

Interregional trade in goods and services UK QMI

Quality and methodology information for interregional trade in goods and services, UK. It includes strengths and limitations, methods, and data uses and users. These are official statistics in development.

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1 . Output information

- Statistical designation: official statistics in development
- Frequency: annual
- How compiled: various surveys and third-party data
- Geographic coverage: UK country and International Territorial Level 1
- Related publications: [Experimental methodology for producing UK interregional trade estimates](#)

2 . About this QMI 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

- Trade is measured through both imports and exports of goods and services between International Territorial Level 1 (ITL1) UK regions.
- Trade in goods and services data are mainly sourced from devolved administration rest of UK (RUK) trade data, estimated on a consistent basis.
- Scotland and Wales estimates are boosted through imputation at a regional reporting unit level to improve trade, industry and business size coverage.
- Data are in current prices, which means they have not been adjusted to remove the effects of inflation.
- In the absence of trade data for England, trade with and between the nine English ITL1 regions is estimated based on a residual approach of other regional trade flows; English region to English region estimates are produced using a different methodology to the UK nation estimates and use proportions from the volume of regional industrial activity in Continuing Survey of Road Goods Transport (CSRGT) and business to business transactions (B2B) data to disaggregate Annual Business Survey (ABS) data.
- Although interregional trade estimates are produced using devolved administration trade survey data as primary data inputs, the estimates produced may vary significantly from those produced by the devolved administrations, primarily because of methodological differences.

4 . Quality summary

Overview

Interregional trade in goods and services, UK is an [official statistic in development](#) dataset that estimates trade between UK regions at a consistent geographical and industry basis. This differs from subnational trade, which estimates UK regions' goods and services trade internationally.

The regions cover 12 UK International Territorial Level (ITL1) regions, which consist of the countries of Scotland, Wales, Northern Ireland, and nine England regions. The industry sectors are published on a consistent industry group basis with the [international trade in UK nations, regions and cities](#) output and based on reporting unit's [Standard Industrial Classification 2007](#) (SIC 2007).

The interregional trade estimates seek to enhance the coherence between existing survey data by the devolved administrations of Scotland, Wales and Northern Ireland. Other survey and administrative data are leveraged to fill known data gaps and estimate trade with and between the English ITL1 regions. This hybrid methodology builds on recommendations by the [Economic Statistics Centre of Excellence](#) (ESCOE) framework for UK interregional trade estimates. This results in interregional trade estimates that are methodologically different to those produced by the devolved administrations.

This quality and methodology information (QMI) report covers methods used to create 2019 to 2021 estimates. Estimates are produced on an economic ownership basis that generally occurs simultaneously with legal ownership. Total trade balance is calculated as total exports less imports for both goods and services. It is an estimate of the net position of the region, describing whether it exports more than it imports (a trade surplus) or imports more than it exports (a trade deficit).

Strengths and limitations

Novel data sources

The interregional trade methodology uses novel data sources including freight activity data to estimate interregional trade in goods flows at country level and between the nine English regions. These data are published by the Department for Transport via the Continuing Survey of Road Goods Transport GB and UK (CSRGT) capturing the volume of goods lifted, commodity type and their points of origin and destination.

A limitation of these data in deriving interregional trade statistics is that they capture the physical movement of goods, not the change in economic ownership, and so goods may be transported to or through a nation without economic exchange taking place. Hence, these data do not robustly reflect the impact of regional transshipment hubs. Another limitation of CSRGT data is that we must work under the assumption that goods exported from one industry sector or region are to be consumed by the same industry sector in another region.

Vocalink pay.uk anonymised and aggregated, business to business transactions data are used to estimate bilateral trade in services at country level and between the nine English regions based on consistent industry and geography proportions. These data benefit from having both importer and exporter industry information. These data are, however, vulnerable to the head-office-effect whereby a large proportion of transactions are recorded between head offices of businesses and not all transactions can be classed as trade.

Data granularity

This methodology produces interregional estimates by building up from a granular representation of regional businesses in the devolved administration data. This means that the data quality cannot be benchmarked with other national-level estimates that are apportioned on a top-down basis.

