

Article

UK foreign direct investment, trends and analysis: July 2018

This review of foreign direct investment (FDI) incorporates initial estimates for 2017 from quarterly data. It covers: headline FDI estimates and impacts on the current account; the impact of exchange rates and mergers and acquisitions on FDI; FDI presented by the ultimate controlling parent approach; and insights on the contributions of FDI businesses to the UK economy.



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Table of contents

1. [Main points](#)
2. [Overview](#)
3. [Foreign direct investment in 2017](#)
4. [The impact of exchange rate movements on foreign direct investment in 2017](#)
5. [The impact of mergers and acquisitions activity on foreign direct investment](#)
6. [Foreign direct investment by the country of the ultimate controlling parent](#)
7. [Contributions of businesses engaged in foreign direct investment to the UK economy](#)
8. [Future research and developments](#)
9. [Acknowledgements](#)
10. [Quality and methodology](#)
11. [Annex A: Differences between the directional and asset and liability measurement principles](#)
12. [Annex B: Ultimate parent company analysis methods](#)
13. [Annex C: Linking Foreign Direct Investment with Annual Business Survey methods](#)

1 . Main points

- First estimates of foreign direct investment (FDI) based on the quarterly survey show that net earnings of FDI improved in 2017 overall, while the net stock of FDI remained stable.
- The overall current account deficit in 2017 was at its narrowest since 2012, led by an increase in FDI credits that was largely due to other effects such as increased profitability rather than exchange rate movements.
- The largest mergers and acquisitions transactions accounted for over half of the value of liabilities flows in 2016 and assets flows in 2017, due to the completion of several large deals in these years.
- Experimental statistics in this article present geographical breakdowns of FDI by the ultimate controlling parent, rather than the traditional immediate parent presentation. Geographical breakdowns of inward FDI stocks presented using the ultimate controlling parent concept in 2016 show that the values of inward stocks in the UK are 32.8% higher from the North Americas and 16.8% lower from the EU when compared with values presented using the immediate parent concept.
- The lower value of inward FDI stocks from the EU when presented on an ultimate basis reflects that stocks from financial centres such as the Netherlands and Luxembourg are often in transit from other territories such as the US, although investment from other EU countries such as Belgium, Germany and France increase when presented on an ultimate basis.
- Experimental Statistics from linking FDI microdata to other ONS business surveys identify that while only 1.1% of UK business receive FDI from abroad, they employ approximately 4 million people in the UK and are notably more productive than businesses that do not engage in FDI; this has been consistent over the three years presented in the analysis from 2014 to 2016.
- These Experimental Statistics also identify that inward FDI recipients are more productive on average than outward FDI investors.
- Caution is recommended when interpreting results from our FDI microdata linking analysis, as these statistics describe the characteristics of UK businesses with FDI relationships, rather than suggest a causal link.

Please note:

This section was updated on 23 July 2018 for clarification on the fourth main point.

2 . Overview

FDI statistics provide information about the value of cross-border investment that result in control or influence in a business

Foreign direct investment (FDI) refers to cross-border investment made by residents and businesses from one country in to another, with the aim of establishing a lasting interest in the country receiving investment¹. Outward FDI, or assets, captures the investments made by UK companies abroad, whereas inward FDI, or liabilities, covers investments in the UK made by foreign companies².

In addition to the direction of investment, FDI statistics can be analysed in terms of positions (total stock of investment at a given point in time), income (earnings generated by underlying assets over a specific period of time), or flows (value of cross-border FDI transactions over a specific period of time).

FDI statistics can also be presented using different measurement principles: the asset and liability principle and the directional principle. While both principles differ when focusing on a specific direction of investment, net values should be the same (see Annex A for more detail).

Statistics used in this analysis are presented using the asset and liability principle unless otherwise stated. This is in line with internationally-agreed best practice for presenting balance of payments statistics; therefore, making the analysis presented consistent with the UK Balance of Payments (Pink Book). Sections of the microdata analyses that use the directional principle are consistent with data presented in the [Foreign direct investment statistical bulletin](#).

Notes for: Overview

1. A minimum of 10% of the voting power is the basic criterion used to distinguish FDI relationships from portfolio investment.
2. Inward investment is made in the UK by non-resident companies.

3 . Foreign direct investment in 2017

Updated UK Balance of Payments estimates for Quarter 4 (Oct to Dec) 2017 were published in June 2018. This allows for the analysis of foreign direct investment (FDI) data to be extended to 2017 using these provisional estimates. For FDI, statistics for the 2017 reference period are based on results from the quarterly surveys, which have a smaller sample designed to provide a timely estimate of quarterly movements.

FDI statistics for the 2017 reference period will be subject to revisions in December 2018, when data from the annual surveys are published. These have a larger sample and the timing of which allows companies to respond using information from audited accounts rather than using estimates from monthly management accounts.

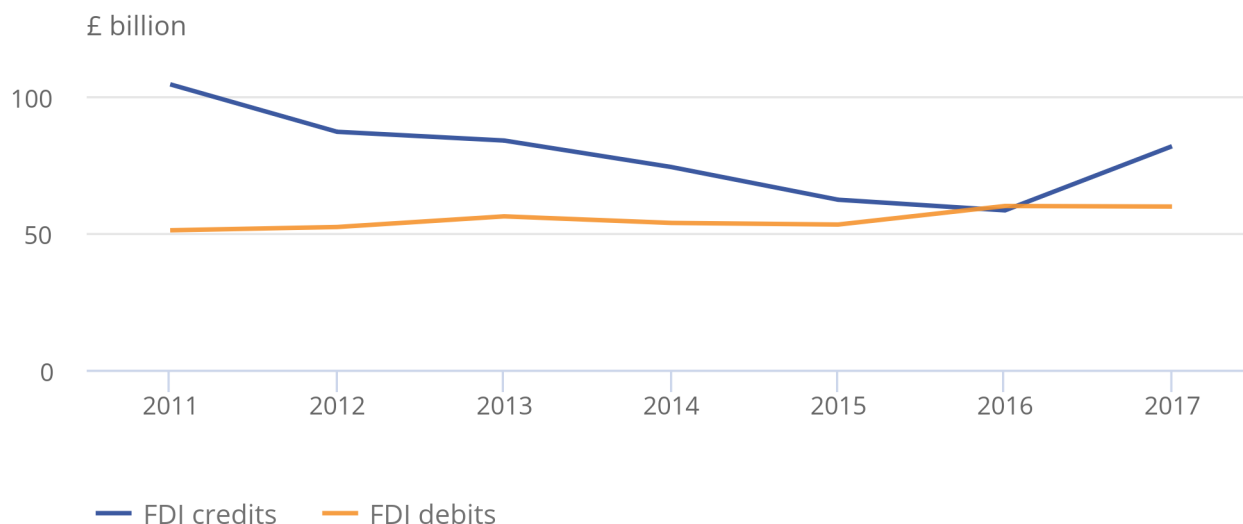
Provisional quarterly estimates suggest that the downward trend in net FDI earnings ended in 2017, recording the first annual increase since 2011

The value of FDI income received (credits) increased notably in 2017, while the value of FDI payable income (debits) remained stable in 2017. Credits rose by £23.5 billion over the year, reversing the downward trend in the value of credits observed since 2011. The value of credits was £104.6 billion in 2011 and had fallen to £58.4 billion by 2016, but rose to £81.9 billion in 2017 (Figure 1).

In contrast, FDI debits have been relatively more stable since 2011, varying between £51 billion and £60 billion. Debits decreased by £0.2 billion in 2017 to £59.8 billion. The increase in credits and stability of debits in 2017 implies that net FDI earnings increased to become positive in 2017, from negative £1.6 billion in 2016 to £22.1 billion.

Figure 1: UK foreign direct investment (FDI) credits and debits, 2011 to 2017

Figure 1: UK foreign direct investment (FDI) credits and debits, 2011 to 2017



Source: Office for National Statistics

Early estimates based on the smaller quarterly sample size suggest that there was a particularly large increase in credits with the North Americas in 2017. Credit values associated with all geographical regions increased from 2016 to 2017, albeit with small increases for non-EU Europe and the South and Central Americas. This increase in credits was led by the manufacturing, and mining and quarrying industry groupings. Initial results indicate that improved profitability is the main driver of the growth in FDI credits, which coincided with increases in oil and commodity prices and a general pick-up in the global economy.

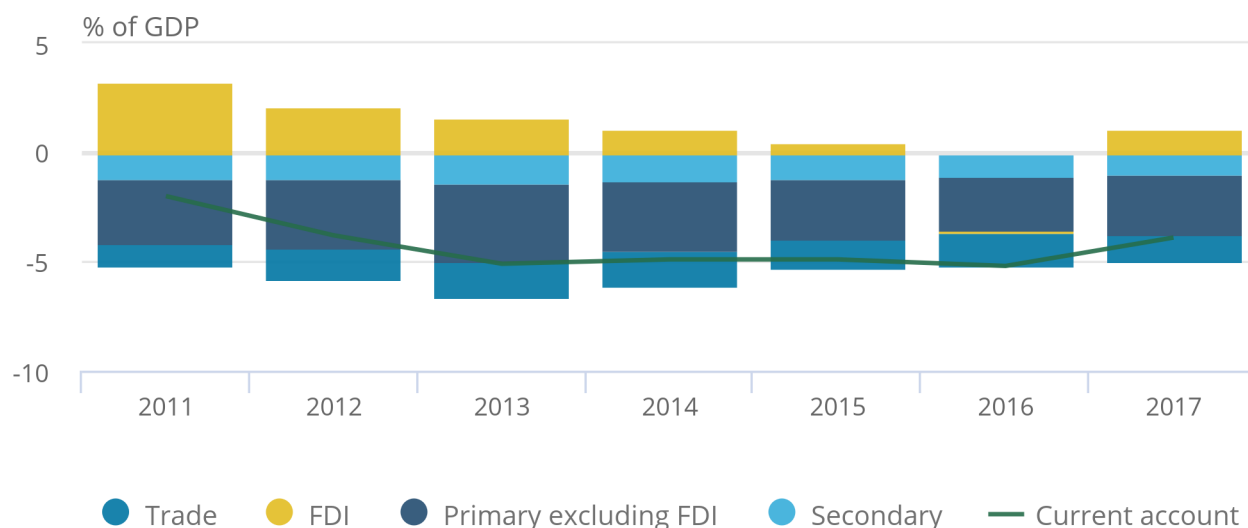
A notable increase in debit values with Asia in 2017 was offset by decreases with both the EU and South and Central Americas, resulting in debit values remaining stable in 2017. On the industry side, a decrease in the value of debits in the manufacturing industry was offset by increases in other groupings such as financial and insurance services, and information and communication services.

FDI is a component of the three main accounts in the UK Balance of Payments and international investment position (IIP) suite. FDI earnings are part of primary income in the current account, FDI flows are part of the financial account, and FDI positions are part of the IIP.

The UK's current account balance has been negative (that is, in deficit) in every year since 1983. Net FDI earnings have been positive in all years but one, since comparable series began in 1997. Changes in net FDI earnings can improve or worsen the current account balance (Figure 2).

Figure 2: The UK current account balance and its components as a proportion of gross domestic product, 2011 to 2017

Figure 2: The UK current account balance and its components as a proportion of gross domestic product, 2011 to 2017



Source: Office for National Statistics

The current account deficit has widened to historical highs since 2011, which has been predominantly due to falling net FDI earnings and other primary income.

There was a narrowing in the current account deficit in 2017, which is partly explained by the reversal of the downward trend in net FDI earnings.

The value of UK FDI assets and liabilities remained stable in 2017

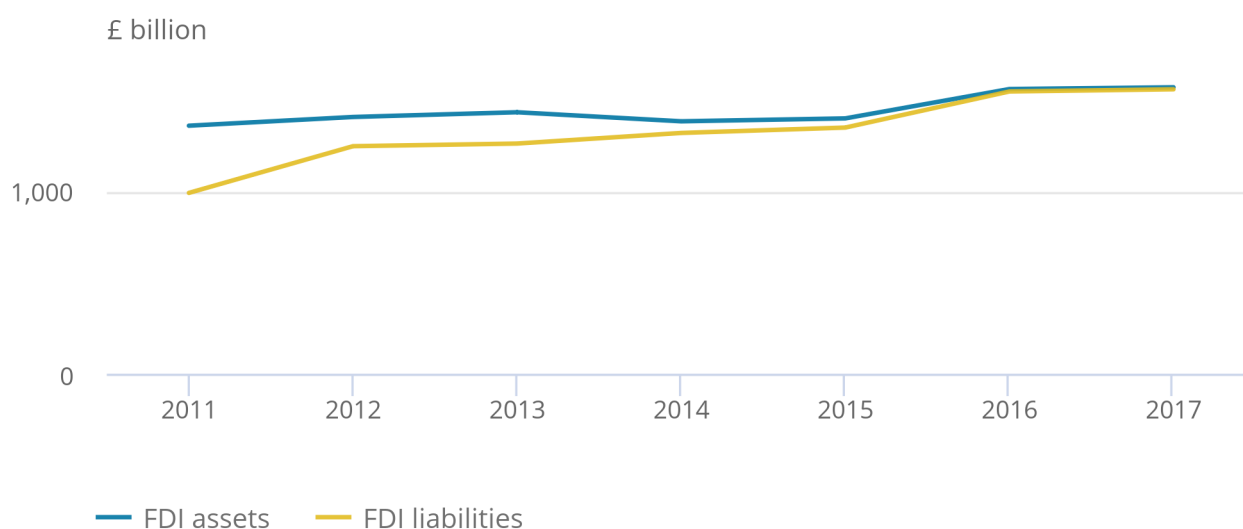
The longer-term trend in the value of UK FDI assets shows that these have been relatively stable over most recent years, with no real change (0.6% increase) in 2017 from the previous year. However, the value of FDI assets saw notable growth in 2016, increasing by £161.4 billion, or 11.5% compared with 2015. As outlined in [previous analysis](#), the majority of the increase in FDI asset values in 2016 was driven by exchange rate movements.

The value of FDI liabilities has shown a trend of year-on-year increases between 2009 and 2017, albeit with a notably modest increase from 2016 to 2017 of £12 billion, or 0.8%. The greater increase in the value of liabilities compared with assets in 2017 has continued the trend of falling net UK FDI positions from 2013, with the net value only just positive in 2017.

Initial estimates show that the value of UK FDI assets from all continents and with all industry groupings remained stable in 2017 from 2016, explaining the stability in asset values displayed in Figure 3. For liabilities, the decrease in values with the North Americas was offset by increases with the EU, Asia and non-EU Europe. From an industry perspective, an increase in liability values from wholesale, transportation and accommodation services was partly offset by a decrease in financial and insurance services.

