

Regional gross fixed capital formation QMI

Quality and methodology information for regional gross fixed capital formation, with strengths and limitations of the data, methods used, and data uses and users.

Contact:
Qamran Hussain and Kris
Johannsson
regionalcapital@ons.gov.uk
+44 1329 444824

Release date:
8 December 2023

Next release:
To be announced

Table of contents

1. [Output information](#)
2. [About this Quality and Methodology Information report](#)
3. [Important points](#)
4. [Quality summary](#)
5. [Quality characteristics of the regional gross fixed capital formation data](#)
6. [Methods used to produce the regional gross fixed capital formation data](#)
7. [Cite this methodology](#)

1 . Output information

- National Statistic: no
- Data collection: administrative and survey sources
- Frequency: annual
- How compiled: using regional data sources to break down national accounts estimates of gross fixed capital formation
- Geographic coverage: United Kingdom
- Related publications: Business investment, capital stocks and fixed capital consumption

2 . About this Quality and Methodology Information report

This Quality and Methodology Information report contains information on the quality characteristics of the data (including the European Statistical System's five dimensions of quality) as well as the methods used to create it.

The information in this report will help you to:

- understand the strengths and limitations of the data
- learn about existing uses and users of the data
- understand the methods used to create the data
- help you to decide suitable uses for the data
- reduce the risk of misusing data

3 . Important points

- Our most recent estimates are available in our [Experimental regional gross fixed capital formation \(GFCF\) estimates by asset type, UK article series](#).
- The first regional estimates of gross fixed capital formation (GFCF) by asset type were published in May 2022 in our [Experimental regional gross fixed capital formation \(GFCF\) estimates by asset type article](#); “buildings and structures” accounts for around half of GFCF and over three-quarters of capital stocks.
- Regional estimates for this asset will be published every year, and estimates for tangible assets, other than buildings and structures and intellectual property products, will be published annually from 2024.
- Regional GFCF estimates are produced on an annual basis and benchmarked to Blue Book estimates of GFCF, using a variety of data sources to capture the regional breakdown of the asset detail used in national accounts GFCF estimates – for more information on data sources, see [Section 6: Methods used to produce the regional fixed capital formation data](#).
- Estimates are available from 1997 to the year preceding publication (so, for the 2023 publication, estimates are available up to 2022).
- Regional estimates of GFCF are experimental statistics; we are looking to continuously improve the methods used to compile estimates and add industry breakdowns in future.
- To produce capital stocks estimates, it is necessary to have a long time series of GFCF as new buildings and structures are used for several decades; the depreciation profile of assets can differ substantially within asset classes as well as price movements, therefore further work is needed to produce capital estimates for most assets.

4 . Quality summary

Overview

The regional gross fixed capital formation (GFCF) publication provides a breakdown of investment by local authority districts (LAD) and International Territorial Levels (ITL). The most recent publication provides estimates for “buildings and structures” in current prices. A dataset that enables the calculation of capital stocks estimates is available for dwellings and land improvements related to transfer costs.

Uses and users

The [Levelling Up the United Kingdom white paper](#) identifies physical capital and intangible capital (some aspects of intangible capital are captured as intellectual property products in capital stocks estimates) as important factors in geographical disparities. Regional GFCF and capital stocks can be used to measure regional differences in investment and capital.

Users include the Department for Levelling Up, Housing and Communities (DLUHC), a range of other government departments and devolved administrations.

Strengths and limitations

Main strengths

- Regional GFCF uses a range of data sources, including Barbour ABI new orders data, to produce regional breakdowns equivalent to the data sources used to compile GFCF and follows guidance from the [Eurostat Manual on regional accounts methods 2013 \(PDF, 1.291KB\)](#).
- Regional estimates are benchmarked to national accounts estimates that are compiled in line with international guidance from the [UN System of National Accounts \(SNA\) 2008](#), the [European System of Accounts \(ESA\) 2010](#) and the [Organisation for Economic Co-operation and Development's \(OECD\) Measuring Capital Manual](#).

