Quarterly stocks survey QMI

Contact:

gcf@ons.gsi.gov.uk

Release date:
25 September 2012

Next release:
To be announced

Table of contents

1 . Methodology background

National Statistic	No
Survey name	Quarterly Stocks Survey
Frequency	Quarterly
How compiled	Sample based survey
Geographic coverage	UK
Sample size	5500
Last revised	25 September 2012

2 . Executive summary

Stocks are a company's merchandise, raw materials and finished and unfinished products, which have not yet been sold. For the purposes of this survey, assets generally used are: materials, stores and fuel; work in progress and goods on hand for sale.

Questionnaires are sent to 5,500 businesses each quarter. All businesses with employment of 300 or more are included permanently; smaller businesses are sampled on a random basis. No companies with less than 20 employed are selected except for in Standard Industrial Classification (SICs) Divisions 36 to 47, where those companies with employment less than 10 are not selected. This is because of a need to reduce burden on business.

Once selected, a respondent can expect to be selected for a period of 5 quarters (3-month periods), before usually taking a break. There is no specified period that a respondent will be omitted from the survey. Automatic imputation using period-on-period movements for those respondents in the same cell who have returned data is carried out for all non-responding businesses. If a business is selected for the first time and has not responded then the data will be estimated, based on average stock by employment.

The Quarterly Stocks Survey(QSS) (formerly Quarterly Stocks Inquiry) collects data on the level of stocks at the beginning and end of each period, with an asset breakdown of these totals, requested for certain sectors.

No data are directly published from the QSS but the book values collated are used by national accounts within Office for National Statistics (ONS) to calculate the change in inventories (also known as stocks). Inventories data are used in the quarterly second estimate of GDP and the UK National Accounts releases. HM Treasury (HMT), Bank of England and Eurostat all make use of the results of the survey.

This document contains the following sections:

- Output quality

- About the output

- How the output is created

- Validation and quality assurance

- Concepts and definitions

- Other information, relating to quality trade-offs and user needs, and

- Sources for further information or advice

3 . Output quality

This report provides a range of information that describes the quality of the output and details any points that should be noted when using the output.

We have developed Guidelines for Measuring Statistical Quality; these are based upon the five European Statistical System (ESS) Quality Dimensions. This report addresses the quality dimensions and important quality characteristics, which are:

- relevance

- timeliness and punctuality

- comparability and coherence

- accuracy

- output quality trade-offs

- assessment of user needs and perceptions

- accessibility and clarity

More information is provided about these quality dimensions in the following sections.

4 . About the output

Relevance

(The degree to which the statistical outputs meet users' needs.)

Information on stocks has been collected since the 1950s when data from the manufacturing, wholesale and retail sectors were first collected. In 1992, motor trades and construction sectors began. In 1993, these merged with the existing surveys and the wholesale and retail to form the survey into the non-production sector with surveys for the hotels and restaurants, and other business services being added in 2000. In 2003, non-production and production surveys merged to form one survey.

The survey sample size has changed over the years ranging from 21,500 to the present 5,500. The reduction in sample size was introduced to save on validation costs, compliance costs and to reduce the burden on business.

The Quarterly Stocks Survey (QSS) collects information from businesses in the mining and quarrying, manufacturing, energy, construction, motor trades, wholesale and retail industries within the UK. Self-completion paper questionnaires are mailed to all respondents. However, respondents in the wholesale and retail industries may reply using telephone data entry (TDE) as less detail is requested for these industries. TDE is a method of data collection where the responses are made via a telephone using the telephone's keypad functions. The survey results provide estimates of total stock at asset level within these industries at book value (the value at which an asset is carried on a balance sheet).

The main user is Office for National Statistics (ONS) itself, which uses the data to provide estimates for use in the compilation of two estimates of gross domestic product (GDP). The change in inventories, or stock building, is part of final expenditure in the UK National Accounts. Holding gains on inventories are also used at the detailed level in the compilation of annual current price input-output supply and use tables, which determine the level of current price GDP. HM Treasury, Bank of England and the Department for Business, Energy and Industrial Strategy (BEIS) use the results for forecasting, analytical and briefing work on the economy wideoutput and on the company sector.

Timeliness and punctuality

(Timeliness refers to the lapse of time between publication and the period to which the data refer. Punctuality refers to the gap between planned and actual publication dates.)

The QSS is quarterly and produces an output each quarter, for which there are two editions. Provisional results are available to national accounts around 5 weeks after the calendar quarter and revised results around 8 weeks after the calendar quarter.

The QSS book values are not published directly but are used internally by national accounts along with other information to calculate the change in inventories (stocks are also known as inventories). Inventories data can be found in the quarterly releases: Second estimate of GDP and the Quarterly national accounts using provisional and revised inventories.

For more details on related releases, the GOV.UK release calendar provides 12 months' advanced notice of release dates. If there are any changes to the pre-announced release schedule, public attention will be drawn to the change and the reasons for the change will be explained fully at the same time, as set out in the Code of Practice for Official Statistics.

