

**Standard documentation**  
**Metainformation**  
(Definitions, explanations, methods, quality)

on

**QUARTERLY SURVEY OF**  
**CONSTRUCTION**  
(QSC)

This documentation applies to the reporting period: Quarterly

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# 1. Overview

The quarterly production in building and construction index provides quarterly statistics on output in the construction sector. The index monitors trends in the value and the volume of production in building and construction. The primary purpose of the index is to measure changes in “Value Added “of construction work done at constant prices.

The principal difference between the value and volume indices is that the volume index traces the quantitative volume of production (i.e. effect of price changes excluded) each quarter. The “Capital Goods” index for Building and Construction materials was used as the price deflator for this series (This is a wholesale price index for capital goods in the construction sector). Data is collected by means of a postal survey with approximately 2,000 firms surveyed each quarter.

## 2. General Information

### 2.1 Statistical Category

The quarterly “Production in Building and Construction Index” is a primary statistical survey.

### 2.2 Area of Activity

Construction Statistics..

### 2.3 Organisational Unit Responsible, Persons to Contact

Building Section

Industry and Building Division

Bríd Fitzpatrick is the statistician with responsibility for this area.

The contact details are as follows;

Email: [building@cso.ie](mailto:building@cso.ie)

Tel: +353 (21) 4535162

### 2.4 Objectives and purpose; history

The quarterly “Production in Building and Construction Index” provides quarterly statistics on output in the construction sector. The index monitors trends in the value and the volume of production in building and construction.

The primary purpose of the index is to measure changes in value added at constant prices (i.e. where the impact of price inflation over the time period of the index is removed ). The Quarterly Survey of Construction (QSC) was established to provide quarterly results on the value and volume of work done in the construction sector and also on the value of new orders received.

First results from the survey were published in August 2007.

## **2.5 Periodicity**

The “Production in Building and Construction Index” is a quarterly survey.

## **2.6 Client**

These statistics are required for EU comparisons under Regulation (EC) No 295/2008.

## **2.7 Users**

- European Union/Eurostat
- Government
- Economists
- National Accounts/CSO
- Construction Industry Federation
- The general public

## **2.8 Legal basis**

This survey is carried out in accordance with the Statistics (Quarterly Survey on Construction) Order, 2004, Number 182 made under the 1993 Statistics Act. The statistics are also required for EU comparisons under Regulation (EC) No 295/2008.

## **3. Statistical Concepts, Methods**

### **3.1 Subject of the statistics**

The subject of the statistics is the value of construction work done and the value of “new orders”( ie. new contracts orders or “work in the pipeline”). (The new orders data is at present only being collected but not published). The quarterly production in building and construction index provides quarterly statistics on output in the sector. The index monitors trends in the value and the volume of production in building and construction. The primary purpose of the index is to measure changes in value added at constant prices. The Quarterly Survey of Construction (QSC) was established to provide quarterly results on the value and volume of work done in the construction sector and also on the value of new orders received.

### **3.2 Units of Observation/Collection Units/Units of Presentation**

The survey is designed to cover the entire construction sector as defined by NACE Rev 1.1 (Industrial Classification of Economic Activity in the European communities ) Division 45. The NACE REV 1.1 classification defines the construction sector (i.e. division 45) as “general construction and special trade construction for buildings and civil engineering, building installation and building completion. It includes the value of new work, repair, additions, the erection of pre-fabricated buildings or structures on the site and also constructions of a temporary nature”. The volume of work done is derived from the value. The CSO collects absolute values and publishes an index, which is derived by comparing results for the current quarter, and the same quarter in the previous year.

The sampling register used for the QSC includes all enterprises classified to Division 45 of NACE Rev 1.1.

The EU requirement is for three indicators of production in the sector;

- Building
- Civil Engineering
- Total Building and Construction

The following value and volume indices are produced as part of the national publication:

- Production in All Building and Construction
- Production in All Building and Construction (excl. Civil Engineering)
- Production in Residential Building
- Production in Non Residential Building
- Production in Civil Engineering

### **3.3 Data sources**

N/A

### **3.4 Reporting Unit/Respondents**

Data is collected for 16 categories of Building and Construction output distinguishing separately new construction work and repair and maintenance work. Respondents are asked to supply data for these categories on the value of work done in the quarter and also on the value of new contracts and orders obtained. The reporting unit is any enterprise classified to Nace 45.

