bank of Japan:

Research and Statistics Department, Price Statistics Section
(03-3279-1111, extension 4073)
Public Relations Department
(03-3279-1111, extension 4628, 4639)

10. 3. Retroactive Revision of Published Indexes

As in the case of CGPI,[27] indexes which have already been released are retroactively revised twice a year—in April and October—along with the release of the preliminary figures for the March and September indexes.

Retroactive revisions of the IOPI will follow those in the CGPI, which are to be made because of a major error found in its price data.[28] The announcement of the revision will be distributed to the

[27] For details regarding the scheduled retroactive revisions of the CGPI, see the "Explanation of the 2000 Base Corporate Goods Price Index (CGPI)" in the Explanation of the 2000 Base Corporate Goods Price Index (CGPI) section of the BOJ website, http://www.boj.or.jp/en/type/exp/stat/pi/excgpi01.htm.

[28] The CGPI 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 commodities* would be affected. For details, see the "Explanation of the 2000 Base Corporate Goods Price Index (CGPI)" in the Explanation of the 2000 Base Corporate Goods Price Index (CGPI) section of the BOJ website, http://www.boj.or.jp/en/type/exp/stat/pi/excgpi01.htm.

press and will also be posted in the Input-Output Price Index of the Manufacturing Industry by Sector section of the BOJ website, http://www.boj.or.jp/en/theme/research/stat/pi/iopi/index.htm.

11. Linked Index

The linked indexes are the series of indexes extending retroactively beyond the base year of the current indexes to fulfill the needs for a long-term continuous index series. The 2000 Base Linked Index extends up to 1990. The 2000 Base Linked Index is available for the index classification level *manufacturing industry sector* and *major sector* from January 1990.[29]

For Input Price Index and Output Price Index, the linked indexes are calculated monthly by using link coefficients computed for each index series using the 2000 base and the 1995 base indexes. The annual averages of the linked indexes in terms of the calendar and fiscal year are obtained by taking simple arithmetic means of the monthly indexes.

The calculation formula for the 2000 Base Linked Index is as follows[30]:

$$\text{2000 Base Linked Index} = \text{1995 Base Index} \times \underbrace{\frac{\text{annual average index in 2000 on the 2000 base } (=100)}{\text{annual average index in 2000 on the 1995 base}}}_{\text{(link coefficient)}}$$

For Output/Input Price Ratio Index, the linked indexes are calculated by dividing the linked Output Price Indexes by the linked Input Price Indexes.[31]

Upon calculation of the new 1995 base index, no adjustments are made to cope with the change in the classification of the index upon revision to the 2000 base. Users should be aware that the nature of linked index is not strictly homogeneous in this respect.

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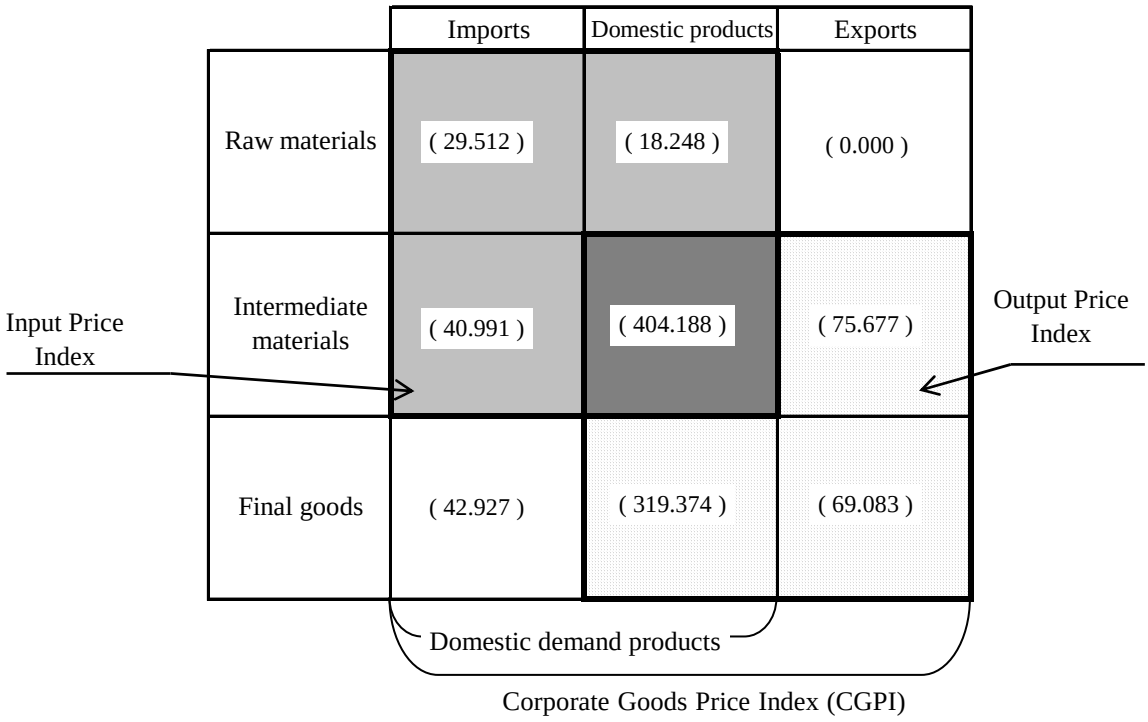
[29] With the change in the compilation procedure from the 2000 base index, all the indexes are compiled excluding consumption tax, but no adjustment for tax is undertaken for the linked index.