Figure 3: UK foreign direct investment (FDI) assets and liabilities, 2011 to 2017

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Source: Office for National Statistics

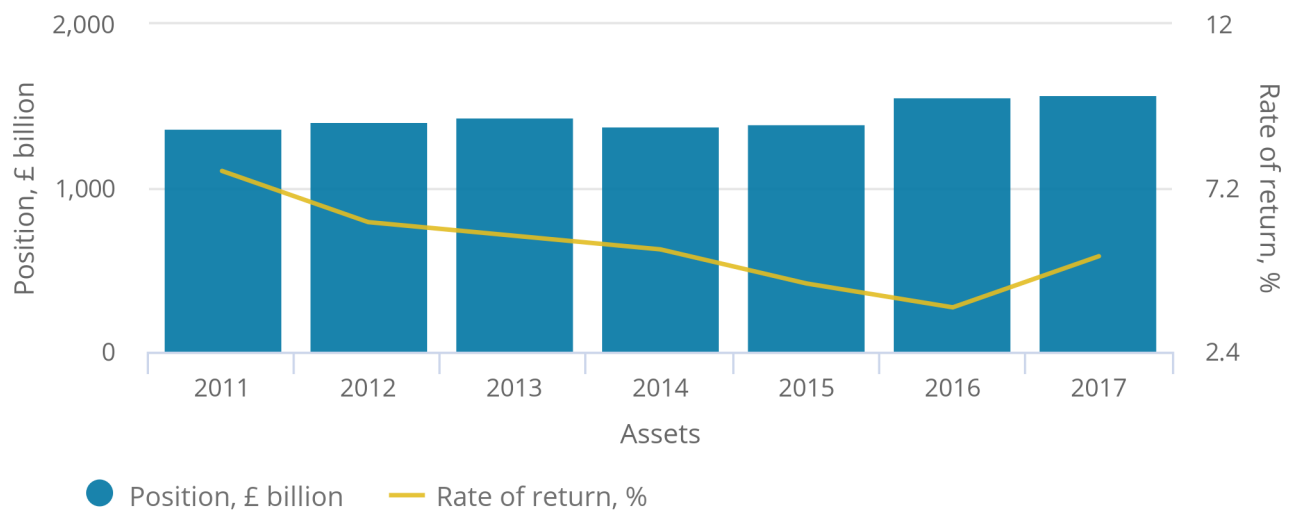
Trends in earnings relative to the stock of investment can also be analysed in respect to changes in the implied rate of return. This captures how much income is generated per British pound of investment. Therefore, if the UK receives £50,000 on an asset in Germany valued at £1 million, then this implies that the rate of return is 5%; every £100 invested generates £5 of income. The implied rates of return on UK assets and liabilities are shown in Figure 4a and Figure 4b, respectively.

Implied rates of return on assets have increased in 2017 for the first time since before 2011. The increase in 2017 reflects the notable increase in credits relative to assets, which have remained relatively stable. The implied rate of return increased with all geographical regions from 2016 to 2017, and increased for all industry groups apart from information and communication services.

In contrast, the rates of return on liabilities have remained largely stable, with levels typically varying between 3.8% and 4.4% from 2012 onwards. The 3.8% estimated for 2017 is the lowest since 1998, but is not much lower than the previous year.

Figure 4a: Values of UK foreign direct investment assets and implied rates of return, 2011 to 2017

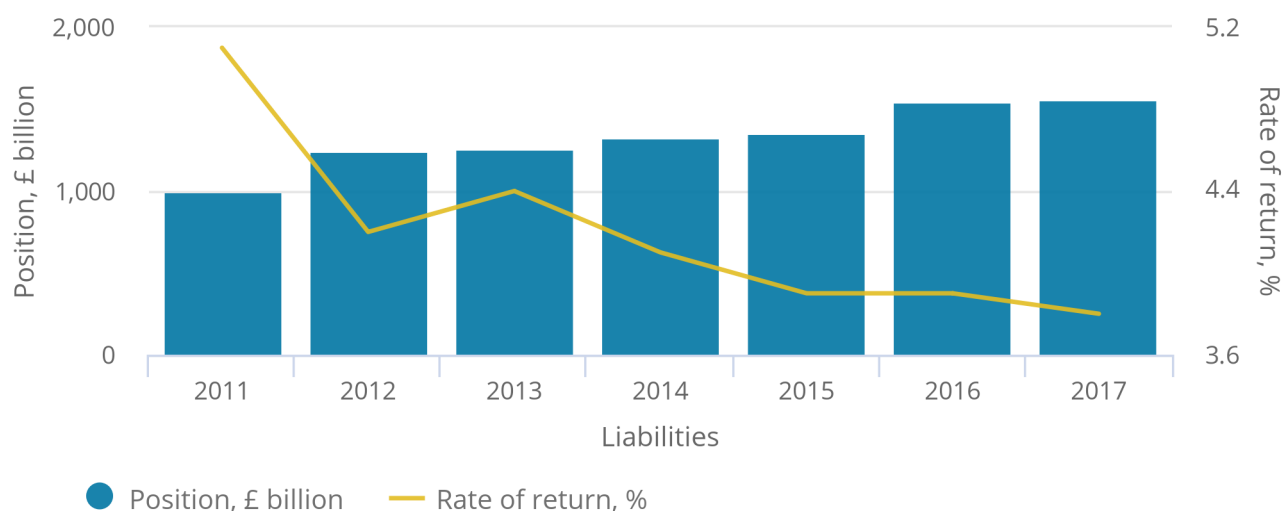
Figure 4a: Values of UK foreign direct investment assets and implied rates of return, 2011 to 2017



Source: Office for National Statistics

Figure 4b: Values of UK foreign direct investment liabilities and implied rates of return, 2011 to 2017

Figure 4b: Values of UK foreign direct investment liabilities and implied rates of return, 2011 to 2017



Source: Office for National Statistics

4 . The impact of exchange rate movements on foreign direct investment in 2017

[Previous foreign direct investment \(FDI\) analytical articles](#) included sections estimating the impact that the depreciation of the sterling exchange rate over 2016 may have had on FDI statistics. We develop this analysis using the latest annual estimates for 2017 and consider the year in the context of exchange rate movements since 2016.

Sterling exchange rate appreciation against the dollar deflated asset values from 2016 to 2017

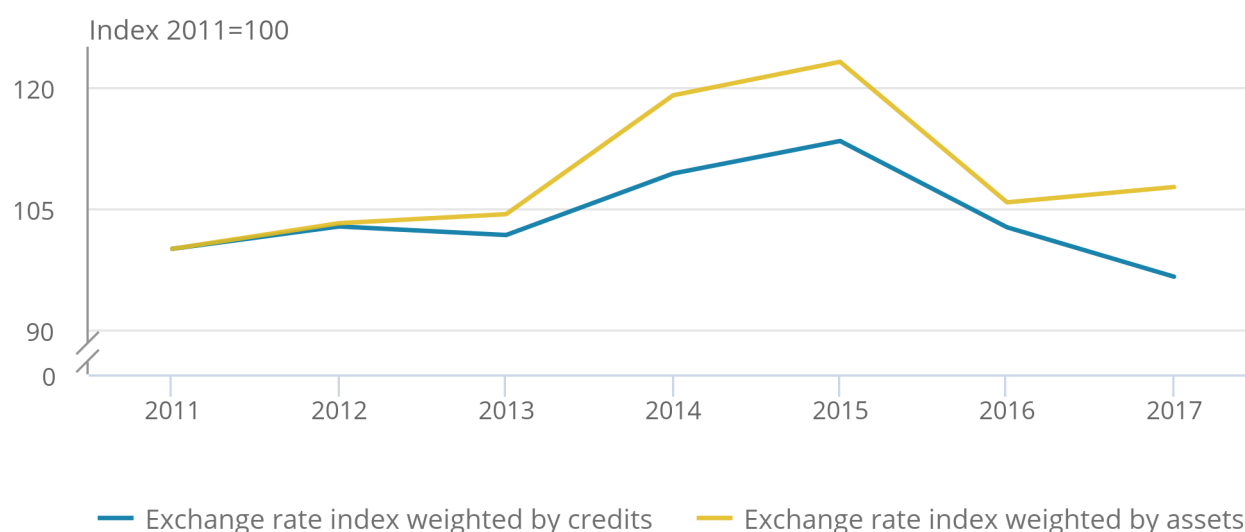
Exchange rate indices are usually weighted by the proportion of a country's trade in each currency. For this analysis, we use exchange rate data from the Bank of England and weight each movement by the proportion of UK FDI assets or credits per currency. This gives FDI-weighted exchange rate indices.

The FDI-weighted exchange rate indices can be used to produce counterfactual estimates of FDI values had the exchange rate remained fixed at a point in time. These calculations require estimating the proportion of FDI positions and earnings denominated in foreign currency.

As shown in Figure 5, both the FDI credit- and asset-weighted indices increased in almost every year from 2011 to 2015. In 2016, the exchange rate had a marked depreciation of 15.9%. The asset-weighted indices appreciated from 2016 to 2017 due to its weighting being closer to the US dollar, against which sterling appreciated during this period. The appreciation of sterling against the dollar is likely to have lowered the value of FDI positions denominated in foreign currency in sterling terms, since each unit of foreign currency buys fewer British pounds. The depreciation of sterling against the euro would have had the opposite effect and increased the value of FDI credits denominated in foreign currency in sterling terms.

Figure 5: Sterling effective exchange rate index, end of period, UK, 2011 to 2017

Figure 5: Sterling effective exchange rate index, end of period, UK, 2011 to 2017



Source: Office for National Statistics, Bank of England

Ahead of our [July 2017 analysis](#), we approached 200 of the largest companies engaged in both inward and outward FDI in the UK to collect voluntary information on the currency composition of their FDI earnings and positions. We found that just over half of FDI assets were denominated in sterling and this was close to three-fifths for FDI credits. A larger proportion of liabilities and debits were denominated in sterling; slightly below 90% of liabilities were held in sterling and just over 90% of debits. Therefore, while FDI debits and liabilities will still be affected by exchange rate changes, the impact will be notably smaller. This analysis focuses on the exchange rate impact on UK FDI credits and debits.

There are three important considerations related to these counterfactual estimates.

Firstly, the voluntary responses of UK direct investors will have its own sampling variation; repeating this survey again may yield different results. Therefore, the actual exchange rate impact could be greater or lower than that presented in this analysis.

The second consideration is that the currency composition of FDI involving the UK is likely to change over time. These results are most applicable for 2016 and 2017, and therefore can be less relevant for other periods of sterling depreciation (or appreciation).

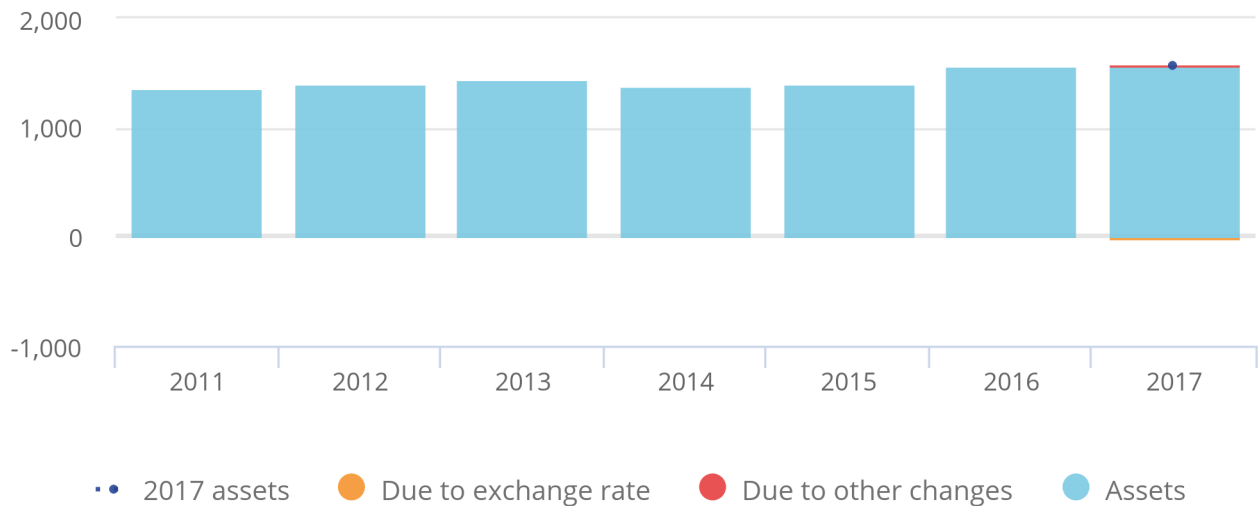
The third consideration is that the counterfactuals only attempt to capture the price effect of an exchange rate movement – that is, the impact of converting non-sterling denominated earnings and assets into sterling. Other behavioural effects, such as increases or decreases in investment due to changes in the profitability of investments after the exchange rate has depreciated, are not captured.

Exchange rates had very little effect on the value of FDI assets in 2017

Focusing upon the asset-weighted exchange rate appreciation in 2016, it is possible to estimate the impact of the exchange rate on FDI statistics relative to other effects in that year. Figure 6 presents the published values of UK FDI assets between 2011 and 2017. For 2017, the solid bar is the value of FDI assets from 2016 carried forward, while the dot represents the actual 2017 value. The counterfactual analysis holds the asset-weighted sterling effective exchange rate fixed at the end of the 2016 rate. This shows that exchange rate movements acted to decrease the value of assets over 2017, if only by a small amount, but were more than offset by other changes. The counterfactual analysis predicts that the value of FDI assets would have been 0.9% higher had the exchange rate remained at its 2016 rate.

Figure 6: Impact of exchange rate movements on foreign direct investment assets, UK, 2017

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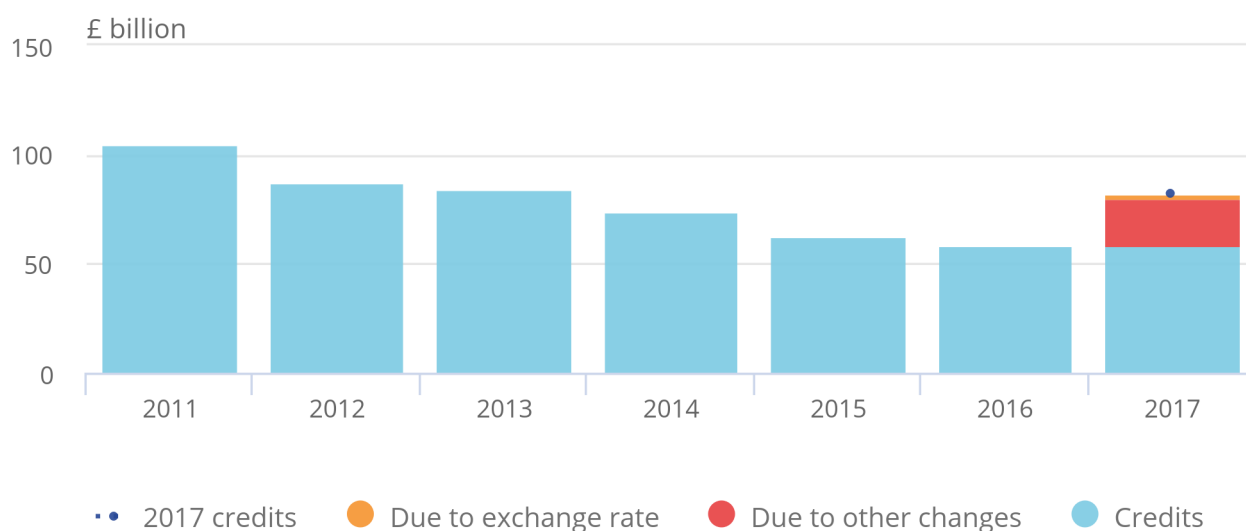
Source: Office for National Statistics

Increase in the value of FDI credits in 2017 largely due to other effects rather than exchange rate movements

Repeating the counterfactual analysis for UK FDI credits shows that the credit-weighted effective exchange rate depreciation over 2017 was a factor in inflating the value of credits. This analysis suggests that UK FDI credits would have been £2.0 billion lower in 2017 had the depreciation not occurred. However, the majority of the increase in credits over the period, around £21.5 billion, was due to other changes such as increased profitability.

