

Article

Foreign direct investment statistics, overview of methods changes: 2020

Summarising how we have used commercial information to enhance the UK's foreign direct investment (FDI) populations and stratification methods, with further information on the composition of microdata behind these estimates.

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1 . Main changes

Stratification method and population changes, as detailed in the following sections, have been implemented into our annual foreign direct investment (FDI) data from 2020 onwards and quarterly data from Quarter 1 (Jan to Mar) 2021 onwards. This methods article focuses on the annual directional impacts, published in our [2020 FDI bulletin](#).

As a result of introducing these developments, some of the comparisons for 2020 FDI statistics with previous years may reflect changes to the FDI population and sample stratification methods. Therefore, we advise caution when interpreting these results.

For the quarterly impact of these stratification changes, we are finalising our analysis plans and working with balance of payments colleagues to agree an implementation plan for when these changes will feed into the national accounts.

2 . Overview of changes to the FDI populations and stratification method

In 2019, we published an overview of our progress and priorities for [developing foreign direct investment \(FDI\) statistics](#). This recognised the significant increase in user demand since the UK referendum on European Union membership in 2016, with users requiring timelier and more granular high-quality statistics.

We provided an update to this [development plan in April 2021](#), detailing progress made and plans for the next stages of the project. This included procuring a new commercial data source to inform our sample design and enhance the coverage of our target FDI populations. We noted that we would continue to investigate the use of this data source to determine further changes, with the hope of implementation in the next stage of development. These investigations have concluded and the implementations and impacts on our statistics are detailed in this article.

There are several areas in which the coverage and maintenance of the population frame has been enhanced, such as improving the coverage of minority investment relationships (between 10% and 50% of the voting power), reviewing stratification methods, and certain types of special purpose entities, which are currently not fully captured using the [Inter-Departmental Business Register \(IDBR\)](#). The population changes are discussed in [Section 3](#), stratification method changes in [Section 4](#) and impacts on our statistics are discussed in [Section 5](#).

3 . Population changes

The introduction of the commercial data source increased the populations from reference periods Quarter 1 (Jan to Mar) 2021 and annual 2020 onwards. The change to the population on the inward side was most prominent, with an annual increase from approximately 29,400 to 45,500 companies. The outward population also increased, but to a lesser extent, from 13,200 to 17,900 (see Table 1).

Table 1: Differences for inward annual FDI population by stratification industry, 2020 compared with 2019
Number or percentage change

	2019	2020	Change	Percentage change
Finance	1,861	3,954	2,093	112
Oil	94	169	75	80
Other	8,670	14,688	6,018	69
Electricity and water	365	578	213	58
Technical	4,344	6,748	2,404	55
Information and communication	3,887	5,830	1,943	50
Retail	6,502	8,810	2,308	35
Manufacturing	3,625	4,669	1,044	29
Insurance	14	17	3	21
Total	29,362	45,463	16,101	55

Source: Office for National Statistics - Foreign Direct Investment Survey

Notes

1. The "other" stratification group is comprised of agriculture forestry and fishing; manufacture of food products; construction; repair of motor vehicles and motorcycles; transportation and storage; other services; publishing activities; veterinary activities; administration and support; service activities; mining of coal and lignite; mining of metal ores; other mining and quarrying.
2. These stratification industries were developed for sampling purposes and may not directly correspond to the industry groups in the FDI bulletin.

Table 2: Differences for outward annual FDI population by stratification industry, 2020 compared with 2019
Number or percentage change

	2019	2020	Change	Percentage change
Finance	890	1,891	1,001	112
Other	3,865	5,351	1,486	38
Technical	2,583	3,541	958	37
Information and communication	1,803	2,275	472	26
Oil	56	69	13	23
Electricity and water	107	131	24	22
Retail	2,077	2,489	412	20
Manufacturing	1,854	2,136	282	15
Insurance	14	14	0	0
Total	13,249	17,897	4,648	35

Source: Office for National Statistics - Foreign Direct Investment Survey

Notes

1. The "other" stratification group is comprised of agriculture, forestry and fishing; manufacture of food products; construction; repair of motor vehicles and motorcycles; transportation and storage; other services; publishing activities; veterinary activities; administration and support; service activities; mining of coal and lignite; mining of metal ores; other mining and quarrying.
2. These stratification industries were developed for sampling purposes and may not directly correspond to the industry groups in the FDI bulletin.

Our analysis shows that using the commercial data source has introduced more companies to our population, with counts in top size bands increasing the most. In comparison, the population counts for the smaller size bands have either decreased slightly or remained unchanged.

The inward industries seeing the largest percentage changes were oil, finance, and other industries. In comparison, the outward industries that saw the largest percentage changes were finance, other industries, and technical services.

4 . Using shareholder funds for stratification

The new commercial dataset also provided additional financial data, which we have used to develop our stratification methods for non-sampled companies in the population.

For both inward and outward foreign direct investment (FDI), population samples are stratified using previously returned international investment positions values (net book value) to determine which size band a company should be allocated to. Prior to 2020, where an inward FDI business was not sampled or net book value was unknown, the turnover variable sourced from the Inter-Departmental Business Register (IDBR) was used to correlate with net book value for all industry groups. For an outward FDI business, the number of foreign affiliates owned by the UK parent company are used.