### **3.5 Type of Survey/Process**

The QSC is a sample survey. Approximately 2,200 companies are surveyed each quarter. The Building Register provides the sampling frame from which the companies are drawn.

### **3.6 Characteristics of the Sample/Process**

#### **3.6.1 Population and Sampling Frame**

The Central Business Register in the CSO provides the basis for the Building register. It is from this Building register that samples are chosen. The population is the complete Building register and comprises all enterprises classified to Division 45 of NACE Rev 1.1.

#### **3.6.2 Sampling Design**

A Neyman allocation method is used to optimally select the sample by sizeclass and NACE REV 1.1 group.

The Neyman allocation method is a stratified sampling method, where the sample can often be split up into sub-samples, i.e. the total sample size is given by the sum of the sub-sample sizes. It takes sub-samples from distinct sub-populations or "strata" of the original population, with the aim of decreasing variances of sample estimates.

Each sizeclass by NACE REV 1.1 group can be considered as a sub-sample when choosing samples for the QSC.

### **3.7 Survey technique/data transfer**

Survey forms are issued by post on a quarterly basis and returned forms are then scrutinised for any discrepancies prior to scanning. The returned forms are scanned in batches.

The resulting scanned data is imported in to the Data Management System (DMS), where edits are run to get a list of outstanding companies.

Postal reminders, emails, telephone calls and field officer visits are used to seek the return of forms from non-respondents. Edits are run on the scanned data and any required changes are made to the data.

### **3.8 Questionnaire (including Explanations)**

The QSC survey collects data on the value of work done and new orders for new construction and repair and maintenance, classified according to 16 categories of work, namely:

#### **Housing**

- Local Authority & Voluntary Housing
- Affordable Housing
- Private Housing

#### **Non-Residential**

- Public
- Private Commercial
- Private Industry
- Private Tourism, Sport and Recreation
- Private Agriculture
- Private Other

#### **Civil Engineering**

- Roads
- Public Transport
- Seaports/Airports
- Water/Sanitary
- Energy
- Telecommunications
- Civil Engineering Other

The following is a link to the current questionnaire:

[http://www.cso.ie/surveysandmethodologies/surveyforms/documents/construction/pdf\\_docs/quarterly\\_survey\\_construction\\_form.pdf](http://www.cso.ie/surveysandmethodologies/surveyforms/documents/construction/pdf_docs/quarterly_survey_construction_form.pdf)

The following is a link to the current set of instructions which are to be referenced to aid completion of the questionnaire:

[http://www.cso.ie/surveysandmethodologies/surveyforms/documents/construction/pdf\\_docs/q\\_survey\\_construction\\_instructions.pdf](http://www.cso.ie/surveysandmethodologies/surveyforms/documents/construction/pdf_docs/q_survey_construction_instructions.pdf)

### 3.9 Participation in the survey

This is a statutory inquiry in accordance with the Statistics (Quarterly Survey of Construction) Order, 2004 Number 182 made under the 1993 Statistics Act

### 3.10 Characteristics of the Survey/Process and its Results

The inquiry is used to obtain information on the value of construction work done and the value of new orders received.

Volume indices are derived from value figures using the Wholesale Prices Index (WPI) “Capital goods for Building and Construction materials” index as a deflator (a deflator is defined as a statistical tool used to convert current prices into inflation-adjusted prices, in order to compare prices over time after factoring out the overall effects of inflation.).

The QSC Index is calculated using a modified fixed weight Laspeyres index: (a Laspeyres index number is a form of index number where prices, quantities or other units of measure over time are weighted according to their values in a specified base period.)

$$\left[ \left( \frac{\sum W_{q-1} \left( \frac{CT_q}{CT_{q-1}} \right)}{\sum W_0} \right) \right] \times 100$$

Where:

$W_0$  and  $W_{q-1}$  are the base weights and updated values respectively.

