STATISTICS DENMARK

Documentation of statistics for Production and Turnover in Manufacturing Industries 2017 Month 12

Statistics Denmark
Sejrøgade 11
DK 2100 København Ø

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1 Introduction

The main purpose of the Production and turnover in manufacturing industries statistic is to show the development in the manufacturing industry. The statistic is primarily used for assessment of the current manufacturing industry business cycle.

Originally published in 1974, the statistic forms part of the harmonized European Union system of short-term business statistics and is comparable to previous versions from 1985 and onwards.

2 Statistical presentation

The production and turnover in manufacturing industries statistic consists of a production index as well as a turnover index. Both indices are categorized into four industry sectors and 12 industries based on the Danish industrial classification DB07. The total turnover index is also published split into two indices of domestic and export turnover. Both non-seasonally and seasonally adjusted data is published.

2.1 Data description

The statistic provides a monthly estimate of the activity in the manufacturing industry shown by the level of production and turnover. The results are published on a monthly basis as indexes with a 2010 base year. Furthermore, the turnover index is split by domestic turnover and by export turnover. Both indexes are categorized into four industry sectors and 12 industries and seasonally adjusted data for both indexes are available as well.

2.2 Classification system

Industry activity is categorized according to the Danish industrial classifications, Dansk Branchekode 2007 (DB07), which is the national classification system based on the NACE rev. 2. A complete overview can be found on the DB07 site.

Data sent to Eurostat is classified by the NACE rev. 2 industrial classification. The connection between the two classifications can be found at https://www.dst.dk: Danish industrial classifications.

For aggregated index calculation purposes, the industries are categorized into 47 sub-industries (journal groups) based on the Danish classification and the NACE rev. 2. These sub-industries are not published.

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2.3 Sector coverage

Manufacturing (C), mining and quarrying (B), and utility services (D+E). All letters and numbers in brackets relate to the Danish industrial classification (DB07).

Industry C manufacturing are split into 12 groups (industry code in brackets):

- CA Manufacture of food products, beverages and tobacco (10 – 12)
- CB Textiles and leather products (13 – 15)
- CC Wood and paper products and printing (16 – 18)
- CDE Manufacture of chemicals and oil refineries etc. (19 – 20)
- CF Pharmaceuticals (21)
- CG Manufacture of plastic, glass and concrete (22 – 23)
- CH Basic metals and fabricated metal products (24 – 25)
- CI Manufacture of electronic components (26)
- CJ Electrical equipment (27)
- CK Manufacture of machinery (28)
- CL Transport equipment (29 – 30)
- CM Manufacture of furniture and other manufacturing (31 – 33)

The industries are also categorized into four sectors by the utilization of the sold goods and services:

- capital goods
- intermediate goods
- durable consumer goods
- non-durable consumer goods.

The split of industries into these four sectors are listed in an annex (in Danish).

2.4 Statistical concepts and definitions

Export: Export turnover is defined as deliveries to recipients outside the Danish Customs area including the Faroe Islands and Greenland.

Domestic Market: Domestic turnover is defined as deliveries to recipients within the Danish Customs area including the drilling platforms in The North Sea.

Turnover: Turnover is calculated in current prices and defined as invoiced values excluding value added tax and indirect taxes, but including subsidies such as e.g. price subsidies. Invoiced rebates are deducted. Turnover includes sales of manufactured goods, hours worked by third parties and mounting, installations and repairs. Sale of goods purchased for resale in the same condition as received is not included. Neither is secondary income such as e.g. sale of know-how and renting out own production units and machines if used by third parties.

Production: The production index is calculated on the basis of a so-called production turnover. The monthly production turnover is calculated on the basis of the monthly turnover (turnover definition above), taking into account the monthly changes in stocks and deflating by the corresponding producer price index. There are two categories of stocks involved; stocks of finished goods and stocks of work in progress. The production turnover is not calculated for the shipbuilding industry and NACE industry B, D and E. For shipbuilding, the base index is calculated by using work hours in stead of turnover. For NACE industry B, D and E, the calculations of the production index is based on information on production quantities received from the Danish Energy Agency (more information in part 3.1 on sources). The production indexes are based on simple index calculations in proportion to the average monthly production in 2010.