Using the additional financial data available from the commercial data source, methodological studies were conducted using the correlation coefficient statistical measure to calculate the correlation between turnover and shareholder funds with net book value to stratify inward companies.

Drawing on the options highlighted within the studies, the recommendations were as follows.

For inward:

- shareholder funds to be used as a stratification variable for finance, technical, and other
- oil, manufacturing, retail, information and communication, electricity and water, and insurance to remain unchanged and to continue to use turnover to stratify non-sampled companies

These changes were implemented from reference periods Quarter 1 (Jan to Mar) 2021 and annual 2020 onwards and have improved the identification of larger companies in our population, similarly to the introduction of the new commercial dataset.

In contrast, outward FDI stratification methods for non-sampled companies have remained unchanged, with continuation of stratification of the outward population by number of affiliates. There is limited financial information, similar to shareholder funds, for foreign investments, which help us to determine the size of outward companies. The study found that the commercial data source does not have sufficient coverage of financial variables for foreign affiliates, but it did provide new information on number of foreign affiliates, which we incorporated into existing stratification methods.

5 . Impact on FDI results

Annual inward positions

Annual inward positions saw a £289 billion increase (18%) in 2020 compared with 2019, from £1,640 billion to £1,929 billion. The annual change is notably larger than recent comparisons, for example, the increase between 2018 and 2019 was £67 billion (4%), from £1,572 billion to £1,640 billion.

The majority of the change (52%) between 2019 and 2020 is from an increase in the values provided in survey responses. This increase will reflect changes to the values of companies sampled previously, in addition to new companies sampled based on different stratification and new companies introduced to the population in 2020 compared with 2019. The contribution from imputation methods for non-response was 31%, while 17% was attributed to estimation methods applied to the non-sampled population.

Considering the stratification changes, the inward stratification industries where we have seen the largest movements (finance, technical, and other) were those that saw changes to the stratification method from turnover to shareholder funds. The total increase in these industries between 2019 and 2020 was £215 billion (76%). For the remaining industries, which were unaffected by the stratification changes, there was an increase of £69 billion (24%) over the same period.

Table 3: Changes to reported inward FDI by stratification industry, 2020 compared with 2019
£ million

	Change 2019 from 2018	Change 2020 from 2019
Electricity and water	9,278	4,390
Information and communication	-46,906	-3,980
Insurance	-2,090	4,049
Manufacturing	32,621	22,501
Oil	11,583	18,866
Retail	3,363	23,658
Total	7,849	69,483
Finance	42,613	119,363
Technical	9,946	53,481
Other	7,218	42,565
Total	59,777	215,408

Source: Office for National Statistics - Foreign Direct Investment Survey

Notes

1. The "other" stratification group is comprised of agriculture forestry and fishing; manufacture of food products; construction, repair of motor vehicles and motorcycles; transportation and storage; other services; publishing activities; veterinary activities; administration and support service activities; mining of coal and lignite; mining of metal ores; other mining and quarrying.
2. These stratification industries were developed for sampling purposes and may not correspond directly to the industry groups in the FDI bulletin.

The industries where the new stratification methods have been applied are generally a larger proportion of the inward investment position historically; stratification industries finance, technical, and other accounted for 53% in 2018 and 55% in 2019. The changes introduced in 2020 further increased this proportion to 57%.

There is also some evidence that inward foreign direct investment (FDI) companies reported higher positions in 2020 compared with 2019. We reviewed our microdata, and these indicated that for companies present in 2019 and 2020, the inward FDI position from survey responses increased between those two years. By only identifying and comparing companies that were present in both years, it limited the impact of population and method changes.

Annual inward earnings

The increase shown in earnings follows a similar pattern to inward FDI positions, where the majority (78%) of the increase in 2020 compared with 2019 can be seen in the returned data. This increase will reflect changes to the values of companies sampled previously, in addition to new companies sampled based on different stratification and new companies introduced to the population in 2020 compared with 2019. Estimation for non-sampled companies accounted for negative 10% to the change, while imputation for non-response contributed 12%.

Annual inward flows

The increase shown in flows follows a similar pattern to inward FDI positions, where the majority (52%) of the increase in 2020 compared with 2019 can be seen in the returned data. This increase will reflect changes to the values of companies sampled previously, in addition to new companies sampled based on different stratification and new companies introduced to the population in 2020 compared with 2019. Estimation for non-sampled companies contributed 11% to the change, while imputation for non-response contributed 37%.

Annual outward FDI statistics

As noted in [Section 4](#), the outward stratification method has remained unchanged, and the population increase is not as prominent as for inward. Therefore, there were fewer changes to the results from the population and methods relative to inward FDI. Further information on outward FDI is available in the [FDI bulletin](#).

6 . Related links

[Foreign direct investment involving UK companies: 2020](#) Bulletin | Released 3 February 2022 Investment of UK companies abroad and foreign companies into the UK, including investment flows, positions, and earnings, by country, component and industry using the directional, and asset and liability measurement principles.