[30] Up to December 1994 index calculation the new 1990 base indexes are used.

[31] There might be some cases in which the linked indexes of Output/Input Price Ratio Index calculated by using the link coefficients obtained by the linked Output/Input Price Ratio Index are inconsistent with those computed by dividing the linked Output Price Indexes by the linked Input Price Indexes. Therefore, the calculation procedure in which the linked Output Price Index and the linked Input Price Index are used is adopted in the

(Appendix 1)

Relationship between IOPI and CGPI



Note: Figures in parentheses are the weights of each component according to the classification by stage of demand in the 2000 base CGPI expressed as one-thousandths.

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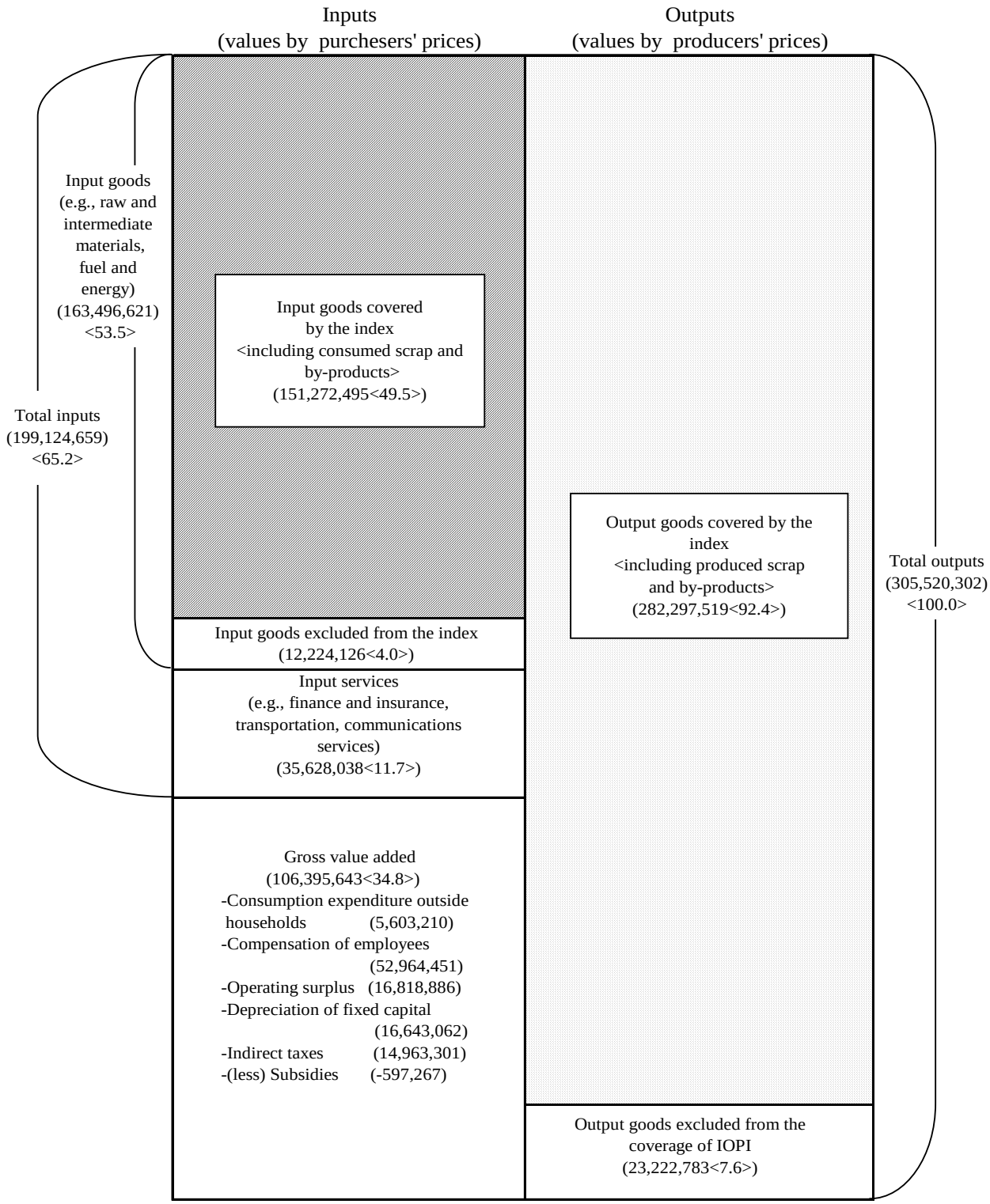
linked Output/Input Price Ratio Index.

