Documentation of statistics for Industry Survey 2016

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STATISTICS DENMARK

1 Introduction

The monthly tendency survey provides a quick and up-to-date overview of actual conditions and expectations within the manufacturing industries. The tendency survey is a supplement to other short-term statistics. To this is added information on a number of factors considered difficult to extract from the traditional statistics. The survey was established in 4th quarter of 1963. In 1980 the survey was adapted to the questions in the existing EC harmonized surveys. Up until 1997 there has been a continuous adaptation to new questions requested by the EC/EU. From 1998 the survey is completely harmonized with the surveys in other EU Member States through a change from quarterly to monthly frequency.

The survey is directly connected to and defined by the Business and Consumer Survey joint harmonized program as managed by the Directorate-Generale for Economic and Financial Affairs (DG ECFIN), European Commission. Within same programme is also carried out monthly tendency surveys on Retail Trade, Construction, Services and Consumer expectations as well as the biannual survey on Manufacturing Industry Investments.

2 Statistical presentation

The Tendency survey for manufacturing industries, is intended to provide rapid and current data on the business cycle. The survey is a qualitative assessment on developments over the past three months and expected developments over the next three month, based on the variables **production**, **employment**, *new orders*, *new export orders*, *competitive position on domestic market*, *competitive position on foreign market*, **selling prices**, **current overall orderbooks**, **current export orderbooks**, **current stock of finished products**, *current stock of raw materials*, *production capacity*, *investment plans*, *capacity utilization*, *production assured by current overall orderbooks (in month)* and *limits to production*.

The variables marked in **bold** are posed each month while the others in *italic* are posed the first month of each quarter (January, April, July and October).

2.1 Data description

The monthly tendency survey provides a quick and up-to-date overview of actual conditions and expectations within the manufacturing industries. The survey is a qualitative assessment on developments over the past three months and expected developments over the next three month, based on various variables: **production**, **employment**, *new orders*, *new export orders*, *competitive position on domestic market*, *competitive position on foreign market*, **selling prices**, **current overall orderbooks**, **current export orderbooks**, **current stock of finished products**, *current stock of raw materials*, *production capacity*, *investment plans*, *capacity utilization*, *production assured by current overall orderbooks (in month)* and *limits to production*.

The variables marked in **bold** are posed each month while the others in *italic* are posed the first month of each quarter (January, April, July and October).

The questionnaire is divided in three sections.

In first section is asked about the development over the past 3 month regarding **production**, **employment**, *new orders*, *new export orders*, *competitive position on domestic market*, *competitive position on foreign market*, and **selling prices**.

In second section is asked similar about the expected development over the next three month regarding the same above mentioned indicators.

In third section is asked about **current overall orderbooks**, **current export orderbooks**, **current stock of finished products**, *current stock of raw materials*, *production capacity*, *investment plans*, *capacity utilization*, *production assured by current overall orderbooks (in month)* and *limits to production*.

2.2 Classification system

The industries in the survey is defined by DB07, which is the Danish industrial classification system similar to the international NACE rev. 2 system.

2.3 Sector coverage

The target population includes enterprises within main group *C Manufacturing*. Please refer to *source data*.

2.4 Statistical concepts and definitions

Industry: The line of businesses that manufactures goods. The Business Tendency Survey also comprises Mining and quarrying, however excluded oil and gas extraction.

Business Tendency Survey: Business Tendency Survey. Compared to traditional statistical surveys, which only cover one or a few related variables from one area of the economy, business surveys collect information about a wide range of variables selected for their ability, when analysed together, to give an overall picture of a sector of the economy. The surveys include questions such as the volume of production, order books, order inflow, stocks of finished goods, exports, employment and prices. The range of information covered by business surveys also goes beyond variables normally captured by classical statistics. Qualitative information may be collected for variables, which are difficult or impossible to measure by conventional methods such as: capacity utilisation, production bottlenecks and views on the overall economic situation.

Confidence Indicator: An indicator for the present position in the business cycle. The marked economy evolves in cycles between boom, decrease, recession and upswing.

Composite Confidence Indicator: Composite indicators are calculated as the simple arithmetic average of the (seasonally adjusted if possible) balances of answers to specific questions chosen from the full set of questions in the survey. In the case of Retail Trade survey the composite indicator reflects the average of the three indicators on Sales over the past three month, the present Volume of stock and Sales expectations over the next three months.

