



Department for
Digital, Culture,
Media & Sport

DCMS Sectors Economic Estimates: GVA Quality assurance report

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1. Introduction

The **DCMS Sectors Economic Estimates 2018 (provisional): GVA** statistics were published on 5th February 2020 and provide an estimate of the contribution of DCMS Sectors to the UK economy, measured by GVA¹ (Gross Value Added). This document summarises the quality assurance processes applied during the production of these statistics and includes a detailed account of the quality assurance processes and the data checks carried out by our data providers (Office for National Statistics)² as well as by DCMS.

2. Data Sources

The following data sources were used in the production of current price (i.e. not adjusted for inflation) GVA estimates for DCMS sectors

1. [Blue Book 2019](#) Consistent Supply and Use tables (published 31st October 2019) – containing data up to 2017.
2. Latest [Quarterly National Accounts](#) – used for 2018 estimates.
3. Unsuppressed ABS aGVA estimates at the lowest level available – used to allocate GVA below the level available in the supply and use tables.
4. Latest [Tourism Satellite Account](#) (produced separately by ONS Tourism Intelligence Unit).
5. Latest balanced GVA for the non-market charities element of NPISH (Non-profit institutions serving households), per industry.

DCMS also publish GVA figures, expressed in Chained Volume Measures (CVM) i.e. taking into account inflation. GVA expressed in chained volume measures was published for the first time in November 2017 in response to user demand.

3. Quality assurance processes at ONS

Quality assurance at ONS takes place at a number of stages. The various processes in place to ensure quality for the data sources used in the GVA publication are outlined below. It is worth noting that information presented here on the data sources are taken from various ONS technical reports and should be credited to colleagues at the ONS.

The Blue Book

Annual GDP estimates are published at two different stages. Annual estimates are first available once all quarterly data for a given year is available in the quarterly national accounts. Annual estimates are then available in the UK National Accounts, The Blue Book, which is usually published between July and October each year (please note that The Blue Book is subject to a process of annual reconciliation).

Trade statistics, Balance of Payments, public sector accounts and other short-term indicators of economic activity are all integrated within the system of national accounts.

It is important to emphasise that the national accounts are estimates based on statistical surveys, forecasts and models.

¹ Gross value added (GVA) is a measure of the increase in the value of the economy due to the production of goods and services.

² <https://www.ons.gov.uk/>

For further information on quality assurance in the production of the Blue Book and associated publications, see the [National Accounts page](#). Section three of this page describes the quality assurance processes of each stage of the production in detail.

Annual Business Survey (ABS)

In order to measure GVA for our sectors at a 4 digit SIC level, The ABS (Annual Business Survey) is used to break down the Supply and Use tables estimates to the 4 digit level³. For example, SIC 32.12 (Manufacture of jewellery and related articles) forms part of the Creative Industries. SIC 32 is available in the SUT, however, SIC 32.12 is the only part of the 2 digit SIC which should be included in the Creative Industries (or DCMS sectors) estimate. To get a National Accounts consistent estimate of the GVA for this particular 4 digit SIC code, the ABS aGVA was used to estimate 32.12 as a proportion of 32. This was then applied to the value of 32 in the SUT to get a National Accounts consistent estimate of GVA for 32.12. This approach was applied for all cases where a 3 or 4 digit SIC is used in the DCMS definition. For Gambling and Telecoms the entire 2-digit SIC from the SUT was used.

For more information on quality assurance processes utilized during the production and analysis of ABS, see [Annual Business Survey technical report: August 2018](#).

Non-profit institutions serving households (NPISH)

Within the UK, we define the non-profit institutions serving households (NPISH) sector to include universities, trade unions, political parties, further education colleges and most charities. This data is used to estimate the Civil Society sector report.

Since Blue Book 2018, improvements have been made to the efficiency and usability of the NPISH processing system. The system processes the sample of general charities data received from the National Council for Voluntary Organisations (NCVO). These data feed into the NPISH sector estimates within the UK National Accounts⁴.

The Tourism Satellite Account (TSA)

Please note that due to substantial revisions to the base data and methodology used to construct the tourism satellite account, GVA estimates for the tourism sector are only available for 2017.

When measuring Tourism, DCMS refer to the Tourism Satellite Account (TSA). The Tourism Satellite Account (TSA) is an extension to a System of National Accounts. It enables users to gain an understanding of the size and role of tourism-related economic activity, which is usually "hidden" within standard national accounts.

A number of macroeconomic aggregates can be derived which describe the size of the economic contribution of tourism. These include tourism direct gross value added (TDGVA).