Figure 7: Impact of exchange rate movements on foreign direct investment credits, UK, 2017

Figure 7: Impact of exchange rate movements on foreign direct investment credits, UK, 2017



Source: Office for National Statistics

5 . The impact of mergers and acquisitions activity on foreign direct investment

[In previous analytical articles](#), analysis focused on exchange rate implications on foreign direct investment (FDI) positions and earnings. In this publication, we will look to expand our analysis of exchange rate impacts to FDI flows, by looking at how mergers and acquisitions (M&A) data as a component feed into FDI flows. As well as mergers and acquisitions activity, FDI flows include equity from new investment, loans and reinvested income. M&A refers to companies acquiring other companies' shares or assets. M&A transactions that result in the acquirer holding at least 10% of the ordinary shares (or voting rights) of the target company are a major component of FDI flows.

M&A accounted for more than half of inward FDI flows in 2016, and outward FDI flows in 2017

The two most recent reference years (2016 and 2017) were notable for inward and outward M&A, respectively. In 2016, inward M&A activity saw a large increase due to the [completion of a few large deals](#). A similar scenario was observed for outward M&A activity in 2017; more information surrounding the nature of M&A can be found in the [UK mergers and acquisitions activity in context 2017](#) article. To analyse the impact of M&A activity on FDI flows, the proportion of the top 50 inward FDI flows linked with M&A activity were considered for each year in question.

From this methodology, we see that in 2016, the largest inward M&A transactions accounted for about 60% of flows, while in 2017, M&A activity accounted for closer to 30%, this being attributed to the large increase in inward M&A in 2016. On the other hand, the largest outward M&A transactions in 2017 accounted for more than 50% of FDI flows, while a year earlier it accounted for closer to 10%. Similarly, this is attributed to large increases in outward M&A activity in 2017. Using this information, we will focus in more depth on inward M&A in 2016 and outward M&A in 2017, as these are prominent years for M&A activity impacts on FDI flows.

Further to the record large FDI liability flows in 2016, a recurring query from users related to the impact exchange rate movements had on the value of reported FDI flows. The following sections attempt to answer that query. However, it is important to emphasise that this analysis only focuses on the arithmetic impact of the depreciation on flows – what would the value of flows have been had the exchange rate not changed between 2015 and 2016, holding everything else constant? – rather than the behavioural effect – did flows increase or decrease as investors reacted to movements in exchange rates and their impact on asset values?

Using M&A microdata, we can untangle the exchange rate impact on M&A by using the date of when a transaction was completed and the end of the last period. For example, looking at a deal completed in June 2017, we would compare the exchange rate at the end of June 2017 with that of the end of 2016. Using both these dates and records of exchange rates, we can compare how values of M&A deals could have been impacted by exchange rate fluctuations.

We look at the exchange rate between the country of the ultimate parent and the acquired subsidiary as this is where the funds are transferred between. By using data for the largest 20 companies for M&A in 2016 and 2017, we can disentangle some of the exchange rate effects on inward 2016 and outward 2017 M&A values.

We have developed two measurers of exchange rate impacts, an “extreme counterfactual” and an “adjusted counterfactual”. The extreme counterfactual looks at the exchange rate effect if we assume all M&A deals are agreed in the currency of the foreign counterpart. The second measure used is the adjusted counterfactual, which looks at the currency in which the deal is agreed. If the deals are agreed in sterling, there will be no exchange rate impacts (as there will be no conversion back into sterling); if the deals are agreed in a foreign currency we would see the influence of exchange rates.

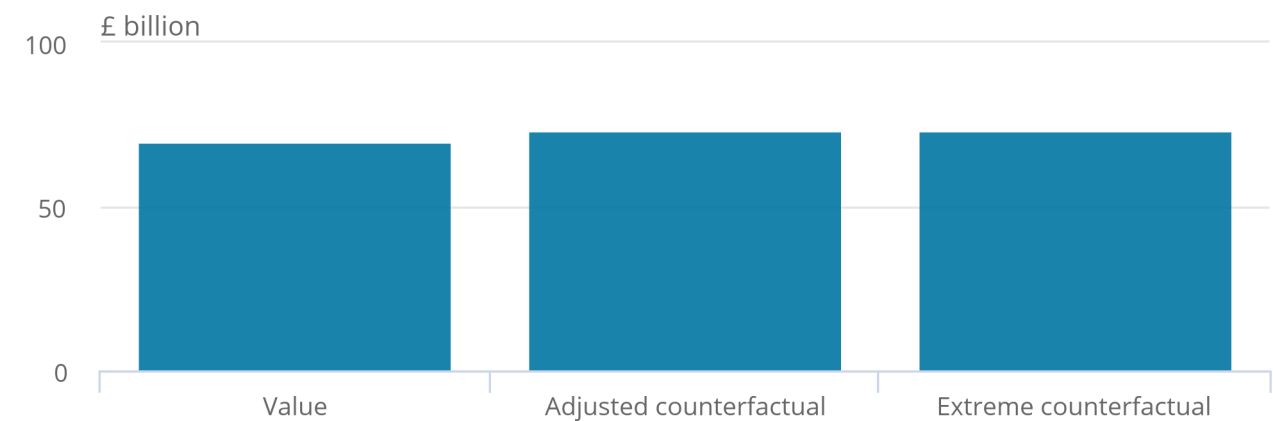
Using information from press releases, we observe the currency of each deal. Our main finding is that most deals are agreed in the acquired firm’s currency. This means we would expect exchange rates to impact outward M&A more than inward M&A, as the acquisition of foreign firms in outward M&A will be more likely to be completed in a foreign currency.

Value of the largest outward M&A deals would have been £3.5 billion higher in 2017 had the exchange rate not appreciated

The value of outward M&A of the top 20 companies for M&A in 2017 was £69.8 billion. However, had exchange rates stayed at the levels observed at the end of 2016, we would expect M&A to be valued at £73.3 billion, or around £3.5 billion higher, as seen in Figure 8. This is led by the largest of these deals being agreed with American firms, with sterling appreciating against the dollar over this period. As seen, an appreciation in sterling reduces the value of FDI flows when converted back into sterling, if all else remains equal. The extreme and the adjusted counterfactual are of a similar value, as most deals are agreed in the acquired company's currency, and on outwards M&A the acquired firm is foreign, so we are seeing the full impact of exchange rates on outwards M&A activity.

Figure 8: Impact of exchange rate movements on the largest outward mergers and acquisitions, UK, 2017

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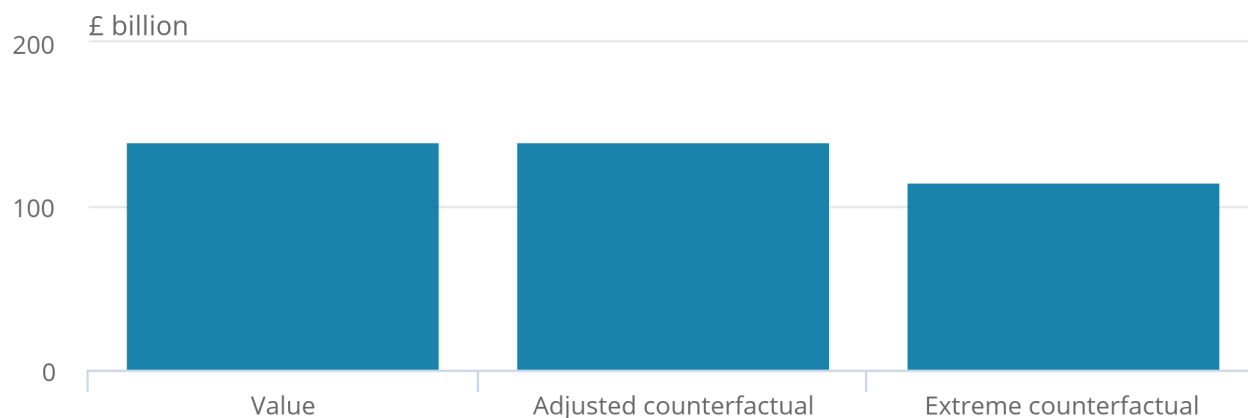
Source: Office for National Statistics

Value of the largest inward M&A deals experienced little effect from movements in exchange rates

The value of inward M&A of the top 20 companies in 2016 was £139.7 billion. However, had exchange rates stayed at the levels observed at the end of 2015, the extreme counterfactual would value M&A activity at £114.4 billion, around £25.3 billion lower. This is due to the largest of these deals being agreed with European firms and the sterling depreciated against the euro during this period. When we consider with which currency the deal was agreed, the adjusted counterfactual value is seen to be £139.5 billion. We see this value as most deals were agreed in sterling, providing a notably smaller exchange rate impact on inward M&A activity values.

Figure 9: Impact of exchange rate movements on the largest inward mergers and acquisitions, UK, 2016

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Source: Office for National Statistics

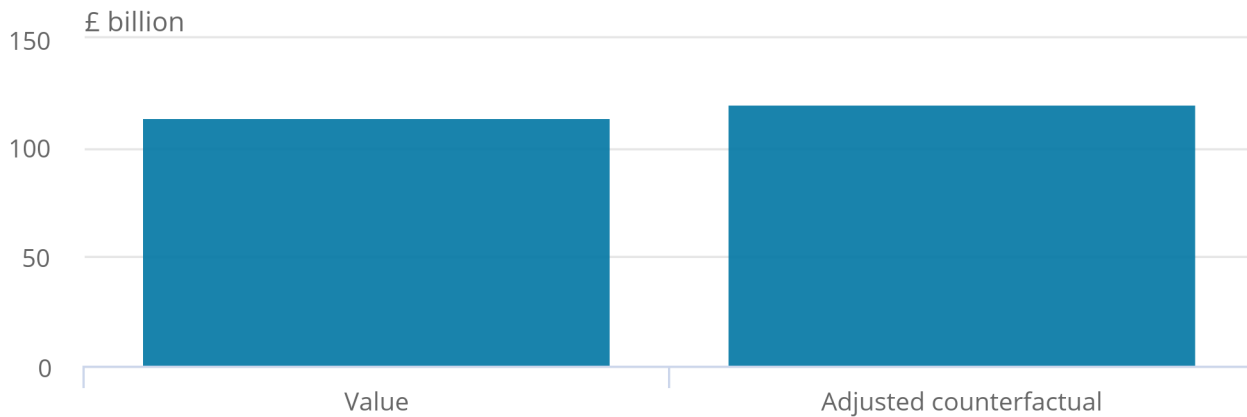
Outward flows in 2017 would have been £5.6 billion higher had the exchange rate not appreciated over the year

Assuming the exchange rate effect on the largest M&A deals in FDI flows is maintained for all FDI flows, we can estimate how much total FDI flows would have been impacted by exchange rate fluctuations. Again, we focus on inflows in 2016 and outflows in 2017, as these are two prominent years where M&A activity had an impact on FDI flows.

Figure 10 shows FDI asset flows would have been around £5.6 billion higher in 2017, had exchange rates remained at 2016 levels. We also estimate that the value of FDI flows would be £119.8 billion. This is due to the appreciation of sterling against the dollar in this period, which lowers the value of FDI flows once converted to sterling.

Figure 10: Impact of exchange rate movements on foreign direct investment asset flows, UK, 2017

Figure 10: Impact of exchange rate movements on foreign direct investment asset flows, UK, 2017

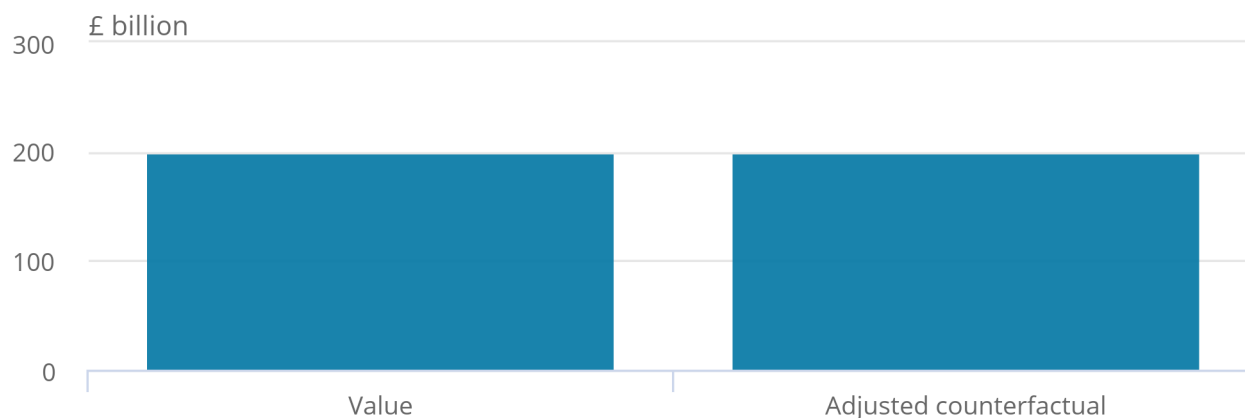


Source: Office for National Statistics

We also see that FDI liability flows were inflated by around £0.4 billion in 2016. If exchange rates had remained at 2015 levels, we estimate that the value of FDI flows would be £198.6 billion as shown in Figure 11. This is due to the depreciation of sterling in this period, which inflates the value of FDI flows once converted to sterling across the period. Due to FDI liability flows mostly occurring in sterling, the effect is smaller.

Figure 11: Impact of exchange rate movements on foreign direct investment liability flows, UK, 2016

Figure 11: Impact of exchange rate movements on foreign direct investment liability flows, UK, 2016



Source: Office for National Statistics

6 . Foreign direct investment by the country of the ultimate controlling parent

In line with international guidance, UK foreign direct investment (FDI) statistics are presented on an immediate parent country basis; as such, geographical compositions reflect direct relationships between investing parties rather than the residence of the ultimate parent companies or transactors.

The presentation of FDI statistics using the immediate counterpart country is useful for analysis of the chain of financial investment positions and flows across countries. However, globalisation has seen an increase in the complexity of multinationals' corporate structures, which often result in investment chains crossing many borders. This raises challenges when trying to answer questions related to who ultimately controls FDI in a particular country. Such questions are important given the impact changes in FDI can have on affected industries and local and national economies. FDI statistics presented by ultimate parent can help by looking through these complex structures to identify the beneficiaries and risk takers of foreign investment.