(Appendix 2)

Correspondence between Input and Output Value Covered by IOPI (2000 base) and 2000 I-O Tables



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

(Appendix 3)

Sector Classifications, Commodity Groupings and Weights

1-1. Input Price Index(by sector classification)

Major sector / Sector	(Weights)
Foods	(111.358)
Foods	(86.046)
Beverage	(18.223)
Feeds and organic fertilizer, n.e.c.	(5.272)
Tobacco	(1.817)
Textile products	(19.055)
Textile products	(7.342)
Wearing apparel and other textile products	(11.713)
Pulp, paper and wooden products	(51.314)
Timber and wooden products	(10.689)
Furniture and fixtures	(10.182)
Pulp, paper, paperboard, building paper	(18.041)
Paper products	(12.402)
Chemical products	(83.166)
Intermediate inputs	(1.323)
Basic inorganic chemical products	(5.673)
Basic organic chemical products	(10.373)
Organic chemical products	(19.466)
Synthetic resins	(11.817)
Synthetic fibers	(2.051)
Medicaments	(10.944)
Final chemical products, n.e.c.	(21.519)
Petroleum and coal products	(46.505)
Petroleum refinery products	(41.887)
Coal products	(4.618)
Ceramic, stone and clay products	(21.294)
Glass and glass products	(4.022)
Cement and cement products	(10.899)
Pottery, china and earthenware	(2.023)
Other ceramic, stone and clay products	(4.350)
Iron and steel	(52.527)
Pig iron and crude steel	(20.991)
Steel products	(20.419)
Cast and forged steel products	(3.965)
Other iron or steel products	(7.152)
Non-ferrous metals	(22.344)
Non-ferrous metals	(5.474)
Non-ferrous metal products	(16.870)
Metal products	(35.002)
Metal products for construction and architecture	(14.372)
Other metal products	(20.630)
General machinery	(89.231)
General industrial machinery	(29.964)
Special industrial machinery	(34.983)
Other general machines	(8.499)
Machinery for office and service industry	(15.785)
Electrical machinery	(179.713)
Household electronic and electric appliances	(28.766)
Electronic computing equipment and accessory equipment	(29.927)
Communication equipment	(18.998)
Applied electronic equipment and electric measuring instruments	(12.912)
Semiconductor devices and integrated circuits	(16.610)
Electronic components	(37.578)
Heavy electrical equipment	(14.462)
Other electrical equipment	(20.460)
Transportation equipment	(182.760)
Passenger motor cars	(55.963)
Other cars	(108.383)
Ships and repair of ships	(8.537)
Other transportation equipment and repair of transportation equipment	(9.877)
Precision instruments	(10.951)
Precision instruments	(10.951)
Miscellaneous manufacturing products	(94.780)
Publishing, printing	(29.219)
Plastic products	(38.134)
Rubber products	(9.553)
Leather, fur skins and miscellaneous leather products	(2.200)
Miscellaneous manufacturing products	(15.674)

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.

