

# Foreign Direct Investment (FDI) QMI

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# 1 . Methodology background

<b>National Statistic</b>	
<b>Survey name</b>	Foreign Direct Investment (FDI)
<b>Frequency</b>	Quarterly and annual
<b>How compiled</b>	Sample based surveys and third party data
<b>Geographic coverage</b>	UK and the world
<b>Sample size</b>	26,900
<b>Last revised</b>	20 January 2017

## 2 . Executive summary

The purpose of the Foreign Direct Investment (FDI) survey is to collect financial data on assets and liabilities. The survey collects information on an annual and quarterly basis between foreign parent companies and their UK affiliates (Inward FDI) as well as between UK parent companies and their foreign affiliates and branches (Outward FDI). FDI is a major driver of globalisation. As investment patterns of multinational enterprises become more complex, reliable and internally comparable FDI statistics are necessary for sound policy making.

The following components are collected:

- a) Earnings: income from investments, for example profits, interest and tax;
- b) Flows: changes within investments, for example, reinvested earnings, acquisitions, disposals and loan movements; and
- c) Positions: these data represent an enterprise's total investment value at a point in time, of equity capital and other capital. Positions data are then used to calculate the international investment position.

The Foreign Direct Investment (FDI) outputs were previously published on our website in two annual publications; the [Annual Foreign Direct Investment Statistical Bulletin](#) and the [Foreign Direct Investment MA4 Business Monitor](#) . From January 2015, these releases have been consolidated into one Foreign Direct Investment publication.

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.

This document contains the following sections:

- Output quality
- About the output
- How the output is created
- Validation and quality assurance
- Concepts and definitions
- Other information, relating to quality trade-offs and user needs,
- Sources for further information or advice

## 3 . Output quality

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

We have developed [Guidelines for Measuring Statistical Quality](#) these are based upon the five European Statistical System (ESS) quality dimensions. 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.

## 4 . About the output

### Relevance

(The degree to which the statistical outputs meet users' needs)

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 Structural and International statistics division within ONS. These data serve a range of purposes for example:

- Inward FDI data indicate which sectors of the economy are of interest to foreign competitors and where long-term growth is expected to be
- Outward FDI data indicates which countries of the world are expected to be growth areas and where a company might wish to invest

The current FDI database holds full country and industry aggregate data from 1972 to the current published year for both the Inward and Outward FDI surveys. Limited country and industry level data are available for the years 1958 to 1971 from within historical publications produced by the Department of Trade in Industry (DTI) now known as the [Department for Business Innovation and Skills \(BIS\)](#).

For more details on 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 are 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 additional information on FDI see the International Monetary Funds' (IMF) [Balance of Payments manual 6 \(BPM6\)](#).

Data for the banking sector are collected by the Bank of England; all other sectors are covered by our surveys. The banking surveys collect information from all banks, whereas our surveys are based on samples. This Quality and Methodology Information concentrates on these sample surveys. These surveys are statutory, collecting information under the [Statistics of Trade Act 1947](#).

## **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 required 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](#).

## Timeliness and punctuality

(Timeliness refers to the lapse of time between publication and the period to which the data refer. Punctuality refers to the gap between planned and actual publication dates.)

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 is 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](#).

## 5 . How the output is created

The processes for creating the outputs for the FDI surveys are detailed in the following subsections.

### Sample frame

There are two separate sampling frames for the FDI surveys. These are explained as follows:

Sample Frame 1: Outward population – approximately 6,000 enterprise groups. This population contains the details of all wholly owned UK Businesses with ownership of subsidiaries and branches in foreign countries.

Sample Frame 2: Inward population – approximately 20,900 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 three sources:

- the historical FDI inward and outward registers of known and proved businesses
- IDBR – which is primarily compiled from administrative information, such as VAT and PAYE details from HM Customs and Excise . The register holds a number of variables including information on the country of ownership for each enterprise group. It also holds information on which UK groups have affiliates. The main source of information for these foreign links is the [Dun & Bradstreet \(D&B\)](#) 'WorldBase'® information. This is a commercial data source purchased by ONS
- the Cross Border Mergers and Acquisitions surveys – which 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

## 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 source provided by the [D&B](#) 'WorldBase'® 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).
- For the "WorldBase"® population, the outward survey strata are defined in terms of the number of foreign affiliates held by the UK parent company.
- For the inward "WorldBase"® population, the strata are defined in terms of the turnover of the UK group.
- For the annual population except for inwards "WorldBase"® population, all groups in the top stratum (containing the largest businesses) are sent questionnaires in order to maximise the survey coverage of foreign direct investment assets
- For annual inwards and quarterly inwards and outwards for the "WorldBase"® population no top strata are fully enumerated.
- In strata containing smaller businesses, only a proportion are selected. Additionally, the sample of smaller businesses is rotated to minimise burden on the respondents.

