Ch.5 Corresponding Relation Between ISIC Revision.2 and ISIC Revision.3:a Study on Corresponding Relation based on Grouping

Chapter 5

Corresponding Relation Between ISIC Revisions.2 and ISIC Revision.3 : A Study of Corresponding Relation based on Grouping

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The corresponding relation between revisions 2 and 3 of the International Standard Industrial Classification (ISIC) is set forth in the "Correspondence tables between ISIC, Rev. 2 and ISIC, Rev. 3" in part 4 of "International Standard Industrial Classification of All Economic Activities, Statistical Paper (Series M no. 4, Rev. 3)." Two types of correlation code tables are presented for the two revisions: (1) the individual classification codes for both ISIC, Rev. 2 and ISIC, Rev. 3 are listed within the same table, using the individual classification codes for ISIC, Rev. 2 as the standard (an ascending order), and (2) the individual classification codes for ISIC, Rev. 3 are used as the standard and the individual classification codes for ISIC, Rev. 2 are also listed. By referring to these two tables, it is possible to organize the corresponding relations between the two revisions into groups. This chapter is a study of grouping and sub-grouping of corresponding relations between ISIC, Rev. 2 and ISIC, Rev. 3 using a cutting model.

In order to link two systems that use different classifications, it is essential to have a corresponding relation code table that makes clear the correlations between the two systems. When using such a corresponding table, studying what sorts of correlations exist between the two sets of classifications is an important issue. Here, the term "group" is used to refer to a collection of classification codes that have a closed correlation and which form the core of the classifications within the corresponding table. For the grouping of corresponding relations between the classifications, the Noda-Yamamoto grouping method, which is based on Sato's concept of FCD (Finest Common Derivative), is employed.

The grouped corresponding relations can be divided into four types, as described below. It is assumed that each corresponding relation consists of a classification A and a classification B. In group type 1, there is a one-to-one corresponding relation between the individual classification codes of classification A and classification B. A group of this type contains a single classification code. In group type 2 there is a one-to-many correlation between classification A and classification B. The number of classification codes contained in a group of this type is equivalent to the number of classification codes contained in classification B. In group type 3 there is a many-to-one correlation between classification A and classification B. This type is the opposite of type 2. In group type 4 there is a many-to-many corresponding relation between classification A and classification B.

In group type 4 can be further subdivided into type 4A and type 4B. Refer to Chapter6, "Identification of Types on Corresponding Relation" for information on dividing up grouping.

The method of viewing groups as single correlations is an effective way of making clear the characteristics of a group, provided that the number of elements in the group is small. However, the more elements a group contains, the wider the range of characteristics it embraces. This makes it difficult to understand what the group actually contains. For this

reason, when we think about forming groups, it is essential both to make sure that the correlations within each group are clear and to create smaller subgroups as a way to deal with groups that have become too large.

The process of removing some corresponding relations from a group and then dividing the corresponding relations that remain into several subgroups is called cutting. In such cases, the corresponding relations that are removed are defined as the cut elements. In addition, the process of cutting determines the characteristics of the corresponding table, so creating subgroups by means of cutting can be seen as one model for a corresponding table.

1. Basic model: GCT_{23}[ISIC:B]

The corresponding table for the ISIC, Rev. 2 and ISIC, Rev. 3 is based on groupings of correspondences comprising 4-digit individual classification codes obtained from Correspondence Table: ISIC, Rev. 2 to Rev. 3, which is a corresponding table of industrial classifications printed in the "International Standard Industrial Classification of All Economic Activities" issued by the UN Statistics Bureau.

The groupings of classifications in the corresponding table are uncut and used as basic model: GCT_{23}[ISIC:B] (Basic model of Grouped Corresponding Table for ISIC, Rev. 2 to ISIC, Rev. 3). In accordance with the grouping process, the groups are numbered sequentially in the basic model. Therefore, the sequential numbers of the groups have no relation to the order of the codes in ISIC, Rev. 2 or ISIC, Rev. 3.

