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"Compilation and Application of Trade Indices (II)," one of IDE's current research projects, is a two-year project focusing on the preparation and employment of world trade statistics which commenced its first fiscal year in April 2003. The focus of this project is the formulation of trade indices and their employment in international comparisons. This project continues the research on the compilation, evaluation and analysis of trade statistics and indices conducted by the IDE projects "World Trade Statistics and Search System" (Organizer: KINOSHITA S.; Coordinator: NODA Y.) commenced in 1993, and "Estimation of Trade Index and its Evaluation" (Organizer: NODA Y.; Coordinator: KUROKO M.) commenced in April 2001.

In outline, the methodological approach of this project is as follows:

(1) Consideration of the use of international trade statistics with particular reference to problems in the estimation of trade matrices, which form the framework for trade relations models, together with evaluation of the consistency of trade statistics and their correction to the extent feasible.

(2) Compilation of consistent trade matrices and trade statistics with a focus on East Asian countries and regions and the US, using the classification codes of the Standard International Trade Classification (SITC) (upper level classification code), the 24 sectors of the International Input-Output Table (IO24) and the International Standard Industrial Classification of all Economic Activities (ISIC).

(3) Calculation of Laspeyres and Paasche indices and chain-weighted versions of both for each classification code for each country. In addition, study of these different forms of index, in particular their usefulness in the case of problems arising from changes in quality.

(4) International comparison, comparison between countries and comparison of world trade indices and national trade indices for each classification code.

(5) In addition to methodological considerations, the implementation of a variety of empirical studies applying economic analysis to trade indices, including study of the relation between trade indices and international competitiveness.

When compiling trade indices, it is essential that the transaction values and quantities in the trade statistical data employed are consistent over a long-term time series. The consistency and validity, or alternatively the problems, of trade statistics and related indicators are sometimes highlighted when they are actually employed in international

comparisons and analyses. The subjects of the most fundamental importance here, and one which forms a focus of this project, is evaluation of consistency in trade statistics over long-term time series. Part of the outcome of the first fiscal year of this research has been published as midterm results in "Compilation and Application of Trade Indices: Aim for estimation and analysis of long-term trade data" (ed. by NODA Y.). Despite being a mid-term report, it examines important issues concerning the evaluation and correction of consistency in the trade statistics which make up the raw material of the project in considerable detail.

This volume also presents part of the research output of the project, focusing on the ASEAN4 nations (Indonesia, the Philippines, Malaysia and Thailand), the Asian NIEs (South Korea, Taiwan, Hong Kong and Singapore), China, Japan and the US. Part 1 deals with subjects in the compilation of trade statistical data and the evaluation and correction of consistency, Part 2 with subjects in the compilation and evaluation of trade indices, and Part 3 with international comparison using trade indices and related indicators. Part 4 is a collection of relevant materials. This preface will provide a general overview of the specific focus of the volume by indicating the fundamental points subjects in the compilation and application of trade statistics and indices.

1. Compilation of Trade Statistics and Evaluation of Consistency

Basic trade statistics for AID-XT (Ajiken Indicators of Developing economies: eXtended for Trade statistics), the world trade statistical database formulated, maintained and managed by IDE, has two subcategories: Former AID-XT and new AID-XT. Former AID-XT was composed of UN, OECD and Taiwan trade statistics. The specificities of data arising from its compilation by different institutions were rendered consistent using IDE unified codes. Statistical data for Taiwan was obtained directly from the Statistical Department, Directorate General of Customs of the Ministry of Finance of the Republic of China by IDE, and the institute's own methods were used to make the contents and form consistent with UN statistics. New AID-XT is composed of UN trade statistics obtained from UN COMTRADE data (which the UN Statistics Division has made available online since 2003) and Taiwan trade statistics.

In this volume the standard for evaluation of consistency is equivalence between the total transaction value for the most detailed classification code (mdcc) in the commodity classification and the total value for the commodity. That is, the method of evaluation is based on a sum check.

This method of evaluating consistency and correcting data to the extent feasible, as employed in the compilation of basic trade statistics for the former and new AID-XT, is explained in Part 1 of this volume. Table 1 in Part 4 is a consistency evaluation table for corrected new AID-XT.