Industry coverage

Interregional estimates are broken down to industry groups defined at local business level [Standard Industrial Classification 2007](#) (SIC 2007), providing a robust representation of regional business characteristics. The estimates are, however, limited to goods and services trade flows in industries that are covered by the devolved administration surveys. As such there are some significant industry exclusions including financial services. A full list of exclusions are captured in the [Experimental methodology for producing UK interregional trade estimates](#).

Conceptual consistency

We bring definitions of business industry, employment and the treatment of local units to a consistent basis across the devolved administration data. The weighting methodologies for these data are revised to improve the representation of regional business populations of Scotland and Wales, while maintaining the validity of their survey designs. Inconsistencies remain on the basis on which trade is captured; for example, Wales collects goods and services trade flows between sites of the same business outside the region.

We supplement Annual Business Survey (ABS) microdata with international exports and imports of goods data from the HM Revenue and Customs (HMRC) overseas trade in goods statistics (OTS) in our imputation methodology. While the quality of these data are high in terms of comprehensiveness and coverage, it tends to be higher than survey data as it captures all taxable transactions at two-digit SIC, thus requiring data adjustments.

5 . Quality characteristics of the data

This section describes the quality characteristics of the data and identifies issues that should be considered when using the statistics.

Relevance

Interregional trade estimates are developed to fill in the statistical gap for a UK-wide measure of trade between its nations and regions. It is part of the [Government Statistical Service \(GSS\) Subnational Data Strategy 2021](#), and stemmed from the levelling up policy that aimed to better understand UK local economies, especially after EU exit.

The data are primarily aimed at informing decisions on UK regional trade policy, promotion of trade and devolution. The main users of the Interregional trade publication are:

- devolved administrations
- Department for Business and Trade (DBT)
- Ministry for Housing, Communities and Local Government (MHCLG)
- academics
- Organisation for Economic Co-operation and Development (OECD)
- Office for the Internal Market (OIM)

Other users can include:

- Cabinet Office
- local authorities
- city regions

The interregional trade estimates aim to provide a coherent UK-wide measure of interregional trade. As such these estimates may vary from those produced by the devolved administrations, which are produced to better represent the specific economies from which the data are derived, supporting local policy making. Users may seek data sources produced by the devolved administrations, found in related links, for alternative measures of trade. Because of methodological differences, users should avoid combining the ONS interregional trade estimates with those produced by the devolved administrations, instead selecting the data most suitable for their purposes.

Accuracy and reliability

The main data used to estimate interregional trade are sourced from the devolved administrations of Wales, Scotland and Northern Ireland. These data are collected through annual surveys and processed with systems built in to identify and address common types of error including sampling errors.

We boost the Wales and Scotland data coverage via the regional Annual Business Survey (ABS) data to improve non-response, industry and business size coverage. However, ABS regional estimates are apportioned from national-level data in contrast to how the devolved administration surveys are compiled.

Our data are not benchmarked against any accredited official statistics. However, we triangulate across regional input-output and supply use tables as well as with the published trade values reported by each of the devolved administrations.

Non-sampling errors are difficult to quantify and include errors of coverage, measurement and processing. To limit processing errors, we carry out quality assurance at each stage of processing and have automated checks to identify errors.

Coherence and comparability

The interregional trade time series outputs for the years 2019 to 2021 are produced on a consistent methodological basis, and as such are comparable over time. As our estimates are official statistics in development, they will be subject to change over time as we improve our methodology.

Both primary and supplementary data sources used are collected on a common change of economic ownership basis between businesses. However, the Welsh data also capture provision of goods and services to other parts of the same businesses outside the region.