The method for identifying the ultimate controlling parent country used here identifies the majority shareowner of a company (over 50% of the voting power), and allocates the entire inward FDI position related to that UK business to the country of the ultimate parent. The results therefore do not present from where the financial flow necessarily comes (which the immediate presentation does), but rather identifies the country of the ultimate decision-maker for each UK business receiving FDI. Both presentations are therefore legitimate, but serve different purposes based on users' needs.

An overview of the methodology adopted to produce Experimental Statistics on inward FDI by ultimate controlling parent, and limitations of such methodology, are found in Annex B and should be considered when interpreting these results. As discussed in the annex, the method allocates the entire FDI position (including separate minority shareholders of 10% to 49%) to a single ultimate parent who holds the majority of the business's shares. While a limitation, the method is recognised internationally as a practical approach given the data sources currently available. The methodology has also been developed since last summer's release to better estimate "round tripping" activity.

Data on inward UK FDI positions on both an ultimate and immediate basis over the time series are available from the associated data download.

It is worth noting that unlike earlier sections, Experimental Statistics presented in this (and the next) section use the directional measurement principle rather than the asset and liability measurement principle. An overview of the differences between the two principles is found in Annex A.

It should also be kept in mind that the inward position into the UK from a country may be less than zero when presented on an immediate or ultimate basis. As investments are shown as net values, it is possible for there to be negative values of investment stocks, which are led by loans made to parents more than offsetting investment received from parent companies, referred to as reverse investment. One such example occurs for China, which shows a negative net value of FDI stock into the UK in 2016 as some of the additional investments allocated to China are negative, offsetting other positive investments.

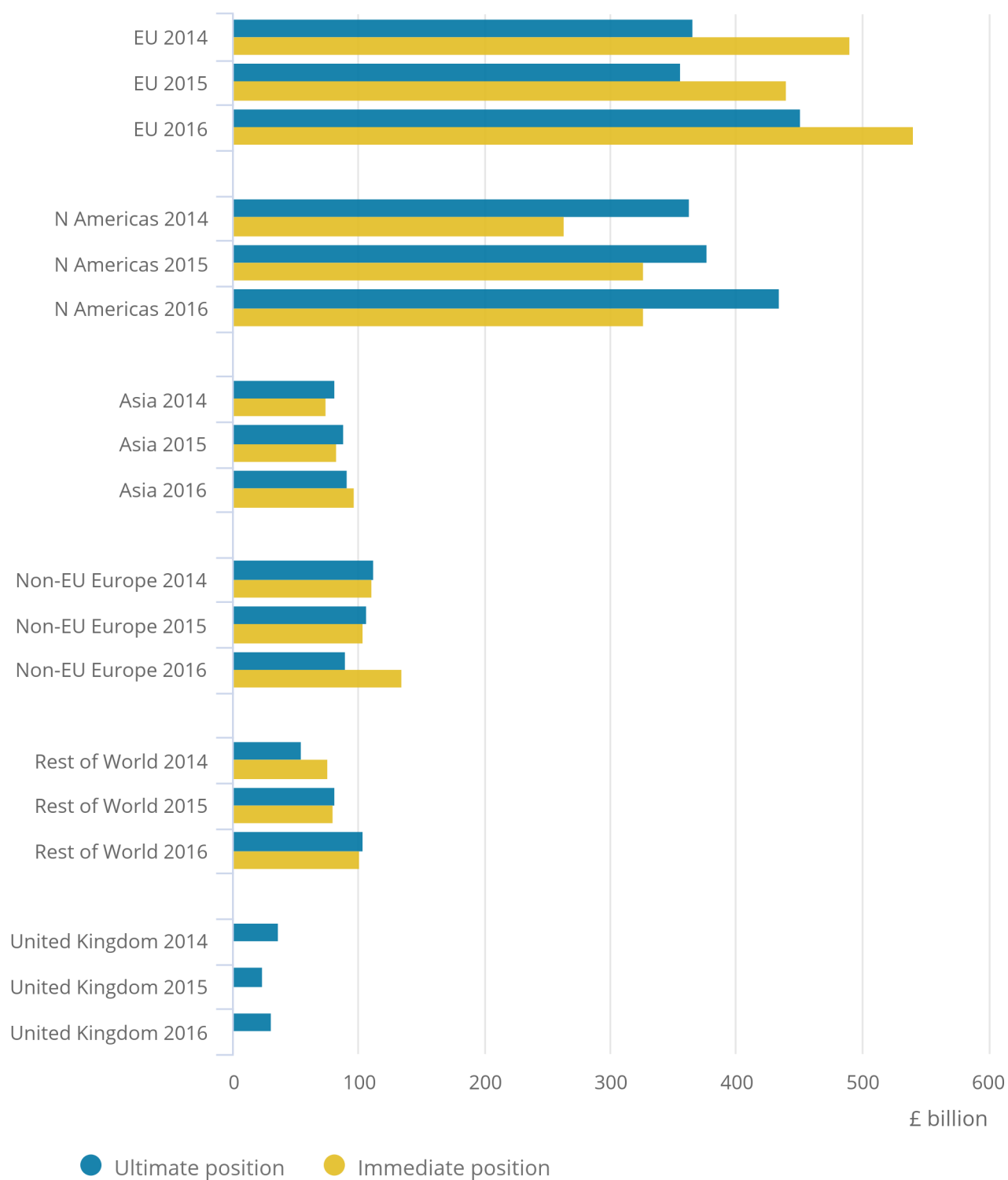
Values of the inward stock of FDI in the UK from the North Americas and EU become very similar when linking to country of the ultimate controlling parent

Through this methodology we can compare the composition of UK inward FDI positions by continent using the immediate parent and ultimate controlling parent countries. The EU is the largest source of UK inward FDI positions when using the immediate parent country, accounting for 45.2% of total inward positions in 2016. However, when linking to the ultimate controlling parent country, as in Figure 12, the EU and the North Americas show very similar inward stock values. In 2015, the North Americas surpassed the EU to become the largest holder of inward stock of FDI in the UK by ultimate controlling parent, although this was reversed in 2016.

A further finding is that £30.7 billion of FDI in 2016 that enters the UK from overseas on an immediate basis is transferred through international subsidiaries, which are ultimately controlled by parent companies based in the UK. This reflects "round-tripping", whereby British companies' foreign subsidiaries reinvest back into the domestic economy.

Figure 12: Inward foreign direct investment positions by continent on immediate and ultimate investing country basis, 2014 to 2016

Figure 12: Inward foreign direct investment positions by continent on immediate and ultimate investing country basis, 2014 to 2016



The largest continental increase when comparing the ultimate and the immediate country of investment is from the North Americas. The results suggest that the stock of FDI held by North American companies in the UK was £107.3 billion (32.8%) higher than on an immediate basis in 2016. This is the only continent through the time series with a much larger inward FDI stock on an ultimate basis than on an immediate basis. The two main continents with greater inward stocks on an immediate basis in 2016 are the EU and non-EU Europe, where inward FDI stocks are £90.8 billion (16.8%) and £44.5 billion (33.2%) lower respectively when presented by the ultimate controlling parent company. Although the EU shows a higher value when presented on an immediate basis, this is led by the Netherlands and Luxembourg. Many other EU countries show increases in their stock of FDI into the UK when presented on an ultimate basis, such as Germany, France, Spain and Belgium.

The US, France and Germany each have large inward investment positions in the UK according to the immediate parent presentation. These increase even further when positions are presented by the ultimate controlling parent country, with increases of 34.3%, 20.9% and 26.6% respectively. A further notable addition to the top 10 inward FDI positions according to the ultimate parent country presentation is Belgium, with its FDI positions becoming the largest from the EU into the UK in 2016. Some of the changes seen in FDI stocks are explained by [inward M&A activity in 2016](#).

The Netherlands and Luxembourg see their FDI positions fall dramatically when comparing the immediate and the ultimate parent country presentation, with falls of 58.5% and 62.4% respectively. These two major financial centres host many “special purpose entities”, which multinationals use to manage and channel investments.

Top 10 countries by value of inward FDI into the UK make up approximately four-fifths of total inward investment on an ultimate basis

Presenting FDI statistics by the ultimate controlling parent provides insight into the role of UK companies investing back into the domestic economy through an overseas subsidiary. This form of “round-tripping” shows the UK having the eleventh largest inward FDI position in the UK in 2016, down from eighth and ninth in 2014 and 2015 respectively.

Over the time series, the top 10 countries make up approximately four-fifths of the total inward investment into the UK on an ultimate basis, and the US specifically accounts for around one-third of the total from 2014 to 2016.

We see that the US has the largest inward FDI position in the UK in 2016 when presented on both an immediate and ultimate basis. The greatest change in rank for one of the largest countries by value on these two forms of presentation is that of Belgium. We estimate that Belgium changes from the twelfth-largest country for inward stock of FDI into the UK on an immediate basis, to the second-largest country when presented on an ultimate basis. On the other hand, Luxembourg changes from the third-largest country on an immediate basis to the eighth-largest country on an ultimate basis.

Table 1: Comparison between the top 10 countries with the largest inward UK foreign direct investment positions on ultimate basis, 2016

Country	Ultimate Position (£ billion)	Immediate Position (£ billion)	Percentage change from immediate position	Change in rank of value from immediate to ultimate basis
United States	413.9	308.1	34.3	=
Belgium*		26.4		+10
Netherlands	88.0	212.1	-58.5	-1
Germany	75.7	59.8	26.6	+2
France	72.4	59.9	20.9	=
Japan	52.4	46.5	12.7	+1
Switzerland	46.8	45.3	3.3	+1
Luxembourg	43.2	114.8	-62.4	-5
Spain*		30.3		+1
British Virgin Islands*		34.1		-1
Rest of the World	245.0	262.1	-6.5	=

Source: Office for National Statistics

Notes:

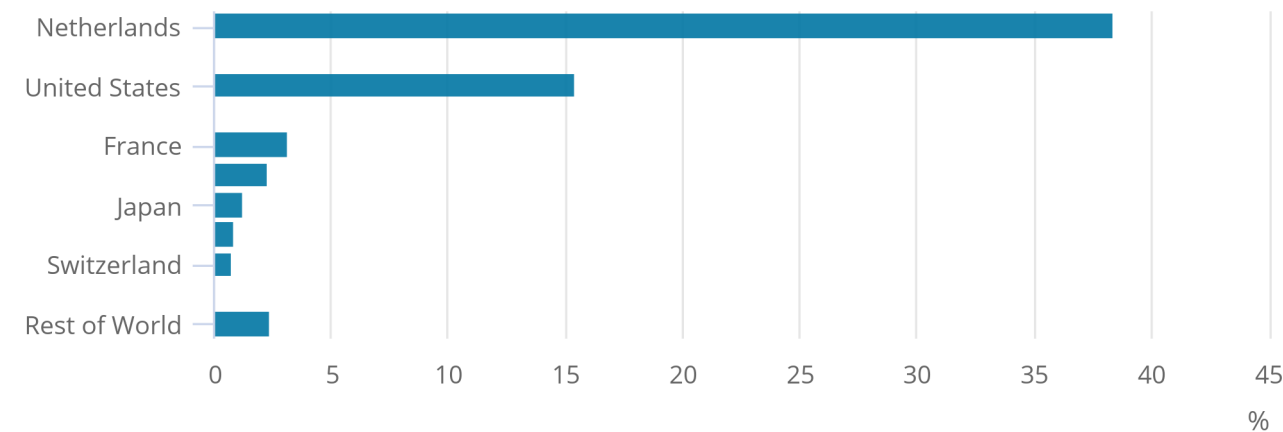
1. (*) Values suppressed to mitigate disclosure.

The Netherlands and Luxembourg have much smaller values of inward FDI into the UK on an ultimate controlling parent basis

The 58.5% decline in the Netherlands' inward FDI positions in the UK when presented using the ultimate, rather than the immediate, parent country is due mainly to investment from other countries being transited through the Netherlands in 2016. Of the £212.1 billion reported as inward FDI positions from the Netherlands on an immediate basis, £81.5 billion (or 38.4%) remains ultimately controlled by the Netherlands and £32.7 billion or 15.4% from the US (Figure 13).

Figure 13: The largest ultimate investing country for UK companies with a Dutch immediate parent, 2016

Figure 13: The largest ultimate investing country for UK companies with a Dutch immediate parent, 2016



Source: Office for National Statistics

Notes:

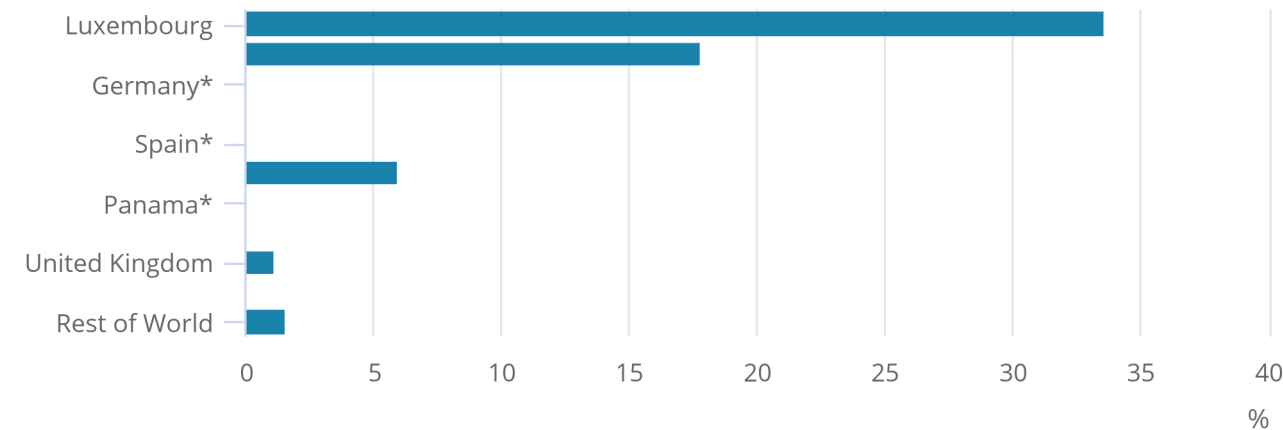
- 1. (*) Values suppressed to mitigate disclosure.

Luxembourg saw a 62.4% fall in its position in the UK when presented on an ultimate basis compared with the immediate basis in 2016. This is also due to investment from other countries being transited through Luxembourg. However, Luxembourg did enter the top 10 largest countries for inward investment to the UK on an ultimate basis in 2016 for the first time in the time series. Similar to the Netherlands, the investment that ultimately comes from Luxembourg is the largest origin for UK inward investment from that country, with a value of approximately one-third of immediate investment attributable to Luxembourg.

To this effect, ultimate investment values as a proportion of immediate investment for both the Netherlands and Luxembourg are much lower than average, as companies often channel their investments to the UK through these two countries.

