

Foreign Direct Investment QMI

Quality and methodology information (QMI) for foreign direct investment (FDI) statistics, detailing the strengths and limitations of the data, methods used and data uses and users.

Contact:
Lee Mallett
fdi@ons.gov.uk
+441633 455060

Release date:
3 February 2022

Next release:
To be announced

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1 . Output information

- National Statistic: yes
- Frequency: quarterly and annual
- How compiled: sample-based surveys and third-party data
- Geographic coverage: UK and rest of the world
- Related publications: Balance of Payments, The Pink Book
- Last revised: February 2022

2 . About this Quality and Methodology Information report

This Quality and Methodology Information report details the quality characteristics of the Foreign Direct Investment (FDI) data 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

- The purpose of the Foreign Direct Investment (FDI) survey is to collect financial data on assets and liabilities; this survey collects information on an annual and quarterly basis between foreign parent-companies and their UK affiliates (inward FDI), and between UK parent-companies and their foreign affiliates and branches (outward FDI).
- The components earnings, flows and positions are collected; earnings are income from investments, flows are changes within investments and positions data represent an enterprise's total investment value at a point in time, of equity capital and other capital.
- This information is primarily required for measuring the UK's Balance of Payments and its International Investment Position (IIP), it is also used to measure the international investment patterns between the UK and the rest of the world, either by country or groups of countries.
- FDI is a major driver of globalisation, making investment patterns of multinational enterprises become more complex; reliable and internationally comparable FDI statistics are necessary for sound policy-making.
- The sampling frame for the FDI survey was changed in January 2021 to include a new commercial data source to enhance how we identify UK companies with FDI relationships and our sampling methods.

4 . Quality summary

Overview

The Foreign Direct Investment (FDI) survey collects financial information relating to direct investment in the UK by enterprises located abroad (inward FDI) and direct investment abroad by enterprises located in the UK (outward FDI). In either case the foreign investment relationship must have at least 10% of the ordinary shares or voting power. Data on investments less than 10%, which are classed as portfolio investments, are collected as part of the Balance of Payments by the Global Trade and Investment division within the Office for National Statistics (ONS).

Aggregate FDI statistics in the Balance of Payments are available from 1987. More detailed statistics from our statistical bulletins, which include some breakdowns by partner country and industry, begin in 1992 and 1998 respectively. There may be structural breaks in the time series over that period. The [inward](#) and [outward](#) historical FDI series can be found on the ONS public website, with details on potential structural breaks.

For more details on upcoming releases, including the Foreign Direct Investment Survey statistical bulletins, 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 is drawn to the change and the reasons for the change should be explained fully at the same time, as set out in the [Code of Practice for Official Statistics](#).

For information on international measurement principles for FDI, see the International Monetary Funds' (IMF) Balance of Payments Manual 6 (BPM6) and Organisation for Economic Co-operation and Development (OECD) [Benchmark Definition of Foreign Direct Investment, fourth edition \(BD4\)](#).

Data for monetary and financial institutions are collected by the Bank of England; most other industries are covered by our surveys and other sources for property and public corporations. The banking surveys collect information from all banks, whereas our surveys are based on samples. This QMI concentrates on these sample surveys. These surveys are statutory, collecting information under the [Statistics of Trade Act 1947](#).

Users of FDI data

The users of FDI data are:

- the ONS Balance of Payments and National Accounts teams
- other government departments for example [Department for Business, Energy & Industrial Strategy](#), [Her Majesty's Treasury \(HMT\)](#), [Foreign Commonwealth and Development Office \(FCDO\)](#), [Her Majesty's Revenue and Customs \(HMRC\)](#), [Cabinet Office](#)
- [Organisation for Economic Co-operation and Development](#)
- [United Nations Committee on Trade and Development \(UNCTAD\)](#)
- [International Monetary Fund](#)
- other international organisations

Strengths and limitations

The main strengths of the survey are that:

