# General Details

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<thead>
<tr>
<th>Title of output:</th>
<th>Capital Stocks and Capital Consumption</th>
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<tr>
<td>Abbreviated title:</td>
<td>CS &amp; CC</td>
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<tr>
<td>Designation:</td>
<td>National Statistics</td>
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<tr>
<td>Geographic Coverage:</td>
<td>United Kingdom</td>
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<tr>
<td>Date of last SQR or QMI:</td>
<td>N/A</td>
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<tr>
<td>Contact details:</td>
<td><a href="mailto:gcf@ons.gov.uk">gcf@ons.gov.uk</a></td>
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# Executive Summary

Capital Stocks (CS) and Capital Consumption (CC) is a regular annual publication. It shows net capital stocks, gross capital stocks, and capital consumption by asset, sector and industry in current prices and chained volume measures, and Gross Fixed Capital Formation (GFCF) by asset and industry only.

The capital stocks and capital consumption data are calculated using the Perpetual Inventory Method (PIM).

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
- Sources for further information or advice

# Output Quality

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

ONS has developed Guidelines For Measuring Statistical Quality; these are based upon the six European Statistical System (ESS) quality dimensions. This document addresses these quality dimensions and other important quality characteristics, which are:
- Relevance
- Timeliness and Punctuality
- Comparability
- Coherence
- Accuracy
- Output Quality Trade-Offs
- Assessment of User Needs and Perceptions, and
- Accessibility and Clarity

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

# About the Output

## Relevance

*The degree to which statistical outputs meet users’ needs.*

Capital Stocks and Capital Consumption estimates are produced annually. They are used internally by ONS in the National and Sector Accounts, Public Sector Finances and the Blue Book, and externally by the Bank of England, the Office for Budget Responsibility and Her Majesty’s Treasury. These organisations use the estimates to monitor economic

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1 Quality and Methodology Information’ (QMI) replaced ‘Summary Quality Reports’ (SQR) from 04/11
performance, and inform monetary and fiscal policy decisions. These estimates are also used by the business and research communities, education, the media and the general public.

Capital Consumption is used in various ways in the National Accounts, in particular:
1. For all sectors, Capital Consumption is used to convert the gross-based estimates, such as gross domestic product or gross operating surplus, into the net estimates such as net national income.
2. For the non-market sectors (central and local government and non-profit institutions serving households), Capital Consumption forms part of the sectors’ contributions to the economy as measured using gross value added, and is the only component of gross operating surplus for these sectors, leaving the net operating surplus as zero.

Additionally, Capital Stocks and Capital Consumption estimates are also used in the calculation of quarterly profitability estimates of UK companies.

**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.*

Capital Consumption and Capital Stocks estimates are published around 8-10 months after the end of the reference year, in the annual publication of the Blue Book. These estimates are re-published with more detailed breakdown in the Capital Stocks, Capital Consumption and Non-Financial Balance Sheet publication. The last publication was in 2010 which referred to the period 2009. On 1 March 2012 ONS announced that it will not be publishing the 2011 Capital Stocks and Capital Consumption publication, due to exceptional circumstances. The next publication date is planned to be after the 2012 Blue Book. The estimates will be consistent with the 2012 Blue Book reference year and will be for the period up to 2011.

For more details on related releases, the [UK National Statistics Publication Hub](#) is available online and provides 12 months’ advance notice of release dates. In the unlikely event of a change 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](#).

**How the Output is Created**

Outputs are estimated using the [OECD](#) definitions of the main measures of Capital Stocks and Capital Consumption. These are as follows:

- **Gross capital stocks** represent the value of all fixed assets still in use when a balance sheet is drawn up. It is valued at the actual or estimated current purchasers’ prices for new assets of the same type irrespective of the age of the assets.

- **Net capital stocks** measure the sum of the written-down values of all the fixed assets still in use when a balance sheet is drawn up (that is, the value of the capital stocks after depreciation).

- **Consumption of fixed capital** represents the reduction in the value of the fixed assets used in production during the accounting period resulting from physical deterioration, normal obsolescence or normal accidental damage.

These measures are consistent with international best practice and are produced by ONS using a Perpetual Inventory Method (PIM) by asset, industry and sector.

A PIM is an economic model that enables balance sheets (or stocks) to be calculated from the associated flows; a PIM separately models the stocks levels of various assets owned by different industries. The ONS PIM takes GFCF data by industries and uses it to form estimates of the value of capital stocks in use in the UK. Assumptions about the life of these capital stocks are used to ensure that they are withdrawn from the model when they are no longer economically useful.

For estimates of capital consumption and net capital stocks these assets are written down over their lifetime. For gross capital stocks, the asset is valued at its new replacement cost until such time as it is retired.

At any given point in time, the PIM estimates the constant price value of capital stocks still in use by summing the original investment data for these assets over their lifetimes. For example, some buildings have life-lengths of a hundred years, so the PIM will aggregate those hundred years of investment data to measure gross capital stocks. To measure net capital stocks, each vintage of investment is adjusted to reflect capital consumption (depreciation). In the ONS PIM, straight-line depreciation is assumed, so that the stock of each vintage decreases each year by a constant amount, falling to zero at the end of the asset’s life-length. This is a depreciation profile based on a constant annual amount of capital consumption over the service life of the asset. This service life is the total period during which the asset remains in use or ready to be used, in a productive process, even if the asset has more than one owner. The depreciation of each asset and industry within each year is aggregated to provide the capital consumption measure.