Figure 14: The largest ultimate investing country for UK companies with a Luxembourg immediate parent, 2016

Figure 14: The largest ultimate investing country for UK companies with a Luxembourg immediate parent, 2016



Source: Office for National Statistics

Notes:

- 1. (*) Values suppressed to mitigate disclosure.

7 . Contributions of businesses engaged in foreign direct investment to the UK economy

While this and previous articles provide a comprehensive insight into foreign direct investment (FDI) statistics and their effect on balance of payments, there has been growing demand for statistics that help explain the importance of globalisation to the real economy.

The analysis in this section presents experimental results of linking FDI microdata with both our main structural business survey, the Annual Business Survey (ABS), and the business register, the Inter-Departmental Business Register (IDBR).

It is important to note a number of points when interpreting statistics presented in this section. First, the FDI survey is designed to collect consolidated accounts for business groups in the UK, while the ABS collects granular information on business units further down in the ownership structure. As such, the microdata linking exercise was conducted at a business group level¹, where all units within a business group were marked as having a “FDI relationship” if the group was identified as receiving FDI.

Second, in contrast to other authors' microdata linking exercises², this analysis links the entire population of both the FDI and ABS and therefore includes both sampled returns and estimation. The approach has been used as it overcomes issues with grossing using a- and g-weights, where sampled businesses' FDI statuses are assumed representative of entire non-sampled cells. This approach apportions gross domestic product (GDP) and other values to the represented businesses, who are in turn identified by their FDI status.

Third, these statistics cannot be used alone to determine the direction of causality between FDI and the real economy; for instance, while FDI-related firms are found to be more productive, these statistics cannot be used in isolation to deduce whether firms in receipt of FDI become more productive or whether productive firms attract FDI.

Fourth, note that there are a number of industry groupings that are omitted from the analysis in this section – most notably financial services – due to the industry coverage of the ABS³.

In addition to this, please note that data presented in this section are for the reference period of 2014 to 2016, with a focus on the most recent available data. FDI statistics are presented on an inward or outward basis as applicable, use the directional measurement principle and report on an immediate parent basis. Annex C contains further details on the methods for this section.

While only 1.1% of UK business receive FDI from abroad, they employ approximately 4 million people in the UK

Table 2 presents the contributions made to the UK economy by businesses in receipt of FDI. While only 1.1% of UK businesses are FDI recipients, they contribute notable amounts to the UK economy, accounting for approximately 4 million jobs and contributing 27.0% of UK approximate gross value added⁴ (aGVA), and 27.2% of acquisitions of capital expenditure (closely related to investment). These large contributions by a small number of businesses reflect the nature of UK FDI recipients, who are generally large multinational businesses.

Table 2: Shares of UK business counts, employment, aGVA and acquisitions of capital expenditure attributable to firms based on foreign direct investment status, 2016

	UK businesses	Employment		aGVA		Acquisitions of capital expenditure	
	(% total)	(million)	(% total)	(£ billion)	(% total)	(£ billion)	(% total)
1) FDI recipients	1.1	4.0	16.8	335.1	27.0	54.7	27.2
2) Non-FDI recipients	98.9	19.8	83.2	907.4	73.0	146.3	72.8

Source: Office for National Statistics

Note:

1. Employment figures presented in this section differ from those presented in the Annual Business Survey release as they are based on micro-data from the Inter-Departmental Business Register, which uses a combination of business survey returns and administrative sources to populate employment estimates for every individual UK business.

2. aGVA data presented use 2016 market prices.

3. If one reporting unit from an enterprise group has any form of FDI link, then this status has been given to the whole enterprise group.

4. The sum of constituent items in tables may not always agree exactly with the totals shown due to rounding.

5. aGVA and acquisitions of capital expenditure variables are based on micro-data from the ABS.

UK employment by FDI recipients has been relatively stable at 4.0 million between 2014 and 2016. Additionally, aGVA and acquisitions of capital expenditure for FDI recipients have remained stable over the period at around £335 billion and £55 billion, respectively.

In addition to looking at aggregate proportions, it is useful to compare differences between businesses with and without FDI relationships in more detail. To ensure the results are not skewed by different distributions of firm size, comparisons are made between businesses of similar size. In the following figures, the categories “large”, “medium” and “small” are used to refer to businesses with more than 250 employees, between 50 and 249 employees and fewer than 50 employees respectively.

Figure 15 presents the percentage difference between the average employment of businesses with and without an inward FDI relationship by size and by industry grouping for 2016. Positive percentages would indicate that the FDI-related businesses have a higher average employment, while negative percentages would indicate FDI-related firms have a lower average employment. This analysis compares UK-resident firms that receive FDI, regardless of whether they invest abroad, against UK firms that do not have a FDI relationship.

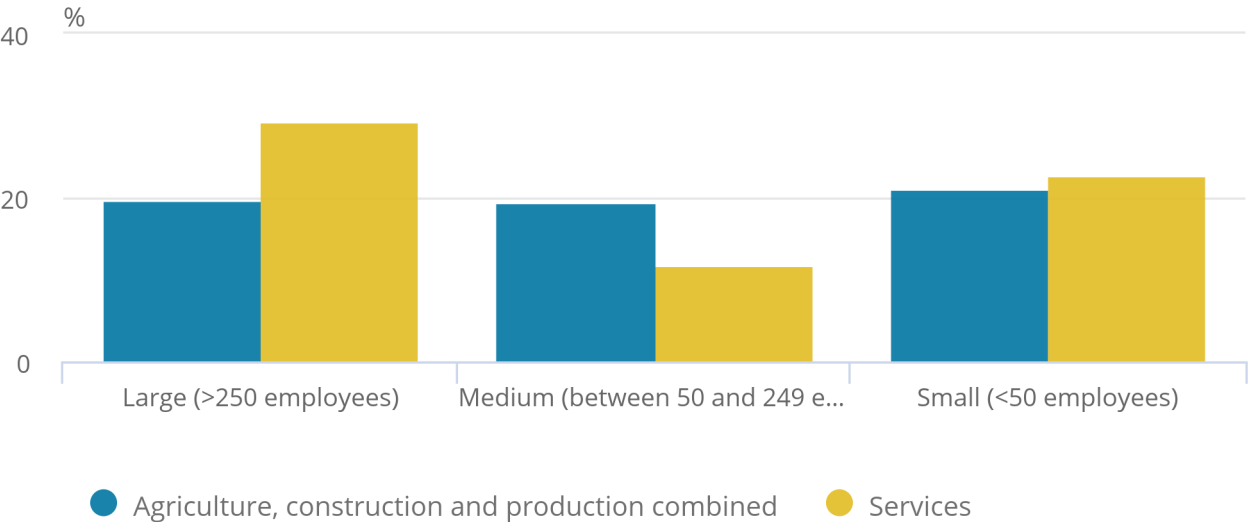
As can be seen, businesses with a FDI relationship tend to have higher employment than their counterparts without a FDI link. This difference is consistent among business size bands for agriculture, construction and production firms, whereby those with a FDI link employ approximately 20% more staff on average. For large and small-sized businesses, it is those in services industries that have the greater difference in employment on average. Large companies with a FDI link typically have 29.2% higher employment whereas the difference is 22.8% between small businesses.

Figure 15: Employment in firms with inward FDI link relative to firms with no FDI link, by size and operating industry

Percentage difference of means, UK, 2016

Figure 15: Employment in firms with inward FDI link relative to firms with no FDI link, by size and operating industry

Percentage difference of means, UK, 2016



Source: Office for National Statistics

Difference in approximate GVA, depending on whether a business receives FDI, most notable for services businesses

The difference in aGVA of businesses with and without an inward FDI link is greater, compared with difference in employment. Figure 16 presents the percentage difference between the average aGVA produced by firms with an inward FDI relationship compared with firms without a FDI relationship in 2016. The biggest differences between those companies with and those without inward FDI links are in services across all sizes of business. The aGVA for each of these is more than double that of firms with no FDI links, with aGVA of FDI businesses being 232.3% higher, more than three times, among medium-sized services firms.

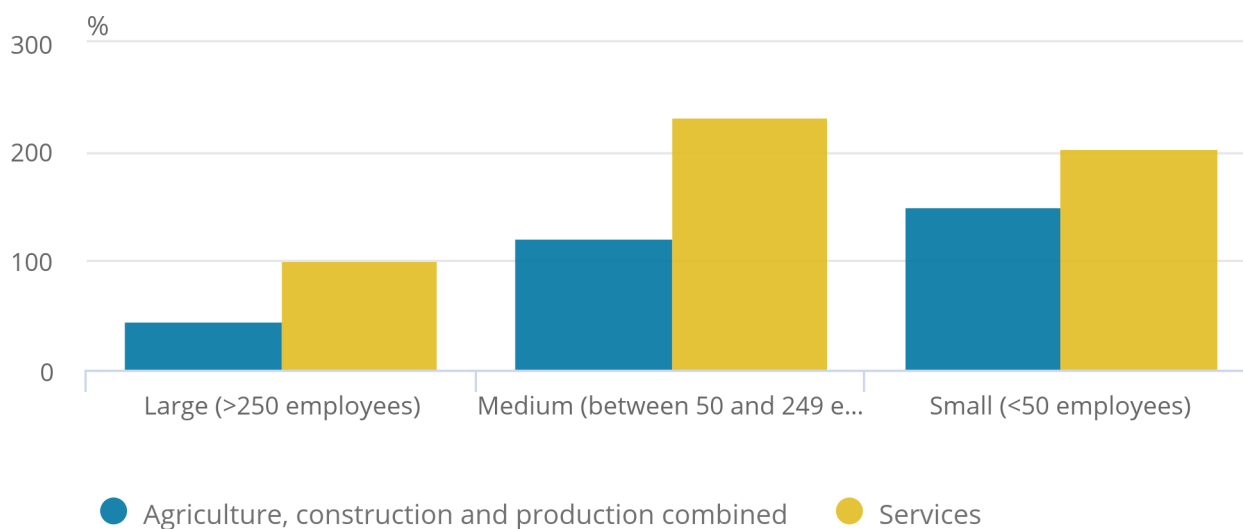
Small and medium-sized firms in agriculture, construction and production with an inward FDI link have average aGVA that is more than double that of those with no inward FDI links. Likewise, large firms in this industry grouping that receive FDI have 46.0% higher average aGVA than those without. Therefore, while firms that receive FDI in agriculture, construction and production create notably more aGVA than their counterparts without such FDI relationships, it is services businesses that tend to have even greater differences in average aGVA between firms with and without inward FDI links.

Figure 16: aGVA of firms with inward FDI link relative to firms with no FDI link, by size and operating industry

Percentage difference of means, UK, 2016

Figure 16: aGVA of firms with inward FDI link relative to firms with no FDI link, by size and operating industry

Percentage difference of means, UK, 2016



Source: Office for National Statistics

UK businesses that received FDI were more productive across all industry groups in 2016

From information gathered on employment and aGVA, it is possible to compare the productivity of businesses with and without FDI relationships. This article uses the average amount of aGVA per employee. Studies have shown that businesses in receipt of FDI tend to be more productive. This could be down to two reasons: either that productive businesses tend to attract investment as large multinationals look to access new profitable markets or acquire productive assets; or foreign competitors entering the domestic market are inherently more productive.

The latter reason indicates that foreign businesses may incur higher costs than domestic firms, such as information costs relating to the local market or the cost incurred in establishing relationships with local suppliers. As such, businesses overcoming these barriers must possess unique productivity advantages such as economies of scale, better organisational and management practices, or possessing and transferring better technology and intellectual property. Furthermore, the entry of a new foreign competitor into a market is also likely to spur competition with existing businesses, therefore encouraging increases in productivity among both new and existing competitors.

These Experimental Statistics suggest that UK businesses in receipt of FDI are indeed more productive on average. The differences are greatest among small firms in both industry categories for 2016. Again, the difference in productivity between UK firms that receive FDI and those that do not is clearest with services industries. In 2016, small and medium-sized services firms that received FDI were 147.2% and 197.4% respectively more productive on average than their counterparts that did not receive FDI. The difference in average productivity is similar between small and medium-sized firms in agriculture, construction and production, where firms with an inward FDI link are 107.2% and 85.7% respectively more productive than their respective non-FDI counterparts.

In 2016, we see that UK firms that received FDI were more productive in each of the three referenced industry groups. However, this has not always been the case over the time series, as seen in Figure 17. We see that construction firms that did not receive foreign investment were seen to be more productive on average, albeit marginally, than construction firms that did receive overseas investment in 2014 and 2015. This pattern changed in 2016, where construction firms in the UK aligned with other industries by showing greater productivity for firms that received foreign investment, on average.

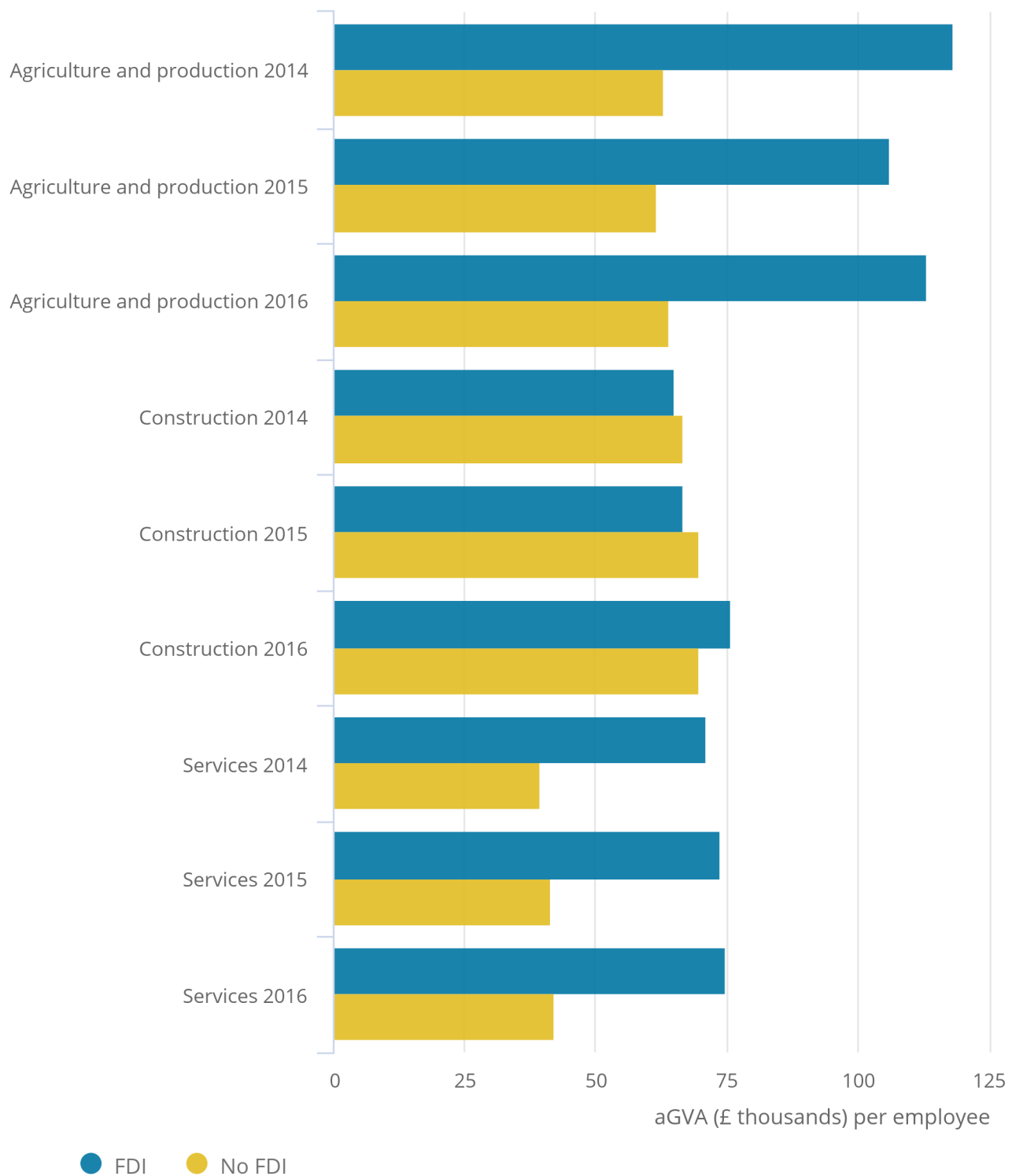
Additionally, we see throughout the three years that firms that receive FDI in the agriculture and production industry grouping are the most productive on average of those presented. This is led by production firms that receive FDI, which were the most productive of any industry group over the time series.