- the survey is very comprehensive covering detailed information on FDI transactions, earnings, and stock positions
- the information is collected annually and quarterly on an industry basis and annual statistics are published by country and industry
- FDI makes an important contribution to flows, earnings, and positions for the UK Balance of Payments
- FDI statistics can be used to measure the international investment patterns between the UK and the rest of the world, either by country or groups of countries
- FDI microdata are produced and delivered annually to the Secure Research Service (previously known as the Virtual Microdata Laboratory (VML))
- quarterly and annual FDI statistics can be revised to reflect new information
- regular FDI articles are published to supplement the FDI annual publication
- UK FDI figures are used for policy, analysis and negotiations by other government departments, international organisations, including United Nations Conference on Trade and Development (UNCTAD), Organisation for Economic Co-operation and Development (OECD) and the International Monetary Fund (IMF), and foreign embassies
- the FDI estimates are used by commercial companies, academics, and independent researchers.

The main limitations of the survey are that:

- the FDI survey collects consolidated results, so cannot identify specific FDI projects
- it currently cannot distinguish between new (greenfield) investments, mergers and acquisitions (M&A) and other investments.
- the FDI survey only captures financial information, so does not include anything on employment or turnover of FDI companies for example

Recent improvements

We have been [developing foreign direct investment statistics](#) for the UK. One of the outcomes of this development has seen information from a commercial data source used to enhance the FDI populations for annual 2020 and quarterly 2021 results. This has increased the FDI populations as well as enhanced sampling methods. It means that some of the comparisons for 2020 FDI statistics with previous years may reflect these changes, and therefore we advise users to apply caution when making comparisons.

There are three main reasons that could explain changes in FDI statistics for 2020 compared with 2019:

- changes in the survey values returned by companies in the FDI populations that were also present in previous years: companies can report higher or lower values compared with their previous response
- new companies added to the FDI population in 2020 that were not sampled: we estimate FDI values for each of these companies to give the UK total; this is more likely to increase FDI position (stock) values, with positive or negative results for FDI earnings and flows.
- new companies that have been sampled based on changed stratification processes for inward FDI: we used new information on shareholders' funds for some strata in our sample selection for 2020 because this was a better measure of company size compared with net worth; some companies are therefore receiving the FDI survey for the first time, whose responses are more likely to increase FDI stock values.

Further information on these changes, and their impact on FDI results, are available in our [Foreign direct investment statistics, overview of methods changes: 2020](#).

5 . Quality characteristics of the FDI data

This section 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](#). This document addresses these quality dimensions and other important quality characteristics, which are:

- relevance
- timeliness and punctuality
- coherence and comparability
- accuracy
- output quality trade-offs
- assessment of user needs and perceptions
- accessibility and clarity

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

Relevance

The Foreign Direct Investment (FDI) survey collects financial information relating to direct investment in the UK by enterprises located abroad (inward FDI) and direct investment abroad by enterprises located in the UK (outward FDI). In either case the foreign investment must be at least 10% of the ordinary shares or voting power. Data on investments less than 10%, which are classed as portfolio investments, are collected as part of the Balance of Payments by the Global Trade and Investment division within ONS.

Change in measurement

Survey history

- 1990 -- surveys became statutory.
- 1997 -- [ESA95/BPM5](#) requirements adopted.
- 2002 -- sample redesigned to include enterprises identified from [Dun & Bradstreet \(D&B\)](#) data.
- 2008 -- methodological review following a discrepancy with the 2006 data.
- 2009 -- the IMF introduced a set of data requirements as part of the [Co-ordinated Direct Investment Survey](#). The purpose of these new data requirements was to provide comprehensive and comparable data across countries' Inward and Outward direct investment.
- 2010 -- changes to the Standard Industrial Classifications (SICs), converting from Standard Industrial Classification 2003 (SIC 2003) to Standard Industrial Classification 2007 (SIC 2007), were implemented to the FDI annual 2009 and 2010 quarterly surveys. Detailed SIC 2007 information is available on the [our website](#).
- 2010 -- the FDI quarterly and annual questionnaires were enhanced to include additional questions, implementing the 2009 IMF data requirements. The new requirements needed the collection of debt between fellow enterprises. These changes represented the first steps towards the introduction of the [Balance of Payments Manual 6 \(BPM6\)](#) and the [Organisation for Economic Co-Operation and Development \(OECD\) Benchmark Definition of Foreign Direct Investment \(4th edition\)](#).
- 2011 to 2012 -- work began to ensure that the surveys became compliant with [ESA\(10\)](#), [Benchmark definition of Foreign Direct Investment \(4th edition\)](#) and the [Balance of Payments manual 6 \(BPM6\)](#) as required by Eurostat, the IMF and OECD.
- 2014 -- first annual FDI publication compliant with [BPM6](#).
- 2021 -- new questions added to quarterly and annual questionnaires to collect more granular estimates of FDI, and the Outward Foreign Affiliates (OFATs) survey was embedded into the annual outward FDI survey.