2.5 Statistical unit

The reporting unit is the Kind of Activity Unit (KAU). A KAU consists of all Danish units which manufactures goods within the same industry belonging to the same enterprise. For this particular statistic only KAUs within the NACE B, C and D+E industry are included. Most enterprises only consist of one Kind of Activity Unit. However, large corporations tend to have a diversified portfolio of activities and hence the KAU is a subdivision of the enterprise. The KAU based turnover is split differently between industries than it would be if the statistical unit was the enterprise (often referred to as economic unit).

2.6 Statistical population

The frame population consists of all Kind of Activity Units (see part 2,5 for more information on the definition of Kind of Activity Unit) with at least 20 employees engaged in the manufacturing industry (NACE industry C), the mining and quarrying industry (NACE industry B) and utility services (NACE industries D and E). The sample population is a sample of about 1000 of the KAUs in the frame population. Data from the sample population is enumerated to represent the frame population.

2.7 Reference area

Denmark not including the Faroe Islands and Greenland. In some cases, turnover will include sales from goods not manufactured in Denmark; for instance if goods are produced as part of contract work for other enterprises for a Danish manufacturer.

2.8 Time coverage

The statistics covers the period from 2000 onwards. Older time series are described under Comparability over time.

2.9 Base period

Point of reference for the indexes is the average production and turnover of 2010, which is shown as 100 in the indexes. The base year is updated every five years. The next update is scheduled to take place spring 2018 for the base year 2015.

2.10 Unit of measure

Index points.

2.11 Reference period

Turnover is measured as flows of sales or invoiced values during the month. The stocks values, which are used in the production index calculations, are measured by the end of the month. The prices, also used for calculation of production, are referenced in the middle or as an average of the month.

2.12 Frequency of dissemination

Monthly publishing.

2.13 Legal acts and other agreements

Section 8 of the Act on Statistics Denmark secures the legal basis for collecting the data.

The statistics fall under Council Regulation (EF) no. 1165/98 of 19 May 1998 and no. 1893/2006 of 20 December 2006 regarding short-term statistics.

2.14 Cost and burden

The burden in 2013 corresponded to 3.235.000 DKK.

2.15 Comment

The Production and turnover in manufacturing industries has a Subject page.

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3 Statistical processing

Each month information on turnover and stocks is collected from approximately 1000 manufacturing enterprises in Denmark, where approximately 20 per cent of the turnover information is collected from existing registers. The data are subjected to error checks both electronically and manually. A production turnover is calculated based on turnover and stock data which are weighted in order to calculate turnover and production indexes covering the entire industry. Seasonally adjusted as well as unadjusted data are published for both indexes.

3.1 Source data

The primary source for the production and turnover statistics is a questionnaire-based survey; information page (in Danish). Stratified sampling is used on industry classes (sub-industry level) and size of the enterprises measured in number of workers (four groups). All Kind of Activity units (KAUs) with no less than 200 workers are included in the sample. KAUs with less than 200 workers have a decreasing likelihood of sample selection as the likelihood depends on the structure of the specific industry. The sample selection is done on enterprise level which secures that all KAUs of a selected enterprise enter into the sample with the same sample weight. The last sample selection process was done in 2009. Every year, the sample is expanded with all new enterprises with no less than 200 workers with activity in the B, C and D+E industry. The statistical business register of Statistic Denmark forms the basis for updating and revision of the sample of enterprises.

For a smaller part of the sample, approximately 20 per cent, the data are collected from VAT reports via the statistics for purchases and sales by enterprises.

The quarterly data on turnover in the statistic manufacturers' sales of goods and services (the Danish Prodcom Statistics, OMS5 in StatBank Denmark) is used for the enumeration calculation from sample to target population.

The producer price index for commodities by industry standard industrial groupings (PRIS42 in StatBank Denmark) are used in the calculation of the production index.

Data for the extraction of crude petroleum and natural gas, which is part of mining and quarrying, and energy supply, both included in the production index originate from the Danish Energy Authority, the net price index by commodity group (PRIS114 in StatBank Denmark) and a special output on micro-data level from foreign trade statistics (KN8M in StatBank Denmark).

3.2 Frequency of data collection

Data are collected monthly.