1-2. Input Price Index(by commodity grouping)

Aggregated major commodity group / Major commodity group	(Weights)
Agriculture, forestry and fishery	(48.437)
Crop cultivation	(34.222)
Livestock	(6.005)
Forestry	(4.849)
Fisheries	(3.361)
Mining	(54.474)
Metallic ores	(6.567)
Non-metallic ores	(6.817)
Coal mining	(3.189)
Crude petroleum and natural gas	(37.901)
Foods	(42.818)
Foods	(40.188)
Beverage	(1.991)
Feeds and organic fertilizer, n.e.c.	(0.567)
Tobacco	(0.072)
Textile products	(15.345)
Textile products	(11.782)
Wearing apparel and other textile products	(3.563)
Pulp, paper and wooden products	(62.802)
Timber and wooden products	(11.882)
Furniture and fixtures	(3.135)
Pulp, paper, paperboard, building paper	(35.831)
Paper products	(11.954)
Chemical products	(105.544)
Chemical fertilizer	(1.113)
Basic inorganic chemical products	(14.371)
Basic organic chemical products	(11.987)
Organic chemical products	(34.644)
Synthetic resins	(19.103)
Synthetic fibers	(3.304)
Medicaments	(2.254)
Final chemical products, n.e.c.	(18.768)
Petroleum and coal products	(21.347)
Petroleum refinery products	(18.475)
Coal products	(2.872)
Ceramic, stone and clay products	(21.925)
Glass and glass products	(9.055)
Cement and cement products	(3.972)
Pottery, china and earthenware	(2.118)
Other ceramic, stone and clay products	(6.780)
Iron and steel	(84.468)
Pig iron and crude steel	(10.317)
Steel products	(54.522)
Cast and forged steel products	(9.502)
Other iron or steel products	(10.127)
Non-ferrous metals	(46.944)
Non-ferrous metals	(19.426)
Non-ferrous metal products	(27.518)
Metal products	(34.755)
Metal products for construction and architecture	(0.770)
Other metal products	(33.985)
General machinery	(47.394)
General industrial machinery	(19.655)
Special industrial machinery	(12.968)
Other general machines	(9.565)
Machinery for office and service industry	(5.206)
Electrical machinery	(150.423)
Household electronic and electric appliances	(6.731)
Electronic computing equipment and accessory equipment	(5.972)
Communication equipment	(0.353)
Applied electronic equipment and electric measuring instruments	(2.730)
Semiconductor devices and integrated circuits	(36.049)
Electronic components	(64.483)
Heavy electrical equipment	(8.070)
Other electrical equipment	(26.035)
Transportation equipment	(119.296)
Other cars	(112.468)
Ships and repair of ships	(2.344)
Other transportation equipment and repair of transportation equipment	(4.484)
Precision instruments	(5.462)
Precision instruments	(5.462)
Miscellaneous manufacturing products	(106.826)
Publishing, printing	(22.939)
Plastic products	(55.238)
Rubber products	(12.891)
Leather, fur skins and miscellaneous leather products	(1.350)
Miscellaneous manufacturing products	(6.254)
Reuse and recycling to "Manufacturing industry"	(8.154)
Electricity, gas and heat supply	(29.063)
Electricity	(26.765)
Gas and heat supply	(2.298)
Water supply and waste management services	(2.677)
Water supply	(2.677)