Assumptions are made in the PIM about the average life-length of different assets across industries. While an asset might have an average life length of 10 years that does not mean that all such assets are retired exactly 10 years after being purchased. In fact it is likely that these assets will be retired over a period of a few years, with 10 being the average. To
ensure that the model reflects this, a retirement function is used where retirements of assets are assumed to be normally distributed around the mean asset life length. To model this, the parameters for the distribution of asset retirements are entered into the PIM. This is called the coefficient of variation for each asset.

In addition to the average life lengths, premature scrapping of assets is modelled, since evidence of the 1980s recession suggested that in economic downturns, industry-specific plant and machinery may be scrapped early reflecting unforeseen obsolescence, such as production becoming uneconomical, and companies being unable to sell the equipment for further use. Such behaviour has been assumed to only take place to plant as other assets such as vehicles and buildings have second-hand markets, suggesting that businesses facing closure would sell these assets, keeping the assets in the capital stocks. The PIM relates such unforeseen obsolescence to data from the Department for Business, Innovation and Skills (BIS) statistics on business insolvencies to model firm closures, and it is assumed that half the plant of insolvent firms is prematurely scrapped.

The PIM uses GFCF in chained volume measures (CVM) for low level assets, industries at the whole economy level and calculates the capital stock and consumption series at constant prices at this level. It then applies proportions to sectorise these across the economy. These CVM series are then reflated using implied deflators based on the GFCF current price and CVM data to give current price estimates. In the model, the constant price estimates are made at a very detailed level of disaggregation; each of the approximately 100 industries has measures for each asset. However, the results are published at a more aggregated level, broken down into asset categories.

Further information on the PIM model can be found in these articles:
- UK capital stock developments in coverage and methodology
- Improving non financial balance sheets and capital stocks

Validation and Quality Assurance

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

The Capital Stocks and Capital Consumption estimates are quality assured using a variety of standard practices, such as movement analysis at sector and asset level. Any atypical movements are investigated to ensure the quality of the data to be published and understand/explain the movements.

As the Capital Stocks and Capital Consumption estimates are used in the production of the National Accounts and Blue Book estimates and are produced according to the National Accounts framework, they are subject to the same revisions policy as the Blue Book.

Quality assurance is a very important part of the compilation of these estimates and the main driver for agreeing the publication to be fit for the users’ requirements. In 2012 ONS announced it would not be publishing estimates of Capital Stocks and Capital Consumption due to ongoing conversion and quality assurance of historical data.

Comparability and Coherence

Comparability is the degree to which data can be compared over time and domain e.g. 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.

Every effort is made to ensure that the series are comparable over time. Comparable time series are available going back to the year 1948 for Capital Stocks and Capital Consumption.

Where possible, changes to the methodology are applied to the whole series to ensure this comparability is maintained. These changes are implemented in line with the National Accounts revisions policy. Since international standards such as SNA 93 and ESA 95 are used in the production of the Capital Stocks and Capital Consumption estimates, the figures should be directly comparable with the accounts of other countries. However the revisions policies of these countries should be examined before comparing data for back periods.

Concepts and Definitions

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

The Capital Stocks and Capital Consumption estimates are compiled in accordance with SNA 93 and ESA 95 with additional guidance produced by OECD.

Where industry breakdowns are provided, these are in line with the Standard Industrial Classification 2003. The next publication will provide industry breakdowns using the Standard Industrial Classification 2007.
Other Information
Output Quality Trade-Offs
Trade-offs are the extent to which different dimensions of quality are balanced against each other.

A trade-off of cost over potentially better quality data is made by using a PIM to model Capital Stocks and Capital Consumption data instead of conducting a survey to gather this information direct from companies. However, the use of PIM model data is internationally recognised as the preferred method of measuring capital data with the assumption that little accuracy is lost by use of the model, since much of the data companies could provide would not meet National Accounts standards and definitions. The OECD Manual ‘Measuring Capital’ supports the use of a PIM over survey data.

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.

ONS’s 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. The ONS 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. For further information please refer to the contact details at the beginning of this document.

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

- Terms and conditions (for data on the website): http://www.ons.gov.uk/ons/site-information/information/terms-and-conditions/index.html
- Copyright and reuse of published data: http://www.ons.gov.uk/ons/site-information/information/creative-commons-license/index.html
- Access to microdata via the Virtual Microdata Laboratory: http://www.ons.gov.uk/ons/about-ons/who-we-are/services/vml/index.html
- Accessibility: http://www.ons.gov.uk/ons/site-information/information/accessibility/index.html

In addition to this Quality and Methodology Information, Basic Quality Information relevant to each release is available in the background notes of the relevant Statistical Bulletin.

This article gives notice of forthcoming changes in methodology used in the production of Capital Stocks and Capital Consumption data.

Useful Links

References

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