

Article

International trade in services, overview of methods changes: 2020

The impact of including microbusinesses in the annual International Trade in Services Survey to improve coverage of UK trade in services statistics.

Contact:
Tyler Elliott and James Norman
trade@ons.gov.uk
+441633 456241

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1 . Main changes

- For 2020 collection onwards, the sample for the annual International Trade in Services Survey (ITIS) has been expanded to include microbusinesses (those with an employment count below 10).
- The method to reduce the impact of extreme values (outliers) has been amended to account for the inclusion of microbusinesses.
- The sample change applies to businesses within Great Britain; further work is taking place to capture microbusinesses residing in Northern Ireland.
- Early indicative results suggest the impact of the sample change on unbalanced trade in services figures is more pronounced on exports than imports, with other business services seeing most of the impact for both imports and exports.
- Data from microbusinesses is not yet included in official trade in services statistics, but the impact of this change on balanced gross domestic product (GDP) estimates is expected to be published in autumn 2023.

2 . Overview of sample change

The International Trade in Services Survey (ITIS)

ITIS is a data source that measures the value of international trade transactions of UK businesses by country of origin and destination. It is the main source of data for UK trade in services (TIS) and has historically been responsible for approximately 50% of the TIS total. It is also an important element of the data used to compile the [UK's balance of payments \(BOP\)](#) and contributes towards the expenditure measure of [gross domestic product \(GDP\)](#).

ITIS uses the [Inter-Departmental Business Register \(IDBR\)](#) for its sampling frame and follows a set of parameters to include businesses that are based within the UK, within specific industries, and within certain ranges of employment sizes. Previously, only companies with an employment count of at least 10 were selected to be part of the ITIS sample, which meant that TIS estimates did not include data from a large portion of the UK business population.

The inclusion of microbusinesses forms part of the Office for National Statistics' (ONS's) wider body of work to improve UK trade statistics. It also feeds into research that aims to better understand asymmetries in trade statistics between the UK and partner countries, and vice versa; this is an issue that affects all countries' trade data.

The ITIS sample covers most industries, except for travel and transport, banking and other financial institutions, higher education, and most activities in the legal professions. These industries receive coverage from other data sources within our final trade in services estimates, such as from the [International Passenger Survey](#), financial data from the Bank of England and from other ONS surveys.

Microbusinesses have been included in the sample for 2020 collection and this article provides estimates to show the indicative impacts that their inclusion has on unbalanced trade in services estimates. We are working to develop these statistics further, alongside estimating the impact on previous periods. We will then incorporate it into our trade in services estimates and within the wider national accounts for purposes such as calculating gross domestic product (GDP). The impact of this change on balanced GDP estimates is expected to be published in autumn 2023, following the annual national accounts review in 2023. More [information about balancing early GDP estimates](#) is available.

The ITIS survey has not previously included microbusinesses within its sample, to reduce the burden on smaller businesses. Also, earlier research suggested that these businesses conducted a very low level of international trade in services. These companies have not previously been estimated for, meaning that historic UK trade in services data only represents companies with more than 10 employees. However, because of the nature of the changing economy, internal research has suggested that these businesses now play a more significant role in the UK's international services trade.

This change forms part of the improvements we are making to UK trade statistics, such as our [adjustment to address the bias in early estimates from the quarterly ITIS survey](#).

Sample methodology changes

The sample for ITIS is produced using various sources, with further information being available in our [ITIS quality and methodology information article](#). The largest contribution to the sample is through a stratified random sample that is generated using IDBR. This method splits the UK business population into groups based on specific business characteristics, known as [strata](#). For ITIS, businesses are stratified by industry, employment and geographic region (UK, Great Britain or Northern Ireland only).

To include microbusinesses in the sample, new strata were designed. A sample increase of 1,500 companies was agreed, which was then used to calculate the optimum sample for each strata. A process known as the Neyman allocation was carried out to determine the number of microbusinesses required within each strata to produce accurate and precise population estimates.

Neyman allocation is carried out by using the following formula to work out a recommended sample for each stratum:

$$n_h = n \frac{N_h s_h}{\sum_h N_h s_h}$$

where n is the total sample required, N_h is the number of businesses in the stratum's population and S_h is the estimate of the population standard deviation for stratum h .

The way that this method calculates the sample for each stratum is illustrated in Table 1. For this example, the maximum sample that can be used across the strata is 1,000.