Our rest of UK (RUK) estimates are comparable with those published by the Northern Ireland Statistics and Research Agency (NISRA) and less comparable with those produced by the Welsh and Scottish Governments because of methodological differences that include:

- remapping industrial activity of reporting units to reflect local regional business activities
- methodology for imputing data to boost coverage is based on same reference year period data, unlike Wales's for instance, which is based on across year references
- imputation of Scotland imports data is processed and grossed based on a different methodology from the Scotland exports data supplied by the Scottish Government as Scottish imports data are not collected
- Welsh estimates are reweighted to enhance consistency with Inter-Departmental Business Register (IDBR) reference period data and to account for boosts and non-response data improvements
- differences in industry coverage account for the most significant variation in reported estimates; Office for National Statistics (ONS) interregional trade estimates are currently restricted to reporting estimates for the industries covered by all devolved administration trade surveys, while the devolved administrations do not have this restriction and so include industries that the ONS are currently unable to cover

Timeliness and punctuality

The recent interregional trade estimates published cover the years 2019 to 2021. We are dependent on the provision of external data sources, and while the timeliness of these data sources is improving, there remains a significant lag of up to four years.

Concepts and definitions

ITL

The International Territorial Levels (ITL) is a hierarchical classification of administrative areas used for statistical purposes. ITL1 are major socio-economic regions, while ITL2 and ITL3 are progressively smaller regions. In the context of the UK, the ITL1 areas are Wales, Scotland, Northern Ireland and nine England regions: East of England, East Midlands, London, North East, North West, South East, South West, West Midlands, and Yorkshire and The Humber.

Local unit

The local unit is a statistical unit used to define an individual site (for example, a factory or shop) in an enterprise.

Reporting unit

The reporting unit is the observation unit of an enterprise or business held on the Inter-Departmental Business Register (IDBR) and holds the mailing address to which survey questionnaires are sent. This is usually based upon the businesses' main registered address in the UK.

Weighting

Weighting describes the method used to produce estimates about the characteristics of a population from the responses given by the people and/or businesses selected in the sample survey. Responses from the sample are weighted to ensure they represent the entire population without bias and produce good quality outputs.

Imputation

Imputation is the process of replacing missing data with substitute data by using statistical methods.

Our [UK Trade: Glossary \(PDF, 125KB\)](#) is available.

6 . Methods used to produce the data

Data sources

We source devolved administration survey data as our primary inputs, including:

- the [Northern Ireland Economic Trade Statistics \(NIETS\)](#) compiled via the [Northern Ireland Annual Business Inquiry \(NIABI\)](#) by the Northern Ireland Statistics and Research Agency (NISRA)
- the [Global Connections Survey \(GCS\)](#), which informs the compilation of the [Export Statistics Scotland \(ESS\)](#)) produced by the Scottish Government; imports trade flows are not compiled
- the [Trade Survey for Wales \(TSW\)](#) produced by the Welsh Government
- there is currently no trade survey that covers interregional trade to and from England or the English regions; our solution to this limitation can be found in the later section on How the outputs are developed

Supplementary Office for National Statistics (ONS) survey datasets include:

- [Regional Annual Business Survey \(ABS\)](#), local unit level data, National ABS, reporting unit level data
- [Inter-Departmental Business Register \(IDBR\)](#)
- [International Trade in Services \(ITIS\)](#)

Other government department and commercial datasets include:

- Department for Transport [Continuing Survey of Road Goods Transport \(CSRGT\)](#)
- [HM Revenue and Customs \(HMRC\) Overseas Trade Statistics](#) data, linked with the IDBR; as well as the weighted and constrained HMRC Overseas Trade Statistics data that are used in the production of [UK International trade in UK nations, regions and cities](#)
- aggregated and anonymised Vocalink pay.uk [business to business \(B2B\) payments](#) data

How the outputs are developed

The interregional trade methodology aims to improve coherence between the devolved administrations' data, as well as improving coverage.

Each devolved administration data are processed separately, which includes linking with other supplementary data when required, before being consolidated to model interregional trade. Data gaps include non-response in TSW data because of historically low response rates; while GCS supplement responses with other data sources to compile the ESS, Scottish import trade flows are not compiled. The NIABI is a statutory survey with historically high response rates.

Conceptual improvements

We sought to enhance consistency in the definition of employment, local units and industry of the devolved administration data and supplementary data while considering their survey designs.

We prioritise the use of employment data in the IDBR and define reporting unit employment as the sum of all local unit employment within regions except for TSW. For TSW we define business employment at the national reporting unit level, retaining the validity of the TSW sampling design, which is set to ensure a good business size base for regional analysis as well as enhancing comparability with national data such as the HMRC Regional Trade Statistics (RTS). We classify business reporting units into four employment size bands that are consistent with ONS subnational trade statistics, primarily for estimation and analysis purposes.