Timeliness and punctuality

The [Annual Foreign Direct Investment \(FDI\) Statistical Bulletin](#) publication is published 12 months after the reference period (in December of the following year).

For more details on related releases, the [UK National Statistics Publication Hub](#) is available online and provides 12 months' advance notice of release dates. If there are any changes to the pre- announced release schedule, public attention are 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](#).

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.)

Comparability

Since 1997, various changes have occurred in the coverage of the survey. The [European System of Accounts \(ESA\(95\)\)](#) definitions were introduced to the 1997 [MA4 Business Monitor](#), allowing comparison across the European Union. The changes were as follows:

- prior to 1997 for the measurement of direct investment, an effective voice in the management of an enterprise was taken as the equivalent of a 20% shareholding; since 1997, this is now 10%
- the Channel Islands (Jersey, Guernsey etc.) and the Isle of Man have been excluded from the definition of the economic territory of the UK. Prior to 1997, these islands were considered to be part of the UK; their data are published under the UK Offshore Islands title in the data tables within the [FDI Statistical Bulletin](#)
- since 1997, interest received or paid was replaced by interest accrued in the figures on earnings from foreign direct investment; there is deemed to be little or no impact arising from this definitional change on the estimates.

The FDI international investment position data have been collected annually since 1987.

A further change caused by the move to [ESA \(95\)](#) was how withholding taxes payable on direct investment earnings were measured. Earnings were first shown gross of these taxes in the [Balance of Payments 2004 Pink Book](#) and were calculated net of tax until 2006. Recently the updated European System of Accounts ([ESA \(10\)](#)) definitions have also been introduced. All the above changes from [ESA \(95\)](#) are still included in it, in addition to some other changes which have been incorporated into the relevant sections of this document.

The FDI survey also underwent changes as a result of requirements laid out in the latest [BPM6](#) manual. The main changes to the survey include:

- the move to an Extended Directional Principle where loans to fellows are taken into consideration when calculating both inward and outward positions; these were previously excluded under BPM5
- publishing data on an asset and liability basis where previously only directional FDI was available, that is, inward, outward.
- producing estimates both including and excluding special purpose entities (SPEs) which are defined as legal entities with little or no employment and are ultimately controlled by an overseas parent company.

To implement these changes, the questionnaire was thoroughly reviewed with the addition of new questions and a number of existing questions were revised. The first survey year in which data was collected using that revised questionnaire was for 2012. Both the 2013 estimates and revised 2012 estimates were published in January 2015.

Further information can be found in an article titled -- [Impact on the Balance of Payments as a result of the introduction of BPM6](#).

As noted in the 'Quality Review section', one of the outcomes in developing our FDI statistics has seen information from a commercial data source used to enhance the FDI populations for annual 2020 and quarterly 2021 results. This has increased the FDI populations as well as enhanced sampling methods. It means that some of the comparisons for 2020 FDI statistics with previous years may reflect these changes, and therefore we advise users to apply caution when making comparisons. Further information on these changes, and their impact on FDI results, are available in our [Foreign direct investment statistics. overview of methods changes: 2020](#).

Coherence

Our FDI surveys are the only source of UK FDI data that complies with FDI international definitions.