$CT_q$  and  $CT_{q-1}$  are the category values of production (or output) for the current and previous quarter respectively.

In the case of the QSC, 16 base weights are used, one for each category of construction work. The compilation of the index for the current quarter ( $q$ ) is based on the percentage change in the value of quarterly production (based on a matched sample) over the previous quarter.

The quarterly production in building and construction index provides quarterly statistics on output in the construction sector. The index monitors trends in the value and the volume of production in building and construction.

The primary purpose of the index is to measure changes in value added at constant prices. The principal difference between the value and volume indices is that the volume index traces the quantitative volume of production (i.e. effect of price changes excluded) each quarter.

The “Capital Goods price index for building and construction materials” is used as the price deflator for this series.

### **3.11 Classifications used**

The QSC survey collects data on the value of work done and new orders for new construction and repair and maintenance, classified according to 16 categories of work, namely:

#### **Housing**

- Local Authority & Voluntary Housing
- Affordable Housing
- Private Housing

#### **Non-Residential**

- Public
- Private Commercial
- Private Industry
- Private Tourism, Sport and Recreation
- Private Agriculture
- Private Other

#### **Civil Engineering**

- Roads
- Public Transport
- Seaports/Airports
- Water/Sanitary
- Energy
- Telecommunications
- Civil Engineering Other

Nace Rev 1.1. This is defined at the following URL link :-

[http://ec.europa.eu/eurostat/ramon/nomenclatures/index.cfm?TargetUrl=LST\\_CLS\\_DLD&StrNom=NACE\\_1\\_1&StrLanguageCode=EN&StrLayoutCode=HIERARCHIC#](http://ec.europa.eu/eurostat/ramon/nomenclatures/index.cfm?TargetUrl=LST_CLS_DLD&StrNom=NACE_1_1&StrLanguageCode=EN&StrLayoutCode=HIERARCHIC#)

### **3.12 Regional breakdown of Results**

No regional breakdown of results is provided.

## **4. Production of the Statistics, Data Processing, Quality Assurance**

### **4.1 Data capture**

Firstly the returned survey forms are scrutinised. Following this the data is scanned and imported into the CSO Data Management System (DMS). Comparison checks are run using PCSAS for each category of work done and for new orders against previous returns and data values exceeding certain thresholds are queried.

### **4.2 Coding**

- Issue/Receipt Codes,
- QSC scrutiny query codes,
- Field Officer codes,
- Edit codes for each of the 16 categories of construction covered,
- work allocation codes.

### **4.3 Data Editing**

A number of edit procedures are in place. Firstly the returned survey forms are scrutinised. Following this the data is imported into the processing system. Comparison checks are run for each category of work done and for new orders against previous returns and data values exceeding certain thresholds are queried. The edits are run using PCSAS. Range checks are also performed as part of the edits.

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

None.

### **4.5 Grossing and Weighting**

A two-stage weighting scheme has been used for the QSC, the first stage is at the company level.

The second stage weights the survey relatives at the type of construction work done (i.e. private residential, public transport, civil engineering roads etc).

### **4.6 Computation of Outputs, Estimation Methods Used**

Approximately 2,200 companies from the Building Register are surveyed.  
A Neyman Allocation is used to optimally select the sample by sizeclass and NACE Rev 1.1 group.

Data is collected at firm level. Outputs are compiled at 2 digit NACE level. Value and volume indices are produced for:- All Building and Construction, Building (excluding civil engineering), Civil Engineering, Residential Building and Non- Residential Building.

The inquiry is used to obtain information on the value of construction work done and the value of new orders received. Volume indices are derived from absolute value figures using the Wholesale Prices Index (WPI) capital goods index for building and construction materials as a deflator (A deflator is defined as a statistical tool used to convert current prices into inflation-adjusted prices, in order to compare prices over time after factoring out the overall effects of inflation.)

#### **4.7 Other Quality Assurance Techniques Used**

Staff training and checking for duplicates on the register.

