

Chapter 1

Conversion of SITC to IO24 Sector Classification and World Trade Matrix

NODA Yosuke

This book is the revised edition of *World Trade Matrix: By Asian International Input-Output Table 24 Sectors* (IDE Statistical Data Series, No. 84). The major revisions undertaken in this edition are: (1) reporting years have been extended to 2001 for all Asian reporting countries and the US; (2) the evaluation of the consistency of data has been reexamined and corrected; (3) the European Union (EU) and ASEAN 4 partner countries have been altered due to redefinition of boundaries; and (4) formulating organizations from which data are sourced have been clarified. The composition of the book, including the chapter layout, has therefore changed to a certain extent.

This book was compiled by taking the trade statistics from the United Nations, OECD, and Taiwan and generating world trade matrices from them on the basis of the 24 sectors for the tables created by the International Input-Output Tables Project of the Institute of Developing Economies. The 11 countries and regions covered are nearly the same as those in the Project, namely China, Japan, the Newly Industrialized Economies (NIEs) of South Korea, Taiwan, Hong Kong, and Singapore; four of the ASEAN nations (Indonesia, Malaysia, the Philippines, and

Thailand), and the United States. We looked at their imports and exports from 1962 to 1999, although the information is not necessarily complete for all countries and regions.

In order to analyze the international industrial structures for East and Southeast Asia, Japan, and the United States, this Project has been creating the Asian International Input-Output Tables. We have already published the *International Input-Output Table for ASEAN Countries, 1975* (Statistical Data Series, No. 39), which covers the five ASEAN countries of Indonesia, Malaysia, the Philippines, Singapore, and Thailand, and South Korea; and the *Asian International Input-Output Table, 1985* (Statistical Data Series, No. 65), which covers these 6 nations in addition to China and Taiwan. When creating these tables, we needed to correlate the industrial and trade statistics, and we did so by using the original data from each country, we adopted the methodology of correlating trade commodity classifications for each country directly with the common sectors, since the common sectors of the Asian International Input-Output table do not necessarily conform to the International Standard Industrial Classification (ISIC). Most countries classify their

trade statistics on the basis of Standard International Trade Classification (many more countries are now basing their statistics on the SITC, or the HS: Harmonized Commodity Description and Coding System since 1988), and basically, it goes back to correlations between the SITC and the common sectors. These 24 common sectors are based on the concept of setting up the divisions that are most important in the trade and industrial structures of East and Southeast Asia, and using them has provided a clear picture of international industrial structures. The common sectors are divided into two stages within the 24 sectors, which are common working sectors integrated from about 70 sectors. Since the 24 sectors include 4 service sectors, only 20 sectors correspond to commodity trade categories. In this book, the 24 sectors used in International Input-Output Tables are referred to as the IO24. The codes and descriptions of the IO24 are shown in Table 1.

The Asian International Input-Output Tables take cross sections of the international industrial structure in specific years, and one cannot see trends in the industrial and trade structures over time. In addition, since creation of the tables requires an enormous investment of effort, they have the weakness of being more than 7 years out of date, looked at in terms of the years covered and the time in which they are used. For this reason, although the Institute of Developing Economies cannot go so far as to update the Input-Output Tables, it can at least take the SITC corresponding to the common sectors in the Tables and use them to compile the international trade statistics created by the United Nations and the OECD. In order to get as much of an idea as possible of the latest trends in world trade, we are publishing the *International Trade Matrix for the Asia and Pacific Region, by Industry: 1965-1983* (Statistical Data Series No. 50), and *International*

Trade Matrix for the Asia-Pacific Region, by Industry: 1975-1992 (Statistical Data Series, No. 68). The SITC-IO24 correlation code tables explaining the 4 digits level of classification codes used here are shown in the appendices to these materials.

Conversions on the basis of the seventy-six divisions of the International Input-Output Table of detailed product classifications in trade data formulated by reporting countries rather than international organization can be found in the *Trade Matrix for Asia-Pacific Region 2000* (IDE Statistical Data Series, No.85). The book is the result of a collaboration between the IDE Input-Output Table Compilation Project and statistics bureaus, universities and research institutes in the ten countries targeted by the Table. Trade matrices using the twenty-four categories of the IO24 industrial table are included in the book.

These correlation code tables were created by the Institute of Developing Economies taking each revised version of the SITC and correlating them with the IO24, but we gave no particular consideration to changes in the correlations over time that occurred because of the revisions. However, *Cross-Reference between Standard International Trade Classification and Industrial Classification* (Statistical Data Series, No. 80) co-authored by FURUKAWA Shunichi and NODA Yosuke, adjusts and corrects the correlations between IO24 and the SITC used in Statistical Data Series, No. 50 and No. 68. The authors modeled the revised SITC and correlated them with the linked IO24, as well as evaluating and readjusting the previously used correlations between the SITC and the IO24 and attempting to create consistent correlations between SITC and the IO24.