The industry activity of reporting units is redefined based on the IDBR five-digit level Standard Industrial Classification (SIC) of local units with highest employment in a region. This approach is consistent with the NIABI and GCS survey methodology, while streamlining the framework of the TSW to the same principles, and ensures consistency with the IDBR reference year business characteristics. Interregional trade estimates are broken down to eight industry groups based on the reporting unit two-digit SIC, which are consistent for both goods and services trade flows for publication.

Imputation

Regional ABS data are used to impute gaps in the TSW and ESS data. We break down unweighted regional turnover and expenditure data into goods and services trade using proportions of same trends found in the national ABS data.

International services trade is supplemented using the international trade in services (ITIS) data. Local-level composites of within-region and rest of UK (RUK) services trade are obtained by removing international trade from total regional services turnover and purchases. HMRC international trade in goods data are broken down to regional activities using an employment weight and linked to the ABS data. Following adjustments for higher-than-expected trade, international exports and imports are removed from goods turnover and purchases to obtain local-level composites of within region and RUK goods trade.

Non-responders to the TSW survey are imputed using their ABS responses. Other reporting units that have Welsh local unit activity in the ABS and are within TSW sampled industries are imputed as boosts. For these reporting units, we filter their Welsh local units and use the TSW mean of proportions for RUK to total trade flows at employment band and two-digit SIC or SIC section (A to U) level to breakdown their composite within-region and RUK trade values. Then RUK services, and goods exports and imports are estimated and aggregated to obtain reporting unit trade.

This approach differs significantly from the imputation methodology employed by the Welsh Government for 2021, in which within year imputation is applied to sales and purchases data, where missing values in business responses are imputed based on other given values within the survey provided by other similar businesses. The Welsh Government also apply across year imputation where missing responses are imputed based on given responses from the business or similar businesses from previous years. Further detail can be found in the [2021 Trade Survey for Wales: quality and methodology information](#).

We filter the Scottish local unit activity of relevant reporting units in the ABS to impute Scottish imports data. For reporting units with exports in the ESS data, we break down their composite within-region and RUK purchase values via their proportions of RUK to total export trade flows in the ESS data to estimate RUK goods and services purchases. For reporting units that do not have reported exports in the ESS but sit within the GCS industry sampling framework, we use the mean of proportions for RUK to total exports at employment band and two-digit SIC or SIC section (A to U) level to estimate RUK goods and services purchases. We assume Scottish export trends are similar to import trends.

Treatment of outliers

We apply a consistent approach to outlier detection and treatment across all the devolved administration surveys to reduce variability caused by extreme trade values that are unrepresentative of the population. Outlier detection and treatment is done at reporting unit level and for RUK exports and imports separately.

Reporting units are grouped at two-digit SIC and four employment band levels and within a minimum threshold of 10 businesses per group for outlier detection. Groups that fall below threshold are merged at SIC section (A to U) level, following which those remaining unmatched and/or below threshold are merged with other groups in the same SIC section containing 10 or more businesses. Any groups that remain below threshold are not treated for outliers.

Reporting units with exports and/or imports trade above the 99th percentile in their group are assigned as outliers, treated during weighting and their values kept. By treating outliers, rather than deleting them, we minimise loss of information.

Weighting

Each data source is then weighted individually while maintaining the survey weighting methodology originally established to minimise estimate variance. The weights are then applied to gross RUK trade to regional business population.

Northern Ireland Economic Trade Statistics (NIETS)

The [Northern Ireland Annual Business Inquiry \(NIABI\)](#) adopts the ONS-ABS use of design and calibration weights to obtain population-level estimates. We retain the use of the NIETS weights, which are already consistent with regional activities, as the Northern Irish reporting units on the IDBR encompass Northern Irish local units only, and are adjusted for outliers.

Trade Survey for Wales (TSW)

We redevelop design weights as a proportion of national-level business population turnover to starting sample turnover as reported in reference year IDBR. We maintain the [TSW weighting strata](#) framework. The design weights are then adjusted to account for imputed boosts and outliers by assigning them a weight of 1 and removing them from the weighting strata.