Please note, that within the TSA several methodology improvements were made in the 2017 UK-TSA⁵. A new data source, the institutional sector accounts, was introduced into the 2017 supply and use tables (SUT) framework. Allowing this information to feed into the balancing process provides a much broader dataset to support the quality assurance process and improves coherence within the UK National Accounts. This has resulted in a step change in the series (for more information see Section 2 of Blue Book 2019 estimates). As the data feed into the GVA estimates, the data is not comparable over time. Therefore, DCMS GVA

³ <https://www.ons.gov.uk/businessindustryandtrade/business/businessservices/methodologies/annualbusinesssurveyabs>

⁴

<https://www.ons.gov.uk/economy/nationalaccounts/uksectoraccounts/articles/nationalaccountsarticles/bluebook2019improvementstononprofitinstitutionservinghouseholdsnpishsector>

⁵ <https://www.ons.gov.uk/economy/nationalaccounts/satelliteaccounts/bulletins/uktourismsatelliteaccountuktsa/latest#things-you-need-to-know-about-this-release>

estimates for Tourism are only available for 2017 and DCMS plan to review the back series alongside the TSA team in the near future.

4. Validation and accuracy of data

The Blue Book

There is no simple way of measuring the accuracy of GDP. All estimates, by definition, are subject to statistical uncertainty and for many well-established statistics we measure and publish the sampling error and non-sampling error associated with the estimate, using this as an indicator of accuracy.

Since sampling is typically done to determine the characteristics of a whole population, the difference between the sample and population values is considered a sampling error. Non-sampling errors are a result of deviations from the true value that are not a function of the sample chosen, including various systematic errors and any other errors that are not due to sampling.

The estimate of GDP, however, is currently constructed from a wide variety of data sources, some of which are not based on random samples or do not have published sampling and non-sampling errors available. As such it is very difficult to measure both error aspects and their impact on GDP.

Sample sizes can vary from 100% (HMRC Self assessment data) to 1% (HMRC PAYE data). These variations are unavoidable in the collation of reliable time series data for the calculation of GVA. Improvements in the GVA methodology or changes in administrative source data allows for reviewing the available sources for higher quality datasets or more timely publications. This is an ad hoc and continuous process which does not include major revisions to the methodology of GVA.

The vast majority of source data are annually updated, however, some datasets are published biennially or on an ad hoc basis. These missing values are imputed, using other available information. As with sample size, potential improvements to the methodology are reviewed whenever new data become available or when significant changes to the source data affect the final values. Where no recent estimate is available, the previous year's data may be used. It is important to note however, that these issues are rare because of the completeness of the main source data.

Estimates of approximate GVA are also published as part of the Annual Business Survey release. These estimates are used in the production of annual Supply and Use Tables for the compilation of the UK gross domestic product (GDP).

Annual Business Survey

As the DCMS sectors are defined at 4 digit SIC level⁶, and the SUT matrix is at a higher level, a method for breaking down the SUT estimates of GVA was applied. This was done using approximate Gross Value Added (aGVA) data from the [UK non-financial business economy \(Annual Business Survey\)](#).

The Annual Business Survey (ABS) measures business and financial information from UK businesses, including total turnover, total employment costs, total purchases, capital expenditure, stocks and other aggregates. Variables derived from these statistics, such as approximate gross value added at basic prices are also published by the ABS.

For information on the ABS quality, please refer to the [DCMS Sector Economic Estimates 2017: Business Demographics - Quality Assurance Report](#)

Non-profit institutions serving households (NPISH)

The NPISH figures used to estimate the size of the Civil Society sector changed considerably from last year due, due to the following [methodological changes](#):

- 1. Correction to remove double counting of Northern Ireland and Scotland's contribution to UK totals.**
- 2. Refinement to the market test** – “During quality assurance of the old process it was identified that ONS’ existing methods were allowing non-charitable organisations, for example, academies, to filter into the market test, and as such potentially into the dataset of non-market charities used to calculate NPISH estimates.”⁷
- 3. Classification review** – ONS improved its classification of organisations, for example by applying the standard industrial classification to non-market charities more thoroughly than had been done previously, improving industry level estimates.

The processing system applies the market test to the general charities microdata, allocates industry classification codes to such, aggregates data by variable, and applies weighting to the data in order to gross the sample data to the population values.

A more robust method is now used to ensure that only charitable organisations are now captured within this dataset (for more information, read section three of the [Changes to National Accounts: Review of the Non-Profit Institutions Serving Household Sector](#)).

Tourism Satellite Account

A new data source, the institutional sector accounts, was introduced into the 2017 supply and use tables (SUT) framework. Allowing this information to feed into the balancing process provides a much broader dataset to support the quality assurance process and improves coherence within the UK National Accounts. This has resulted in a step change in the series (for more information see Section 2 of Blue Book 2019 estimates).

⁶ See table 2.2.

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/829114/DCMS_Sectors_Economic_Estimates_-_Methodology.pdf

⁷ [ONS - National Accounts articles: Blue Book 2019 improvements to non-profit institutions serving households \(NPISH\) sector](#)

Approximate gross value added (aGVA) vs GVA in the National Accounts

aGVA represents the amount that individual businesses, industries or sectors contribute to the economy. Generally, this is measured by the income generated by the business, industry or sector minus their intermediate consumption of goods and services used up in order to produce their output, labour costs (for example, wages and salaries) and an operating surplus (or loss). The latter is a good approximation for profits, from which the cost of capital investment, financial charges and the payment of dividends to shareholders are met.

