

Chapter 5

Compilation of Trade Indices Using UN Comtrade Data

Based on SITC and HS

KUROKO Masato

Introduction

Since 2004, the Institute of Developing Economies (IDE) has formulated trade indices using SITC-based data drawn from UN Commodity Trade Statistics Database (Comtrade) for the previous four years. In 2005, the trade indices were formulated using Comtrade data based only on SITC Revision 1. In 2007, Comtrade data based on all of the SITC revisions (SITC Revisions 1 to 3; below, they will be abbreviated SITC-R1, SITC-R2 and SITC-R3) were used in the formulation of the indices. For the present indices, Comtrade data based on the Harmonized Commodity Description and Coding System (HS) were also employed, and the indices were formulated using data based on all SITC revisions and HS versions.

This paper will first consider the significance of formulating trade indices using data based on HS, following which it will discuss the formulation of correspondence tables between HS and 20 industry classifications formulated by Kinoshita and Yamada in 1993 (termed “KY20” below) which this necessitated. To conclude, it will compare and consider the HS-based and the SITC-based indices.

1. The Significance of Formulating Trade Statistics using HS Classifications

The SITC is a system of commodity classification developed by the UN. SITC Revision 3 (SITC-R3), issued in 1986, classifies 3121 basic headings at its most-detailed level. (Of these, 2822 are 5-digit classifications, and 299 are 4-digit classifications). The HS was developed by the Customs Cooperation Council (CCC), the predecessor of the World Customs Organization (WCO), and contains 5224 sub-headings in its 2002 version. The HS can be considered to be a more detailed commodity classification system than the SITC.

The well-known “quality change” problem is a significant issue in the formulation of trade unit value indices for commodity classifications. The problem here is that, when a commodity classification for which unit value indices are calculated includes heterogeneous commodity items of different unit values, not only the change in the unit values but also the change in the composition of the heterogeneous items are reflected in the unit value indices for the commodity classification. Kinoshita (2008) formulated unit value indices for automotive products using HS-based data and compared these with unit value indices formulated by the IDE using SITC-based data. The results showed the latter to be overestimated.

Given this finding, for this study it was decided to employ the more detailed HS-based data for the period for which such data was available from Comtrade. This

not only made it possible to resolve the problem of quality changes in the formulation of unit value indices, but also enabled the formulation of indices using data which was closest in nature to the data originally provided to the UN by the governments of the relevant nations.

2. Correspondence between HS Classifications and Industry Classifications

The formulated trade indices consist of general indices and indices for each industry classification. The industry classifications are based on the correspondence tables between SITC-R1, SITC-R2 and 20 industry classifications formulated by Kinoshita and Yamada in 1993 (termed “KY20” below). The author formulated a correspondence table between SITC-R3 and KY20 in 2007 in order to employ data based on SITC-R3. For the present indices, correspondence tables between HS versions (HS1988/1992, HS1996 and HS2002) and KY20 were formulated to enable data based on the HS revisions to be employed.

The correspondence tables between the HS versions and KY20 were formulated by joining two tables. These were the correspondence table between SITC-R3 and KY20 formulated in 2007 (termed “SITC3/KY20 table” below), and a correspondence table between the HS versions and SITC-R3 (termed “HS/SITC3 table” below). That is, correspondence was established between the HS versions and KY20 using the SITC-R3 as the key item for their connection. The SITC-R3 digit levels were inclusive for the SITC3/KY20 table in which the correspondences were basically established for industry classifications by the 2-digit classifications and exceptionally by the lower 3- and 4-digit classifications when the basic correspondences by 2-digit classifications were not

established. By contrast, for the HS/SITC3 tables, SITC-R3 digit level was the most-detailed levels, 5-digit. Because of this, SITC-R3 in the HS/SITC3 table was first added more inclusive digit levels (1- to 4-digit levels) of SITC-R3, and correspondences were established between these and SITC-R3 in the SITC3/KY20 table. This is shown as procedures 1 to 9 in Figure 1. The HS02 table is the table to which more inclusive digit levels of SITC-R3 were added, and the HS03 table is a table in which correspondences were first established between HS and KY24.

Next, because the HS03 table contained the most-detailed 6-digit HS classifications carried over from the HS/SITC3 table, it was necessary to run a check to determine whether or not it would be possible to establish correspondences between KY20 and HS 2- and 4-digit levels, in order to enable a correspondence table with KY20 at a more inclusive level of HS to be obtained. This is shown as procedures 11 to 20 in Figure 1. Procedures 11 to 13 are the check to determine whether correspondence could be established at the HS 2-digit level, and procedure 14 is storing the HS for which correspondence could be established in the HS07 table. Next, a check was conducted to determine whether correspondence with other HS could be established at the 4-digit level (procedures 15 to 17), and the HS for which correspondence could be established were stored in the HS07 table (procedure 18). Finally, a check was conducted to determine whether correspondence with the remaining HS could be established at the HS 6-digit level (procedure 19) and the HS for which correspondence could be established were stored in the HS07 table (procedure 20). The HS07 table containing the HS for which correspondence had been established with KY20 was further subjected to a manual check to determine whether correspondence could be established at a more inclusive level (procedure 21), and was finally formulated as HS/KY20

correspondence tables (22).

A detailed description of the procedures employed to establish correspondence between HS and KY20 was provided above. For procedures other than these employed in the formulation of indices for this study, please refer to the relevant reports in 2007 and 2008.

3. Remarks on the Indices Formulated in this Study

The graphs on the left in Figure 2 show examples of the unit value indices formulated in this study. They are chain-linked Fischer unit value indices for Japanese exports by industry. There is a clear deviation between the indices formulated using SITC-R1-based data and the indices formulated using HS-based data from 1989 onwards. For all KY20 categories other than 01 (Agricultural products), 02 (Mine Products) and 13 (Iron and steel), the indices formulated using SITC-R1-based data are higher than the indices formulated using HS-based data from 1989 onwards (the period for which it is possible to employ HS-based data), indicating the validity of the supposition that the SITC-based indices were overestimated.

The graphs on the right in Figure 2 show the value representation ratio for the calculation of each index. For all industry classifications, a comparison of the value representation ratios of the indices formulated using HS-based data and SITC-R3-based data from 1989 onwards shows that the ratios are either identical

or the ratios of the indices formulated using HS-based data are higher.

These results indicate that the use of HS-based data enables trade unit value indices to be formulated with a higher level of accuracy, and enables trade data to be reflected in indices with a higher representation ratio. However, there are considerable differences between the transaction values of SITC-R3-based data and the HS-based data for KY20 heading 02 (Mine products) in the HS1988 period, despite the fact that there is no major difference between the value representation ratios. This indicates the possibility that a mistake has been made in establishing correspondences between HS and KY20, and that it will be necessary to adjust the correspondences.

Conclusion

This paper has discussed the formulation of trade indices using HS-based Comtrade data. It will be necessary to partially adjust the correspondences between HS and KY20, but this is an issue for the future.

The attempt to formulate more accurate trade indices by using the original trade statistics compiled by the relevant nations, which employ more detailed 9- or 11-digit commodity classifications in accordance with HS, is planned as a future extension of the present project.