### **5. Quality**

#### **5.1 Relevance**

The QSC is designed as a short term indicator, so while it provides good estimates of quarter-on-quarter change, it is not designed to be used to examine long term or structural changes in the construction sector. It is of relevance to the following user groups:-

- Eurostat
- Government
- Economists
- Other CSO sections
- The general public
- Professional Bodies
- University students and other interest groups for research purposes

#### **5.2 Accuracy and Reliability**

##### **5.2.1 Sampling Effects, Representativity**

This is a relatively new survey and the CSO currently considers the results to be experimental. The CSO will continue to monitor the quality and comparability of this new data series.

Samples are chosen each quarter, stratified by NACE code and sizeclass, so as to be representative of the population as far as possible. The sample is chosen from the Building Register which is populated from the Business Register. Some NACE categories have few enterprises and in such cases staff contact these enterprises in order to boost response.

## **5.2.2 Non-Sampling Effects**

### **5.2.2.1 Quality of the data sources used**

Not relevant as external sources are not used in order to produce results for this inquiry.

### **5.2.2.2 Register Coverage**

Sample Selection is taken from the CSO Central Business Register. Coverage is dependent on the quality of the Register used. Updates to the Register are made continually throughout each year, to improve the quality.

All enterprises classified under NACE REV 1.1, division 45 are available for sample selection.

A Neyman Allocation is used to optimally select the samples by sizeclass and NACE Rev 1.1 group.

Coverage errors

There may be some multiple listings (duplicated) when the sample is first taken from Business Register. They are removed from the sample when discovered.

### **5.2.2.3 Non-Response (Unit and Item)**

Extensive follow up of non-responding companies is carried out by telephone, e-mail and by field officer visits.

In the case of item non-response, contact is made with the company to retrieve any missing data.

The matched unit response rate is approximately 65% per quarter.

Some companies find it difficult to supply data each quarter.

### **5.2.2.4 Measurement errors**

Measurement errors are not formally calculated, however hereunder are some sources of measurement errors and the measures which are employed by the section to guard against them:-

- Only those enterprises who are engaged in activities defined in NACE REV 1.1., Divisions 45 are requested to complete the form as outlined in the instructions. A listing of activities (and a description of each) classified by NACE REV1.1, Division 45 are included with the instructions and the questionnaire.
- The instructions provide a definition of terms, as well as describing how the questionnaire should be completed, in terms of what to include and what to exclude from figures.

Instructions are given in addition to the questionnaire in order to provide some assistance in filling in the survey form. Some instructions for completion of the form are also provided on the questionnaire itself.

The reference period and units of response are clearly outlined on the questionnaire itself.

An 'other' category is provided on the questionnaire, if the value of work done by a respondent does not correspond to the 16 categories listed on the form. The respondent is asked to give a description of this work in addition to providing the value of work done.

- Respondent forms are scanned. Should a respondent wish to see the form they submitted following a query, the scanned form is made available to the respondent by email/post.

- Data is compared at local level. Data for the current quarter is compared with data for the previous quarter and also with the same quarter in the previous year.
- Staff are trained so that they have a good knowledge of the local units they are responsible for.
- The design of the questionnaire is monitored and any changes which can be made to improve the questionnaire are incorporated into the questionnaire.

### **5.2.2.5 Processing errors**

#### **Data Capture**

Forms are sent by post to construction firms. The returned forms are checked, and edits run on them. Data is scanned and verified. Due to the use of scanning rather than keying data manually, the risk of data capture error is greatly reduced. Any character which may be rejected by the scanner is manually keyed.

#### **Data Editing**

Edits have been developed to compare values for variables in each category of work done and for new orders against previous returns. If differences exceed specified thresholds, an edit is raised. The system produces lists of errors for each type of edit each quarter. These are then analysed and records are corrected as appropriate.

#### **Coding Error**

Two variables are coded, one to indicate when an edit has been changed from failure, to confirmed, changed or waiting on response from company, the other to indicate when a scrutiny query of the form has been raised.

The values entered for each edit code is displayed on screen, so any errors in coding can be rectified.

### **5.2.2.6 Model-related effects**

It is assumed that non-respondents have the same characteristics as respondents.

Grossing or imputation is not used when generating results for the QSC, however, weighting is used. Weights have been derived for each category of construction by sizeclass. Each firm is sizecoded at the beginning of each year. It is assumed that each firm remains in the same sizeclass throughout the year.