2. Cutting model: GCT_{23}[ISIC:Nd]

Among the groups obtained from the ISIC 4-digit uncut basic model GCT_{23}[ISIC:B], group number 30 (group 30) is a collection of 407 corresponding relation items. Furthermore, when ISIC, Rev. 2 is used as the standard, all items from major classifications 1 through 9 are included. GCT_{23}[ISIC:Nd] is a cutting model created by organizing the corresponding relations contained in group 30 into subgroups corresponding to the major classifications from ISIC, Rev. 2.

In the case of model GCT_{23}[ISIC:Nd], the cut elements are not always elements that are "considered to be unrelated." We cannot dismiss the possibility that some very relevant corresponding relations have been removed as cut elements, and it is possible that there may be close connections between some subgroups. Consequently, in order to use the subgroups of group 30 obtained from GCT_{23}[ISIC:Nd], it is necessary to give deep consideration to the possibility of connections between different subgroups.

3. How to read Appended Table 1

The grouped corresponding relations obtained using cutting model GCT_{23}[ISIC:Nd] are listed in Appended Table 1. This table lists all pairs of corresponding individual classification codes. This means that if an individual classification code is linked with m other items, it is listed m times. This listing method uses the following constituent items. Set of sequential group number: G, sequential subgroup number: SG and group type: Typ

$$(G \quad SG : Typ)$$

is shown at the first line of a grouped corresponding relation in group G and sebgroup SG. Pairs of corresponding individual classification codes in the group and the sebgroup are comprised of the items.

[$G \cdot Q2$] Sequential number of ISIC, Rev. 2 individual classification code within group

[$SG \cdot Q2$] Sequential number of ISIC, Rev. 2 individual classification code within subgroup

〔*R2*〕 ISIC, Rev. 2 individual classification code

〔*f2*〕 Number of items linked to ISIC, Rev. 2 individual classification code

〔*f3*〕 Number of items linked to ISIC, Rev. 3 individual classification code

〔*R3*〕 ISIC, Rev. 3 individual classification code

〔*G·Q3*〕 Sequential number of ISIC, Rev. 3 individual classification code within group

〔*SG·Q3*〕 Sequential number of ISIC, Rev. 3 individual classification code within subgroup

The table is organized in ascending order in the following sequence: *G*, *SG*, *R2*, *R3*. The table shows items organized into groups and subgroups. This makes it quite difficult to search for an item if only the ISIC, Rev. 2 or ISIC, Rev. 3 individual classification code is known, but not the group or subgroup. To deal with this problem, two additional tables have been appended to allow lookup of an item's group or subgroup using the individual classification code.

The first of these additional tables, Appended Table 2, is called "Table of ISIC, Rev. 2 Individual Classification Codes and Corresponding Groups." When given an*R2* individual classification code, this table can be used to look it up and determine to which group and subgroup the code belongs. One can then return to the model GCT_{23}〔ISIC:Nd〕 in Appended Table 1 to look up the group. The *R2* individual classification code should be contained in that group. Corresponding relations between *R2* and *R3* for the items in that group are listed in the table.

Appended Table 2 contains the following constituent items.

〔*G*〕 Group

〔*SG*〕 Subgroup

〔*R2*〕 ISIC, Rev. 2 individual classification code

〔*R2.NM* 〕 Content of *R2*

The listing order in this table is *R2*, *G*, *SG*.

The second additional table, Appended Table 3, is called "Table of ISIC, Rev. 3 Individual Classification Codes and Corresponding Groups." Items can be looked up in this table using exactly the same method used for looking up *R2* codes. Appended Table 3 contains the following constituent items.

〔*G*〕 Group

〔*SG*〕 Subgroup

〔*R3*〕 ISIC, Rev. 3 individual classification code

〔*R3.NM* 〕 Content of *R3*

The listing order in this table is*R3*, *G*, *SG*.

4. How to read Appended Table 4

Appended Table 3 shows corresponding relations between GCT_{23}〔ISIC:Nd〕 individual classification codes as solid lines. In the case of subgroup 30-7, which has many corresponding relations, it would have been difficult to indicate all corresponding relations with solid lines, and even if all such corresponding relations were so indicated the result would have been so intricate that it would have been impossible to read. Therefore, the sold lines indicating corresponding relations were omitted in this case.