Table 1: Example of how the Neyman allocation is used to assign a sample size that is suitable for each strata, within the restriction of the chosen sample increase

Strata	Population	Standard deviation	Population x standard deviation	Weight applied to total sample size	Recommended sample size for each strata
1	1786	1.3	2321	0.14	140
2	2500	1.5	3750	0.23	230
3	3929	2.3	9036	0.55	550
4	714	0.7	500	0.03	30
5	1071	0.9	964	0.06	60
Total	10000	N/A	16571	1	1000

Source: Office for National Statistics - International trade in services, overview of methods changes

Notes

1. Totals may not add up to the sum of their parts because of rounding.

Table 1 illustrates how strata with larger standard deviations are assigned a larger sample size. This is to ensure the variation of responses within each strata of the population is captured as best as possible.

As there were previously no data available on microbusinesses to produce a standard deviation figure, one was calculated using previous ITIS value returns from companies with 10 to 19 employees. This is because it was assumed that the data within the same Standard Industrial Classification (SIC) and region(s) would be most similar in behaviour to the zero to nine employees strata. We will be reviewing the sample size and allocation for future years based on this year's data as part of the process of developing our statistics ahead of them being included in our main trade in service estimates.

Northern Ireland microbusinesses

We investigated whether microbusinesses based in Northern Ireland should be included as part of the sample. It was decided that these would be included in a future sample, so that sufficient time was available to research the most suitable method of estimating the trading behaviours of these businesses. Therefore, only microbusinesses within Great Britain have been selected.

Annual Business Survey (ABS) sampling

Although the sample parameters for the ITIS survey cover most industries and employment sizes within the UK, there are some that are excluded from the random sample because of costing, feasibility, and lower levels of trading behaviours. To ensure representation of these industries, the ITIS sample is supplemented by the ABS. This involves using data from companies sampled by ABS to identify whether they trade in services. For 2020, companies sampled from ABS contributed 3.4% of total imports and 2.7% of total exports. It was not possible during this phase of development to include representation of microbusinesses from the industries covered by ABS. However, we expect this will be possible soon, and we will communicate this when completed.

In summary, the ITIS sample has been expanded to include microbusinesses within Great Britain. This change will only impact the coverage within industries already part of the stratified random sample. Work is underway to increase coverage of microbusinesses in industries supplemented by ABS in subsequent data.