3.3 Data collection

Data are collected using an on-line questionnaire. Online form and instructions can be found on the information page (in Danish). For a smaller part of the sample, approximately 20 per cent, the data are collected from VAT reports via the statistics for purchases and sales by enterprises. Further data used in the calculation of the production index and data used in the enumeration from sample to target population is obtained from other sources. (See part 3.1 for detailed information of data sources)

3.4 Data validation

The online survey includes views of previous data for each enterprise. It is possible to edit data for the two previous reported months. When Statistic Denmark receive the monthly survey data, the data is checked for errors electronically by parameters set up to make sure the data does not vary too much from previous reported data. Too large variations between the monthly data will show in an error check list for the data to be manually compared to previous reported data and data comparisons between the enterprise and similar enterprises. The enterprise is contacted if further information is needed.

Missing data is imputed by using the last reported data. If an enterprise have not reported anything because the enterprise is new in the sample, missing data cannot be imputed and the enterprise data will not show in the sample until data is reported.

The level of non-response is carefully watched; the number of non-response should decrease from the first published version of the monthly data towards the 2nd revision of the same data two months later where these data are assumed as final.

On KAU level ,the data is compared to the quarterly data on turnover in the statistic manufacturers' sales of goods and services (the Danish Prodcom Statistics, OMS5 in StatBank Denmark).

3.5 Data compilation

Data missing because of non-response are imputed using information from previous periods. In the estimation possible sample or non-response bias is corrected by using auxiliary information from the statistic manufacturers' sales of goods and services (the Danish Prodcom Statistics, OMS5 in StatBank Denmark). The quarterly statistic cover more enterprises than the monthly survey. The production is calculated by adding monthly changes in stock value to the monthly turnover and dividing the result by a corresponding price index. This results in the monthly produced volume which is the basis for the production index. In the calculation of aggregated production indices, the detailed industry figures are weighted using value added.

3.6 Adjustment

The figures are seasonally adjusted on the lowest level of publication. Indirect seasonal adjustment are used for calculating seasonal adjusted figures on a more aggregated level.

4 Relevance

The development of the production and turnover indices are primary used for manufacturing industry business cycle analyses and as input for the national accounts. Various users include industry organisations, public authorities and the news media. Form and content as well as comparisons with other statistics are continuously discussed at manufacturing industry user committee meetings.

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4.1 User Needs

The development of the production and turnover indices are primary used for manufacturing industry business cycle analyses. The production index is an early indicator of the manufacturing industry business cycle trend both on an aggregated level and on sub-industry levels. In debt analyses of the turnover index is possible due to the split in domestic and export turnover indices.

Users of the statistic include industry organisations, the financial sector, public authorities and the news media.

Furthermore, the statistic is used as an input for the national accounts.

4.2 User Satisfaction

Twice a year meetings with important users are held. At these meetings the users are given opportunity to give information about their use of the published figures, and they are informed about important actual themes in the statistics.

4.3 Data completeness rate

This statistics are affected by demands from EU. In terms of completeness all these demands are fully met.

5 Accuracy and reliability

Precision and reliability of the statistic is conditional on two factors: The calculation process of the production and the quality of the quarterly statistic for manufacturers' sales of goods and services.

5.1 Overall accuracy

The total errors on the total production are normally less than 2 pct. Around half of these errors are due to sampling errors while the remaining half is caused by non-sampling-errors such as measurement errors and model assumptions. Especially the volume calculations, where turnover and stock values are deflated, add to the non-sampling errors. This does not affect the turnover indices and the error on the turnover figures will normally be below 1.5 pct.

The accuracy on the monthly growth rates is in general somewhat better, normally with an error less than half the errors on the actual figures.

5.2 Sampling error

Less than 1 pct. on the total production and turnover figures.

5.3 Non-sampling error

Coverage errors do not affect the accuracy in any significant way, because of a very thorough quality assurance of the population used for grossing up the survey data. Measurement errors on the reported figures on turnover and stocks are not an important issue, but lack of consistency with the price indices used for deflation can, in some cases, affect the accuracy. Non-response does not add much to the error, because information from the quarterly survey on manufacturers' sales of goods and services, which covers the entire population, is included in the estimation to compensate for any bias in the non-response. In the calculation of the production changes in the stock values are included in the turnover to be deflated. By using that method it is assumed that the prices of sold goods develop similar to the prices of the stocked goods. This is not always true.