2. Output Price Index

Major sector = Aggregated major commodity group	Sector = Major commodity group	(Weights)
Foods		(117.981)
	Foods	(72.751)
	Beverage	(30.925)
	Feeds and organic fertilizer, n.e.c.	(3.559)
	Tobacco	(10.746)
Textile products		(22.792)
	Textile products	(7.779)
	Wearing apparel and other textile products	(15.013)
Pulp, paper and wooden products		(52.651)
	Timber and wooden products	(11.199)
	Furniture and fixtures	(10.553)
	Pulp, paper, paperboard, building paper	(17.686)
	Paper products	(13.213)
Chemical products		(90.726)
	Chemical fertilizer	(1.367)
	Basic inorganic chemical products	(7.090)
	Basic organic chemical products	(7.130)
	Organic chemical products	(16.273)
	Synthetic resins	(10.142)
	Synthetic fibers	(1.906)
	Medicaments	(22.933)
	Final chemical products, n.e.c.	(23.885)
Petroleum and coal products		(44.840)
	Petroleum refinery products	(41.910)
	Coal products	(2.930)
Ceramic, stone and clay products		(29.689)
	Glass and glass products	(6.100)
	Cement and cement products	(14.104)
	Pottery, china and earthenware	(2.977)
	Other ceramic, stone and clay products	(6.508)
Iron and steel		(49.419)
	Pig iron and crude steel	(6.238)
	Steel products	(32.913)
	Cast and forged steel products	(5.187)
	Other iron or steel products	(5.081)
Non-ferrous metals		(21.029)
	Non-ferrous metals	(5.010)
	Non-ferrous metal products	(16.019)
Metal products		(38.284)
	Metal products for construction and architecture	(9.456)
	Other metal products	(28.828)
General machinery		(87.039)
	General industrial machinery	(31.172)
	Special industrial machinery	(38.237)
	Other general machines	(7.281)
	Machinery for office and service industry	(10.349)
Electrical machinery		(189.193)
	Household electronic and electric appliances	(26.660)
	Electronic computing equipment and accessory equipment	(26.403)
	Communication equipment	(19.469)
	Applied electronic equipment and electric measuring instruments	(13.059)
	Semiconductor devices and integrated circuits	(22.165)
	Electronic components	(40.939)
	Heavy electrical equipment	(17.719)
	Other electrical equipment	(22.779)
Transportation equipment		(133.667)
	Passenger motor cars	(43.151)
	Other cars	(82.629)
	Ships and repair of ships	(1.806)
	Other transportation equipment and repair of transportation equipment	(6.081)
Precision instruments		(13.957)
	Precision instruments	(13.957)
Miscellaneous manufacturing products		(108.733)
	Publishing, printing	(42.608)
	Plastic products	(36.313)
	Rubber products	(10.601)
	Leather, fur skins and miscellaneous leather products	(2.354)
	Miscellaneous manufacturing products	(16.857)

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)

Number of Sector Classifications, Commodity Groupings and Commodities

1.Input Price Index

Sector classification		Aggregated major commodity groups	Major commodity groups	Commodity groups	Domestic products	Imports	Commodities	Domestic products	Imports
Manufacturing industry sector		18	65	322	295	157	1,240	932	308
	Agriculture, forestry and fishery		4	25	10	16	45	15	30
	Mining		4	10	5	6	18	6	12
	Foods		4	37	35	21	166	122	44
	Textile products		2	14	14	10	99	56	43
	Pulp, paper and wooden products		4	17	17	10	93	73	20
	Chemical products		8	55	52	25	191	150	41
	Petroleum and coal products		2	10	10	6	17	11	6
	Ceramic, stone and clay products		4	16	16	3	47	44	3
	Iron and steel		4	17	17	7	62	52	10
	Non-ferrous metals		2	10	10	4	45	32	13
	Metal products		2	10	10	4	47	43	4
	General machinery		4	27	26	11	92	81	11
	Electrical machinery		8	31	31	16	142	108	34
	Transportation equipment		3	6	5	4	14	8	6
	Precision instruments		1	6	6	5	33	27	6
	Miscellaneous manufacturing products		6	27	27	9	121	96	25
	Electricity, gas and heat supply		2	2	2	0	6	6	0
	Water supply and waste management services		1	2	2	0	2	2	0
Major sector	Foods	14	39	136	122	75	598	431	167
	Textile products	15	30	96	92	52	377	276	101
	Pulp, paper and wooden products	17	44	154	151	73	616	472	144
	Chemical products	16	45	158	149	77	637	480	157
	Petroleum and coal products	15	29	68	65	32	279	216	63
	Ceramic, stone and clay products	17	45	141	136	65	561	430	131
	Iron and steel	14	37	92	88	50	412	301	111
	Non-ferrous metals	15	40	117	113	63	508	382	126
	Metal products	15	43	134	131	66	579	454	125
	General machinery	15	45	160	157	74	661	527	134
	Electrical machinery	15	45	165	164	83	703	550	153
	Transportation equipment	17	49	170	167	85	714	554	160
	Precision instruments	15	39	130	129	69	624	491	133
	Miscellaneous manufacturing products	17	51	187	179	96	745	571	174

