

Preliminary note

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Preliminary Notes

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Background of compilation of the 2000 AIO table

In response to the recent development of Spatial Economics/New Economic Geography, it is increasingly recognised that the concept of “space” plays an important role in the analysis of economic development. Many policy makers and researchers alike, therefore, have come to pay greater attention to the spatial aspect of the economies nowadays.

In this regard, an international input-output table as an extension of interregional or interspatial I-O techniques became a significant analytical tool for the issues of current concern. The Institute of Developing Economies (IDE) for the last 30 years has been making every effort to construct international I-O tables in collaboration with statistical offices and research institutes of East and Southeast Asian countries. Now facing the rapid growth of the Chinese economy and the deepening interdependency in the Asia-Pacific region, IDE's *Asian International Input-Output Table* is an indispensable apparatus for the analysis of Asian economic development from a spatial perspective.

Asian international input-output projects: some history

Pioneering work

Interregional I-O models were pioneered by prominent economists of the time, including Leontief, Isard, Chenery, and Moses. The first international I-O model was developed in 1961 by R.J. Wonnacott for the Canadian and U.S. economies. At IDE, Watanabe proposed in 1964 the idea of using international I-O models as analytical tools for the North-South trade issues. In 1965 IDE developed an international I-O model covering six regions: North America, Europe, Oceania, Latin America, Asia, and Japan. In 1966 and 1971, IDE constructed international I-O models for ten Asian countries. Yet the I-O tables compiled in these studies were subject to a number of

limitations; i.e., estimation techniques were too simple; the industrial sector classification was too crude; the tables had no import matrix, and so on. These problems notwithstanding, the models were credited with facilitating empirical analyses of structural relationships between developed countries and developing countries.

Beside such research-oriented projects, IDE's I-O tables were also utilized for evaluating the credibility and preciseness of statistical materials of developing countries. From the basic premise of data coherency between demand and supply sectors, the misspecification of estimates by local statistical agencies can be logically inferred if any deviation or inconsistency is observed in the table. The "targets" to be scrutinized ranged from production data to consumption data, or even to foreign trade statistics.

First phase (1973 to 1977)

In 1973 IDE decided to launch development of a comprehensive international I-O table to explore the situation of interindustrial transactions among East and Southeast Asian countries. The Republic of Korea and the five ASEAN countries plus the United States were chosen to be included, as these countries have close economic relationships with Japan. Had all the countries compiled their national I-O tables at the same referential year, the project would not have been so laborious. However, Indonesia, Thailand, and Singapore had not constructed any I-O tables by that time. Also, IDE was not sufficiently experienced in compiling a comprehensive I-O table. Thus, the project had to begin with two preliminaries: one was to construct national I-O tables for these three countries, and the other was to compile bilateral I-O tables with the countries for which the national tables were already available. Under this project, three national I-O tables (Indonesia for 1971, Singapore for 1973, and Thailand for 1975) and three bilateral I-O tables (Korea-Japan for 1970, U.S.A.-Japan for 1970, and Philippines-Japan for 1970) were constructed in collaboration with the national statistical offices and research institutes of the countries concerned.

Second phase (1978 to 1982)

In 1978, IDE started the second phase of the I-O project, with the aim of constructing the 1975 multilateral I-O table among the ASEAN countries, Japan, Korea, and the U.S.A. This project went along with the following three steps: (1) estimation of national I-O tables for the countries that did not have 1975 national tables, (2) construction of

1975 bilateral I-O tables for the countries that had already compiled national tables by the time, and (3) construction of the 1975 multilateral I-O table. First, existing tables had to be updated to the year 1975 for Malaysia, the Philippines, Singapore, and the U.S.A. Next, the 1975 bilateral I-O tables for Indonesia-Japan, for Thailand-Japan, and for Korea-Japan were constructed. Finally, these national and bilateral tables were linked together under a single multilateral I-O table for 1975, which was completed in 1983. The 1975 multilateral table has been used for various analyses of East and Southeast Asian industrial structure, and the table became the prototype for the subsequent international I-O projects.

Third phase (1988 to the present)

After completion of the 1975 international I-O tables, IDE soon relaunched for construction of the 1985 international I-O tables, to cover more Asia-Pacific countries. Since China commenced an Open-Door policy as one of its key development strategies it has rapidly increased its external trade with the United States, Japan, and others. China now plays an important role in the Asia-Pacific region, not only in providing a gigantic market but also in receiving investment from the neighboring countries. Thus, China and Taiwan were covered in the 1985 multilateral table, making it even more comprehensive than the previous 1975 version. Since then, IDE has successfully completed the multilateral tables every five years, providing powerful analytical tools for dynamic structural changes in the Asia-Pacific region.