[Mergers and Acquisitions Statistical Bulletin](#) provides cross border equity transaction data for the respondents selected on the annual and quarterly FDI surveys. FDI equity data includes transactions above a 10% ownership threshold. The FDI surveys report those deals, or parts of deals, funded directly by parent companies and exclude any deals, or parts of deals, funded by locally raised funds (either in the UK for Inward FDI or abroad for Outward FDI).

Concepts and definitions

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

[Statistics of Trade Act 1947.](#)

[ESA \(95\).](#)

[ESA \(10\)](#)

IMF's [BPM6](#).

[OECD.](#)

[Standard Industrial Classification.](#)

Accessibility and clarity

(Accessibility is the ease with which users can 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.)

Over the coming months, all ONS datasets will be reviewed to ensure they meet the accessibility standards outlined in the Government Statistical Service (GSS) guidance on [releasing statistics in spreadsheets](#). This is to ensure that all GSS outputs meet [Web Content Accessibility Guidelines](#), a legal requirement set out in [The Public Sector Bodies \(Websites and Mobile Applications\) Accessibility Regulations 2018](#).

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

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

Further queries can be addressed to the Foreign Direct Investment public enquiry team at: fdi@ons.gov.uk.

Output quality

Revisions to quarterly (and annual) estimates may happen to provide more accurate estimates, as detailed in the Timeliness and punctuality section.

Why you can trust our data

ONS is the UK's National Statistics Institute and is the country's largest independent producer of statistics. [The Data Policies and Information Charter](#), available on the ONS website, detail how data are collected, secured and used in the publication of statistics. We treat data that we hold with respect, keeping these secure and confidential, and we use statistical methods that are professional, ethical and transparent. More information about our [data policies](#) is available on our website.

6 . Methods used to produce the FDI data

How we collect the data, main data sources and accuracy

Data collection

FDI surveys are collected using paper questionnaires or secure electronic file transfer (SEFT) – Excel spreadsheets. These are generally sent to the head of the enterprise group within the UK and request consolidated information for the group. Both data collection instruments are dispatched to businesses in March or April after the end of the reference year to collect annual results. Quarterly surveys are dispatched after the end of the reference quarter.

Sample frame

There are two separate sampling frames for the FDI surveys. Sample frame one focuses on outward population – approximately 17,900 enterprise groups. This population contains the details of all wholly owned UK businesses with ownership of subsidiaries and branches in foreign countries. Sample frame two focuses on inward population – approximately 45,500 enterprise groups. This population contains the details of UK businesses, who themselves are subsidiaries and or branches of a foreign company.

The sampling frames are produced from five sources:

- the historical FDI inward and outward registers of known and proved businesses
- the IDBR, which is primarily compiled from administrative information, holds variables including information on the country of ownership for each enterprise group and information on which UK groups have affiliates; the main source of these foreign links is information from Dun and Bradstreet (DB), this is a commercial data source purchased by the Office for National Statistics (ONS)
- the Cross Border Mergers and Acquisitions surveys are conducted on a continuous basis, collecting UK company information on acquisitions and disposals of a foreign company and vice versa when a foreign company
- a commercial dataset provides detailed information on the foreign shareholders and foreign affiliates of UK groups, including for minority relationships, in addition to financial account variables

Sample design

Sampling of enterprise groups for inclusion in the FDI surveys is based on stratified designs for the known FDI historical population and the unknown population. For the known FDI population, the outward and inward strata are defined in terms of the value of the net international investment position (Net Book Value), as calculated from their previous FDI survey return. The unknown FDI population consists of UK groups identified from one of our data sources as being eligible for FDI, but who have never previously been selected for the FDI survey. For the unknown population, the outward survey strata are defined in terms of the number of foreign affiliates held by the UK parent company. For the inward unknown population, the strata are defined in terms of either the turnover of the UK group, or the shareholders' funds of the UK group.

For both the annual and quarterly surveys, all groups in the top stratum (containing the largest businesses) are sent questionnaires to maximise the survey coverage of FDI assets. In strata containing smaller businesses, only a proportion are selected. Additionally, the sample of smaller businesses is rotated to minimise burden on the respondents. There are some strata which are fully enumerated for annual surveys, but are not fully enumerated for quarterly surveys, because of the smaller quarterly sample size.