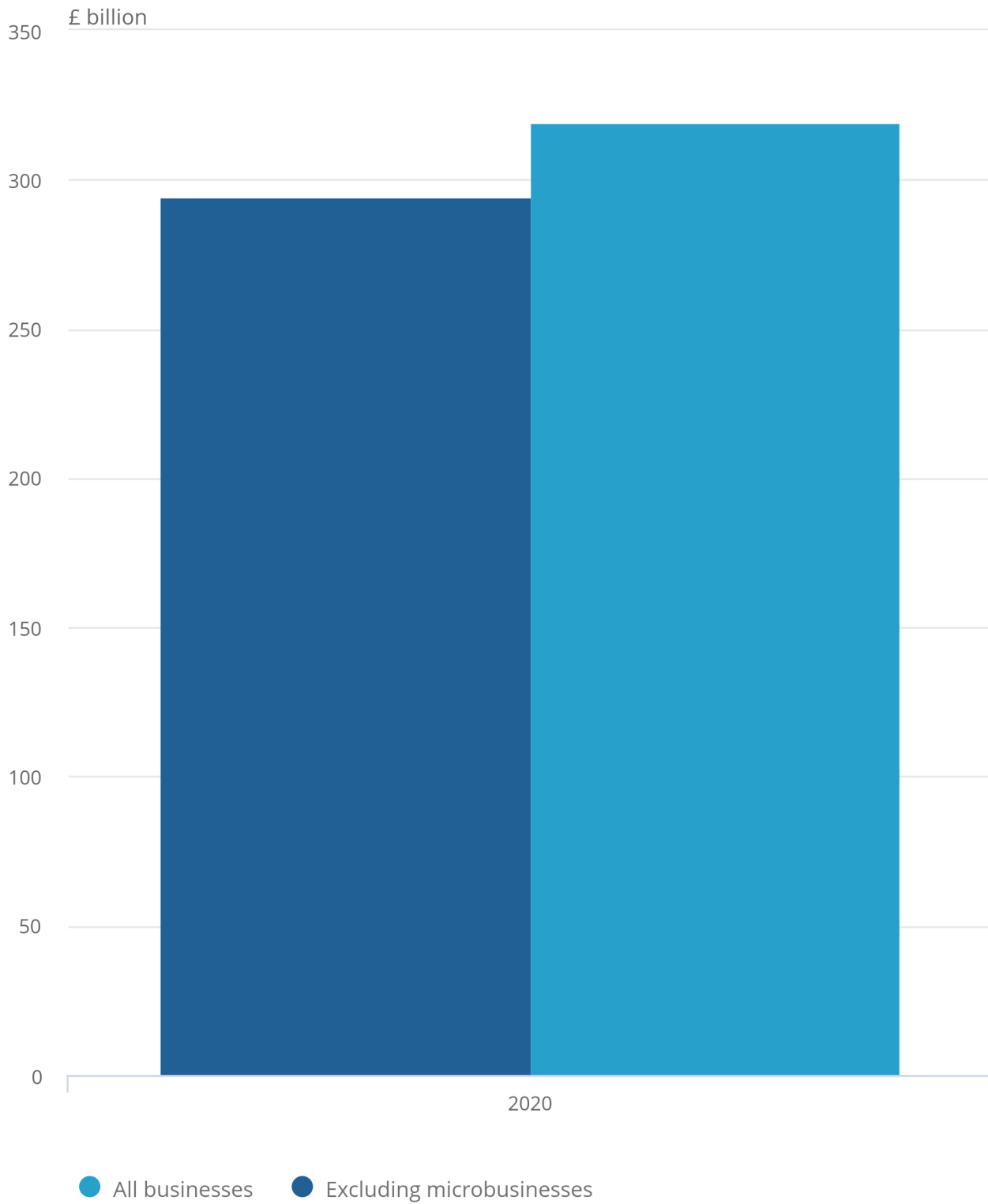
3 . Indicative impacts on Trade in Services data

In this section, we present the indicative impacts of adding microbusinesses to the Trade in Services Survey (ITIS) sample on unbalanced trade in services statistics, as well as a breakdown of the products that have experienced the greatest change. Because these are experimental and indicative results, it is currently not possible to provide estimates of the impact this method change will have on the expenditure measure of gross domestic product (GDP). This is because, as well as being early indicative estimates, these figures are not able to take account of the balancing process, which ensures consistency of data sources across national accounts. As such, the impact of this change on balanced GDP estimates will not be published until autumn 2023 at the earliest.

Impacts on service exports

Figure 1: Estimates for trade in services exports with and without microbusinesses, 2020, Great Britain

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Notes:

1. This figure shows unbalanced trade in services data, as supply-use balancing adjustments do not yet take microbusiness data into account; impacts could therefore be subject to change once balancing takes place.