## Sample size

The sample sizes for the Foreign Direct Investment surveys are as follows:

Annual Outward - approximately 2,100 enterprise groups

Annual Inward - approximately 3,500 enterprise groups

Quarterly Outward - approximately 680 enterprise groups

Quarterly Inward - approximately 970 enterprise groups

## 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 as a whole. Both data collection instruments are despatched to businesses in March or April after the end of the reference year.

## Response

Two written reminders are subsequently sent to non-responding groups and are followed by telephone, fax 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 received and by industry sector and sizeband. See [Standard Industrial Classification \(SIC\)](#).

Response Rate Targets by Net Book Value (NBV):

Annual Outward - 75%;

Annual Inward - 85%;

Quarterly Outward - 50%;

Quarterly Inward - 75%.

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

## Validation

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

1. All questions are completed.
2. Responses to individual questions are consistent within the questionnaire as a whole.
3. The return is consistent with historical data from the business or differences are explained.
4. 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 in order to ensure 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 listed below:

Annual Outward - 40%;

Annual Inward - 50%;

Quarterly Outward - 30%;

Quarterly Inward - 60%.

## Outliers

The distance from the mean methodology is used. 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 8 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 4 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 used 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”, a value calculated to give an estimate of the ratio between the previous value and the current value. In a ratio of means method, 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, whereas 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

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, taking into account other relevant sources of information.'

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

[Revisions to annual data on the ONS Web page](#).

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

# 6 . Validation and quality assurance

## 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, a number of 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 in order 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 as a result 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, response rates and estimated standard errors are available in the Basic Quality Information in the background notes of the [FDI Statistical Bulletin](#) and the [FDI MA4 Business Monitor](#).

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.

## 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 FDI First Release 2004 and 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 of 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.

More recently the FDI survey has undergone changes as a result of new 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 has been collected using the revised questionnaire is for 2012. Both the 2013 estimates and revised 2012 estimates will be 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](#).

## 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](#).

[Eurostat](#).

[OECD](#).

[Standard Industrial Classification](#).

## 7 . Other information

### Assessment of user needs and perceptions

(The processes for finding out about users and uses, and their views on the statistical products.) Data from the Foreign Direct Investment (FDI) surveys are used by a wide range of users. The main users are:

- ONS Balance of Payments and National Accounts teams
- Other Government Departments for example [Department for Business Innovation and Skills](#), [Her Majesty's Treasury \(HMT\)](#), [Department For International Development \(DfID\)](#)<sup>25</sup>, [Her Majesty's Revenue and Customs \(HMRC\)](#), [Cabinet Office](#), [British Foreign and Commonwealth Office \(FCO\)](#)
- [Eurostat](#)
- [Organisation for Economic Cooperation and Development](#)
- [United Nations Committee on Trade and Development \(UNCTAD\)](#)
- [International Monetary Fund](#).

Additional users are UK and foreign academics and students, UK and foreign embassies and Trade Missions, businesses, UK and foreign press and the general public.

The annual survey data are published initially in an [FDI Statistical Bulletin](#) which is freely available from the National Statistics website (text and spreadsheet versions). Further queries can be addressed to the [FDI public enquiry team](#).

## 8 . Sources for further information or advice

### Accessibility and clarity

(Accessibility is the ease with which users are able to access the data, also reflecting the format in which the data are available and the availability of supporting information. Clarity refers to the quality and sufficiency of the release details, illustrations and accompanying advice.)

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. Our website also offers users the option to download the narrative in PDF format. In some instances other software may be used, or may be available on request. Available formats for content published on our website but not produced by the ONS, or referenced on our website but stored elsewhere, may vary. For further information please refer to the contact details at the beginning of this document.

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

- [Terms and conditions \(for data on the website\)](#);
- [Copyright and reuse of published data](#);
- [Pre-release access\(including conditions of access\)](#);

Basic Quality Information relevant to each release is available in the background notes of the relevant Statistical Bulletin [FDI Statistical Bulletin](#).

Further queries can be addressed to the Foreign Direct Investment public enquiry team at: [fdi@ons.gsi.gov.uk](mailto:fdi@ons.gsi.gov.uk).

## Useful links

- [National Statistician's Guidance: Confidentiality of Official Statistics](#).
- [Basic Quality Information in the Foreign Direct Statistical Bulletin](#).
- [FDI International definitions](#).
- [Balance of Payments and National Accounts](#).
- [National Statistics Website](#).