Balance: Balances are the difference between positive and negative answering options, measured as percentage points of total answers. In particular, if a question has three alternative options, “positive” (“up”, “more”, “more than sufficient”, “good”, “too large”, “increase”, “improve”, etc.), “neutral” (“unchanged”, “as much”, “sufficient”, “satisfactory”, “adequate”, etc.) and “negative” (“down”, “less”, “not sufficient”, “too small”, “decline”, etc.), and if P, E and M (with P+E+M=100) denote the percentages of respondents having chosen respectively the option positive, neutral, and negative, the balance is calculated as B = P - M.

2.5 Statistical unit

The sample is based on Kind of Activity Units (KAU's) as the observation units. A KAU is a group of local units with identical activity code belonging to the same enterprise, which is identified by "CVR-number" from the Central Business Register.

2.6 Statistical population

The universe population includes enterprises within main group C Manufacturing, covering industry groups 10 to 33 in Danish classification system DB07, almost identical to the international NACE rev. 2 system. Also B Mining and quarrying , excluded oil extraction, is covered. The target population consists of about 4700 enterprises with mail activity within manufacturing industries and with 20 or more employees on annual basis.

2.7 Reference area

Denmark.

2.8 Time coverage

The survey was established in 4th quarter of 1963. In 1980 the survey was adapted to the questions in the existing EC harmonized surveys. Up until 1997 there has been a continuous adaptation to new questions requested by the EC/EU. From 1998 the survey is completely harmonized with the surveys in other EU Member States through a change from quarterly to monthly frequency.

2.9 Base period

Not relevant for these statistics.

2.10 Unit of measure

Percentages, months and Balances.

2.11 Reference period

The reference point is the first day of the survey month. Questions are asked concerning the past three month and the coming three month.

2.12 Frequency of dissemination

The survey is published monthly - the second last working day. However results of the December survey is first published in the beginning of January.

2.13 Legal acts and other agreements

The survey is voluntary, and therefore not subject to any Danish legal act. The survey is conducted according to agreement with the EU Commission. The legal framework of the survey is "The Joint Harmonized European Union Program on Business and Consumer Surveys" approved by the European Commission on 12 July 2006 COM (206)379.

2.14 Cost and burden

The survey is voluntary, therefore no burden as such. If one decides to participate the questionnaire is supposed to only take a minute to complete.

Enterprises with 19 or less employees are not included in the survey sample.

Joint reporting is accepted if same organization includes several companies representing unique legal units, but within same industry-class.

2.15 Comment

Information about the statistics here. The statistics is part of the The Joint EC Business and Consumer Surveys programme managed by Directorate-Generale for Economic and Financial Affairs (DG ECFIN) please refer to their Guidelines.

3 Statistical processing

Monthly business survey data is collected from a sample of approximately 500 manufacturing enterprises. Data is reported either online at http://www.VIRK.dk or in paper questionnaire, and consists of qualitative information about changes in net sales, employment, inventories, orders, etc., which are not validated. The collected data are enumerated from the sample to the total population weighted by employment data, and distributed at industry and size groupings. If seasonal variation patterns are detected for the indicators that constitute the composite confidence indicator, data is adjusted for this.

3.1 Source data

The statistics is compiled from data collected via questionnaires. The sample is based on information in the Central Business Register.

The survey is carried out with a panel based stratified sample consisting initially of 500 enterprises representing about 60 pct. of the total number of full-time employees in selected trades within the included strata. Enterprises with more than 200 employees are all selected. Enterprises with employees ranging from 20 - 199 are selected randomly, but the more employees the higher probability being selected.

Because of drop-out the sample is updated ones a year. Typically the sample is added 100-200 new enterprises at update.