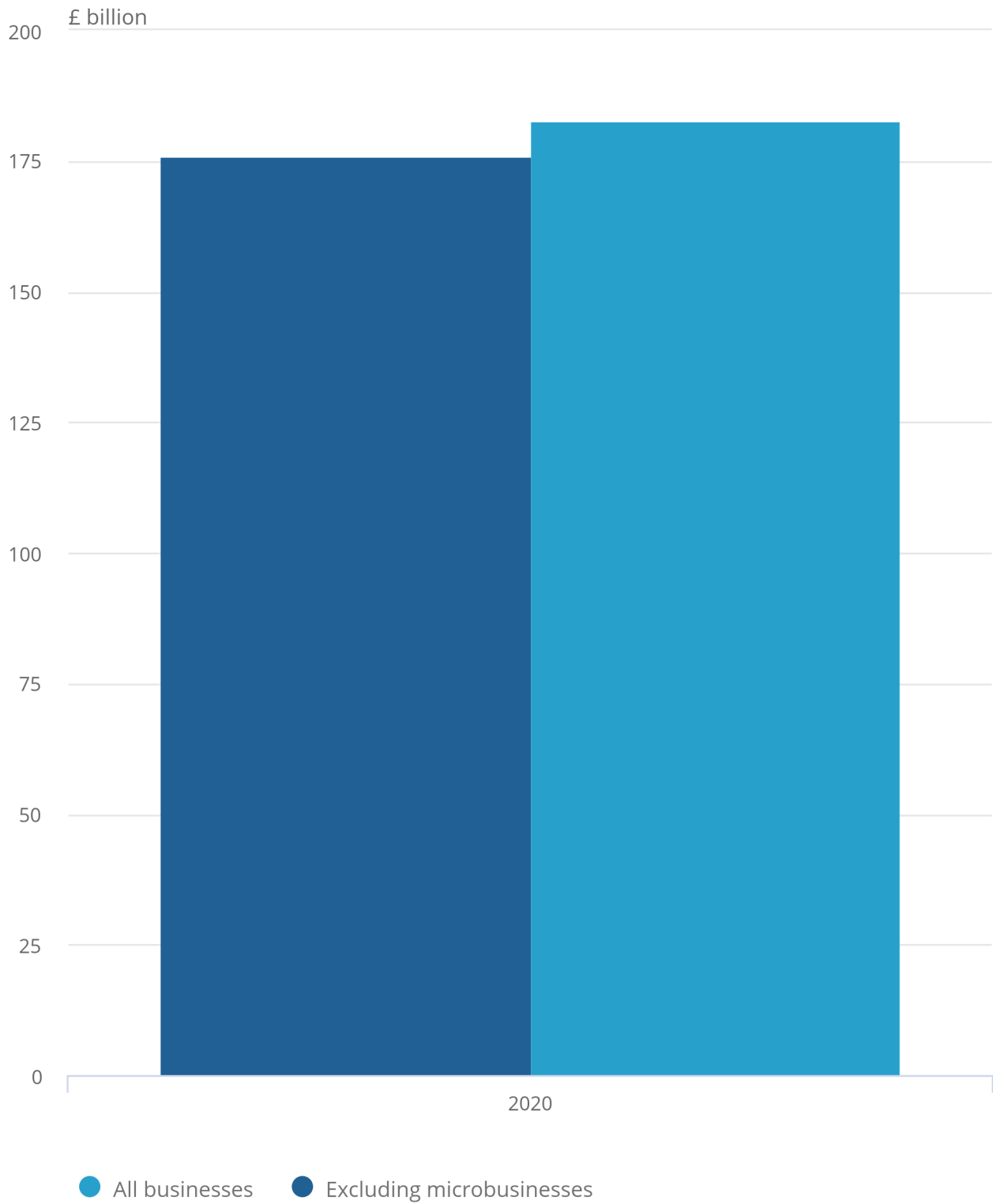
The UK exported £294.27 billion of services in 2020 when businesses with at least 10 employees are considered. When including microbusinesses within the sample, our early indicative estimate of UK service exports increases by 8.4% to around £319.00 billion in 2020.

The service products that saw the largest increase in exports belonged to the other business services category, which saw an increase of £13.41 billion (11.4%) from microbusinesses and accounted for 54.2% of the total impact on exports. The largest contributor within this category was management consulting, which saw an increase of £6.00 billion (44.7%). Charges for the use of intellectual property saw the next largest value increase, at £3.93 billion (21.3%). This is the largest percentage increase within products affected by microbusinesses. Financial services saw a similar value increase of £3.52 billion (5.1%).

Impacts on service imports

Figure 2: Estimates for trade in services imports with and without microbusinesses, 2020, Great Britain

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Notes:

1. This figure shows unbalanced trade in services data, as supply-use balancing adjustments do not yet take microbusiness data into account; impacts could therefore be subject to change once balancing takes place.

Our indicative impacts suggest that the UK imported a total of £182.60 billion of services in 2020, when data from microbusinesses are included. This is an increase of £6.51 billion (3.7%) when compared with data excluding microbusiness, which amounted to £176.08 billion in 2020.

The service product that had the largest increase was other business services, which increased by £3.32 billion (3.9%). This equated to 50.9% of the total increase on total imports.