Non-response weights are scaled down to account for imputed non-response data from the ABS where applicable within non-response weighting strata, which follow the TSW framework. Strata with wholly imputed non-response are assigned weights of 1.

Export Statistics Scotland (ESS)

The Scotland exports sample is designed to cover all exporting businesses in Scotland, and as such each reporting unit represents itself. We retain this survey framework and do not weight the data.

For the imputed Scotland imports data, we calculate design weights as a proportion of regional business population reported in reference year IDBR to achieved business sample. Weighting strata are based on two-digit SIC and seven employment bands, and aligns with the [ABS methodology](#). Weights are adjusted to account for imputed boosts and outliers by assigning them a weight of 1 and removing them from the weighting strata. We adopt the use of reporting unit-level calibration weights calculated in the ABS data for the imputed Scotland imports data. The weights are set to account for economic bias caused by regional local-level industry activities in relation to that of the reporting unit. Local unit employment is used as a proxy as there are no turnover data at local level.

Estimating trade

Of the three devolved administration trade surveys, only the TSW requires businesses to split their reported RUK sales and purchases to England, Scotland and Northern Ireland; however, these trade flows in combination are not always consistent with reported RUK trade in the data.

Following weighting, grossed reporting unit-level estimates for RUK imports and exports of goods and services across the NIETS, ESS and TSW data are then compiled and processed to estimate interregional trade between ITL1 regions. First, the compiled RUK trade data are disaggregated to obtain bilateral trade flows for the three devolved nations of Northern Ireland, Wales and Scotland using sets of proportions from CSRGT, for goods trade, and B2B transactions data, for services trade.

For goods trade flows, the CSRGT data are converted from the Standard Goods Classification for Transport Statistics (NST 2007) to [Standard Industrial Classification 2007](#) (SIC 2007), to be consistent with other data sources. This is done by using Eurostat correspondence tables to allocate the combined nomenclature (CN) codes to freight data, HMRC Overseas Trade Statistics are then used to convert CSRGT data from CN to SIC consignments. The haulage volumes of goods that reflect the intensity of trade relationships of various goods between UK regions are used to construct proportions, which are then applied to the compiled devolved administrations' grossed RUK trade in goods estimates to disaggregate interregional trade for the four UK nations.

For services imports and exports trade flows, B2B transactions values are broken down to differentiate between goods and services sold. This is done by constructing and applying proportions of goods and services trade to total trade found in the ABS turnover and expenditure data. Proportions of interregional trade constructed from B2B data are then used to disaggregate RUK trade in services and estimate how services exported from one region are consumed by various sectors in other regions.

England exports are then derived through a residual approach whereby, for each devolved nation's RUK data, imports to a nation from other bilateral trade devolved nations are subtracted from imports reported by it to obtain exports from England. The England goods and services exports are then broken down to ITL1 level using the developed sets of proportions from CSRGT and B2B, respectively. England ITL1-level imports are further estimated using a mirroring approach that assumes imports of one region from another is converse to exports from the other region to it. Summarily, this approach enables missing trade data for England to be estimated via known and estimated parameters on trade and to obtain interregional trade estimates at both country level and for all ITL1 regions.

This approach leads to mirrored and balanced trade values between English regions and the devolved administrations, where exports from region A to region B match imports to region B from region A. However, trade between devolved administrations may not balance in the same way because of asymmetries between the trade survey input datasets produced by each nation. Trade in services between English regions and devolved administrations will mirror as described previously at "all industries" level, however, as we have industry information for both importers and exporters within the B2B data, we are able to provide additional granularity showing the importing business may be from a different industry to the exporting business. This means trade in services data will not mirror at the industry level.

Statistical disclosure control

The [Statistical Disclosure Control Policy](#) sets out the standards for safeguarding the information provided to us in confidence. Disclosure control refers to the methods that reduce the risk that confidential information is published in any official statistics. These methods are applied if ethical, practical or legal considerations require the data to be protected. Disclosure control involves modifying data so that the risk of identifying individuals is reduced, but at the same time attempts to find a balance between improving confidentiality protection and maintaining an acceptable level of quality in the published data.