Sample sizes

The sample sizes for the FDI surveys are:

- annual outward – approximately 2,500 enterprise groups
- annual inward – approximately 4,200 enterprise groups
- quarterly outward – approximately 1,000 enterprise groups
- quarterly inward – approximately 1,500 enterprise groups

Response

Two written reminders are sent to non-responding groups and are followed by telephone and electronic mail reminders to try to minimise non-response and thereby any non-response bias. There is also the possibility of using the legal powers of the [Statistics of Trade Act 1947](#) to force response, though we prefer to work together with businesses to produce the necessary information.

Response rates are analysed on a weekly basis for both the quarterly and annual surveys. The number of questionnaires received and cleared after validation is documented. Response rates are also analysed by proportion of Net Book Value (NBV) received and by industry sector (see [Standard Industrial Classification \(SIC\)](#) for further information) and size band.

The response rate targets by Net Book Value are:

- annual outward – 75%
- annual inward – 85%
- quarterly outward – 55%
- quarterly inward – 75%

These targets may be reviewed in future with respect to the new, larger sample sizes.

How we quality assure and validate these data

Data are quality assured throughout the data collection, processing and analysis processes using regular consistency checks, investigation of anomalies, ensuring disclosure procedures and reviewing data sources. These checks are presented at regular meetings, where important internal stakeholders can interrogate the results and explore any anomalies or interesting findings. External stakeholders, for example, other government departments, also have regular opportunities to analyse these estimates and share feedback with ONS colleagues.

Validation

Returned information is run through a series of checks to identify errors. These tests ensure that:

- all questions are completed
- responses to individual questions are consistent within the questionnaire as a whole
- the return is consistent with historical data from the business or differences are explained
- acquisition and disposals data for equity capital are compared with data produced by the Mergers and Acquisitions' survey

Data clearance

Any errors in FDI data are fully investigated and corrected so that the data outputs are as accurate as possible before final results are produced.

This process is known as “cleaning” of the data. Therefore, realistic clearance target levels are set to achieve good quality data.

The clearance target levels, by Net Book Value (NBV) are:

- annual outward – 75%
- annual inward – 85%
- quarterly outward – 75%
- quarterly inward – 80%

Outliers

The distance from the mean methodology is used to identify outliers. This involves calculating the mean and standard deviation within each stratum. The data are trimmed first so that any extreme values do not influence the calculation of the mean or standard deviation. The top 15% and bottom 5% are trimmed where there are more than eight observations with non-zero data within each stratum. The remaining data within each stratum is then used to calculate the mean and standard deviation. An interval is then formed, plus or minus four standard deviations either side of the mean, and then applied to all returned data. Anything that falls outside the range is identified as an outlier. The identified outliers are kept in the sample data and only represent themselves in the estimation. They are excluded from the calculation of the mean for the estimation.

Imputation

The imputation methods are used to assign values for non-responders in the sample and vary depending on the variable being measured. The methods used include:

- a ratio of means method for calculating the imputation link, this involves multiplying the previous period value by an “imputation link”, calculated to estimate the ratio between the previous and current value; this imputation link is derived from the ratio between the stratum mean for the current and previous period, for the stratum containing the value to be imputed, in some cases, if the previous value was negative, the imputed value is set to zero
- a trimmed stratum mean method, where the top 15% and bottom 5% of values are not included in the calculation of the stratum mean, are used to calculate some imputed values, particularly where no previous period data was available
- a median value within a given stratum
- copying forward imputing previous period values
- imputing zero values

The different methods were chosen based on their suitability for the particular variable. For example, a ratio of means estimator typically performs well for variables which have a strong correlation with their previous values. For variables that are strongly correlated with other values in their stratum, a trimmed mean or median could be used.

