

Standard Report
on
Methods and Quality
for
Quarterly Accounts Inquiry to Industry

This documentation applies to the reporting period:

<2007>

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1 Overview

The Quarterly Accounts Inquiry to Industry (QAI) comprises two parts, “Industrial Stocks” and “Capital Assets in Industry”. The Industrial Stocks release details changes in stocks of goods held in the Mining, Manufacturing, and Energy sectors. The Capital Assets in Industry release details quarterly acquisitions and sales of capital assets in the Mining, Manufacturing and Energy Sectors.

The capital acquisitions and industrial stocks series are short-term indicators of trends, and are subject to revision when the annual CIP results become available. Note, however, that the CIP variable “additions to capital assets” includes capitalised Research & Development (R & D) expenditure, whereas the capital acquisitions series in this release do not.

2 General Information

2.1 Statistical Category

Primary statistical survey.

2.2 Area of Activity

Industry – Quarterly Acquisitions and Sales of Capital Assets and Changes in Industrial Stocks.

2.3 Organisational Unit Responsible, Persons to Contact

Industry Division - Data Collection Unit

Industry Division - Results Analysis and Publication

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2.4 Objectives and Purpose; History

The purpose of the Quarterly Accounts Inquiry to Industry is to collect data on the stocks and assets of industrial firms for publication in the releases “Industrial Stocks” and “Capital Assets in Industry”. These releases are short-term indicators for the annual Census of Industrial Production (CIP).

The quarterly releases “Industrial Stocks” and “Capital Assets in Industry” were initiated on 19 January 1998 and 21 January 1998 respectively when figures for the periods Q1 1996 to Q2 1997 were published in each case.

2.5 Periodicity

Quarterly

2.6 Client

Irish Government and Eurostat

2.7 Users

- Government
- Other CSO sections

- University students and other interest groups for research purposes
- The general public
- Professional bodies
- European Union/Eurostat

2.8 Legal basis

Quarterly Accounts Inquiry to Industry is conducted under Statutory Instrument SI No 247 of 2006 and Statutory Instrument SI No 248 of 2006. Data collected is governed by the Statistics Act, 1993. EU law - see 2.6 above.

3 Statistical Concepts, Methods

3.1 Subject of the Statistics

The subject of the statistics is the quarterly acquisitions and sales of capital assets and the changes in stocks of goods held in the Mining, Manufacturing, and Energy Sectors.

3.2 Units of Observation/Collection Units/Units of Presentation

The survey is made up of a census of Industrial Enterprises with 20+ employees between NACE (business classification system) codes 10 – 40 inclusive. The census is taken from the CSO Central Business Register (CBR) with all Industrial Enterprises employing 20+ employees being surveyed. Figures on the release are rounded to one decimal place.

The survey is a census of approximately 1,800 enterprises. These enterprises account for over 95% of stocks held by, and capital acquisitions and sales made by enterprises with 3 or more persons engaged (as measured by the Census of Industrial Production).

The data is published in € millions to one place of decimal at 2 digit NACE level.

3.3 Data Sources

None - primary survey (census).

3.4 Reporting Unit/Respondents

Reporting unit - 2 digit NACE level reporting for industrial enterprises employing 20+ persons.
Respondents - industrial enterprises employing 20+ persons.

3.5 Type of Survey/Process

Postal survey of Industrial Enterprises employing 20+ employees.

3.6 Characteristics of the Sample/Process

3.6.1 Population and Sampling Frame

The survey population is made up of all industrial enterprises with 20+ employees in NACE sectors 10-40
The sampling frame/register is the CSO's Central Business Register.

3.6.2 Sampling/Census Design

Once a year a copy is taken of the Central Business Register (CBR) for the Quarterly Industrial Inquiry to Industry survey. A census of all industrial enterprises (NACE 10-40) with 20+ employees is then taken from the file in the first quarter of each year. This census is scrutinised for duplicates, companies who have indicated an inability to provide information, or who are no longer trading at the recorded address. A file of approximately 1,800 potential respondents is then prepared for post-out.