5 . How the output is created

Output objectives

The Quarterly Stocks Survey (QSS) measures the value of stock held by book value for UK businesses, at the beginning and end of the quarter. Most industries are required to provide an asset breakdown, for example, manufacturers are asked the value of their materials and fuel, work in progress and finished goods.

Coverage and sample

The QSS selects 5,500 businesses each quarter, using the Inter-Departmental Business Register (IDBR) as the sampling frame. The IDBR is a database of UK businesses that is maintained by Office for National Statistics (ONS). Stratification of the survey is by UK Standard Industrial Classification 2007: SIC 2007 and either a single SIC code or groups of SIC codes and employment size. All businesses in the 300 and over employment strata are permanently included in the sample. The smallest businesses in terms of employment (that is, 0 to 9 or 0 to 19 employment) are not sampled. A random sample is selected in each of the other strata, unless there are insufficient businesses, in which case all businesses are selected. These strata are:

- SIC Divisions 05 to 35 (employment strata 20 to 49, 50 to 99, 100 to 299 and 300 and over)

- SIC Divisions 36 to 47 (employment strata 10 to 49, 50 to 99, 100 to 299 and 300 and over)

The industries covered by the survey are mining and quarrying, manufacturing, energy, construction, motor trades, wholesale and retail. Eleven different questionnaires are sent out reflecting different sectors and sub-sectors (Table 1).

Table 1: Questionnaire type

Questionnaire type	Asset breakdown requested
Mining and quarrying SICs 05101-08990	Raw materials and consumable stores All other stock
Manufacturing SICs 10110 to 33200	Materials and fuel Work in progress Finished goods
Energy (electricity) SIC 35100	Coal Oil Gas
	Nuclear fuel Other stock
Energy (gas) SIC 35200	Natural gas Other fuel Non fuel
Energy (steam) SIC 35300	Coal Oil
	Other fuel Stores
	Work in progress
Energy (water, sewerage and waste)	Stores
SICs 36000 to 39000	Work in progress
Construction	Materials, stores and fuel (dwellings)
SICs 41100 to 43999	Work in progress and goods on hand for sale (dwellings)
	Materials, stores and fuel (non-dwellings)
	Work in progress and goods on hand for sale (non-dwellings)
Motor trades	New vehicles Used vehicles
SICs 45111 to 45400	
	All other stock
Wholesale SIC 46000	Total stock
Retail	Total stock
SIC 47000	

Questionnaires ask for the level of stocks at the beginning and end of each quarter. All businesses in the same industry, regardless of employment size, receive the same questionnaire.

Editing and validation

All responses are automatically validated by the processing system. Within this system are a set of validation tests, which use information from previous responses and register information and identify any responses that are suspect. These errors are investigated by the editing and validation team, who contact businesses to confirm and explain data provided. All contact with businesses is recorded, providing an audit trail.

Weighting and estimation

The QSS uses combined ratio estimation. The implementation of design and calibration weights ensures the estimates take into account the characteristics of non-selected businesses including the 0 to 9 and 0 to 19 employment strata. Two weights are applied to the sampled

- "a" weight (also called a design weight) – this covers the inclusion probability of the sample, taking into account the ratio of the size of a sample to the size of the population from which the sample is selected

- "g" weight – this takes into account how representative a sample's register employment is compared with the register employment of the population from which the sample is selected

Imputation and constructions

Imputed returns are made for all non-responding businesses, based on quarter-on-quarter ratios in the current and previous year. Non-responders selected for the first time are given a constructed value based on average stock for their employment level. Occasionally, manual constructions will be used to override these if more information is known.

Outliers

Businesses with extreme or atypical key variable returns for their business size are detected automatically and treated by Winsorisation outliering methodology. This technique is used to reduce the effect of outlying observations on the overall estimate. The parameters used in this process are reviewed on an annual basis.

6 . Validation and quality assurance

Accuracy

(The degree of closeness between an estimate and the true value.)

The survey obtains its sample from the Inter-Departmental Business Register (IDBR). The sample is reviewed and optimised particularly when methodological changes are implemented. The achieved response rate is 69% at the provisional stage and 80% at the revised stage. Businesses are sent reminder letters to encourage response and are also contacted by telephone to achieve the response targets. Enforcement action is taken against persistent non-responders.

Estimates from this survey are subject to various sources of error. Total error consists of two elements, the sampling error and the non-sampling error.

Sampling error

This occurs because estimates are based on a sample rather than a census. Sampling error is minimised for the Quarterly Stocks Survey (QSS) through the use of a stratified random sample, which is reviewed and refined periodically. Sampling error is continually monitored with standard errors and coefficients of variation (CV) calculated for all survey outputs.

Table 2 illustrates the average CV for total stock by sector for the period Quarter 3 (July to Sept) 2011 to Quarter 2 (Apr to June) 2012.

Table 2: Average coefficients of variation by sector

Average sector CVs Quarter 3 2011 to Quarter 2 2012	
Mining and quarrying	3.9
Manufacturing	1.9
Energy	3.3
Construction	7.7
Motor trades	4.8
Wholesale	3.7
Retail	3.5
Survey	1.8

Non-sampling error

Non-sampling errors are not easy to quantify and include errors of coverage, measurement, processing and non-response. Response rates give an indication of the likely impact of non- response error on the estimates (for example, bias). Non-sampling error is minimised through comprehensive input and output editing processes. The IDBR is updated continuously in an attempt to ensure that all samples taken from it are representative of all types of businesses, helping to reduce frame error.