These modifications mean that some cells will be suppressed to maintain confidentiality.

At lower geographical levels, the likelihood of identifying individuals is increased and so the number of suppressed cells will increase. We have therefore tried to limit the number of suppressed cells by reducing or grouping together industries.

Statistical disclosure control is applied to the interregional trade data at reporting unit level before publication. All data used to compile the trade statistics are used in-line with statutory obligations. We follow the rules of the feeder sources. For example:

- HMRC states that the disclosive nature of their data requires them to aggregate potential disclosive data to a higher level of detail so that inference on individual businesses cannot be made
- ITIS explains to their respondents that data are treated with confidentiality under legal requirement (the Statistics of Trade Act) and disclosure rules are applied to the data

How we quality assure and validate the data

We carry out standard quality assurance and have automated checks to identify errors at each stage of processing.

This is in addition to the quality assurance that each source data owner has carried out as part of their processing.

Assessment of user needs and perceptions

To assess user needs and perceptions, we hold regular meetings with the devolved administrations, HMRC, the Department for Business and Trade (DBT), the Office for the Internal Market, and ONS's Subnational Statistics division to address any issues with the data, answer questions that users may have and collect user requirements. This ensures that the output is relevant to wider users and that any issues are brought to our attention.

We also receive data requests and feedback through our mailbox subnational.trade@ons.gov.uk. This also feeds into our user requirements and development plan.

To reach wider audiences, we hold user events as part of the Global Trade and Investment (GTI) division's wider user engagement strategy. This methodology has also been presented to academic colleagues via the Economic Statistics Centre of Excellence (ESCOE) Conference and the Economic Experts Working Group, as well as internationally via the Organisation for Economic Co-operation and Development (OECD) working party on territorial indicators.

Future improvements

- Adding additional data breakdowns based on user need, such as total trade, combining goods and services.
- Identifying regional UK transshipment hubs to estimate the size of regional transit of goods and account for these movements in the estimation of interregional trade data.
- Improving industry coverage for the interregional trade estimates by including tourism and travel, finance, and aquatic fisheries industries.
- Estimating the interregional intermediate consumption of goods and services, broken down by products for Standard Industrial Classification 2007 (SIC 2007).

7 . Other information

Our [Interregional trade statistical bulletin](#) is published on our website and outputs meet dataset accessibility requirements.

Individuals essential for production and publication, quality assurance and operational purposes have access to the data at 9:30am, 24 hours before publication. This is in accordance with the [Code of Practice for Statistics](#).

For information regarding conditions of access to data, please refer to our:

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

General enquiries about interregional trade series, compilation methods, quality information or difficulties finding the latest figures can be emailed to subnational.trade@ons.gov.uk.

In addition to this Quality and Methodology Information report, further information on source datasets can be found on the [Government Analysis Function user guide to regional trade](#).

8 . Related links

[Experimental methodology for producing UK interregional trade estimates](#)

Methodology | Released 28 July 2023

Experimental methodology for estimating the value of UK interregional trade in goods and services at International Territorial Level 1.

[Northern Ireland Economic Trade Statistics: Background Information \(PDF, 179KB\)](#)

Methodology | Released 8 December 2022

Details of the methodology to produce Northern Ireland Economic Trade Statistics.

[Trade Survey for Wales, 2022: quality and methodology information](#)

Methodology | Released 16 July 2024

Details the data collection, general principles and processes leading up to the production of Trade Survey for Wales (TSW) 2022 statistics.

[Export Statistics Scotland: methodology](#)

Methodology | Released 29 November 2023

Information about the methodology used to produce the estimates of Scotland's exports in the Export Statistics Scotland publication.

[Improving the Quality of Regional Economic Indicators in the UK: A Framework for Interregional Trade Data Collection and Estimation \(ESCoE TR-13\)](#)

Methodology | Released 9 December 2021

Technical report defining a framework for measuring the UK interregional trade.

9 . Cite this methodology

Office for National Statistics (ONS), updated 18 February 2026, ONS website, methodology, [Interregional trade in goods and services UK quality and methodology information \(QMI\)](#)