2. Output Price Index

Sector classifications	Aggregated major commodity groups (= Major sectors)	Major commodity groups =Sectors	Commodity groups	Domestic products	Exports	Commodities	Domestic products	Exports
Manufacturing industry sector	14	54	321	320	138	1,253	1,019	234
	Foods	4	40	40	0	138	138	0
	Textile products	2	14	14	4	61	56	5
	Pulp, paper and wooden products	4	19	19	5	81	75	6
	Chemical products	8	58	58	34	228	166	62
	Petroleum and coal products	2	12	12	1	16	15	1
	Ceramic, stone and clay products	4	18	18	8	54	46	8
	Iron and steel	4	22	22	11	84	67	17
	Non-ferrous metals	2	10	10	4	38	32	6
	Metal products	2	12	12	3	54	51	3
	General machinery	4	30	30	18	133	97	36
	Electrical machinery	8	37	37	24	183	133	50
	Transportation equipment	4	13	12	9	46	31	15
	Precision instruments	1	7	7	6	43	31	12
	Miscellaneous manufacturing products	5	29	29	11	94	81	13

Note: 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 the same commodity name within a single commodity group, they are counted as two commodities.

(Reference 1)

The Classification of Scrap and By-products

In the 2000 *I-O Tables*, scrap and by-products are classified as the output from the newly established manufacturing sector, "reuse and recycling," and as the input to the other sectors, as the result of classification revision (see Box below for details). In the IOPI, however, "reuse and recycling" is not categorized in the *manufacturing industry sector* because the output value of "reuse and recycling" includes the transaction value of the reuse and recycling services as well as the output value of scrap and by-products.

1. Input Price Index

"Reuse and recycling" is excluded from the sector classification because "reuse and recycling" covers the "reuse and recycling" services of scrap and by-products, which is not in the category of *manufacturing industry sector*, and there is no information for subtracting the output value of those services from that of "reuse and recycling." In commodity grouping, on the other hand, *major commodity group* "reuse and recycling" is newly established in *aggregated major commodity group* "miscellaneous manufacturing products," according to the 2000 *I-O Tables,* and scrap and by-products belong to this group.[32]

--- *Major commodity group* and *commodity group* related to "reuse and recycling" are established for each *manufacturing industry sector / major sector* since commodities differ greatly[33] depending on where they are directed to (for example, "reuse and recycling to "foods"" for the commodities directed to foods sector).

--- The commodities in *commodity group* established for each *manufacturing industry sector / major sector* are selected, referring to the input value of "Table on Scrap and By-Products" in the supplementary tables of the 2000 *I-O Tables*.

2. Output Price Index

In the Output Price Index, where the products of each sector classification and its commodity grouping are the same, "reuse and recycling" is not established in the commodity grouping because of the same reason in the Input Price Index. As in the 1995 base IOPI, scrap and by-products which do not include reuse and recycling services are categorized as *commodity group*, belonging to each *major commodity group* that produces scrap and by-products.[34]

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[32] By the 1995 base IOPI, input values of scrap and by-products are categorized as *commodity groups* according to the type of scrap and by-products. This is because that the input values of scrap and by-products (at the purchasers' prices) in the conventional *I-O Tables* are categorized by type of scrap and by-products by demand sector.

[33] In the *I-O Tables*, each category (sector) covers only a single type of commodity (output) in principle. The sector "reuse and recycling", however, exceptionally covers all types of scrap and by-products.