Reliability

An indication of reliability is the difference between the first published estimate and the final revised estimate. The survey revises up to five previous periods, taking on late responses and businesses that revise their own data, having firstly supplied estimated data, which they subsequently replace with an actual return. The data collected from the QSS are also compared with the Annual Business Survey (ABS).This provides a further check of reliability and congruence.

Table 3 shows the revision between the provisional and revised estimate for Quarter 3 (July to Sept) 2011 and Quarter 2 (Apr to June) 2012.

Table 3: Quarter 3 (July to Sept) 2011 and Quarter 2 (Apr to June) 2012 revision (provisional to revised)

Revision	2012 Q2	2012 Q1	2011 Q4	2011 Q3
	%	%	%	%
Mining	-0.01	-0.01	0	0.03
Man msf	-0.03	0	0.02	0
Man wip	0.00	0.02	0.01	-0.01
Man fg	0.04	0.01	-0.01	-0.01
Energy	0.03	-0.01	0.01	0
Cconstruction	0.03	0	0.03	-0.02
Motor trades				
	-0.01	0.03	0	0
Wholesale	0.01	0	0.01	0.01
Retail	0.00	0.01	-0.01	0.02
Total stocks				
	0.01	0.01	0.01	0

Comparability and coherence

(Comparability is the degree to which data can be compared over time and domain, for example, geographic level. Coherence is the degree to which data that are derived from different sources or methods, but refer to the same topic, are similar.)

Stocks estimates were produced on a comparable basis from 2003 until Quarter 4 (Oct to Dec) 2010. From 2011, the survey moved from sampling businesses using Standard Industrial Classification: SIC 2003 to SIC 2007. Whenever methodological changes or other factors impact on the stocks estimates, users are consulted and every effort is made to ensure that all previous estimates are amended to make them directly equivalent. There have been no major changes to the questionnaires in recent years.

As previously mentioned, the results of the QSS are checked for congruency once a year against the ABS. The ABS covers production, construction and distribution and has a much larger sample of approximately 62,000 businesses. It collects the total (not asset) level of stocks at the beginning and end of a 12-month period. This ensures coherence at industry level.

7 . Concepts and definitions

(Concepts and definitions describe the legislation governing the output, and a description of the classifications used in the output.)

The statutory basis of the Quarterly Stocks Survey (QSS) in Great Britain is the Statistics of Trade Act 1947 and in Northern Ireland, it is the Statistics of Trade and Employment (Northern Ireland) Order 1988. These acts allow Office for National Statistics to obtain data to be used in the production of economic and social statistics, which aid government policy-making and provide essential information for industry and academia.

This survey is carried out under section 1 of the Statistics of Trade Act and if a business does not respond, penalties may be incurred in accordance with section 4 of the Act. The purpose and coverage of the Northern Ireland Act is the same as Great Britain and again respondents are approached on a mandatory basis.

QSS is defined in accordance with Divisions 05 to 47 of the Standard Industrial Classification: SIC2007.

8 . Other information

Output quality trade-offs

(Trade-offs are the extent to which different dimensions of quality are balanced against each other.)

The quick collection of data allows for the timely production of outputs, but more reliable estimates are available in subsequent months as imputed values are replaced with actual data received from businesses.

Assessment of user needs and perceptions

(The processes for finding out about users and uses, and their views on the statistical products.)

All issues relating to the survey are addressed at quarterly Pause and Review meetings held with users. There is also an annual Survey Improvement Plan, where more fundamental issues, such as methodology, sampling and questionnaire design are reviewed.

Every three years, a Triennial Review is undertaken, approaching users and respondents to evaluate all aspects of the survey.

9 . Sources for further information or advice

Accessibility and clarity

(Accessibility is the ease with which users are able to access the data, also reflecting the format in which the data are available and the availability of supporting information. Clarity refers to the quality and sufficiency of the release details, illustrations and accompanying advice.)

Our recommended format for accessible content is a combination of HTML webpages for narrative, charts and graphs, with data being provided in usable formats such as CSV and Excel. Our website also offers users the option to download the narrative in PDF format. In some instances other software may be used, or may be available on request. Available formats for content published on our website but not produced by us, or referenced on our website but stored elsewhere, may vary. For further information please refer to the contact details at the beginning of this report.

For information regarding conditions of access to data, please refer to the following links:

- [Terms and conditions](#) (for data on the website)

- [Copyright and reuse of published data](#)

- [Pre-release access](#) ([ended from 1 July 2017](#))

- [Accessibility](#)

- Access to microdata via the [Virtual Microdata Laboratory](#)

Useful links

[Quarterly National Accounts – Table C2](#) Table C2 is gross domestic product by category of expenditure: chained volume measures. The QSS data is used as part of changes in inventories, within the gross capital formation heading.