The sample is stratified into lines of industries. The industry strata are:

- B Mining and quarrying
- C Manufacturing
- CA Manufacture of food products, beverages and tobacco
- CB Textiles and leather products
- CC Wood and paper products and printing
- CD Oil refinery etc.
- CE Manufacture of chemicals
- CF Pharmaceuticals
- CG Manufacture of plastic, glass and concrete
- CH Basic metals and fabricated metal products
- CI Manufacture of electronic components
- CJ Electrical equipment
- CK Manufacture of machinery
- CL Transport equipment
- CM Manufacture of furniture and other manufacturing
- BC Mining and quarrying and manufacturing. Of this: Capital goods, Intermediate goods, Durable consumer goods, Non-durable consumer goods

The basic information in the survey is stored at the level of statistical unit (KAU) including the following information:

- Id. no KAU
- Id. no. enterprise
- Id. no. local units
- Adress information
- Employment
- Activity code

- Employment by activity
- Year
- Month
- Development, current (*7)*
- Development, expected (*7)*
- Judgment end of period (*6)**
- Capacity utilisation ***
- Limits to production ***

*covering the variables: production, sales prices, total new orders received, eksport new orders, competitive position export market, competitive position domestic market. The two first mentioned occurs for all months, the rest only for January, April, July and October.

**covering the variables: total stock of orders, export stock of orders, stocks of finished goods, stocks of raw material, production capacity and investment plans. The three first mentioned occurs for all months, the latter two only for January, April, July and October.

***Occurs only for January, April, July and October.

The stored information only to a very limited extent allows for alternative aggregates by activities in DB93. Limitations are defined by rules regarding confidentiallity.

3.2 Frequency of data collection

Data is collected each month during the first 2-3 weeks.

3.3 Data collection

Data is collected either by paper questionnaire send to the respondent including postage pre-paid envelope, or by online reporting. In the latter case, respondents receive an e-mail notification telling it is time to log in to the reporting system VIRK, and fill the online questionnaire. Respondents are urged to respond online.

Notification letter is send about the 13th in the survey month, with new deadline about the 20th in same month.

Response rate is about 77 pct. on average. Deadline for responding to the current month's questionnaire is about the 6'th of the month. Here, about two third of the answers have arrived. The rest, one third, arrives within two weeks and are included in the statistics.

Information to the respondents about the statistics is found here (in Danish).

3.4 Data validation

To fill the questionnaire one has to tick one of three options for each question. This does not call for data validation. The paper questionnaires are scanned automatically, and questionnaires refused in this process is handled manually. Non-response errors are corrected for in the enumeration process. By online reporting the system warns the respondent if a question is not ticked. However in both cases, online reporting or reporting by mail, it is accepted that some questions are left un-ticked. In the data enumeration process, basic data is checked if bigger deviations as compared to last month - usually the reason is either unidirectional change in assessments by several big companies or missing reporting from some few big companies.

3.5 Data compilation

The enterprises' responses are weighted according to their average number of full-time employees. Within each stratum answers are distributed into percentages answering *decline*, *unchanged* and *Increase* adding up to 100 pct. The group of non-responding enterprises within the stratum is assigned same percentage distribution as the group of responding enterprises (which is considered a imputing method).

Hereafter, the responses are enumerated to the number of full-time employees of the total population, within each industry-grouping.

Confidence indicator for a variable is calculated and denominated balance. Is is the difference between percentages of enterprises (weighted by number of employees) that have answered increase and decrease (or too small and too large). The balance figures do not measure the size of the increase or decrease, but only indicates that an overweight of enterprises expect either increase or decrease.

The *Composite confidence indicator* is the arithmetic average of balance figures for expected *production* development over the next 3 month, *current stock of order books* and *current stock of finished products*. The latter is calculated with inverted sign since stock too large is considered affecting the confidence indicator negatively and vice versa.

3.6 Adjustment

No adjustments are carried out, besides seasonal adjustment.

4 Relevance

Users of the statistics are trade organizations, banks, politicians, public authorities, international organizations, business enterprises and the news media. The confidence indicators provides valuable information about the state of the business economy and are reflected upon every month in financial related news medias. There has been no survey if the statistics meets the needs of clients.

4.1 User Needs

The statistics is considered a supplement to other short-term statistics relating to this area. Users of the statistics are trade organizations, banks, politicians, public authorities, international organizations, business enterprises and the news media.

4.2 User Satisfaction

There are no measurements of user satisfaction.

4.3 Data completeness rate

The Business Surveys are conducted in partnership with the EU commission, [Directorate General Economic and Financial affairs (DG ECFIN)] and follows as far as possible the guidelines provided by them.

As a matter of confidentiality some line of business has been aggregated in larger groups.