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The schematic image of the 2000 Asian international input-output table

| code | Intermediate Demand (A) | | | | | | | | | | | Final Demand (F) | | | | | | | | | | | Export (L) | | | | Statistical Discrepancy (QX) | Total Outputs (XX) |
|--|-------------------------|---------------|------------------|----------------|---------------|------------|-------------|------------|------------|-------------|----------------|------------------|------------------|----------------|---------------|------------|-------------|------------|------------|-------------|--|-------------------|-----------------------|-------|--|--|------------------------------|--------------------|
| | Indonesia (AI) | Malaysia (AM) | Philippines (AP) | Singapore (AS) | Thailand (AT) | China (AC) | Taiwan (AN) | Korea (AK) | Japan (AJ) | U.S.A. (AU) | Indonesia (FI) | Malaysia (FM) | Philippines (FP) | Singapore (FS) | Thailand (FT) | China (FC) | Taiwan (FN) | Korea (FK) | Japan (FJ) | U.S.A. (FU) | Export to Hong Kong (LH) | Export to EU (LO) | Export to R.O.W. (LW) | | | | | |
| Indonesia (AI) | A^{II} | A^{IM} | A^{IP} | A^{IS} | A^{IT} | A^{IC} | A^{IN} | A^{IK} | A^{IU} | A^{IU} | F^{II} | F^{IM} | F^{IP} | F^{IS} | F^{IT} | F^{IC} | F^{IN} | F^{IK} | F^{IU} | F^{IU} | L^{IH} | L^{IO} | L^{IW} | X^I | | | | |
| Malaysia (AM) | A^{MI} | A^{MM} | A^{MP} | A^{MS} | A^{MT} | A^{MC} | A^{MN} | A^{MK} | A^{MU} | A^{MU} | F^{MI} | F^{MM} | F^{MP} | F^{MS} | F^{MT} | F^{MC} | F^{MN} | F^{MK} | F^{MU} | F^{MU} | L^{MH} | L^{MO} | L^{MW} | X^M | | | | |
| Philippines (AP) | A^{PI} | A^{PM} | A^{PP} | A^{PS} | A^{PT} | A^{PC} | A^{PN} | A^{PK} | A^{PU} | A^{PU} | F^{PI} | F^{PM} | F^{PP} | F^{PS} | F^{PT} | F^{PC} | F^{PN} | F^{PK} | F^{PU} | F^{PU} | L^{PH} | L^{PO} | L^{PW} | X^P | | | | |
| Singapore (AS) | A^{SI} | A^{SM} | A^{SP} | A^{SS} | A^{ST} | A^{SC} | A^{SN} | A^{SK} | A^{SU} | A^{SU} | F^{SI} | F^{SM} | F^{SP} | F^{SS} | F^{ST} | F^{SC} | F^{SN} | F^{SK} | F^{SU} | F^{SU} | L^{SH} | L^{SO} | L^{SW} | X^S | | | | |
| Thailand (AT) | A^{TI} | A^{TM} | A^{TP} | A^{TS} | A^{TT} | A^{TC} | A^{TN} | A^{TK} | A^{TU} | A^{TU} | F^{TI} | F^{TM} | F^{TP} | F^{TS} | F^{TT} | F^{TC} | F^{TN} | F^{TK} | F^{TU} | F^{TU} | L^{TH} | L^{TO} | L^{TW} | X^T | | | | |
| China (AC) | A^{CI} | A^{CM} | A^{CP} | A^{CS} | A^{CT} | A^{CC} | A^{CN} | A^{CK} | A^{CU} | A^{CU} | F^{CI} | F^{CM} | F^{CP} | F^{CS} | F^{CT} | F^{CC} | F^{CN} | F^{CK} | F^{CU} | F^{CU} | L^{CH} | L^{CO} | L^{CW} | X^C | | | | |
| Taiwan (AN) | A^{NI} | A^{NM} | A^{NP} | A^{NS} | A^{NT} | A^{NC} | A^{NN} | A^{NK} | A^{NU} | A^{NU} | F^{NI} | F^{NM} | F^{NP} | F^{NS} | F^{NT} | F^{NC} | F^{NN} | F^{NK} | F^{NU} | F^{NU} | L^{NH} | L^{NO} | L^{NW} | X^N | | | | |
| Korea (AK) | A^{KI} | A^{KM} | A^{KP} | A^{KS} | A^{KT} | A^{KC} | A^{KN} | A^{KK} | A^{KU} | A^{KU} | F^{KI} | F^{KM} | F^{KP} | F^{KS} | F^{KT} | F^{KC} | F^{KN} | F^{KK} | F^{KU} | F^{KU} | L^{KH} | L^{KO} | L^{KW} | X^K | | | | |
| Japan (AJ) | A^{JI} | A^{JM} | A^{JP} | A^{JS} | A^{JT} | A^{JC} | A^{JN} | A^{JK} | A^{JU} | A^{JU} | F^{JI} | F^{JM} | F^{JP} | F^{JS} | F^{JT} | F^{JC} | F^{JN} | F^{JK} | F^{JU} | F^{JU} | L^{JH} | L^{JO} | L^{JW} | X^J | | | | |