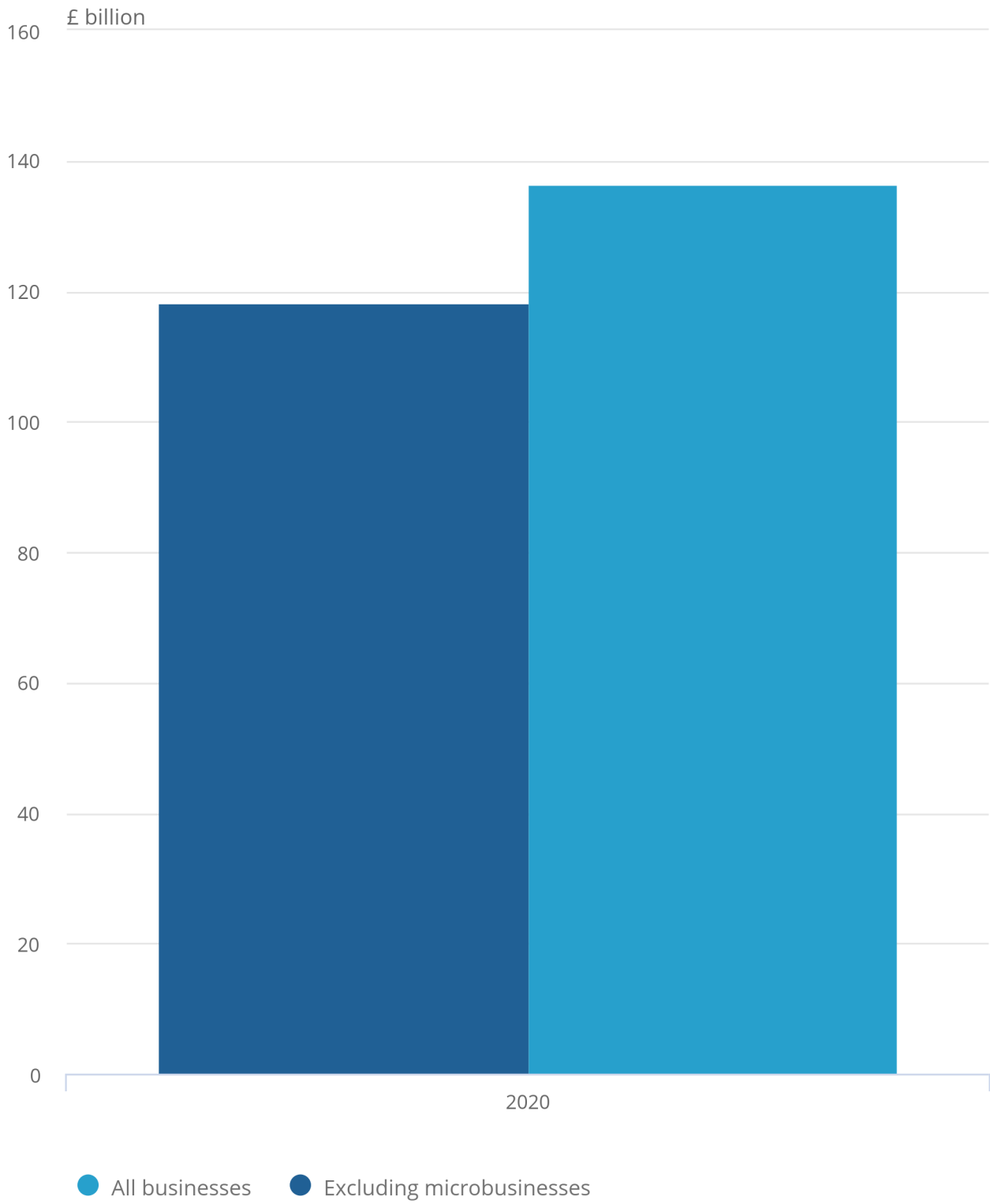
The service product to see the next largest value increase was charges for the use of intellectual property, which saw a rise of £1.84 billion (13.3%) to £15.65 billion. This was also the product to see the largest percentage increase from the inclusion of microbusinesses. Financial services saw an increase of £0.76 billion (4.8%) to £16.54 billion.

The inclusion of microbusinesses in the ITIS sample will increase import estimates and is likely to affect our import trade asymmetries. Where an import asymmetry is negative from a UK perspective (the UK import estimate is smaller than a partner countries export estimate), an increase in UK import estimate could contribute to a reduction in the asymmetries observed. More information on UK trade asymmetries is available in our [Asymmetries in trade data: updating analysis of UK bilateral trade data article](#).

Impacts on trade in services balance

Figure 3: Estimates for the trade in services balance with and without microbusinesses, 2020, Great Britain

Figure 3: Estimates for the trade in services balance with and without microbusinesses, 2020, Great Britain



Notes:

1. This figure shows unbalanced trade in services data, as supply-use balancing adjustments do not yet take microbusiness data into account; impacts could therefore be subject to change once balancing takes place.