5 Accuracy and reliability

Regarding *accuracy*, sampling error is estimated to plus/minus 1-2 percentage points for the confidence indicators. The figures are by definition *reliable*, since they are not revised.

5.1 Overall accuracy

The statistics covers a substantial part of enterprises in the selected industries and is considered as statistically representative. In general, sampling error uncertainty at plus/minus 1-2 percentage point is expected for the indicators. Non-sampling errors are caused by non-response errors (about 24 pct. non-responses), and especially missing responses from large companies may cause fluctuations from month to month. Also measurement errors influence the statistics. A senior person in the company is asked to check mark his perception of the developments over the past three months and his expectations for the next three months. The expectations are inherently uncertain. The perception of the development over the past may also be associated uncertainty, depending on the respondent's current level of information.

5.2 Sampling error

The survey variables are mostly categorical - with answer possibility of the type *increase*, *unchanged* or *decrease*. For each month' statistics is calculated confidence interval with upper and lower values for the three variables constituting the Composite Confidence Indicator. The confidence interval varies from month to month, and depends on the actual number of responses in each answer category.

5.3 Non-sampling error

Basically the statistics is assumed to cover the target population satisfactory.

There is no systematically checking for errors.

By sample update, new enterprises may inform they are not registered in correct business sector and therefore not relevant.

Between lines of businesses there may be some over-coverage because of wrong or changed registration.

The tendency surveys are subjects to measurement errors: A senior person in the company is asked to check mark his perception of the developments over the past three months and his expectations for the next three months. The expectations are inherently uncertain. The perception of the development over the past may also be associated uncertainty, depending on the respondent's current level of information.

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 statistics covers a substantial part of enterprises in the selected industries and is considered as statistically representative. In general, sampling error uncertainty at plus/minus 1-2 percentage point is expected for the indicators. Non-sampling errors are caused by non-response errors (about 24 pct. non-responses), and especially missing responses from large companies may cause fluctuations from month to month. Also measurement errors influence the statistics. A senior person in the company is asked to check mark his perception of the developments over the past three months and his expectations for the next three months. The expectations are inherently uncertain. The perception of the development over the past may also be associated uncertainty, depending on the respondent's current level of information.

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 survey does not include provisional figures. However for a number of variables, *production*, *employment*, *new orders* and *sales prices*, enterprises are asked to give their opinion on expectations three months ahead and at a later stage to give a current judgment over the same three months. The difference in the two sets of judgments may, measured by the balance figures, be considerable, especially around turning points in the business cycle.

6 Timeliness and punctuality

The Survey is launched about 5 working days before the beginning of the survey month. Questionnaires or e-mail notification is send out. Deadline for responses is about the 6th of the survey month. Reminder is send about the 13th giving new deadline about the 20th of the survey month. The statistics is compiled about the 24th immediately before deadline for sending data to EU-partner DG ECFIN. Last but one working day before the end of the survey month data is published in both Denmark and EU. The process runs punctual.

6.1 Timeliness and time lag - final results

The statistic is published the last day but one of the survey month as a principal rule, i.e. about 30 days after the date of reference. Data is not revised afterwards.

6.2 Punctuality

The process runs punctual with no delays.

7 Comparability

The statistics is carried out in collaboration with the EU-commission, and the same survey is carried out in other EU-countries. Please refer to (DG ECFIN)

The survey was established in 4th quarter of 1963 based on a method basically developed by the IFO Institute in Munich. In 1980 the survey was adapted to the questions in the existing EC harmonised surveys. Up until 1997 there has been a continuos adaptation to new questions requested by the EC/EU. From 1998 the survey is completely harmonised with the surveys in other EU Member States through a change from quarterly to monthly frequency. In relation to the reorganisation of the survey from quarterly to monthly frequency the size of the sample was cut from around 800 to around 500 enterprises and consequently results from then on presented at somewhat more aggregate levels of the activity classification DB93. At the revised levels of DB93 statistics have been calculated back to 1. Quarter 1990. As from January 2009 the survey is published with the activity classification DB07.

As of Q2 2013 the questionnaire is re-designed, implying drop in responses "no limitations" and increase in responses on various other limitations; To what extend the drop from 1st to 2nd quarter 2013 is caused by the re-design cannot be determined, since also general cyclical movements influence the drop.