The census that is taken in the first quarter is then “rolled over” and used for each of the subsequent quarters of that year (quarters 2, 3 and 4) so that there is continuity within the survey for the relevant year.

The first level of the Census is 2 digit NACE 10-40.

The next level is enterprise size:

- Employment Group 1: 20 to 49 persons engaged
- Employment Group 2: 50 to 99 persons engaged
- Employment Group 3: 100 to 249 persons engaged
- Employment Group 4: 250⁺ persons engaged

3.7 Survey Technique/Data Transfer

Survey forms are printed in the Printing Section of the CSO and posted out to respondents for self-completion. From Quarter 1 2007 the returned forms are scanned, verified and data captured.

When a survey form is returned to the CSO, the form is scrutinised to resolve any errors prior to scanning and a response code is put on the form. When a batch is large enough (50 forms) the forms are scanned and verified. They are then edited by using PC-SAS software.

The edits that arise are scrutinised and resolved where necessary.

For 2 weeks each quarter field staff will visit some non-respondent companies seeking to collect and return completed survey forms.

3.8 Questionnaire (including explanations)

The Quarterly Accounts Inquiry to Industry survey form contains six sections and gathers information on:

1. Currency Used
2. Turnover
3. Stocks and Work in Progress
4. Changes in Capital Assets
5. Trade Creditors and Trade Debtors
6. Total Persons Engaged

The survey form may be accessed on the CSO website at;

http://www.cso.ie/surveysandmethodologies/surveyforms/documents/industry/pdf_docs/quarterly_accounts_inquiry_to_industry.pdf

3.9 Participation in the Survey

Participation is compulsory. This is a statutory Inquiry under SI No. 247 of 2006 and SI No. 248 of 2006.

3.10 Characteristics of the Survey/Process and its Results

The survey is a census of industrial enterprises with 20+ employees, which is aggregated and published at 2 digit NACE level. Results are published for all enterprises. Estimates for enterprises employing between 3-19 persons, for stocks and capital assets, are grossed by NACE division, using grossing factors from the latest available Census of Industrial Production (CIP).

3.11 Classifications used

NACE Rev1.1 is used for NACE 10-40 as follows;

NACE 10-40 All industries

NACE 10-37 Transportable Goods Industries

NACE 15-37 Manufacturing Industries

The following is a link to the full listing of NACE categories

http://www.cso.ie/surveysandmethodologies/classification_indus_act.htm

3.12 Regional Breakdown of Results

Results are not broken down by region. The results are broken down by 2 digit NACE group (10-40) and are aggregated at national level.

4 Production of the Statistics, Data Processing, Quality Assurance

4.1 Data Capture

Data once received is scrutinised. A response code is put on the survey form and it is then scanned and verified using teleforms software. Data from the form is then transferred to the PC and edit programs are run regularly using SAS to clean the returns.

4.2 Coding

When the completed survey forms are receipted and the response codes are added, the data is input by NACE class.

When the barcode is scanned the 4-digit NACE code and 2-digit NACE division are also captured.

4.3 Data Editing

Survey edit programs are run on SAS to perform checks on consistency of returns between quarters, comparisons between enterprises for this quarter, and check that the sum of the components is equal to the keyed total. There are no online edit checks at present.

The following edit checks are carried out:

- The number of employees different from previous quarter
- The change in stocks in the range +/- 33%
- Opening Stocks Current Quarter different to Closing Stocks of Previous Quarter.
- Capital Assets Disposals
- Capital Assets Acquisitions

A listing file of all the edits is printed and sorted by priority based on employment size. Each edit is checked for possible scanning or verification errors and any comment that may explain the unusual figure on the form. Returns for previous quarters are also checked for indications of a trend. The enterprise is contacted to resolve any discrepancy. The return is then manually edited on the basis of the explanation from the enterprise. Once all errors are amended a copy is made of the clean dataset.