What makes these correlations complex is the fact that some SITC classification codes contain

more than one IO24 sectors. These complexities were further increased when revisions of the SITC caused complications and shifts in the correlations. In *Cross-Reference between Standard International Trade Classification and Industrial Classification*, we adopt the method of adjusting the correlations between the SITC and the IO24 by adjusting the inconsistencies between results of the linked models of the SITC and the IO24. We have also examined the inconsistencies in which the linked product code groups correspond to multiple sectors and adjusted them to single sector as much as possible.

Table 2 summarizes the linked groups that include multiple divisions. The 14 linked groups which include 2 IO24 sectors, those in which the i numbers for $CGi(j)$ are 20, 25, 46, 78, 95, 96, 119, 230, 2778, 525, 662, 745, 749, and 760. The linked groups that include 3 IO24 groups are the 7 groups for which the i numbers are 138, 146, 429, 471, 570, 799, and 821. These are the models that we obtained by taking the revised SITC and correlating the places where they overlap with the IO24.

AID-XT (Ajiken Indicators of Developing Economies Extended for Trade Statistics), the data system adjusted, maintained and administered by the Institute of Developing Economies, is composed of trade statistics from the United Nations, the OECD, and Taiwan, and our own IDE unification codes make it possible to use the unique characteristics of the data that arise from its having been generated by different institutions. The UN trade statistics are purchased every year from the United Nations by the International Statistical Affairs Division, Statistical Standards Department Statistics Bureau, Ministry of Public Management, Home Affairs, Posts and Telecommunications and our institute is responsible for preparing, maintaining, and administering the data. This data contains total amounts of commodities and

product category codes to all digits levels, irrespective of whether they are classified under the SITC system or the HS system.

The Institute of Developing Economies purchases the OECD trade statistics directly from the OECD, and it is composed of the same kind of product classification codes. The Taiwan trade statistics are included in the UN trade statistics in the following explanations, having been converted into content and formats based on the UN trade statistics according to the Institute of Developing Economies's own methods.

Creating the world trade matrices in this book requires these trade statistics as well as the SITC and IO24 correlation codes. By taking the common SITC and converting them, we are recompiling the monetary amounts of transactions and the numerical quantities in terms of the IO24. Since an IO24 code corresponds to the most detailed SITC trade commodity category codes in the correlation code tables, we need to use the most detailed product classification code when converting them in trade statistics as well. There is no direct correlation between the HS and the IO24, but since HS and SITC-R3 code correlation tables exist, it is possible to use them to make the conversions.

This book is composed of two parts. The first is made up of three chapters which provide an overview of the formulation of the world trade matrices and discuss the methodologies employed. The second features two tables which present the world trade matrices. Chapter 1, "Conversion From SITC to IO24 Classifications and World Trade Matrices," is a paper by NODA Yosuke which discusses the original correspondence tables between the basic classification codes of the various SITC revisions and the classifications employed in the IO24 divisions, looks at the methods used in formulating the

revised correspondence tables, and examines the difference between the tables in order to provide an outline of the process of formulation of the world trade matrices presented in this volume. The world trade matrices presented in this volume were formulated using UN and OECD trade statistics to enable international comparisons, and each SITC revision was converted to IO24 on the basis of revised correspondence tables. This chapter discusses the methodology employed in the formulation of the world trade matrices.

Chapter 2 is a paper by KUROKO Masato titled "Conversion of Product Classifications to Industrial Classifications - Treating Inconsistent Data -." This chapter discusses methods of conversion to enable trade data to be weighted. In this volume, transaction value and quantity have been converted on the basis of making correspondence tables for SITC and IO24 classification codes correspond to detailed classification codes in trade data. For this reason, when trade data employing detailed SITC classification codes are converted, they do not always correspond with product classification codes in correspondence tables of codes formulated using basic classifications. This chapter discusses uniform weighting and weighting by value as methods of responding to the problems of processing SITC clas-

sification codes which do not correspond.

Chapter 3 is a paper by NODA Yosuke titled "Evaluation and Correction of Consistency in World Trade Matrices," dealing with the evaluation of the consistency of trade statistical data. This chapter discusses problems of consistency when utilizing trade data from the perspective of the sum check of total product value which is used as a standard among partner countries. The chapter also discusses methods for correction for product classification codes which have consistency problems.

Part 2 of this book is composed of two tables. Table 1, "Evaluation of Consistency of Basic AID-XT Data for East Asian Nations and Regions and the US," is the consistency evaluation table introduced by Noda in Chapter 2. Table 2, "World Trade Matrices: Time Series Transaction Value Table by the 24 Classifications of the Asian International Input-Output Table," are world trade matrices compiled by Kuroko. Uniform weighting was generated by the conversions conducted in the formulation of these tables. The world trade matrices in this book are the result of the process described above, but the information contained in these pages is only part of the whole. We plan to offer the world trade matrices created here in the form of a CD-ROM.