## **5.3 Timeliness and Punctuality**

### **5.3.1 Provisional results**

Provisional Results are produced for current quarter. There have been large improvements in punctuality in the past year so that the reference period to publication date is now within 3 months. The release contains value and volume indices together with annual percentage change for production in Building and Construction and also for subsectors such as Civil Engineering, Residential and Non-Residential, together with EU comparative data.

### **5.3.2 Final results**

Final results are provided for the last published quarter - e.g. if the current quarter published is q1 2007, then final results for q4 2006 will be produced – this is now within 6 months. The release table details are the same as those outlined in section 5.3.1 for provisional results.

## **5.4 Coherence**

Data from the QSC is checked for consistency with other data sources such as:

- QNHS, numbers employed in construction.
- Quarterly Earnings and Hours Worked, average hourly and weekly rate, hours worked
- Planning Permissions, number of units granted planning permission
- House Completions Series
- Commencement Notices
- House Registrations
- Monthly Production Index

The QSC compares reasonably with these indicators in value and volume of construction output in Ireland.

## **5.5 Comparability**

Comparisons are made between quarters going back to Q1 2000 and there is no break in the time series.

Data for the QSC is comparable with that for other EU states as can be seen in tables 3(a) and 3(b) of the release. Data is also available from the Eurostat website. First results from the survey were published in August 2007. As the QSC is a relatively new survey, the CSO has only published results for the volume and value of work done and has regarded these results as being experimental. There are differences (due to timing, definitions and other factors) between the quarterly and annual trends measured by this survey and by other national data sources. In particular the quarterly series from the Quarterly Survey of Construction shows considerable volatility. Comparability is improving as this survey matures. The methodology is currently under review in order to make any further improvements if required.

## **5.6 Accessibility and Clarity**

### **5.6.1 Assistance to Users, Special Analyses**

The publications, background notes and methodology documents are available on the CSO website, see section 5.6.3.3

Historical data is also available on the CSO's databank, see section 5.6.3.3.

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

### **5.6.2 Revisions**

Revisions are made to provisional data due to late returns or amendments being required to existing returns. Revised data becomes final data.

### **5.6.3 Publications**

#### **5.6.3.1 Releases, Regular Publications**

Quarterly Production in Building and Construction Index

#### **5.6.3.2 Statistical Reports**

- Statistical Yearbook

### **5.6.3.3 Internet**

The most recent release is made available at the following link:

<http://www.cso.ie/releasespublications/documents/construction/current/prodbuild.pdf>

All previous releases are made available from the Releases and Publications archive :

[http://www.cso.ie/releasespublications/pr\\_constructarchive.htm](http://www.cso.ie/releasespublications/pr_constructarchive.htm)

Data from the paper publication is also available on Database Direct :

<http://www.cso.ie/px/pxeirestat/database/eirestat/Production%20in%20Building%20and%20Construction%20Index/Production%20in%20Building%20and%20Construction%20Index.asp>

Quarterly Survey of Construction Instructions are available at the following link :

[http://www.cso.ie/surveysandmethodologies/surveyforms/documents/construction/pdf\\_docs/q\\_survey\\_construction\\_inst.pdf](http://www.cso.ie/surveysandmethodologies/surveyforms/documents/construction/pdf_docs/q_survey_construction_inst.pdf)

The Quarterly Survey of construction Methodology Document is also available:

Production in Building & Construction Index, Introduction to Series and methodological notes (Base: Year 2000 = 100)

[http://www.cso.ie/surveysandmethodologies/documents/pdf\\_docs/qsc\\_methodology.pdf](http://www.cso.ie/surveysandmethodologies/documents/pdf_docs/qsc_methodology.pdf)

### **5.6.4 Confidentiality**

The data provided by respondents is treated as strictly confidential in accordance with Part V of the Statistics Act, 1993. Data on respondent companies are not disclosed by the CSO to any other Government Department or outside body.

## **6 Additional Documentation and Publications**

www.cso.ie

The entry for this statistic under StatCentral (the portal to Ireland's official statistics) is at

<http://www.statcentral.ie/viewStat.asp?id=170>