Reports are run throughout the survey period outlining the numbers of edits outstanding and the number of forms scanned compared to previous quarters.

4.4 Imputation (for Non-Response or Incomplete Data Sets)

Imputation is performed using SAS software as follows:

- For Industrial Stocks - estimates are made for non-responding enterprises, and for those enterprises where the total stock level returned is zero. The *opening* stock level for each such enterprise in the current quarter is made equal to the closing stock level for that enterprise in the previous quarter. To estimate the *closing* stock level for the enterprise in the current quarter, the census is classified into relatively homogeneous cells defined by NACE division and employment size, and the cell ratio closing stocks to opening stocks (calculated from the aggregated respondent values in the non-respondent's cell) is applied to the opening stock level for the enterprise. The stock change is derived as the closing stock level minus the opening stock level.
- For Capital Assets - estimates are made for non-response. For each non-responding enterprise, capital acquisitions data are imputed from returns for that enterprise in previous quarters or in the CIP. Where no historical data are available, estimates are made as follows: the census is classified into relatively homogeneous cells defined by NACE division and employment size, and the cell ratio acquisitions per person (calculated from the aggregated respondent values in the non-respondent's cell) is applied to the employment for the non-respondent. The estimation procedure for capital sales is similar.

4.5 Grossing and Weighting

Grossing is performed using SAS software.

Grossing Factors are taken from the latest available Census of Industrial Production and applied to the results in order to gross the data up to the population. The CIP data is broken down to NACE two-digit level. The total of each of the components of stocks and assets is calculated for each cell group. This is repeated with only those firms with more than 20 employees included. These two sets of figures are used to calculate the grossing factors. The overall total for each component is divided by the total figure for those firms with only 20 employees, i.e. the grossing factor is total component/sub component. However, the Grossing factor defaults to 1 if sub component = zero (if the sub component = 0 then no companies exist above twenty).

No weighting is used for the derivation of results.

4.6 Computation of Outputs, Estimation Methods Used

Results are aggregated to 2-digit NACE at national level. There are preliminary results for quarter t (current quarter) and final results for quarter t-1 (previous quarter) released in each publication.

Imputation is used for non-responses, but no estimation used.

4.7 Other Quality Assurance Techniques Used

The dataset is created from the latest version of the CBR of all companies in NACE 10-40 in the Industrial Sector. Duplicates are checked for and removed each quarter. Companies that have been discovered to be non-relevant are also removed.

Data for QAI are benchmarked against the latest CIP (when it becomes available). Consistency checks are also done with Monthly Industrial Production, Balance of Payments and Trade data.

5 Quality

5.1 Relevance

QAI is an important short-term indicator used both nationally and by the EU. It provides some of the information needed by National Accounts in the compilation of quarterly GDP - Regulation EC number 2223/96.

5.2 Accuracy and Reliability

5.2.1. Sampling Effect & Representivity

Standard error is not calculated. A census is taken of all NACE groups in 10-40 to ensure that the statistics produced are properly representative of the trends in each of these groups.

5.2.2 Non-Sampling Effects

5.2.2.1 Quality of the Data Sources used

Census is taken from the CBR. No other data sources used.

5.2.2.2 Register Coverage

As this survey is a census with the enterprises being obtained from the Central Business Register (CBR), all companies in the relevant NACE groups are surveyed.

Coverage errors – there may be some multiple listings (duplicates) when the census is first taken from the Central Business Register. They are removed from the census when discovered.

Coverage is restricted to Industrial Enterprises operating in NACE sectors 10-40.

5.2.2.3 Non-response (Unit and Item)

Unit non-response: The response rate for the survey is approximately 60%.