The indication method of the second model indicates corresponding links between items with solid lines in order to indicate the mutual correlations between the individual classification codes. This method is direct and easy to understand. However, if the number of correlations is large, many connecting lines overlap, resulting in a table that is actually more difficult to read. This method uses the following constituent items for each of *G*, *SG*.

〔*G·Q2*〕 Sequential number of ISIC, Rev. 2 individual classification code within group

〔*SG·Q2*〕 Sequential number of ISIC, Rev. 2 individual classification code within subgroup

〔*R2*〕 ISIC, Rev. 2 individual classification code

〔*f2*〕 Number of items linked to ISIC, Rev. 2 individual classification code

〔*f3*〕 Number of items linked to ISIC, Rev. 3 individual classification code

〔*R3*〕 ISIC, Rev. 3 individual classification code

〔*G·Q3*〕 Sequential number of ISIC, Rev. 3 individual classification code within group

〔*SG·Q3*〕 Sequential number of ISIC, Rev. 3 individual classification code within subgroup

In the graphical indication, the 〔*f2*〕 and 〔*f3*〕 for each item are shown by solid line links. When making a graphical indication of corresponding relations between grouped items, the items have been reordered so as to minimize the number of crossed lines, even if this means the correlation codes are often not listed in their proper ascending sequence. There are many possible graphical indication methods. One of them would be not to change the sort order of the items when adding indications. This ensures that the sequence of the codes is preserved even when the same code has multiple correlations. Using this method, group 32-1 would appear like this.

In this example, items other than *R2*, *f2*, *f3*, and *R3* have been omitted. In this diagram, the lines linking *R2* and *R3* codes cross in two places. In contrast to this, if the sequence of the codes is rearranged in order to minimize the number of crossed lines, not worrying about the sort order, the result looks like the following diagram.

In this case there are no crossed lines. Since a diagram without crossed lines can be created by switching around a variety of codes, there is more than one way to achieve the same result. In this chapter, the method which minimizes the number of crossed lines was used in the diagraming of grouped items, but an effort was made to disrupt the sort order of the items as little as possible.

4. Cut elements and subgroup connections

In the case of model GCT_{23}〔ISIC:Nd〕, cutting and the formation of subgroups was performed only on group 30, which contains a total of 407 corresponding relations. There were 42 cut elements, and these were used to divide group 30 into 19 subgroups.

In Appended Table 1 showing group 30, the grouping of cut elements appears first, followed by the various subgroups. The cut elements comprise the following constituent items.

(*G* 0 :)

〔*R2*〕 ISIC, Rev. 2 individual classification code

〔*B2·SG*〕 Sequential number of subgroup to which ISIC, Rev. 2 individual classification code belongs

〔*B2·SG*〕 Sequential number of subgroup to which ISIC, Rev. 3 individual classification code belongs

〔*R3*〕 ISIC, Rev. 3 individual classification code

In order to distinguish between the cut elements and entries that are not cut elements in Table ??, the *B2·SG* and *B3·SG* items are enclosed in square brackets 〔〕 in the case of cut elements.

As was mentioned above, cut elements in model GCT_{23}〔ISIC:Nd〕 are not selected in a manner that ensures that there are no mutual connections between them and the subgroups. It is therefore necessary to show clearly any connections between cut elements and subgroups. The connections between cut elements and the subgroups to which the various individual classification codes belong are shown in Table ??. In particular, among the cut elements, individual classification codes that do not belong to any subgroup are indicated by a 〔0〕.

Corresponding relations between the subgroups of cut elements are identified as the same type as correlations between individual classification codes. If 〔0〕 is indicated for one or the other individual classification code, the correlations is type 0. Corresponding relations other than type 0 through type 3 are type 4.

As an example, let us consider a connection via a type 1 cut element. The following connection appears in Figure 1.

This means that group 30-1 and group 30-9 are linked via a corresponding relation (cut element)

between ISIC, Rev. 2 individual classification code 3211, which belongs to group 30-9, and ISIC, Rev. 3 individual classification code 0140, which belongs to group 30-1. What must be kept in mind here is that since both the subgroups and the cut elements are intertwined with other items to form a group, cut elements cannot be removed piecemeal; they must all be removed together.