As of July 2014 some phrasings in the questionnaire have been revised in order to harmonize fully to the guidelines of DG ECFIN. Previous, questions of this type: "Regarding Production, how was the development the last 3 month (e.g. May-July) as compared to the previous 3 month (e.g. February-April)? please tick either *less*; *unchanged* or *bigger*". Now there are no comparison between two 3-month periods, and instead is asked: "How has your production developed *over* the past 3 month? please tick either *decreased*, *unchanged* or *increased*" The results are believed to be the same, and no data break has been detected. The same change has been made for questions concerning the future development over the next 3 month. Furthermore the answer possibilities regarding *Current stock* has been changed from *less*; *unchanged* or *bigger* to *too small*; *adequate* or *too large*.

7.1 Comparability - geographical

The statistics is carried out in collaboration with the EU-commission, and the same survey is carried out in other EU-countries. Please refer to (DG ECFIN).

7.2 Comparability over time

The survey was established in 4th quarter of 1963 based on a method basically developed by the IFO Institute in Munich. In 1980 the survey was adapted to the questions in the existing EC harmonised surveys. Up until 1997 there has been a continuos adaptation to new questions requested by the EC/EU. From 1998 the survey is completely harmonised with the surveys in other EU Member States through a change from quarterly to monthly frequency. In relation to the reorganisation of the survey from quarterly to monthly frequency the size of the sample was cut from around 800 to around 500 enterprises and consequently results from then on presented at somewhat more aggregate levels of the activity classification DB93. At the revised levels of DB93 statistics have been calculated back to 1. Quarter 1990. As from January 2009 the survey is published with the activity classification DB07.

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7.3 Coherence - cross domain

The tendency survey is a supplement to other short-term statistics notably the *industriens produktion og ordreindgang* (monthly production and orders statistics). Similar surveys are conducted by the other EU member states through the EC Business and Consumer Surveys programme managed by Directorate-Generale for Economic and Financial Affairs (DG ECFIN).

7.4 Coherence - internal

The data set to the survey is consistent.

8 Accessibility and clarity

Results of the surveys are published monthly at Statistics Denmark; Key indicators are published in the newsletter edition Nyt fra Danmarks Statistik, Konjunkturbarometer for Industri and in English at the homepage [Short term trends]. Detailed data is available in English version at Statbank; choose English language and look for the tables BARO1-BARO8.

Read here about the statistics.

Also, data are published at the homepage of the EU-commission partner Directorate Generale Economic and Financial affairs (DG ECFIN) along with similar data from other EU countries.

Scientists and analysts have the option to buy detailed micro-data through the Division of Research Services, Statistics Denmark. In this case data will anonymized in order to ensure enterprises confidentiality.

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.

8.4 News release

Newsletter Nyt fra Danmarks Statistik, Konjunkturbarometer for Industri is publish every month, the second last working day. Also a brief message occurs on Tweeter.

8.5 Publications

Based on the confidence indicators the dynamic graphical presentation Business Cycle Tracer (konjunkturcyklus) is updated. As the title indicates the graph traces the development in the business cycle, whether it is in a upswing or downswing phase.

8.6 On-line database

Detailed data is available in English version at Statbank; choose English language and look for the tables BARO1-BARO8.

8.7 Micro-data access

Scientists and analysts have the option to buy detailed micro-data through the Division of Research Services, Statistics Denmark. In this case data will anonymized in order to ensure enterprises confidentiality.

8.8 Other

Also, data are published at the homepage of the EU-commission partner Directorate General Economic and Financial affairs (DG ECFIN) along with similar data from other EU countries.

8.9 Confidentiality - policy

The statistics is subject to the confidentiality policy of Statistics Denmark, in Danish here.

8.10 Confidentiality - data treatment

Data is aggregated into wider industry groupings if necessary to ensure confidentiality especially for large enterprises. Furthermore, response rates within individual industry groupings are not public available.

8.11 Documentation on methodology

Please refer to the EU-commission partner DG ECFIN's homepage on methodological guides.

In the database TIMES4 is entered descriptions on the variables of the statistics.

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 statistic are in the division of Short Term Statistics. The person responsible is Bo Eriksen, tel. +45 39 17 35 52, e-mail: bhe@dst.dk

9.1 Contact organisation

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