The main reasons for unit non-response are as follows:

- Company Gone-Away from the address on the survey form – investigated and resolved by the section
- Duplicate – company receive two forms with different reference numbers – removed from the survey
- Company has ceased trading – marked as ceased and removed from future post out of the survey
- There is a query about the survey form – company is contacted by the section by telephone to resolve issue.
- Hold – company request an extension on the due return date
- Company is Inactive/Dormant – company removed from survey.
- Merger – Takeover or change in structure of company. - Company investigated by the section and resolved for future quarters.

Item non-response:

Item non-response is not measured in the survey.

Where a part of the form is not completed the following is done;

1. Contact Company – to confirm the details on the survey form
2. Last Value Carried Forward (LVCF) for a variable if no other data are available.

5.2.2.4 Measurement Errors

Measurement Error is not formally calculated for the survey. However, the following should be noted:

- (a) questionnaire – it is ensured that the questionnaire is clear with definitions provided as appropriate.
- (b) data collection method – the collection method is by post. This method is unlikely of itself to be a source of measurement error (e.g. telephone interviewing not used).
- (c) interviewer - field interviewers are not used by the survey. CSO Field Officers call to non-respondents for 2 weeks each quarter to collect survey forms, and assist companies with their completion if necessary. Staff are well trained in the survey for any contact they may have with respondents.
- (d) respondent – survey data can contain sensitive and confidential information due to the fact that it is a short-term survey and may be requested prior to annual accounts being completed. The survey only publishes aggregated data at 2 digit NACE level which preserves confidentiality of individual returns.

5.2.2.5 Processing Errors

(A) Data Capture Errors are likely to be a low risk as survey forms are scanned and verified. There is also the option of manual data entry.

(B) Data Editing - Edits are run, which test the returns against a range of values;

- Number of Employees are different from previous quarter
- Stock changes of +/- 33%
- Opening Stocks for current quarter different to closing stocks of previous quarter
- Capital Assets Disposals
- Capital Assets Acquisitions

Contact is made with company to confirm returned figures. Data are manually changed if required.

(C) NACE Code and NACE division are linked to the enterprise number and are data captured when the enterprise number is scanned. Where the NACE classification of individual companies changes in the Census of Industrial Production, this is amended in the QAI at the time the Register sample is taken once a year.

5.2.2.6 Model-related Effects

In the case of unit or item non-response imputation is usually carried out as follows –

1. Historical data for the company is used for Last Value Carried Forward (LVCF) for a variable
2. Where no historical data is available for the company CIP data are copied for the missing QAI data
3. Where neither QAI nor CIP historical data are available imputation is done on the basis of homogeneous cells defined by NACE division and employment size, and the cell ratio (calculated from the aggregated respondent values in the non-respondent's cell) is applied to the enterprise.

On occasions where historical data is unavailable and other methods of imputation are not appropriate, then use is made of the nearest neighbour method of imputation for non-response.

In most cases imputation is based on actual previous returns by the company to the QAI or to CIP, resulting in quite accurate imputation. In the cases where homogeneous cell or nearest neighbour imputation is used the profile of the company is closely mirrored for accurate imputation.

Grossing factors are generated from the latest available CIP. The grossing factors are applied to the QAI from the first quarter of the reference period e.g. CIP 2006 is used to generate grossing factors that are then applied to Quarter 1 2006 of the QAI and to all subsequent quarters of the QAI until the next CIP data are available. This causes a revision to the data published. In most cases this is less than 1% at 2 digit NACE level but can lead to more significant revisions in certain cases.

5.3 Timeliness & Punctuality

5.3.1 Provisional Results

Provisional Results are published within 14 weeks of reference date. This schedule is generally met.

5.3.2 Final Results

Final results are published within 30 weeks of reference data. This schedule is generally met.

5.4 Coherence

Data for QAI are benchmarked against the latest CIP (when it becomes available) at 2-digit NACE level. Consistency checks are also done with Monthly Industrial Production, Balance of Payments and Trade data at industrial enterprise level.