There are differences between the approximate measure of aGVA calculated by ABS and the measure of gross value added (GVA) used in the national accounts. The National Accounts carry out coverage adjustments, conceptual adjustments and coherence adjustments. This estimate of GVA uses inputs from a number of surveys and covers the whole UK economy, whereas the ABS does not include some parts of the agriculture and financial activities sectors, or public administration and defence.

The ABS total aGVA is around two-thirds of the national accounts whole economy GVA because of these differences. Real (inflation-adjusted) estimates of national and regional GVA are published in the national accounts and regional accounts respectively. However, national and regional estimates of aGVA from the ABS are not adjusted for inflation.

There are also some conceptual differences between the two measures of gross value added. For example, some production activities such as illegal smuggling of goods must be included in the national accounts but are outside the scope of the ABS.

More information on this can be found in the [ABS technical report](#).

5. Quality assurance processes at DCMS

The majority of quality assurance of the data underpinning the DCMS Sectors Economic Estimates GVA release takes place at ONS, through the processes described above. However, further quality assurance checks are carried out within DCMS at various stages.

Production of the report is typically carried out by one member of staff, whilst quality assurance is completed by at least one other, to ensure an independent evaluation of the work.

Data requirements

For the ABS data, DCMS discussed our data requirements with ONS and these are formalised as a Data Access Agreement (DAA). The DAA covers which data are required, the purpose of the data, and the conditions under which ONS provide the data. Discussions of requirements and purpose with ONS improved the understanding of the data at DCMS, helping us to ensure we receive the correct data and use it appropriately.

Checking of the data delivery

DCMS check that the data delivered by ONS match what is listed in the Data Access Agreement (DAA). For this particular release we check that:

- We have received all data at the 4 digit SIC code level, which is required for us to aggregate up to produce estimates for our sectors and sub-sectors.
- Data at the 4 digit SIC code has not been rounded unexpectedly. This would cause rounding errors when aggregating up to produce estimates for our sectors and sub-sectors.

Data Analysis quality assurance checks

At the analysis stage, data are aggregated up to produce information about DCMS sectors and sub-sectors. The GVA statistics lead builds in the following checks at this stage:

1. Data Validation
 - Are the GVA proportions similar to last year? If not, could this be because of changes to the methodology?
 - Are there any missing data?
 - Does the percentage changes each year look similar – look at any large differences between the data and possible causes to these.

2. Data Processing
 - Checking the updated UK National Accounts data been used, including the revised back series data.
 - Checking that the correct SIC codes have been aggregated together to form DCMS sector (and sub-sector) estimates. Are all SIC codes we require included? Are there any non-DCMS SIC codes that have been included by accident?
 - Spot check some of the data
 - Checking for any missing data

Finalised figures are disseminated within Excel tables and a written report (which includes written text, graphs, tables and infographics) published on GOV.UK. These are produced by the GVA statistics lead. Before publishing, a quality assurer checks the data tables as well as the report to ensure minimal errors. This is checked against a QA log where comments can be fed back and actioned accordingly. The quality assurer also makes sure any statements made about the figures (e.g. regarding trends) are correct according to the analysis and checks for spelling or grammar errors.

The following checks are done at the final stage:

Final Tables quality assurance checks

- Checking sub-sector breakdowns sum to sector totals
- Cross checking the totals are consistent for each table
- Sense checking whether the data looks sensible i.e. comparing against previous year's figures.
- Check formulas are linking to correct cells
- Checking the data has been revised back to 2010
- Making sure it is not possible to derive disclosive data from the figures that will be published.
- Making sure the correct data has been pasted to the final tables for publication and are formatted correctly.
- Making sure all charts are linking to the right data and all maps produced are using the correct data.

Report quality assurance checks

The following checks happen to make sure no errors occur within the written report:

1. Proof reading
 - Cross check figures in publication match the published tables
 - Checking the footnote numbering is correct
 - Making sure hyperlinks work
 - Checking chart/table numbers are in the right order

2. Publication

- Making sure publications has sign off by DCMS Head of Profession and DCMS Chief Economist
- Make contact with press office to ensure they are aware of the release date
- Making sure to check the publication on website once published

Reviewing processes post publication

Once the publication is released, DCMS review the processes and procedures which took place via a wash up meeting. This occurs usually a week after the publication release date and takes note of:

- what went well/didn't go so well
- What improvements can be made for next time
- Engage with users of the publication to get feedback

Next steps

We encourage our users to engage with us so that we can improve our statistics and the documentation surrounding them. If you would like to comment on this quality assurance report, or have any enquiries please get in touch at evidence@culture.gov.uk.



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