With the inclusion of microbusinesses, the trade in services balance (exports minus imports) for 2020 totalled around £136.40 billion. This is an increase of £18.19 billion (15.4%) when compared with data excluding microbusinesses, which was £118.21 billion.

The service product with the largest increase in its trade balance was other business services. This saw an increase of £10.09 billion (31.6%) to £42.04 billion, which accounted for 55.4% of the total balance increase. Within this category, the largest contributor was management consulting, which saw an increase of £5.63 billion (44.3%). This contributed to 55.8% of the total increase in other business services.

Financial services had the next largest value increase of £2.75 billion (5.1%), to £56.41 billion. Charges for the use of intellectual property saw the largest rise in terms of percentage change, increasing by 44.9% (£2.08 billion) to £6.73 billion.

4 . Strengths and limitations

Using a stratified random sample to produce estimates of the population allows us to capture specific characteristics of the population so that they are represented. For ITIS, this includes employment count and industry. Stratification also leads to a smaller standard error in our estimates, as well as greater precision. These attributes improve how reliable the statistics are, as well as how well they reflect trading patterns in the UK.

The population of microbusinesses is large, meaning it is necessary for the sample to be reasonably sized to account for this. Despite an increase of 1,500 businesses, this still means each of these businesses represent a substantial number of companies within the population.

As noted in our [International trade in services quality and methodology information \(QMI\) article](#), a step in our process to produce population estimates involves grossing data from the chosen sample up to the population. Returned data from the sample are multiplied by what is called a grossing factor, which is the number of businesses in population of the strata divided by the sample size of the strata. The smaller the sample, the larger this factor becomes. Data for microbusinesses will therefore likely contain a higher level of volatility. Currently, there are no plans to increase the sample size for microbusinesses.

While a robust sampling method was used to collect a representation of the trading population, only one year of data has been returned so far. This therefore limits the scope of our quality assurance efforts and analysis, as we do not have any previous periods to compare with. However, as more data become available, we will continue to monitor and refine our microbusiness estimates.

5 . Future developments

We are working towards including microbusiness trade in services data into wider national accounts publications, such as the Blue Book and gross domestic product (GDP) estimates. To ensure that including these companies from 2020 onwards does not cause a significant data step change, we are currently working to produce trade estimates from 1997 to 2019 that seek to adjust for microbusinesses. This project requires at least two years' worth of data to develop a good quality model of previous periods. We will communicate this work as part of our regular Blue Book development process.

The International Trade in Services Survey (ITIS) is involved in a major redevelopment project, beyond the work described above to ensure it is equipped for future demands. Currently, work is being carried out to increase the coverage of industries being included in the stratified random sample element, as opposed to using the Annual Business Survey's (ABS) sample. For 2021 estimates, companies with over 50 employees and part of industries recently taken from the ABS based sample will be selected through the stratified sample. Other employment bands will remain represented by ABS.

Furthermore, new industries will be captured in future ITIS samples to ensure even greater coverage of the UK economy. This will include transport, education, financial and insurance industries. Also, new transport related questions are being tested for possible inclusion onto future surveys, allowing us to produce improved trade in transport services statistics.

Finally, collaborative work is being carried out with the Northern Ireland Statistics and Research Agency (NISRA) to produce accurate estimates of trading behaviours carried out by companies in Northern Ireland.

Future articles will be released to:

- outline in more detail the results of these changes
- communicate how this will affect our statistics
- provide you with the information to make decisions on how you use the data

6 . Related links

[International trade in services QMI](#)

Article | Released 28 January 2022

Quality and methodology information for the International Trade in Services Survey data detailing the strengths and limitations of the data, methods used, and data uses and users.

[Annual Business Survey QMI](#)

Article | Released 16 May 2019

Quality and methodology information for the Annual Business Survey, detailing the strengths and limitations of the data, methods used, and data uses and users.

[UK Trade QMI](#)

Article | Released 12 May 2021

Quality and methodology information for UK Trade statistics, detailing the strengths and limitations of the data, methods used, and data uses and users.

[UK Trade Development Plan](#)

Article | Released 5 June 2020

The transformation of UK trade statistics over the past three years, along with an update on the ambitious plans for the next four years.