Main limitations

- New orders estimates used to produce regional breakdowns of new buildings are lower than GFCF, as explained in our [Construction statistics development article](#), and currently no adjustments are made to capture any regional difference there may be between the two measures.
- Investment in existing buildings relies on the assumption that at an ITL1 level firms carry out all work in the region where they are based.
- At lower geographies we assume capital expenditure is evenly spread across dwellings or the floorspace of commercial property.
- Some lower-level regional breakdowns cannot be published as existing data sources do not provide estimates at that level of geographic detail.

Recent improvements since May 2022

A range of improvements have been made since our last [Experimental regional gross fixed capital formation \(GFCF\) estimates by asset type: 1997 to 2020 article in May 2022](#).

- Most estimates of GFCF for buildings and structures are now available down to local authority districts.
- The asset detail for “buildings and structures” is now separated between “dwellings” and “other buildings and structures”, with further breakdowns by asset detail.
- The regional breakdown of new buildings and structures is now more closely aligned to regional construction output estimates at an ITL1 level; lower-level project detail from Barbour ABI new orders data is used from 2018.
- For local government and public corporations dwellings GFCF, we now use capital expenditure reported by the relevant local authorities, for example in England we use [data published by the Department for Levelling Up, Housing and Communities](#).
- Regional breakdowns of stamp duty and price paid data have been used to provide improved estimates of land improvements relating to transfer costs.
- A dataset that enables the production of capital estimates for dwellings and land improvements related to transfer costs is now available.
- Industry-level detail is no longer published as this did not accurately reflect regional industrial patterns, so we are looking to improve regional estimates of GFCF by industry before reintroducing this.

5 . Quality characteristics of the regional gross fixed capital formation data

This section provides a range of information that describes the quality and characteristics of the data and identifies issues that should be noted when using the output.

Relevance

GFCF measures the flow of capital, which includes “buildings and structures”, “machinery and equipment” and “intellectual property products”. If GFCF exceeds the depreciation of capital (capital consumption) this will result in positive net capital formation and consequently an increase in the net stock of capital. The purpose of regional gross fixed capital formation (GFCF) is to provide geographic breakdowns of gross fixed capital formation and capital stocks.

Accuracy and reliability

As regional estimates of gross fixed capital formation are benchmarked to national estimates, revisions to UK estimates will reflect a number of factors listed in our [business investment QMI](#), such as the availability of additional data.

Given the experimental nature of regional gross fixed capital formation, future regional estimates are likely to be revised as improvements are made to address existing limitations. Estimates for the latest year are also likely to be revised for some series as additional data become available.

Coherence and comparability

The calculation of regional gross fixed capital formation and capital stocks estimates are generally consistent with estimates used in national accounts. Currently there are some small differences in estimates of published gross fixed capital formation and those used in the perpetual inventory method, which are detailed in our [Capital stocks user guide](#). Regional GFCF estimates are consistent with GFCF used to produce capital stocks estimates. These follow international guidance from the [UN System of National Accounts \(SNA\) 2008](#), the [European System of Accounts \(ESA\) 2010](#) and the [Organisation for Economic Co-operation and Development's \(OECD\) Measuring Capital Manual](#).

The regional breakdown of GFCF is calculated in line with guidance from the [Eurostat Manual on regional accounts methods 2013 \(PDF, 1.292KB\)](#), with data available by local authority districts and International Territorial Levels.

Accessibility and clarity

Our recommended format for accessible content is a combination of HTML web pages for narrative, charts and graphs, with data being provided in usable formats such as CSV and Excel. We also offer 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 email regionalcapital@ons.gov.uk.

Regional capital releases conform to the standards set out in the UK Statistics Authority's Code of Practice for Official Statistics.

Timeliness and punctuality

Regional estimates of gross fixed capital formation (GFCF) for "buildings and structures" were published less than twelve months after the reference period in 2023. From 2024 we are looking to produce regional GFCF estimates within twelve months for all assets depending on input data availability.

Concepts and definitions

Gross fixed capital formation (GFCF) measures the value of acquisitions minus disposals of fixed assets and specified expenditure on non-produced assets by producers. Capital stocks estimates are derived from GFCF by converting current price GFCF into constant prices and using the perpetual inventory method to estimate net capital stock, gross capital stock, and consumption of fixed capital.