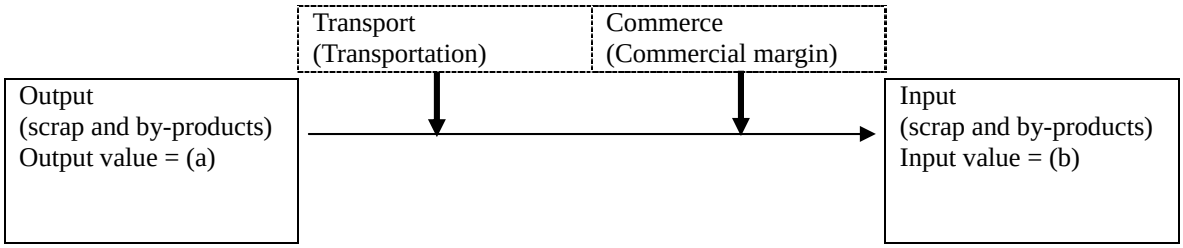
[34] As the compilation procedure of the conventional IOPI, commodities for scrap (by-products) cover all that

--- The commodities in each *commodity group* are selected, referring to the output value of "Table on Scrap and By-Products" in the supplementary tables of the 2000 *I-O Tables*.

(Box)

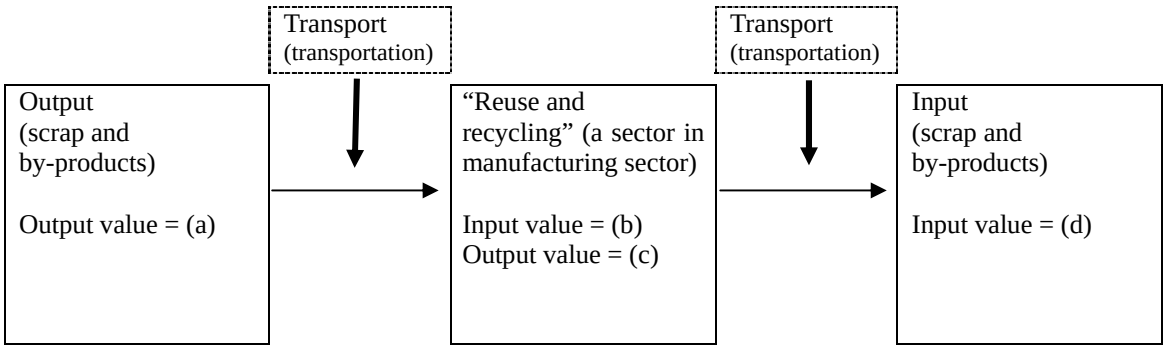
Change in the compilation procedure of scrap and by-products in the I-O Tables

<I-O Tables before 2000>



--- In calculating the output value of scrap and by-products, (a) is subtracted. (b) at purchasers' prices equals to (a) + transportation cost + commercial margin.
--- Transport cost and the cost for reuse and recycling of scrap and by-products are not included in the domestic production of the manufacturing industry in the *I-O Tables* before 2000. This is because in these I-O Tables, they are categorized as transportation services and commerce, respectively and not categorized as manufacturing sector.