Figure 17: Mean productivity of firms with inward FDI link relative to firms with no FDI link, by operating industry

aGVA (£ thousands) per employee, UK, 2014 to 2016

Figure 17: Mean productivity of firms with inward FDI link relative to firms with no FDI link, by operating industry

aGVA (£ thousands) per employee, UK, 2014 to 2016



Notes:

1. Productivity refers to aGVA per worker.

Productivity growth from 2015 to 2016 was estimated to be less than 1% for UK businesses, regardless of FDI link

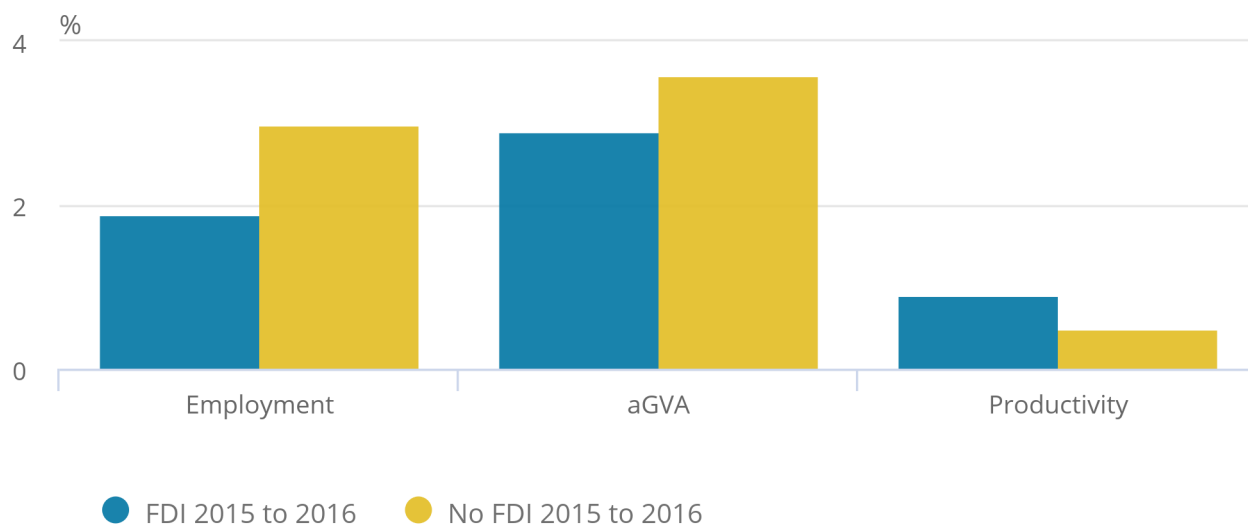
It is also useful to analyse how important indicators have changed annually. This analysis focuses on the change in employment and aGVA from 2015 to 2016 for firms that have maintained their FDI (or lack of) relationship across both periods. These indicators feed through to productivity growth and Figure 18 breaks down these changes by FDI status.

We see that for jobs and value-added, it is firms that do not have a FDI link that are driving these annual changes. This may be expected, as firms without a FDI relationship make up the vast majority of UK businesses, yet many firms that engage in FDI are large multinationals that could be expected to be driving changes in the number of jobs and value-added in the UK.

A greater level of growth of aGVA compared with employment for FDI-linked firms explains why productivity has grown at a greater rate over the year than is true for firms without a FDI relationship. It is notable that the average productivity growth for firms from 2015 to 2016 has been less than 1%, regardless of FDI status.

Figure 18: Growth rate of employment, aGVA and productivity by foreign direct investment status, UK, 2015 to 2016

Figure 18: Growth rate of employment, aGVA and productivity by foreign direct investment status, UK, 2015 to 2016



Source: Office for National Statistics

Notes:

1. aGVA data presented use 2016 market prices.
2. Productivity refers to aGVA per worker.

Over 2.1 million employees in the UK worked for businesses in receipt of FDI from the EU in 2016

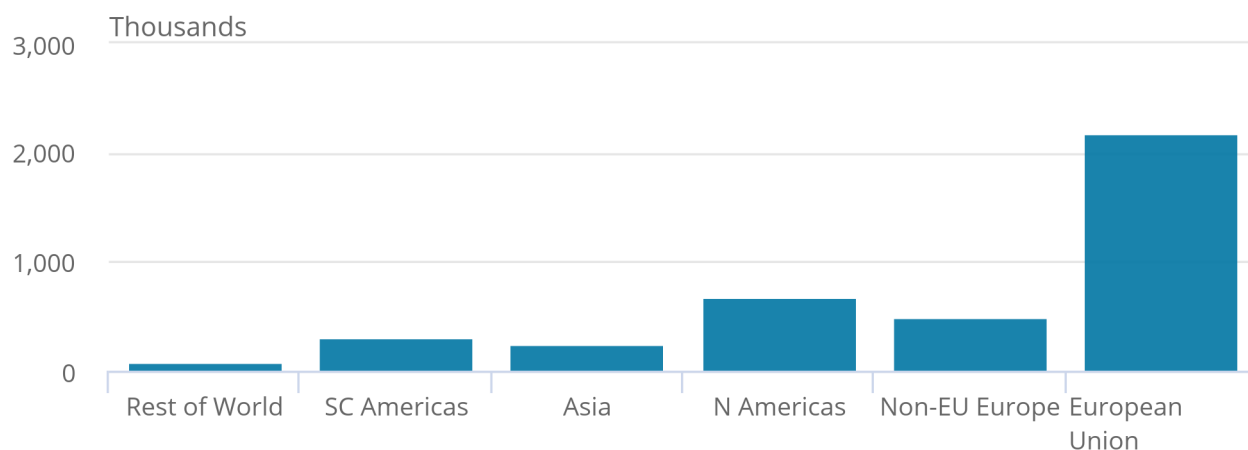
In addition to determining the number of UK jobs, aGVA and other macroeconomic variables accounted for by UK businesses in receipt of FDI, microdata linking can also indicate these proportions by geographical composition from where the investment is received.

Figure 19 breaks down the 4 million jobs accounted for by UK businesses with an inward FDI relationship by geographical region in 2016. As can be seen, just over half of the UK jobs accounted for by businesses in receipt of foreign investment received that investment from EU countries. The Netherlands (606,000), Luxembourg (442,000), France (312,000) and Germany (275,000) are the four largest countries in terms of UK employment in businesses in receipt of FDI from the EU.

The North Americas accounted for the second-largest employment by geographical region, with 17% of the UK employment by firms in receipt of FDI. The majority of this is linked to businesses in receipt of FDI from the US, who account for 631,000 jobs. The other regions represent under one-third of the overall employment of businesses in receipt of FDI.

Figure 19: Employment (thousands) by UK businesses in receipt of inward foreign direct investment by geographical region of investment, 2016

Figure 19: Employment (thousands) by UK businesses in receipt of inward foreign direct investment by geographical region of investment, 2016



Source: Office for National Statistics

Notes:

1. Employment figures presented in this section differ from those presented in the Annual Business Survey release as they are based on microdata from the Inter-Departmental Business Register, which uses a combination of business survey returns and administrative sources to populate employment estimates for every individual UK business.

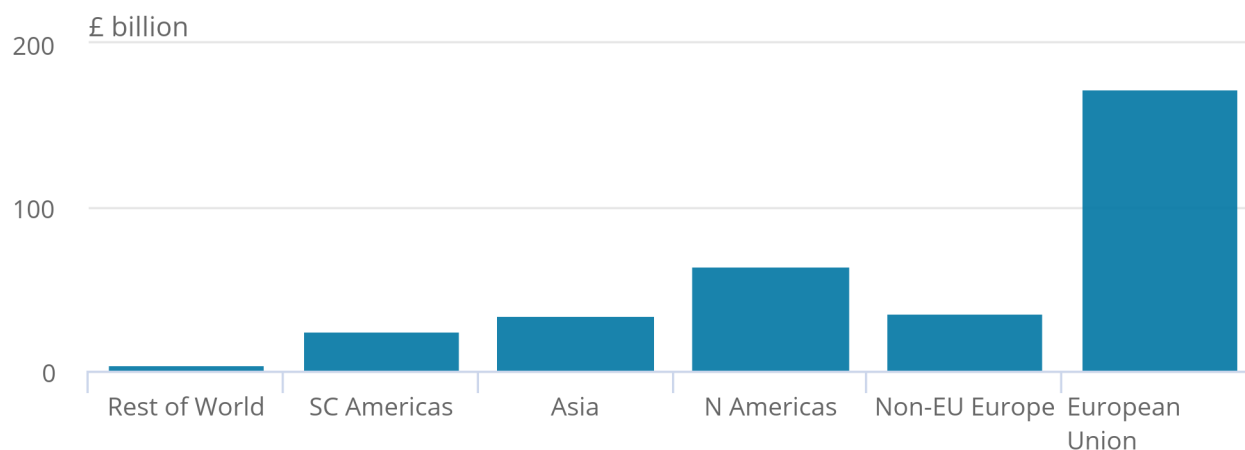
FDI from the EU accounted for over £170 billion of aGVA in the UK in 2016

Figure 20 presents a geographical composition of the aGVA accounted for by UK businesses in receipt of FDI. Similar to employment, slightly more than half of UK aGVA accounted for by businesses in receipt of FDI received that investment from the EU. The Netherlands (£45.5 billion), Luxembourg (£37.9 billion), France (£27.3 billion) and Germany (£20.3 billion) once again produced the largest amounts of aGVA for businesses with inward FDI relationships from the EU in 2016.

The North Americas were the second-largest geographical region in 2016 in terms of the aGVA accounted for by firms in receipt of FDI, with 19%. The majority of this was for businesses in receipt of FDI from the US (£56.6 billion).

Figure 20: Approximate gross value added by UK businesses in receipt of inward foreign direct investment by geographical region of investment, 2016

Figure 20: Approximate gross value added by UK businesses in receipt of inward foreign direct investment by geographical region of investment, 2016



Source: Office for National Statistics

Notes:

1. aGVA data presented use 2016 market prices.

From this information, it is possible to compare the average productivity of UK firms, based on the geographical region from which they receive foreign direct investment from abroad. Figure 21 is indexed to a base of average productivity for a UK firm without any FDI link, which is represented by “Without FDI”. Therefore, for continents that have values higher than 100, UK firms are that much more productive than an average UK firm without a FDI link if they receive FDI from parents that are resident in these continents. For example, if a continent has a value of 120, then a UK firm that receives FDI from a parent that is resident in that continent is 20% more productive than an average UK firm that does not have a FDI link.

Contextually, we see that a UK firm that receives FDI from the EU is over 70% more productive on average than a given UK firm that does not receive FDI from abroad. On the other hand, if a UK firm receives investment from an Asian parent, on average, it is almost three times more productive than an average UK firm that does not receive foreign investment.

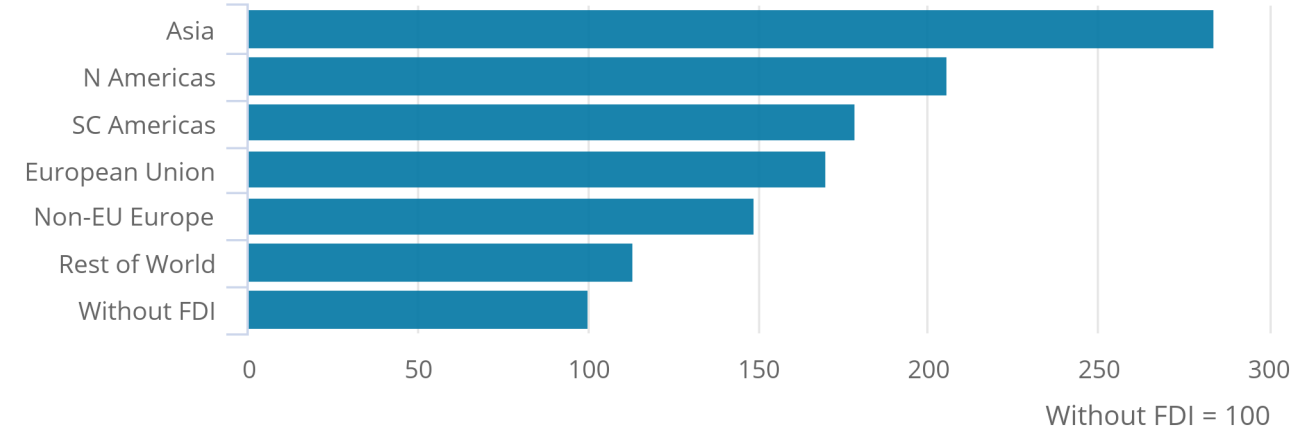
Therefore, we see that UK firms that receive FDI from any geographical region are more productive on average than UK firms that do not have a FDI relationship. Looking at specific regions, we estimate that the average productivity premium for firms that receive FDI from either the EU, non-EU Europe or the rest of the world is less than the premium for investments from a company resident in the South and Central Americas, North Americas or Asia.

One main reason that UK firms that receive FDI from Asia are notably more productive in relative terms than from any other region is led by Japan. In 2016, UK firms that received FDI from Japan were twice as productive as UK firms that received FDI from the US, on average.

However, caution is recommended when interpreting these statistics, as differences in productivity between regions is likely to reflect characteristics of certain businesses within the UK, and can be dominated by a few large multinationals, especially when looking at more granular geographical breakdowns.

