

Measuring Homogeneity of Industries by Using Data on Kind-of-Activity Units in Mining and Manufacturing

Dr. Gerhard Stock

Federal Statistical Office

Gustav-Stresemann-Ring 11

D-65180 Wiesbaden, Germany

gerhard.stock@statistik-bund.de

1. Suitability of Activity Classifications

After implementation of NACE Rev. 1, which is based on ISIC Rev. 3, consolidated statistical results are now available in Germany, which permits to examine the question whether or how far the structure of NACE Rev. 1 is suitable to deliver, for the existing national economic structure, a reliable information and decision basis for businesses, the government and society. With data on Mining and Manufacturing (NACE sections C and D), produced by German official statistics on enterprises, local units, and kind-of-activity units, quantitative results will be available for the discussion about the suitability of NACE as well as future needs for revision.

2. Statistical Units and their Activity Classification

In most of the official European structural business statistics, the statistical units “enterprise” and “local units” are used to obtain statistical results. But it is obvious that a given statistical unit often is inhomogeneous in a sense that it performs more than one activity (diversification). In this case all variables of the unit are counted under the activity code of the main activity, even if there are other, so-called secondary activities. In order to get consistent results for all levels of an activity classification, the main activity has to be carried out by the “Top-Down method”. In cases where individual data not only for the main activity but also for secondary activities can be obtained by surveys it is possible to investigate if a given classification is suitable for the description of a national economy. In Germany we can construct figures for a kind of “unit of homogeneous production” by aggregating variables surveyed for main and secondary activities from local units to enterprises once a year.

3. Indicators of Homogeneity

With data described above the following ratios can be calculated:

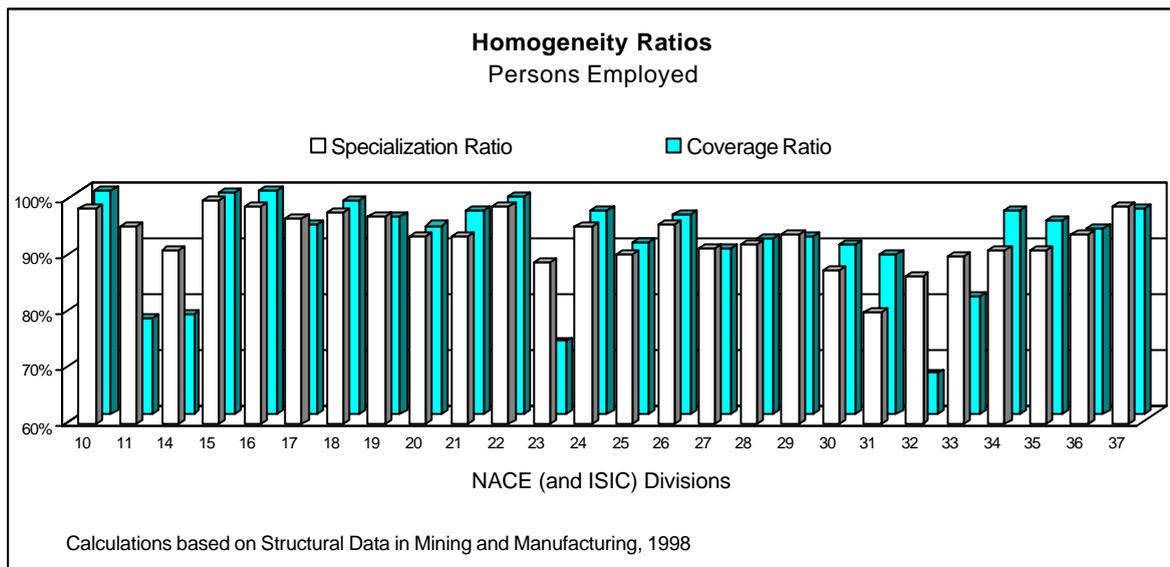
$$\text{Specialization ratio} = \frac{\text{Output (or input) in main activity}}{\text{Output (or input) in all (main and secondary) activities}} \times 100 \%$$

$$\text{Coverage ratio} = \frac{\text{Output (or input) in main activity}}{\text{Output (or input) in all activities with the same classification code}} \times 100 \%$$

The specialization ratio shows how many percent of a specific product (or input for a product) come from units classified with the classification code of the producing activity. The coverage ratio shows how many percent of a specific product (or input for a product) are produced (or used) in typical products of a specific branch.

4. Some Empirical Results

The following diagram shows homogeneity ratios for NACE (and ISIC) divisions 10 to 37:



For the 2-digit aggregation level (divisions), both homogeneity ratios are on average more than 90 %, so – at least at this level - the classification allows to describe rather homogeneous units. But there are some exceptions: Divisions with rather low specialization ratios are NACE (ISIC) 31 (Manufacture of electrical machinery and apparatus n.e.c.), 32 (Manufacture of radio, television and communication equipment and apparatus) and 33 (Manufacture of medical, precision and optical instruments, watches and clocks). Rather low coverage ratios are observed for products of NACE (ISIC) 11 (Extraction of crude petroleum and natural gas; service activities incidental to oil and gas extraction excluding surveying), 14 (Other mining and quarrying), 23 (Manufacture of coke, refined petroleum products and nuclear fuel) and 32 (Manufacture of radio, television and communication equipment and apparatus). More detailed investigations (e.g. for NACE groups and classes) that go far beyond the scope of this paper have been made to check the suitability of the NACE classification for the German industry. They will be published soon.

REFERENCES

Council Regulation (EEC) No 3037/90 of 9 October 1990 (OJ No L 293, 24.10.1990, p.1) on the statistical classification of economic activities in the European Community and Council Regulation (EEC) No 761/93 of 24 March 1993 (OJ No L 83, 3.4.1993, p.1) amending Council Regulation 3037/90.

Council Regulation (EEC) No 696/93 of 15 March 1993 (OJ No L 76, 30.03.1993, p.1) on the statistical units for the observation and analysis of the production system in the Community.

Economic Classification Policy Committee (U.S. Department of Commerce) (Ed.), Issues Paper No. 4, Criteria for Determining Industries, p.1, Washington 1993.

United Nations (Ed.), International Standard Industrial Classification of all Economic Activities, Statistical Papers, Series M No. 4, Rev.3, New York 1990.

RESUME

L'exposé montre comment des données provenant des statistiques structurelles sur les industries extractives et manufacturières en Allemagne peuvent être exploitées pour calculer des taux d'homogénéité. Pour la première fois, le débat sur l'adéquation de la NACE aux structures actuelles de l'économie nationale et aux révisions ultérieures nécessaires peut s'appuyer sur des résultats quantitatifs.