5.4 Quality management

Statistics Denmark follows the recommendations on organisation and management of quality given in the Code of Practice for European Statistics (CoP) and the implementation guidelines given in the Quality Assurance Framework of the European Statistical System (QAF). A Working Group on Quality and a central quality assurance function have been established to continuously carry through control of products and processes.

5.5 Quality assurance

Statistics Denmark follows the principles in the Code of Practice for European Statistics (CoP) and uses the Quality Assurance Framework of the European Statistical System (QAF) for the implementation of the principles. This involves continuous decentralized and central control of products and processes based on documentation following international standards. The central quality assurance function reports to the Working Group on Quality. Reports include suggestions for improvement that are assessed, decided and subsequently implemented.

5.6 Quality assessment

The main focus when new indices are published is the recent development in the monthly production index. In general the data behind the production index is reasonably precise and reliable, but a few reservations must be made: First of all the calculation of the production relies heavily on coherence between the reported turnover and stock figures and the price indices used for volume calculations. At times this may weaken the precision. Secondly, the calculations uses information from the quarterly survey on manufacturers' sales of goods and services, and once a quarter this can lead to relatively large revisions of the data of recent months.

5.7 Data revision - policy

Statistics Denmark revises published figures in accordance with the Revision Policy for Statistics Denmark. The common procedures and principles of the Revision Policy are for some statistics supplemented by a specific revision practice.

5.8 Data revision practice

The monthly figures are revised twice, and revisions further back in time happen rarely (e.g. with the introduction of new methods). The difference between provisional figures and final figures is normally less than 1 percent. In some cases, however, revisions to information formerly reported by enterprises may lead to differences larger than that.

6 Timeliness and punctuality

The statistics are published between 35 and 40 days after the end of the month. The punctuality is high, with very few delays in relation to the scheduled release dates.

6.1 Timeliness and time lag - final results

The statistics sre published between 35 and 40 days after the end of the month. The first provisional figures are revised with the two next publications, and the final results are thus published after 95-100 days.

6.2 Punctuality

The punctuality is high, with very few delays in relation to the scheduled release dates.

7 Comparability

The current time series goes back to year 2000, and it has a high degree of comparability over time. The time series can for most industries be linked to data of previous years, resulting in a comparable time series going back to year 1985. The international comparability with similar statistics from other EU countries is very high.

7.1 Comparability - geographical

The statistics are produced according to common guidelines for all EU countries, ensuring good comparability across the entire EU.

At the Eurostat website under Short-term business statistics data tables for the production index and the turnover index are found.

7.2 Comparability over time

With the publication of figures for December 2014 new methods for calculating production were introduced. The entire time series of the production index was recalculated. Until the end of 2012 the name of the statistics was Industrial production and new orders. Before 2005 the statistics were called the Industrial sales and orders statistics. In Statbank Denmark, archived tables can be found, including the now discontinued variable for orders.

7.3 Coherence - cross domain

The turnover index is comparable to various other business statistics involving turnover data with the reservation of differences in statistical concept. Turnover data published in other business statistics are measured in terms of value while the Production and turnover in manufacturing industries statistics only publish indices. Comparisons are possible either by comparing growth rates between time periods or by calculating simple value or volume indices (deflated value indices). The turnover index is comparable to the following business statistics: Manufacturers' sales of goods and services - PRODCOM (quarterly), Purchases and sales by firms (monthly), International trade of goods (monthly) and accounts statistics for non-agricultural private sector (annual). The below lists key concepts of the comparable business statistics as well as each of their populations, statistical unit and which variable is comparable to the turnover index in the Production and turnover in the manufacturing industries statistics.

- Manufacturers sales of goods (PRODCOM). The statistics describe manufacturers' sales of goods measured in terms of volume and value covering all enterprises with 10+ employees within NACE B (mining and quarrying) and C (manufacturing). Total sales are distributed by industries (NACE groups). The statistical unit is KAU's just as it is in the Production and turnover in manufacturing industries statistics as the only one of the other business statistics. If commercial (resale) turnover and other sales are deducted from total sales in Manufacturers' sales of goods, the two turnover variables are equally defined.