<2000 I-O Tables>

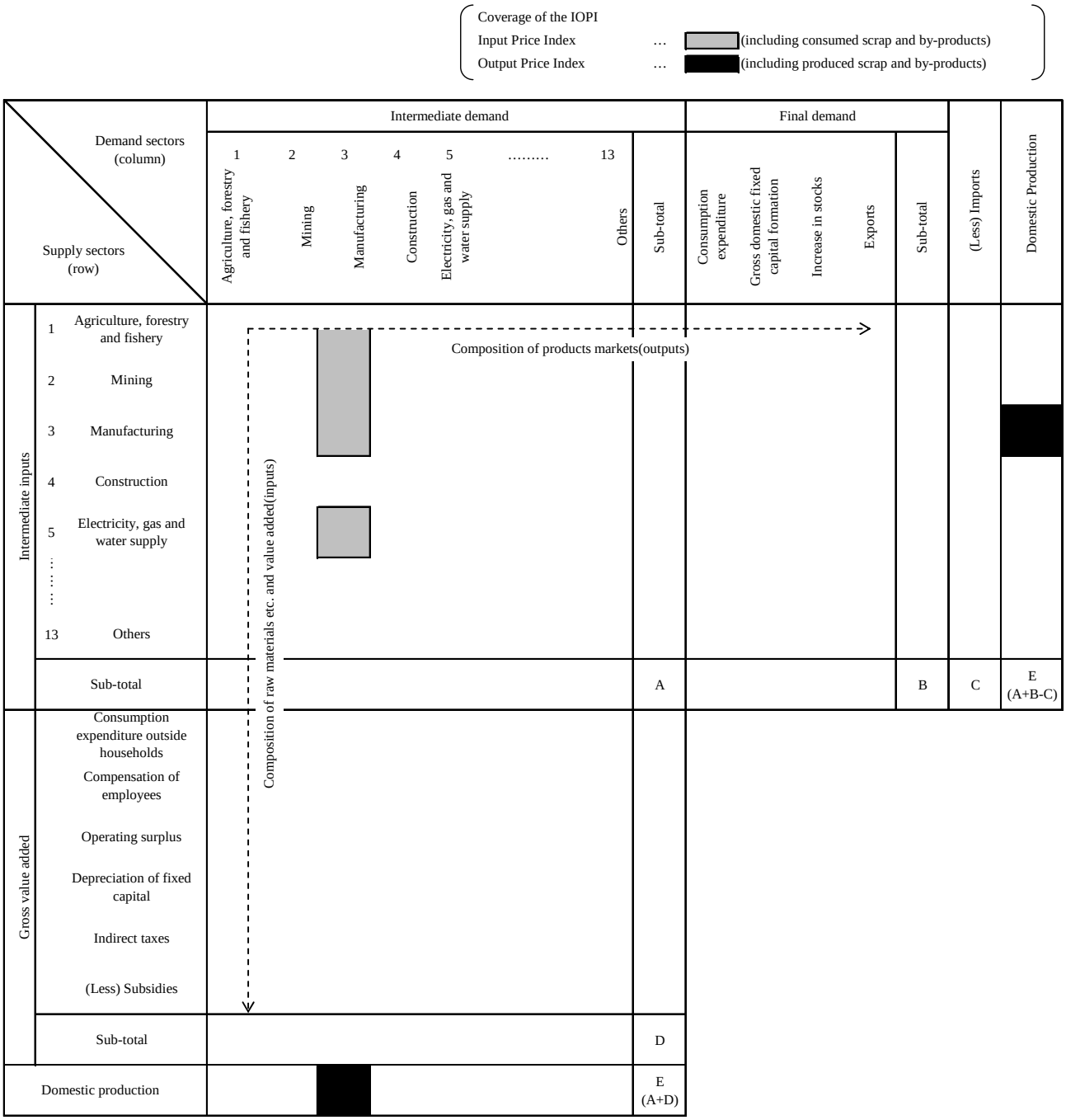


--- In calculating the output value of scrap and by-products, (a) is subtracted. (c) is the output value from "reuse and recycling" sector (newly established manufacturing sector that reuse and recycle scrap and by-products) and its value equals to (b) plus cost of reuse and recycling. The domestic production of the manufacturing sector in the 2000 *I-O Tables* is, thus, greater than those in the previous *I-O Tables* by the amount of (c), at producers' prices.
--- (d) at purchasers' prices is (c) plus transportation cost, which equals to (b) in the *I-O Tables* before 2000 (at purchasers' prices).

produced in the corresponding *major commodity group*.

(Reference 2)

Structure of I-O Tables
by 13-sector classification



Note: Sectors in row and column of the 2000 *I-O Tables* are stratified by five classification levels, from the lowest classification level *basic sector* to the most aggregated classification level *13-sector* . The number of categories in each classification level are as follows. The number in parentheses ( ) denote the numbers only for the manufacturing industry sector;

	Numbers of sectors in row	×	Numbers of sectors in column
1.Basic sectors	517 (326)		405 (243)
2.Minor aggregated sectors	188 (110)		188 (110)
3.Medium aggregated sectors	104 (55)		104 (55)
4.Major aggregated sectors	32 (14)		32 (14)
5.13-sectors	13 (1)		13 (1)