Estimation

Estimation for FDI assigns a trimmed mean value to each of the non-sampled businesses within a given stratum. These are then added up, along with the sampled data, to give the population estimate. The reason for this approach is that the estimation takes in to account any clustering of responses (more so in outwards).

If distance from the mean is used for outliering, then the outlier is excluded from the calculation of the mean. The mean is calculated for each stratum and then applied to every non-sampled unit in the population, and these values are added together to find an estimate for the total population.

Disclosure

The Government Statistical Service (GSS) defines statistical disclosure control as follows:

“Statistical disclosure control (SDC) is the term used to cover the many methods of safeguarding the confidentiality of the information about individuals and businesses. Information obtained from surveys or administrative data is usually given in confidence. SDC is applied to ensure that individuals, businesses, or other statistical units cannot be identified from published data, whether record level data or tables. This will involve modifying data so that the risk of identification is reduced to an acceptable level.” Statistical disclosure control methodology is applied to FDI data. This ensures that information attributable to an individual or individual organisation is not identifiable in any published outputs. [The Code of Practice for Official Statistics](#), and specifically the [Principle on Confidentiality](#), set out practices for how we protect data from being disclosed. The principle includes the statement that ONS outputs should “ensure that official statistics do not reveal the identity of an individual or organisation, or any private information relating to them, considering other relevant sources of information”.

More information can be found in National Statistician’s Guidance: Confidentiality of Official Statistics and on the [Statistical Disclosure Control Methodology page on the ONS website](#).

Further information on the revisions policy for economic statistics can be found on the [ONS Web page](#).

Further details of the coverage of the FDI surveys are covered in the [FDI Statistical Bulletin](#).

Accuracy

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

Sampling error

Sampling error is the error caused by observing a sample instead of the whole population. While each sample is designed to produce the “best” estimate of the true population value, several equal-sized samples covering the population would generally produce varying population estimates. The sampling error measures this variation. Sample surveys are employed rather than censuses to balance the burden on businesses and cost of collection, processing and quality, against the relative accuracy of an estimate instead of a population value. Standard errors are an estimate of the sampling error and provide a measure of the precision of the estimate, and a low standard error indicates a precise estimate. To aid comparison, the standard error is also expressed as a percentage of the total value.

This quantity is called the coefficient of variation and it allows the standard errors to be put into context. A high coefficient of variation indicates a greater relative variation between the true population value and the estimated value from the sample.

Non-sampling error

In addition to sampling errors, there is the potential for non-sampling error that cannot be easily quantified. One potential source of non-sampling error is non-response, which relates to the failure to obtain data from some businesses selected in the sample. Another source of non-sampling error may be because of undetected deficiencies that may occur in the survey register, and errors or inconsistencies may be submitted by the contributors when completing the survey questionnaires.

The Foreign Direct Investment (FDI) revisions and response rates are available in the [FDI Statistical Bulletins](#).

Another aspect of accuracy is reliability, which refers to the closeness of the initial estimated value(s) to the revised estimated value(s) and can be thought of as a measure of consistency between the initial and revised estimates. The reliability of key indicators in this release can be obtained by monitoring these revisions.

How we disseminate these data

FDI is primarily required for measuring the UK's Balance of Payments and its International Investment Position (IIP). It is also used to measure the international investment patterns between the UK and the rest of the world, either by country or groups of countries.

FDI annual data are disseminated through publication of statistical bulletins and ad hoc releases on the ONS website. The quarterly FDI statistics are used in the Balance of Payments quarterly statistical bulletin. The publication schedule is detailed under the ONS policy for timeliness and punctuality.

How we review and maintain data processes

Data processes are reviewed by Statistical Research Officers regularly to ensure efficient work procedures, processes and systems are maintained.

7 . Other information

[Code of Practice for official statistics](#)

[FDI International definitions](#)

For information on all economic transactions between residents of the UK and the rest of the rest of the world please see [Balance of payments](#).

[National Statistics Website](#).

For information on investment of UK companies abroad (outward) and foreign companies into the UK (inward), including investment flows, positions and earnings, by country, component and industry please see [Foreign direct investment involving UK companies statistical bulletins](#).