- International trades in goods. Exports and imports are measured in terms of volume and value covering all exports and imports of goods to and from all countries in the world distributed on commodity codes but not industries. The external trade is comparable to the total export turnover index in the Production and turnover in manufacturing industries statistics. The statistical unit is however enterprises and External trade of goods only includes goods that physically cross the Danish boarder whereas turnover in the Production and turnover in the manufacturing industries statistics include all export turnover. Commercial (resale) turnover is included in the external trade statistics.

- Purchases and sales by firms. The statistics are based on VAT reports from Danish enterprises sent to the Danish tax authorities. The variable Total sales consists of domestic sales and export sales. The level is comparable to the total turnover index of the Production and turnover in manufacturing industries. The statistical unit is enterprises. The VAT report data is primarily collected for administrative purposes whereas the statistical use of data is secondary.

- Accounts statistics for non-agricultural private sector. The statistics provide key economic data on a sample of enterprises covering the private secondary and tertiary industries among others manufacturing industries. The statistical unit is enterprises.

7.4 Coherence - internal

Seasonal adjustment is performed indirectly, which results in consistency between seasonal adjusted aggregates and their sub-components.

For a smaller part of the sample, approximately 20 per cent, the data are collected from VAT reports via the statistic for purchases and sales by enterprises. Consistency between the data collected from VAT reports and the other data collected from enterprises, is obtained by the use of two rules: The enterprice must have only one KAU and the yearly turnover must be equal to or below 100 mill. DKK. The yearly turnover in question is from the statistic manufacturers' sales of goods and services in the sample selection year.

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8 Accessibility and clarity

New figures are published in a monthly news article News from Statistics Denmark, and all figures can be found in Statbank Denmark.

The statistics also have a subject page.

8.1 Release calendar

The publication date appears in the release calendar. The date is confirmed in the weeks before.

8.2 Release calendar access

The Release Calender can be accessed on our English website: Release Calender.

8.3 User access

Statistics are always published at 8:00 a.m. at the day announced in the release calendar. No one outside of Statistics Denmark can access the statistics before they are published. Theme publications etc. may be published at other times of the day. The National Statistician can decide that such publications may be released before their official publication time, e.g. to the media and other stakeholders.

8.4 News release

The figures are published in a monthly news release, Nyt from Statistics Denmark.

8.5 Publications

The figures are included in Statistical Yearbook.

8.6 On-line database

Monthly updates for the statistic Production and turnover in manufacturing industries are published in StatBank Denmark under the topic Business Sectors, Manufacturing industries, Production and turnover in manufacturing industries where the following tables are found:

- IPO01: Industrial turnover (non-seasonally adjusted) by turnover and industry (DB07)
- PO02: Industrial turnover(seasonally adjusted by turnover and industry (DB07)
- PROD01: Industrial production index by seasonal adjustment and industry (DB07)

8.7 Micro-data access

There is no micro-data access.

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8.8 Other

Monthly data are delivered to Statistics Denmark's National Accounts Division as well as international data transmissions to Eurostat and the UN.

8.9 Confidentiality - policy

The confidentiality policy of Statistics Denmark is followed (only in Danish).

8.10 Confidentiality - data treatment

When figures can not be published on a certain level of detail, because of confidentiality issues, figures are published on a more aggregated level.

8.11 Documentation on methodology

No further methodology papers are available.

8.12 Quality documentation

Results from the quality evaluation of products and selected processes are available in detail for each statistics and in summary reports for the Working Group on Quality.

9 Contact

The administrative placement of these statistics are in the division of Short Term Statistics. The person responsible is Thomas Eisler, tel. +45 39 17 32 49, e-mail: tme@dst.dk

9.1 Contact organisation

Statistics Denmark

9.2 Contact organisation unit

Short-Term Statistics, Business Statistics

9.3 Contact name

Thomas Eisler

9.4 Contact person function

Responsible for the statistics

9.5 Contact mail address

Sejrøgade 11, 2100 Copenhagen

9.6 Contact email address

tme@dst.dk

9.7 Contact phone number

+45 39 17 32 49

9.8 Contact fax number

+45 39 17 39 99