Figure 21: Productivity index of UK businesses in receipt of inward foreign direct investment by geographical region of investment, 2016

Figure 21: Productivity index of UK businesses in receipt of inward foreign direct investment by geographical region of investment, 2016



Source: Office for National Statistics

Notes:

- 1. Productivity refers to aGVA per worker.

Less than 2% of UK businesses had some sort of FDI relationship in 2016, accounting for 30% of employment and over 40% of aGVA

It is also possible to compare the productivity of UK firms based on their FDI relationship. Specifically, by separating firms into four categories, we can analyse how productivity differs depending on the type of FDI relationships in which UK businesses are involved.

In addition to considering the contributions FDI recipients make to the UK economy, comparisons can also be made with UK businesses that invest abroad, and also those that both receive FDI and are FDI investors themselves.

Table 3 presents the main characteristics of businesses with any sort of FDI link. It shows that while only 1.8% of UK businesses were found to have a FDI relationship, these large multinationals control sizable proportions of UK economic activity. UK businesses who only have an inward FDI link – that is, UK-resident businesses that receive investment from abroad – make up less than 1% of the total number of UK businesses, but provide almost 10% of aGVA and 6.2% of employment in the UK. Firms that only have an outward FDI relationship (that is, they hold investments abroad), are fewer in number but make up an even greater proportion of UK aGVA (9.3%) and employment (15.0%). Firms that have both inward and outward FDI relationships were fewer still, accounting for just 0.3% of UK businesses; however, they account for 13.3% of aGVA and 8.2% of UK employment.

Firms that have any form of FDI link also accounted for over two-fifths of all acquisitions of capital expenditure in 2016. This suggests that the small number of UK firms that have a FDI link make up a disproportionately large share of new capital spending on physical assets.

Table 3: Shares of UK business counts, employment, aGVA and acquisitions of capital expenditure attributable to firms based on foreign direct investment links and components, 2016

	UK businesses		Employment		aGVA		Acquisitions of capital expenditure	
	thousand	% total	million	% total	£ billion	% total	£ billion	% total
1) Any FDI link	43.3	1.8	8.2	29.4	608.5	40.1	104.3	41.6
of which:								
only inward FDI link	20.7	0.9	1.7	6.2	141	9.3	24.5	9.8
only outward FDI link	15.9	0.7	4.2	15	266.4	17.6	48.9	19.5
both inward and outward FDI links	6.7	0.3	2.3	8.2	201	13.3	30.9	12.3
2) No FDI link	2,387.8	98.2	19.8	70.6	907.4	59.9	146.3	58.4

Source: Office for National Statistics

Note:

1. Employment figures presented in this section differ from those presented in the Annual Business Survey release as they are based on micro-data from the Inter-Departmental Business Register, which uses a combination of business survey returns and administrative sources to populate employment estimates for every individual UK business.
2. aGVA data presented use 2016 market prices.
3. If one reporting unit from an enterprise group has any form of FDI link, then this status has been given to the whole enterprise group.
4. The sum of constituent items in tables may not always agree exactly with the totals shown due to rounding.
5. aGVA and acquisitions of capital expenditure variables are based on micro-data from the ABS.

UK firms who only receive FDI from abroad are more productive than those who only invest abroad

Similar to the previous analysis of inward FDI recipients, UK businesses' productivity per worker can be analysed by whether they are FDI investors, a FDI recipient, both, or neither. As shown in Table 4, businesses who have both inward and outward FDI relationships are the most productive on average, followed very closely by businesses that receive FDI from abroad – these businesses' productivity is 90.1% and 77.3% higher respectively than businesses that had no FDI relationship in 2016.

It is perhaps unsurprising that firms which both invest abroad and receive investment are seen to be the most productive by any form of FDI link presented, as these are likely to be larger multinational companies that can exploit multiple markets and economies of scale. Interestingly, the productive premium of only conducting FDI abroad but not receiving any FDI falls to 37.8% compared with UK businesses with no FDI relationship in 2016.

Table 4: Productivity of UK companies based on form of foreign direct investment link, aGVA (£ thousands) per employee, 2016

	Mean productivity of UK companies (aGVA per worker, £ thousands)
1) Firms with any FDI link	73.8
of which:	
only inward FDI link	81.4
only outward FDI link	63.3
both inward and outward FDI links	87.3
2) Firms with no FDI link	45.9

Source: Office for National Statistics

Businesses that have a FDI relationship are more likely to trade internationally in goods

In addition to comparing businesses with and without FDI relationships, we can also compare businesses that trade internationally in goods with those that do not from binary questions on the ABS.

Businesses that invest abroad or that are in receipt of FDI are exposed to international investors, who may have either invested to set up a UK presence or acquired UK businesses to access UK markets. The international focus of these businesses is also extended to trade, as many FDI-related businesses are part of multinationals' global value chains.

This is demonstrated in Table 5, which presents the proportion of UK businesses with and without any FDI relationship that engage in international trade in goods. Here, the proportion of businesses that export and import goods was far higher for businesses with any FDI relationship (18%) than for those without (2%). We also see that UK firms are more likely to import than export goods, regardless of their FDI relationship, or lack of. What is noteworthy is that firms with any FDI relationship are notably more likely to import than export, whereas firms that do not have any form of FDI link are only slightly more likely to import than export. This is likely to suggest that firms with FDI links are more interconnected in international markets on both sides of trade in goods.

Table 5: Trade in goods status of firms based on form of foreign direct investment link, percentage of UK total, 2016

	Exporter	Importer	Importer and Exporter
1) Firms with any FDI link	24	29	18
of which:			
only inward FDI link	23	29	16
only outward FDI link	22	26	17
both inward and outward FDI links	37	41	30
2) Firms without any FDI link	5	7	2

Source: Office for National Statistics

Note:

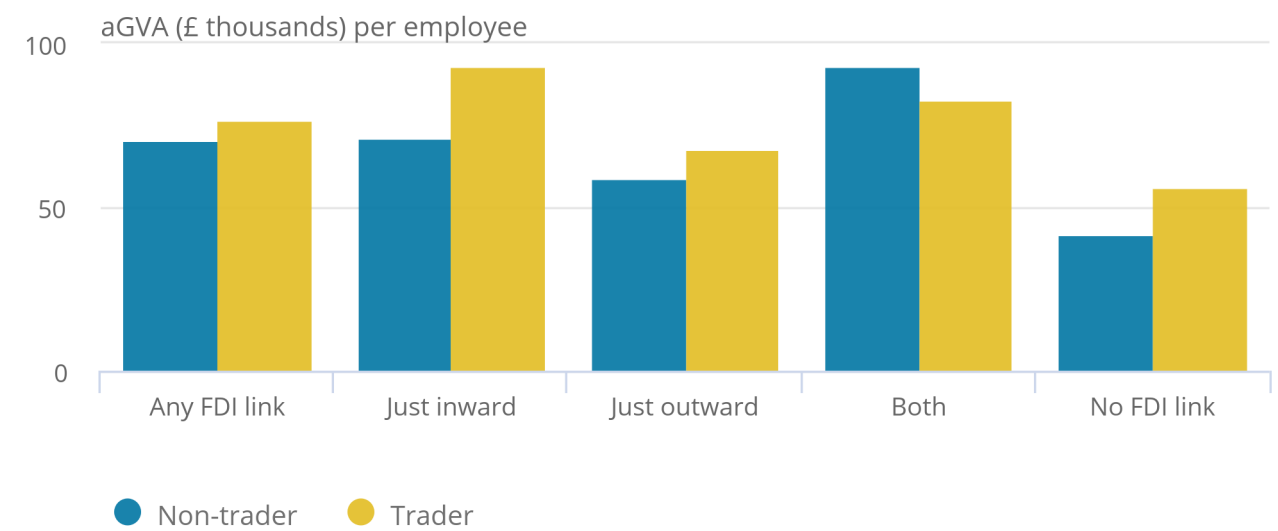
1. If one reporting unit from an enterprise group is an exporter, importer or both, then this status has been given to the whole enterprise group.

It is possible to extend the earlier productivity analysis to compare international traders in goods with and without a FDI relationship (for context, estimates indicate that firms that trade in goods internationally represent around one-tenth of all UK businesses). As can be seen in Figure 22, trading of goods internationally increases the average productivity of firms for most FDI relationships.

The average productivity gain of exporting or importing is evident for those that do not have a FDI relationship (34%), notably more so than for firms that do have a FDI link (9%). Firms that both receive foreign investment and invest abroad do not experience any productivity gain from trading their goods internationally; and firms that only receive investment from abroad gain more productivity from trading in goods internationally than is the case for firms that only invest abroad.

Figure 22: Productivity by trade in goods status and foreign direct investment relationship, aGVA (£ thousands) per employee, UK, 2016

Figure 22: Productivity by trade in goods status and foreign direct investment relationship, aGVA (£ thousands) per employee, UK, 2016



Source: Office for National Statistics

Notes:

- 1. Productivity refers to aGVA per worker.

We also find that results are very similar when looking solely at whether a business exports goods (regardless of import status).

We estimate that UK business with a FDI link that export goods are 7% more productive than UK businesses with a FDI link but who do not export. This changes to a 32% productivity premium when comparing exporters and non-exporters among businesses with no FDI link.

Therefore, we estimate that UK businesses show higher average productivity from exporting, while the productivity premium for exporters is greater for those without any FDI link compared with businesses with such a link.

The contribution of FDI-related businesses to the UK economy

As already discussed, caution is recommended when interpreting the results presented in this section, as these statistics only describe the characteristics of UK businesses with FDI relationships, rather than suggesting causality. With this in mind, the findings presented do support a widespread view that businesses with FDI links tend to be larger and contribute substantial amounts of economic activity in the UK.

Furthermore, even when categorising by industry and business size, businesses with FDI links are found to, on average:

- have larger workforces
- contribute more to gross domestic product (GDP)
- have higher productivity
- be more likely to engage in international trade in goods

Even when only comparing the productivity of UK businesses engaged in international trade, the productivity of those with a FDI relationship is higher – although the productivity gain does narrow.

The economic contributions of businesses in receipt of FDI can also be broken down by the geographical region the investment is received from. Doing so shows that the EU accounts for just over half of the 4 million employees and £335 billion aGVA accounted for by businesses in receipt of FDI in 2016, while the US was the single-largest country, accounting for 631,000 employees and £56.6 billion aGVA. Finally, by analysing FDI relationships, we see that UK firms that have any form of investment relationship abroad are notably more productive than UK firms that do not have such a relationship, on average.

Comparing different forms of FDI links, UK firms that invest abroad account for a higher level of jobs and GDP in the UK than UK firms that receive investment from abroad. Despite this, in 2016, firms that only received investment from abroad (and did not invest abroad) had higher average productivity than firms that only invested abroad (and did not receive FDI).

Notes for: Contributions of businesses engaged in foreign direct investment to the UK economy

1. Further information on the structure of the IDBR can be found in [Evans and Welpton](#).
2. For more information on other authors' microdata linking exercises, see [UK trade in goods and productivity: new findings](#).
3. Further information on the ABS can be found in the [ABS Quality and Methodology Information \(QMI\) report](#).
4. Approximate gross value added (aGVA) measures the value of goods and services produced and is closely linked to gross domestic product (GDP), although GDP includes taxes minus subsidies in production.

8 . Future research and developments

A number of the topics presented in this analysis reflect the initial results of on-going research and development work for foreign direct investment (FDI) statistics.

We are working closely with international partners to develop our understanding of FDI asymmetries in addition to measures of FDI on an ultimate parent company basis. We would be interested in receiving suggestions on other areas of analysis that users would find particularly useful for their work. Please send your suggestions via email to fdi@ons.gov.uk or by contacting Sami Hamroush on +44 (0)1633 455087.

9 . Acknowledgements

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10 . Quality and methodology

The [Foreign direct investment Quality and Methodology Information](#) report contains important information on:

- the strengths and limitations of these data and how they compare with related data
- uses and users of these data
- how the output was created
- the quality of the output including the accuracy of these data

11 . Annex A: Differences between the directional and asset and liability measurement principles

Background

Official foreign direct investment (FDI) statistics produced by Office for National Statistics can be presented using two different measurement principles: the asset and liability principle and the directional principle. In line with international guidelines, the asset and liability principle is used when presenting FDI statistics within the [UK Balance of Payments](#), while the directional measurement principle is used when presenting country and industry breakdowns in the [FDI statistical bulletin](#).

Headline FDI statistics are derived using several variables. Positions refer to the value of the stock of investment at the end of a period and comprise equity positions of quoted and unquoted shares; branch assets and liabilities; and loan positions of preference shares, short- and long-term intercompany loans, and debt securities. Investment relationships between parent companies and their affiliates are not necessarily “one way”, as affiliates such as subsidiaries can also invest or lend to their parent companies. It is the treatment of these “reverse investments” that is the main distinction between the two measurement principles.

The asset and liability measurement principle

- Used to present statistics in the UK Balance of Payments, namely the current account for FDI income, financial account for FDI flows, and international investment position for FDI positions.
- The principle focuses on the outward and inward investments of resident units and ignores whether the unit is a parent, subsidiary, affiliate, fellow or branch.
- FDI assets relate to all overseas investments made by UK resident units to overseas affiliates businesses, regardless of whether they are investments from UK parents to overseas affiliates, or UK affiliates investing in their parents (for example, a loan from a subsidiary to its parent) – referred to as reverse investment.
- FDI liabilities relate to all investments received by UK resident units from foreign parents and affiliates.

The directional measurement principle

- Used to present detailed country and industry statistics in the FDI statistical bulletin.
- The principle focuses on the direction of control or influence, and deducts reverse investment from the parent's outward or inward investments; as such, outward or inward values are generally lower than asset and liability values, although their nets should be the same.
- FDI outward positions relate to the total investment made by UK parents abroad, minus reverse investment made by overseas affiliates back to UK parents.

Illustrative example

An example illustrating the difference between the two measurement principles is presented. Table 6 presents a simplified version of the variables used from the outward and inward FDI surveys to derive FDI position values.

The “outward survey” column presents a UK parent’s equity investment into a foreign subsidiary (200), loans made to the foreign subsidiary (100) and loans made from the foreign subsidiary to the UK parent (100); the outward position value is 200 according to the directional measurement principle.

The “inward survey” column presents a foreign parent’s equity investment into a UK subsidiary (150), loans made to the UK subsidiary (75) and loans made by the UK subsidiary to the foreign parent (75); the inward position is therefore 150 according to the directional measurement principle. This approach focuses on each of the surveys (outward or inward) in isolation and deducts any reverse investment to derive the “net outward position” value. The focus here is on the direction of control or influence.

The “asset calculation” and “liability calculation” columns present the positions according to the asset and liability measurement principle. The main difference in these columns is the treatment of reverse investment (subsidiaries’ loans to their parents). For assets, this means combining outward equity (200) and loan positions (100) of UK parents to their foreign subsidiary, plus all loans made by UK subsidiaries to their foreign parents (75) from the inward survey.