| U.S.A. (AU) | A^{UI} | A^{UM} | A^{UP} | A^{US} | A^{UT} | A^{UC} | A^{UN} | A^{UK} | A^{UU} | A^{UU} | F^{UI} | F^{UM} | F^{UP} | F^{US} | F^{UT} | F^{UC} | F^{UN} | F^{UK} | F^{UU} | F^{UU} | L^{UH} | L^{UO} | L^{UW} | X^U | | | | |
| Freight and Insurance (BF) | BA^I | BA^M | BA^P | BA^S | BA^T | BA^C | BA^N | BA^K | BA^J | BA^U | BF^I | BF^M | BF^P | BF^S | BF^T | BF^C | BF^N | BF^K | BF^J | BF^U | International freight and insurance on the trade between member countries (A^{**} , F^{**}). | | | | | | | |
| Import from Hong Kong (CH) | A^{HI} | A^{HM} | A^{HP} | A^{HS} | A^{HT} | A^{HC} | A^{HN} | A^{HK} | A^{HU} | A^{HU} | F^{HI} | F^{HM} | F^{HP} | F^{HS} | F^{HT} | F^{HC} | F^{HN} | F^{HK} | F^{HU} | F^{HU} | Valued at C.I.F. | | | | | | | |
| Import from EU (CO) | A^{OI} | A^{OM} | A^{OP} | A^{OS} | A^{OT} | A^{OC} | A^{ON} | A^{OK} | A^{OU} | A^{OU} | F^{OI} | F^{OM} | F^{OP} | F^{OS} | F^{OT} | F^{OC} | F^{ON} | F^{OK} | F^{OU} | F^{OU} | Import duties and import commodity taxes levied on all trade. | | | | | | | |
| Import from the R.O.W. (CW) | A^{WI} | A^{WM} | A^{WP} | A^{WS} | A^{WT} | A^{WC} | A^{WN} | A^{WK} | A^{WU} | A^{WU} | F^{WI} | F^{WM} | F^{WP} | F^{WS} | F^{WT} | F^{WC} | F^{WN} | F^{WK} | F^{WU} | F^{WU} | Valued at C.I.F. | | | | | | | |
| Duties and Import Commodity Taxes (DT) | DA^I | DA^M | DA^P | DA^S | DA^T | DA^C | DA^N | DA^K | DA^J | DA^U | DF^I | DF^M | DF^P | DF^S | DF^T | DF^C | DF^N | DF^K | DF^J | DF^U | Import duties and import commodity taxes levied on all trade. | | | | | | | |
| Value Added (VV) | V^I | V^M | V^P | V^S | V^T | V^C | V^N | V^K | V^J | V^U | | | | | | | | | | | | | | | | | | |
| Total Inputs (XX) | X^I | X^M | X^P | X^S | X^T | X^C | X^N | X^K | X^J | X^U | | | | | | | | | | | | | | | | | | |

* Each cell of A^{**} and F^{**} represents a matrix of 76 x 76 and 76 x 4 dimension, respectively.

In a columnwise direction, each cell in the table shows the input compositions of industries of respective country. A^{II} for example shows the input compositions of Indonesian industries vis-à-vis domestically produced goods and services, i.e. domestic transactions of Indonesia. A^{MI} in contrast shows the input composition of Indonesian industries for the imported goods and services from Malaysia. The cells A^{PI} , A^{SI} , A^{TI} , A^{CI} , A^{NI} , A^{KI} , A^{JI} , A^{UI} , A^{HI} , A^{OI} , A^{WI} allow the same interpretation for the imports from other countries. BA and DA give international freight & insurance and taxes on these import transactions.

Turning to the 11th column from the left side of the table, it shows the compositions of goods and services that have gone to final demand sectors of Indonesia. F^{II} and F^{MI} , for example, maps the inflow into Indonesian final demand sectors, of goods and services domestically produced and of those imported from Malaysia, respectively. The rest of the column is read in the same manner as is done for the 1st column of the table. L^{HI} , L^{FO} , L^{WU} are exports (vectors) to Hong Kong, EU and the Rest of the World, respectively. V^s and X^s are value added and total input/output, as seen in the conventional national I-O table.