

# Improving Homogeneity of Industries in the Danish Supply and Use Tables. Methods and Application

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One of the characteristics of Globalization is an increasing integration of firms in Global Value Chains (GVCs) of production. Simultaneously multinational companies play a more dominant role and an increasing number of firms are becoming so-called Factoryless Goods Producers. Firms in the globalization process increase their imports and exports and change their structure of production. Moreover they may change ownership or geographical location. Groups of firms that used to constitute specific industries are becoming less and less homogenous. It becomes an increasing problem that firms that are part of GVCs are characterized quite differently from those that are not. This is a serious attempt on the solid foundation on which supply-use tables and input-output tables rest. Using standard input-output tables for analyses of how industries are doing in a globalized economy may therefore yield wrong results. Various remedies to solve these challenges have been suggested. One is to disaggregate the industries of the existing supply and use tables according to their participation in GVC's in order to re-establish homogeneity in production. This paper discusses an attempt made by Statistics Denmark to disaggregate the Danish supply and use tables in order to achieve some more homogenous industries. It departs from an aggregated version of the Danish supply-use tables (from 117 to 84 industries (NACE) and 2350 products to 260 products (CPA)) and breaks down the industries according to various criteria; size (small, medium or large), exporter or non-exporter and ownership. The breakdowns will be carried out for output and intermediate consumption and cover 4 years from 2011 through 2014. A part of the project will be to investigate the possibilities to also breakdown employment and investments with the same industry breakdowns.

The primary microeconomic data to be used for the breakdown of existing industries is the Structural Business Statistics (SBS), Statistics on Manufactured Goods (PRODCOM), Statistics on Foreign Affiliates (FATS), e-income register for employment, and finally the recent report "Services and Goods Exports from the Nordics", Nordic Council of Ministers (2016). An adapted version of the Danish SBS contains establishments and enterprises (identified by a unique legal number) with a detailed industry breakdown (NACE rev 2, 726 industries). This database is applied to populate the new industry breakdowns by size, exports and ownership.

Firstly, targets for totals (summed over all products) in the manufacturing industries will

becompiled. Then the initial supply matrix is compiled using both PRODCOM and the adapted SBS. For non-manufacturing industries more crude methods are used. Finally the supply matrix is balanced by applying the RaS procedure. The Use matrices are more complicated because there is no information readily available as to what products the firms use. A partial solution is to use the direct imports of goods. Naturally, this works best for industries heavily dependent on imports. Further details about the breakdown are discussed in the paper.

An important aim in the paper is to look for applications of the new extended supply-use tables. The breakdown of industries will enable a comparison between the parts of the original industries that are e.g. small or large or foreign owned or not in terms of e.g. productivity. Another obvious possibility is to use the extended supply and use tables to extend the input-output tables and to exploit these tables for various input-output calculations in order to better describe the structure of the economy in a more globalized world.