Geography

Regional GFCF estimates are produced by ITL1, ITL2, ITL3, and local authority districts. Further details on International Territorial Levels (ITLs) and local authority districts, including maps can be found on our [Open geography portal](#).

6 . Methods used to produce the regional gross fixed capital formation data

How we collect the data, main data sources and accuracy

Dwellings

Gross fixed capital formation (GFCF) formation of dwellings can be broken down into two main categories of GFCF: “new dwellings and fees” and “dwellings improvements”.

Data from [Barbour ABI](#) on new orders, as described in our [Construction output in Great Britain bulletin](#), are used to estimate the regional breakdown of “new dwellings and fees” from 2010 for Great Britain. Construction output estimates are used for Northern Ireland and other ITL1 regions from 1997 to 2009, while lower-level regional data are estimated using data on completions, net new dwellings and house prices.

The main aspect of “dwellings improvements” are “private housing repair and maintenance”, which uses regional construction output data for ITL1 regions and number of dwellings to produce lower-level geographic detail. Hidden improvements relate to work carried out by the self-employed that are not captured within the construction output survey, and regional breakdowns are estimated using regional estimates of mixed income in the construction industry. For more detail, see our [Regional gross value added \(balanced\) per head and income components dataset](#).

Components of gross fixed capital formation private sector dwellings

New dwellings and fees:

- fees (3%)
- private new housing – self builds (6%)
- private new housing – private housing new work (46%) (construction output)

Dwellings improvements:

- hidden improvements (7%)
- DIY improvements (1%)
- contract improvements – adjustments in VAT (8%)
- contract improvements – private housing repair and maintenance (28%) (construction output)

Please note that these proportions are for indicative purposes only and may not sum to totals because of rounding.

Regional breakdowns of GFCF for public corporations dwellings are estimated using capital expenditure estimates on dwellings published by the Department of Levelling Up, Communities and Housing (DLUHC) and devolved administrations.

Other buildings and structures

Barbour ABI new orders data are used to estimate the value of GFCF for new other buildings and structures in Great Britain from 2010 onwards, excluding for local government GFCF. Projects are currently allocated to a single location, in future we will look to identify projects that take place across a number of regions, such as transport infrastructure. Estimates from 1997 to 2009 use data from the Annual Business Survey.

Major improvements to other buildings and structures are estimated using construction output data for ITL1 regions, with Valuation Office Agency floorspace data used to produce estimates for lower-level regions.

Local government estimates use capital expenditure estimates published by DLUHC and devolved administrations. Not all local government capital expenditure can be assigned to local authority districts and where this is the case, capital expenditure is distributed using proportions of capital expenditure in local authority districts.

Currently we assume that the geographic breakdown of the “mining and quarrying” industry matches the gross value added within this industry.

Land improvements include the cost of ownership transfer of land, which includes stamp duty and professional fees (including costs such as estate agents’ fees and conveyancing). From 2005 onwards [HMRC and devolved administrations regional data on stamp duty](#) are used and, for earlier estimates as well as professional fees, [HM Land Registry Price Paid data](#) are used.

How we process the data

A variety of data sources are used and this involves a range of processes to ensure that estimates are produced in line with the appropriate guidance.

Regional estimates of new construction work are estimated by modelling expenditure of new orders across the expected construction period, as explained in our [2018 Construction development article](#).

Estimates of capital are calculated using the perpetual inventory method and further details of the process and code used are available on [Github](#).

How we quality assure and validate the data

Estimates are quality assured and validated using a range of standard practices and estimates are compared against other data sources.

How we disseminate the data

A dataset containing estimates of regional gross fixed capital formation are published, as well as a “piminput” dataset that allows users to run estimates using the perpetual inventory method.

How we review and maintain the data processes

Given the experimental nature of these statistics we are looking to continuously improve the methods used to estimate regional GFCF.

7 . Cite this methodology

Office for National Statistics (ONS), released 8 December 2023, ONS website, methodology, [Regional gross fixed capital formation QMI](#)