Benchmarking is done against the latest available CIP data. CIP data is based on published Annual Accounts for the companies. The QAI is a short-term indicator, mostly based on management accounts, therefore, CIP data are taken as more correct and QAI is amended accordingly. The 4 quarters of the QAI are aggregated and compared to the latest available annual CIP data. The data are compared at 2-digit NACE level. Where there is an inconsistency in the results at 2-digit NACE, the QAI companies' returns within the NACE group are investigated by comparison with the CIP returns. Where there are major differences in the returns, the CIP data for the company are taken and divided across the 4 quarters of the QAI. Where applicable, figures are revised from the first quarter of the reference period e.g. CIP 2006 benchmark revisions applied to Quarter 1 2006 of the QAI and to all subsequent quarters of the QAI until the next annual CIP data are available.

5.5 Comparability

QAI has been carried out quarterly since January 1996, and there has been no break in this series.

Comparisons are done with:

- Previous Quarter
- Previous Year

Census of Industrial Production. The sum of 4 quarters of QAI and compared with annual CIP results. The time series is international comparable at EU level (as the terms of the relevant EU Regulation are applied).

5.6 Accessibility and Clarity

5.6.1 Assistance to Users, Special Analyses

The publications and background notes are available on the CSO website - ref 5.6.3.3.

The questionnaire and background notes are also available at

<http://www.cso.ie/surveysandmethodologies/surveys/industry/quartaccinquiryind.htm>

and

http://www.cso.ie/surveysandmethodologies/surveys/industry/background_notes_ind_stocks.htm

Historical data are available back to 1996 on the CSO website - ref 5.6.3.3.

Specific user requests are acceded to where possible, and where confidentiality issues do not arise.

5.6.2 Revisions

Each quarter the provisional data from the previous quarter is revised on the receipt of late returns or amendments to existing returns and renamed to be “final”. The current quarter data is always provisional and only becomes final when the next quarter is published. The size of revision varies from quarter to quarter. QAI works to get the maximum number of returns from the largest respondents for inclusion in the provisional data. There is a timeliness issue as this survey is a short-term indicator for the CIP.

Revisions also occur as a result of benchmarking with the latest available CIP as at 5.4 above and application of revised grossing factors generated also by the latest available CIP as at 5.2.2.6. Again these revisions vary across 2 digit NACE groups. This revision occurs once a year and applies to all quarters going forward from the beginning of the CIP reference period. In most cases there is less than a 1% change in value at 2 digit NACE level, but there can be more significant revisions in certain cases.

5.6.3 Publications

5.6.3.1 Releases, Regular Publications

Industrial Stocks (each quarter)

Capital Assets in Industry (each quarter)

5.6.3.2 Statistical Reports

Statistical Yearbook

5.6.3.3 Internet

Publications are available on the CSO website at:

<http://www.cso.ie/releasespublications/documents/industry/current/indstk.pdf>

and

<http://www.cso.ie/releasespublications/documents/industry/current/caind.pdf>

Historical data is available on the CSO website at:

<http://www.cso.ie/px/pxeirestat/database/eirestat/Capital%20Disposals%20and%20Acquisitions%20in%20Industry/Capital%20Disposals%20and%20Acquisitions%20in%20Industry.asp>

and

<http://www.cso.ie/px/pxeirestat/database/eirestat/Stocks%20Held%20in%20Industry/Stocks%20Held%20in%20Industry.asp>

5.6.4 Confidentiality

All data are treated as strictly confidential in accordance with Part V of the Statistics Act, 1993. In order to ensure confidentiality, NACE groups are amalgamated where NACE groups are identifiable due to their size.

6 Additional documentation and publications

Relevant EU data can be found at:

http://epp.eurostat.ec.europa.eu/portal/page?_pageid=1090,30070682,1090_33076576&_dad=portal&_schema=PORTAL

The entry for this statistic under StatCentral (the portal to Ireland's official statistics) is at <http://www.statcentral.ie/viewStat.asp?id=163> and at

<http://www.statcentral.ie/viewStat.asp?id=172>