Similarly, FDI liabilities combine inward FDI equity (150) and loan (150) positions from foreign parents to their UK subsidiaries, plus all loans made by foreign subsidiaries to their UK parents (100) from the outward survey. This approach therefore combines the two surveys to gross investment by UK residents abroad, or overseas residents into the UK, regardless of whether they are a parent or a subsidiary. The focus here is on the residency of the business, regardless of the direction of control.

Table 6: Example calculations for foreign direct investment position statistics, directional compared with the asset and liability principle

Transaction	Directional		Assets	Liabilities
	Outward survey	Inward survey		
Parent's equity investment into subsidiary	200	150	200	150
	+	+	+	+
Parent's loans to subsidiary	100	75	100	75
	-	-	+	+
Subsidiary's loans to parent (reverse investment)	100	75	75	100
	=	=	=	=
Total position	200	150	375	325

Source: Office for National Statistics

The two measurement principles produce quite different results when considering either direction of investment: FDI assets and liabilities in the example were 375 and 325 respectively, much higher than the directional outward and inward positions of 200 and 150 respectively. This is because the asset and liability measurement principle grosses investments and reverse investments, while the directional measurement principle deducts reverse investment from the outward and inward positions to produce a net value.

Notice, however, that the FDI net position values are equal regardless of the measurement principle used. The net FDI position according to the asset and liability measurement principle is 50 (375 minus 325), while the net position according to the directional measurement principle is also 50 (200 minus 150). This is demonstrated when comparing the net FDI position presented for 2016 in the UK Balance of Payments of £13.4 billion (£1,565.1 billion minus £1,551.7 billion), compared with the net FDI position presented for the same period in the FDI statistical bulletin of £13.1 billion (£1,212.8 billion and £1,199.5 billion).

While conceptually the two nets should match exactly, small differences do arise due to different industry classifications used in the UK Balance of Payments (where industries are classified based on the UK parent or subsidiary for national accounting purposes) and the FDI statistical bulletin (where industries are classified based on the foreign or domestic affiliate to identify the activity of the investment). Since loans and interest payments are excluded for banks and other financial intermediaries, there are a small number of instances where discrepancies occur due to differences in the industry classification of the parent company and the affiliate.

While this short note focuses on FDI positions to highlight the differences between the two measurement principles, similar differences apply to FDI flows and income; reverse investment flows and interest payments from affiliates to their parents are either netted (directional) or grossed (asset and liability). Alternatively, a more technical report on the differences between these measures is available from the [Organisation for Economic Co-operation and Development \(OECD\)](#).

12 . Annex B: Ultimate parent company analysis methods

To present foreign direct investment (FDI) statistics by the ultimate controlling parent, a data-linking project was undertaken that involved matching company microdata from the Inter-Departmental Business Register (IDBR) and Foreign Direct Investment (FDI) survey.

The IDBR contains business-specific information such as the ultimate parent company obtained through survey data and procured from Dun and Bradstreet (D&B) – a commercial data source. The FDI survey contains information on companies' cross-border investment positions, financial flows and income flows on an immediate parent basis. By linking the two files, the project aims to establish from where inward FDI ultimately originates. This annex outlines how IDBR data were linked to the FDI population.

The Inter-Departmental Business Register

The Inter-Departmental Business Register (IDBR) is a comprehensive list of UK businesses used by government for statistical purposes. It is fully compliant with the EU regulation on harmonisation of business registers for statistical purposes (EC No 177/2008).

The IDBR provides the main sampling frame for surveys of businesses carried out by Office for National Statistics (ONS) and other government departments. It is also an important data source for analyses of business activities.

The IDBR covers 2.6 million businesses in all parts of the UK economy, other than the very small businesses (those without employees and with turnover below the tax threshold) and some non-profit making organisations.

The two main sources of input are the Value Added Tax (VAT) system and Pay As You Earn (PAYE income tax) from HM Revenue and Customs (HMRC). Additional input comes from Companies House, Dun and Bradstreet, our business surveys and contact with the largest multinational businesses through profiling.

All data on the IDBR are treated as Official Sensitive and are protected by the Code of Practice for Statistics and by specific legislation.

The Foreign Direct Investment (FDI) Survey population

The FDI population is produced from four sources.

Data from the IDBR and Dun and Bradstreet (D&B) are combined to identify the target population and sampling frame for the FDI survey. Auxiliary variables, such as the number of affiliates, are not used to produce FDI estimates directly, but are used by ONS to stratify the outward survey sample. The D&B inputs are sourced from D&B's Who-owns-Whom database of world linkages of companies. An annual data extract is procured at the start of the calendar year. These are then adapted and matched to the IDBR. The resulting data extract provides information on majority share ownership only (more than 50% of ordinary shares).

We also maintain a separate database for enterprises that have previously been identified to be engaged in FDI either through the FDI or Mergers and Acquisitions surveys. This database includes minority share relationships (between 10% and 49% of ordinary shares) that are not included in the IDBR and D&B extract but are relevant for FDI statistics.

The FDI population is also updated regularly using information from the ONS Mergers and Acquisitions Survey, which is conducted on a quarterly basis and collects information on domestic and cross-border acquisitions and disposals involving UK companies.

Throughout the year our Business Profiling team (BPT) investigate the largest multinational businesses to ensure the correct structure for all ONS surveys; there is a pool of 2,000 businesses for the profilers to maintain. A sub-section of BPT also maintains the linkages between businesses throughout the year. This information is obtained from ONS surveys, Companies House and data from HMRC.

In contrast to most ONS business surveys, where sampled returns are weighted to estimate for the non-sampled population, FDI estimation methods predict values for all non-sampled businesses, allowing for aggregate estimates to be derived simply by summing over the domains of interest. While uncommon in ONS, this method is not unique and has a sound, academic basis. This approach provides a rich microdata set for the whole population, with returned and estimated values for each company.

Linking the IDBR to the FDI population

Data linking was carried out in SAS by binding the IDBR extract to the FDI population. The IDBR extract included the country code of the ultimate parent. As the IDBR holds information only on majority share ownership (above 50%) while FDI includes minority share ownership (between 10% and 49%) information as well, there are some gaps in the provided IDBR extract.

Moreover, the ONS FDI survey is supplemented by data on Monetary Financial Institutions (MFIs), bank holding companies, public corporations and property data, which are collected from other sources such as the Bank of England and the Balance of Payments team in ONS. These do not contain business identifiers that can be linked to IDBR data (contributing to the gaps in the IDBR extract). These gaps were replaced with the immediate country code information from the FDI survey. This affected only 12.1% of the total FDI positions.

There is a limitation within this methodology as the IDBR collects information only on the majority shareholder of a company, which can lead to some country estimates being either overestimated or underestimated. As it is not possible to unpick every corporate structure, this is a limitation agreed and accepted internationally and it requires some caution when interpreting the results of this analysis.

Method for better estimating round-tripping

Previously-published estimates of round-tripping, whereby UK companies use different parts of their overseas company structures to invest in the domestic economy, were likely to overestimate the value of such round-tripping. This overestimation arose as it is sometimes the case that a UK subsidiary can have two ultimate controlling parents, with one based in the UK and another based abroad.

As the IDBR only contains information on the ultimate parent country for majority shareholders, information will not be available for any minority shareholders (even if they are an ultimate controlling parent of that minority stake). Therefore, if a UK company had a UK-resident majority shareholder (even if they only held 51% of voting power) and an overseas-based minority shareholder (holding less than 50% of the voting power), the previous methodology would allocate the entire value of the FDI stock to the country of the majority shareholder. In this example, that would be classed as the UK and would be categorised as round-tripping.

Attempting to resolve this overestimation, validation of the largest of such examples by FDI stock was carried out using additional data sources. Where companies were shown to have a marginal UK-resident majority shareholder relationship, and signs of significant voting power from foreign parents were evident, the ultimate controlling country was allocated to be the country of the immediate parent.

This methodology has helped to provide a better estimate of UK round-tripping from 2014 to 2016.

13 . Annex C: Linking Foreign Direct Investment with Annual Business Survey methods

Overview

This data-linking project involves matching company microdata from the Annual Business Survey (ABS) and Foreign Direct Investment (FDI) Survey. The ABS collects information on business characteristics such as turnover, employment and gross operating surplus; while the FDI survey contains information on companies' cross-border investment positions, financial flows and income.

By linking the two files, the project aims to develop understanding of the characteristics of businesses engaged in FDI relationships and answer some important questions such as:

- are UK companies that have FDI links more productive?
- are they more likely to trade internationally?
- do they invest more in fixed capital within the UK?
- are UK companies that receive investment more productive than UK companies that invest abroad?

This annex outlines how the ABS sample was expanded to the Inter-Departmental Business Register (IDBR) before linking to the FDI population.

The Annual Business Survey population

Following the collection and processing of the ABS results, these data are held as two separate files: a “universe” or population dataset, consisting of 2.1 million reporting units within the ABS sample frame; and the “contributor” or respondent dataset, which contains survey returns from the 56,000 reporting units who responded to the business surveys.

We collect data for Great Britain, which are combined with survey data from the Northern Ireland Statistics and Research Agency (NISRA) Annual Business Inquiry (ABI) to create a UK-wide measure. Each reporting unit is given a unique identifier so it is possible to link the two datasets.

The population file is extracted from the IDBR – which is the source for all Office for National Statistics (ONS) business surveys. It contains a small number of variables on the business' core attributes, including the type of industry, regional location, employment and turnover measured at a point in time.

The industry, region (whether England and Wales, Scotland, or Northern Ireland) and size of the business are used to create the cells from which the ABS and Annual Business Inquiry (ABI) samples are selected. They are selected using a stratified random sample design; large businesses (with employment of 250 or more) are selected each year as they are dominant contributors to the estimated total values. Further information on our sample selection and ABS methodology can be found in the [ABS Technical Report](#).

The respondent file contains nearly 2,000 variables extracted or derived from the completed survey form. Each business has a design weight that reflects the business' probability of selection and a calibration factor to correct for any potential bias in the sample. To produce aggregated totals, a business's response is scaled by the design weight and calibration factor.

For continuous variables, to expand the ABS population file to include value data for all businesses in the sample universe, the aggregated totals for each variable has to be distributed across the non-sampled businesses in the ABS universe, at a cell level. Where a business provided a response to the survey, their unweighted values are removed from the aggregated totals. The difference is then distributed across the non-sampled businesses in the cell, based on employment held for the business. This employment, extracted from the IDBR ahead of the ABS sample selection, provides an indication of each business' relationship to other businesses within their sample cell.

Where the variable is a discrete or logical variable, the value for each non-sampled business has been based on a probability function. For example, if we had a cell with 20 businesses with five respondents, the ratio of the actual responses to a yes or no question could be three to two. In this instance, the probability of any of the non-sampled businesses being yes is 0.6. Using a uniform random number function for each non-sampled business, if the random number for the business is less than 0.6, the estimated variable is recorded as a yes. This differs from the methodology used for the Annual Business Survey: Great Britain non-financial business economy exporters and importers release, which sums the weighted values of any business with a yes response, therefore assuming that the estimated response from all of the unsampled businesses that the respondent represents is "yes".

The Foreign Direct Investment (FDI) Survey population

The FDI population is produced from four sources.

Data from the IDBR and Dun and Bradstreet (D&B) are combined to identify the target population and sampling frame for the FDI survey. Auxiliary variables, such as the number of affiliates, are not used to produce FDI estimates directly, but are used by ONS to stratify the outward survey sample. The D&B inputs are sourced from D&B's Who-owns-Whom database of world linkages of companies. An annual data extract is procured at the start of the calendar year. These are then adapted and matched to the IDBR. The resulting data extract provides information on majority share ownership only (more than 50% of ordinary shares).

We also maintain a separate database for enterprises that have previously been identified to be engaged in FDI either through the FDI or Mergers and Acquisitions surveys. This database includes minority share relationships (between 10% and 49% of ordinary shares) that are not included in the IDBR and D&B extract but are relevant for FDI.

The FDI population is also updated regularly using information from the ONS Mergers and Acquisitions Survey, which is conducted on a quarterly basis and collects information on domestic and cross-border acquisitions and disposals involving UK companies.

Throughout the year our Business Profiling team (BPT) investigate the largest multinational businesses to ensure the correct structure for all ONS surveys; there is a pool of 2,000 businesses for the profilers to maintain. A sub-section of BPT also maintains the linkages between businesses throughout the year. This information is obtained from ONS surveys, Companies House and data from HM Revenue and Customs (HMRC).

In contrast to the ABS and most ONS business surveys, where sampled returns are weighted to estimate for the non-sampled population, FDI estimation methods predict values for all non-sampled businesses, allowing for aggregate estimates to be derived simply by summing over the domains of interest. While uncommon in ONS, this method is not unique and has a sound, academic basis. This approach provides a rich microdata set for the whole population, with returned and estimated values for each company.

Linking the ABS and IDBR population to the FDI population

Data linking was carried out in SAS by merging the expanded ABS and IDBR population to the FDI population. The FDI population used for the linking included only four variables – the Who-owns-Whom reference (wowent), the business unit reference number (ruref), the FDI position, and the Standard Industrial Classifications 2007: SIC 2007. Multiple enterprise reference numbers can exist in the FDI population, which reflect an enterprise having more than one FDI investor.

Prior to data linking, businesses in the FDI population that were recorded as Monetary Financial Institutions (MFIs), bank holding companies, public corporations and property were removed. Data on these are collected from other data sources, such as the Bank of England and the Balance of Payments team in ONS, and do not contain business identifiers to allow linking with the ABS.

To overcome differences in which enterprise units return surveys for respective sampled businesses (FDI tends to sample the parent enterprise, while the ABS samples lower reporting units in the UK ownership tree), values relating to the subsidiaries of the same enterprise group are summed in the FDI population to make them unique (and therefore represent the inward investment relationship of the entire enterprise group).

The two files were then merged using the enterprise reference number. In instances where there were multiple subsidiaries with the same enterprise reference numbers on the ABS population, the investment relationship of the overall enterprise group is replicated for each reporting unit on the ABS; therefore, the FDI relationship on the final dataset represents the FDI relationship for the enterprise rather than that specific reporting unit.

The merged file was then separated into two – a dataset containing businesses that have been linked between the expanded ABS and IDBR population and FDI population, and a dataset containing businesses on the expanded ABS and IDBR population that do not have FDI links.

Further merging exercises were undertaken between the unmatched FDI businesses to the unmatched expanded ABS and IDBR population, which involved using identifiers relating to unique reporting units lower down in the UK ownership tree.

Finally, the matched ABS and FDI file on an enterprise and reporting unit basis and the unmatched businesses were combined into one dataset, which provides the entire expanded ABS and IDBR population along with matched FDI values where relevant. The merging exercise successfully matched a range of between 70% to 80% of the approximately 30,000 enterprises in the FDI population to the expanded ABS and IDBR population over the time series.

There are some unmatched FDI businesses, which can be due to factors such as differences in the industry coverage of both surveys. The ABS excludes: finance and insurance, public administration and defence, public provision of education, public provision of health and all medical and dental practice activities; while FDI excludes: MFIs, public corporations, bank holding companies and property data.