2. Conversion of Different Classifications

When attempting to employ a consistent analytical framework in the analysis of trade statistics as long-term time series, where commodity classifications have been revised, it is necessary to integrate the classifications used, choosing the classification system either before or after the revision as the standard. Commodity classification systems can be integrated by calculating distributed weights on the basis of correspondence between the classifications before and after the year of revision,

and the employment of these weights in redistributing the transaction values and quantities in the respective classification codes. The method employed to date at IDE is to formularize the structure of distributed weights in each commodity group, to calculate the weights, and to use them to convert trade statistical data. The application of specific conversion formulas to UN and OECD data enables the formulation of long-term time series data employing unified classifications. The methods employed in estimating distributed weights for commodity groups are discussed in Part 2 of this volume.

The equal distribution method, which employs a distribution structure obtained from correspondences between commodity classifications without consideration of transaction value, is widely used in conversion of actual trade statistics. A variety of conversion tables have been modeled for this method: IDE's conversion model for SITC-R2 to SITC-R1, the OECD conversion model, the Kinoshita and Yamada conversion model and the UN Comtrade database estimation method. However, each of these conversion tables is wholly or partially modeled using fixed individual classification codes, and when classification codes appear in trade data which do not match these, that data is judged as being outside the scope of the model. Masato Kuroko has developed a method of conversion using distributed weights which rectifies this defect, and this is the method employed at IDE.

3. Compilation and Evaluation of Trade Price Indices

Trade price indices are formulated in Chapter 3 of this volume using a long-term SITC-R1 series from the UN Comtrade database and employing the 20 industrial sector classifications developed by Kinoshita and Yamada (Table 10) as index codes. In addition to trade value indices, terms of trade indices are compiled in Chapter 3 by dividing trade quantity indices and trade export value indices by imports. The results of these calculations are shown in Table 4 "Trade Indices: General and industrial sectors based" in Part 4. Chapter 4 conducts evaluations based on comparisons between the trade price indices compiled in Chapter 3 and trade indices and indicators formulated by the relevant nations themselves.

4. Trade-Related Indices for International Comparisons

In addition to trade price indices, this volume employs revealed comparative advantage (RCA) and Grubel-Lloyd intra-industry trade indices as trade-related indices in international comparisons of East Asian countries and regions and the US. The RCA and intra-industry trade indices are formulated in this volume employing basic trade statistics for new AID-XT converted to SITC-R1 trade statistical data using Kuroko's equally weighting method based on the most detailed commodity code. Chapter 6 analyzes international competition using these indices.

In table 2 in part4 export, import and difference from export to import of RCA are shown and export RCA index is defined for year y、

$$RCA\_e_{rc}(y) = \frac{x_{rWc}(y)/x_{rWT}(y)}{x_{WWc}(y)/x_{WWT}(y)}$$

where $x_{rWc}(y)$ is export value for reporting country r, partner country *World* and commodity code c, $x_{rWT}(y)$ total export value for reporting country r, partner country *World* and commodity total, $x_{WWc}(y)$ total export value for reporting country *World*, partner country *World* and commodity code c, $x_{WWT}(y)$ total export value .

Similarly import RCA index as revealed comparative disadvantage is defined,

$$RCA\_i_{rc}(y) = \frac{m_{rWc}(y)/m_{rWT}(y)}{m_{WWc}(y)/m_{WWT}(y)}.$$

m is import instead x as export. Relative revealed comparative trade advantage is defined the difference from export RCA to import RCA,

$$RCA_{rc}(y) = RCA\_e_{rc}(y) - RCA\_i_{rc}(y)$$

for 1 level commodity code and 0-4,9} ,5,6,7,8.

Export transaction value and import transaction value for industry c and partner country p are termed x_{pc} and m_{pc}, respectively. Grubel-Lloyd Intra-industry trade for industry c and partner country p is defined as,

$$R_{pc} = x_{pc} + m_{pc} - |x_{pc} - m_{pc}|$$

and Intra-industry Trade indices is defined as

$$B_{pc} = R_{pc}/(x_{pc} + m_{pc})$$

Table 3-1 is titles "Intra-Industry trade indices of commodity total and 1 digit level commodity code in SITC-R1" and Table 3-2 is titled "Intra-Industry trade indices of 1 digit level commodity code {5-8}, {0-4,9} in SITC-R1". A variety of indicators formulated by international organizations are used as base data in this volume in addition to indices formulated by IDE. Trade unit values are formulated using these data in Chapter 5.