

# Japan

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### 1. Introduction

Input-Output Tables for Japan have been compiled every five years by a joint project of 10 governmental agencies under the coordination of the Ministry of Internal Affairs and Communications. The latest ones are the 2005 I-O Tables published in 2009. They are commodity-by-commodity tables and include 520-row and 407-column sectors. Transactions are valued at both producers' prices and purchasers' prices and various supplementary tables such as tables on import, trade margin and domestic freight are available.

Basically a transactions table of domestic products is obtained by extracting a transaction table on import from a transaction table at producers' prices. But data processing is necessary to get I-O tables for the GTAP Data Base, e.g. on adjusting negative values and consumption taxes. Data processing for removing negative values and subtracting consumption taxes is applied before aggregating data on the basis of commodity concordance.

### 2. Commodity Concordance

Table A1 shows the commodity concordance between the sectoral classification of the Japanese I-O table and the GTAP sectoral classification (GSC2). Compared to the GTAP classification, the Japanese I-O table has a very detailed classification on manufacturing and service sectors, but not so detailed for agriculture and mining products. This reflects the characteristics of the Japanese economic structure.

While several sectors are disaggregated to meet GTAP classification in the output table (row code), they are aggregated in the input table (column code), e.g. crude petroleum and natural gas. In that case, we divide the input data by the ratio of their domestic productions in the output table. Table 1 shows these division ratios.

**Table 1. Division ratio of input**

| Japanese I-O                                               | GTAP classification    | Division Ratio |
|------------------------------------------------------------|------------------------|----------------|
| <b>11102 Wheat, barley and the like</b>                    | 2 Wheat                | 0.83846        |
|                                                            | 3 Cereal grains n.e.c. | 0.19893        |
| <b>11509 Other edible crops</b>                            | 3 Cereal grains n.e.c. | 0.97205        |
|                                                            | 5 Oil seeds            | 0.02795        |
| <b>11609 Other inedible crops</b>                          | 7 Plant-based fibers   | 0              |
|                                                            | 8 Crops n.e.c.         | 1              |
| <b>71101 Coal mining , crude petroleum and natural gas</b> | 15 Coal mining         | 0.08852        |
|                                                            | 16 Oil                 | 0.23665        |
|                                                            | 17 Gas                 | 0.67483        |

The final demand matrix includes (1) consumption expenditure outside households, (2) household consumption expenditure, (3) general government consumption expenditure, (4) public gross domestic fixed capital formation, (5) private gross domestic fixed capital formation, (6) increase in stocks, and (7) exports. As (1) consumption expenditure outside households includes corporate social expenses etc., we move it to the endogenous sectors (54. Business services n.e.c.). We add (4) to (5) to create a vector of investment usage.

The value-added matrix includes (1) consumption expenditure outside households, (2) compensation of employees, (3) operating surplus, (4) depreciation of fixed capital, (5) indirect taxes, and (6) (less) current subsidies. As explained before, we move (1) to the endogenous sectors. We add (4) to (3) to obtain a vector of capital employment. (6) Subsidies are subtracted from (5) to get a vector of net non-commodity indirect taxes.

### ***3. Adjustment of Negative Values***

In the original I-O Tables for Japan, there are some negative values in the intermediate usage, household consumption and investment usage. This is mainly due to the scrap and by-products which are recorded as negative values on the basis of the Negative Input Method or the Stone Method. To remove negative values, we adopt the Transfer Method for the intermediate usage, that is, to transpose their row number and column one and in turn to change their signs, which does not affect the matrix balance. As to household consumption and investment usage, we move such negative items to “change in stocks”.

In addition, there are several negative values in the general government consumption. Several government consumption items calculated by the cost-add method become negative on the disaggregated level as the government sector does not have operating surplus by definition. However, the capital employment of the government sector is not zero, because it includes both operating surplus and capital depreciation. Thus we change negative items of the government consumption into zero and adjust the capital employment.

### ***4. Estimation of Commodity Taxes***

In relation to commodity taxes, there is the General Consumption Tax (GCT) in Japan. GCT is a non-cumulative multi-indirect tax imposed on each and every process of transactions. In addition, GCT imposed on purchase is deducted in order that GCT may not be accumulated in the intermediate transaction stages.

The Japanese I-O Tables record transactions in gross value, that is, including GCT even in such tax deducted transactions as intermediate usage. However, it is suitable to estimate net values of tax deductible for the GTAP pre-commodity-tax table and commodity tax table. Thus we have to estimate GCT values and separate them from the original transaction table to make the pre-commodity-tax table. Then we compile the commodity tax table by estimating net values of tax deductible.

We estimated them by applying the base GCT rate, which is 5% from 1997, to gross values of the original I-O table except tax-exempt goods and services. Tax-exempt goods and services are dwellings, education, health, financial services (excluding financial fees) and the like. The commodity tax table is net values of tax deductible, where most intermediate usage net taxes are zero and GCT is mainly imposed on consumption expenditures. In addition, as the original indirect tax data include net GCT payments, we subtract them from the indirect taxes to get the non-commodity indirect tax (net).

## ***5. Information Not Available from the Japanese I-O Tables***

There is no available information from the Japanese I-O tables for employment of land. Zero values are assigned to this array.

## ***References***

Statistics Bureau, the Ministry of Ministry of Internal Affairs and Communications (2009).  
“2005 Input-Output Tables for Japan”