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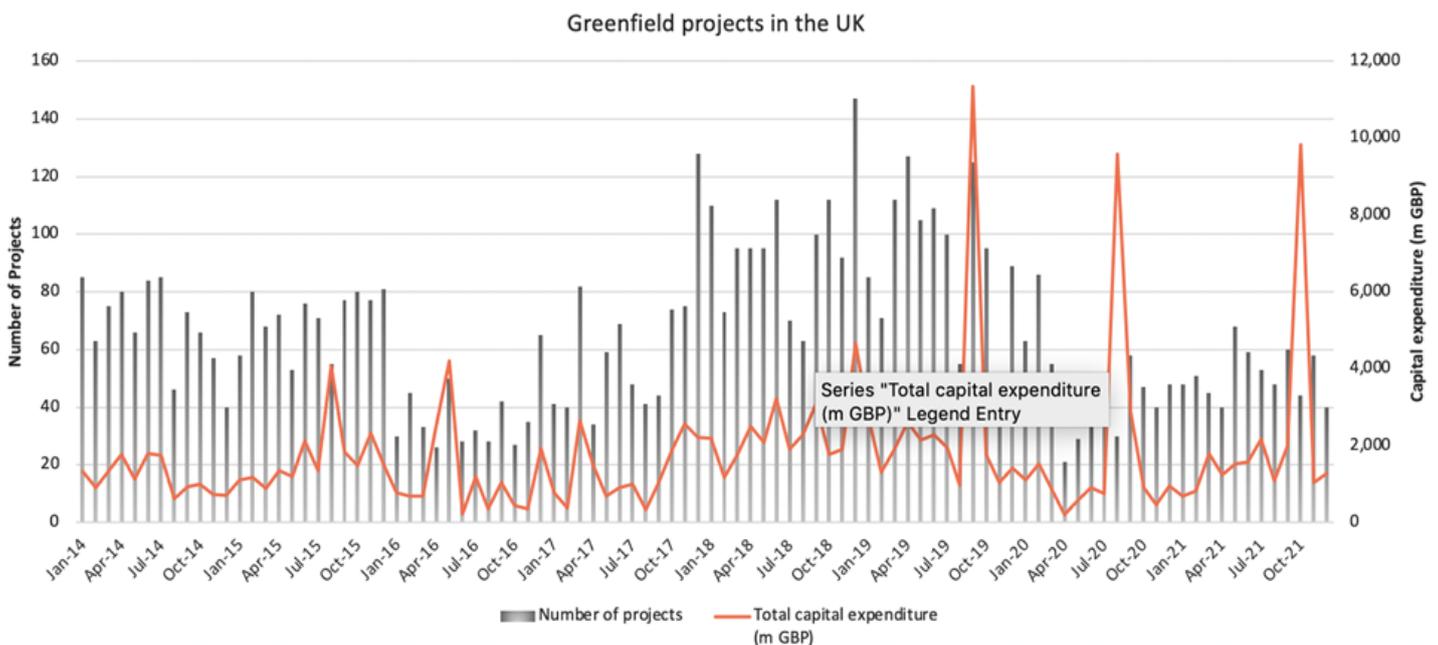
## Highlights

This briefing is the first in a regular series of notes tracking the changing patterns of inward investment in the UK as we emerge from Covid-19, and as our trading relations with the rest of the world become more certain. What we are seeking to do, as a collaboration between Warwick Business School and Moody's Analytics funded by The Productivity Institute, is to explore the latest intelligence on foreign direct investment (FDI) flows into the UK, and what that means for productivity. The aim will not be to discuss every aspect of inward investment every time, but to focus on certain details.

We start, therefore, with an assessment of the changing patterns of FDI before the Brexit referendum. We suggest that, while volumes of inward investment have varied, patterns, both distinguishing between merger and acquisition (M&A) and greenfield in terms of source country, have stayed fairly similar, with approximately two-thirds of inward FDI into the UK originating in the traditional markets of the European Union (EU27) and United States of America (USA).

However, analysis of the largest investments suggests that high proportions are linked to infrastructure, while a high proportion of acquisitions appear to be motivated by the desire of foreign firms to acquire knowledge, rather than to lever their technology or knowledge into UK markets. Both of these activities are associated with lower levels of productivity growth than other forms of FDI.

Figure 1. Monthly number and capital expenditure of greenfield projects in the UK, 2014-2021



Source: Orbis Crossborder Investment database

## Greenfield FDI

UK greenfield project investment experienced a decrease during the 2016 referendum that triggered Brexit and was on an upward slope from then on until 2019. Later, it was hit by the Covid-19 pandemic, with the performances of destination regions and source markets being unevenly affected. However, positive dynamics of recovery were observed in 2021.

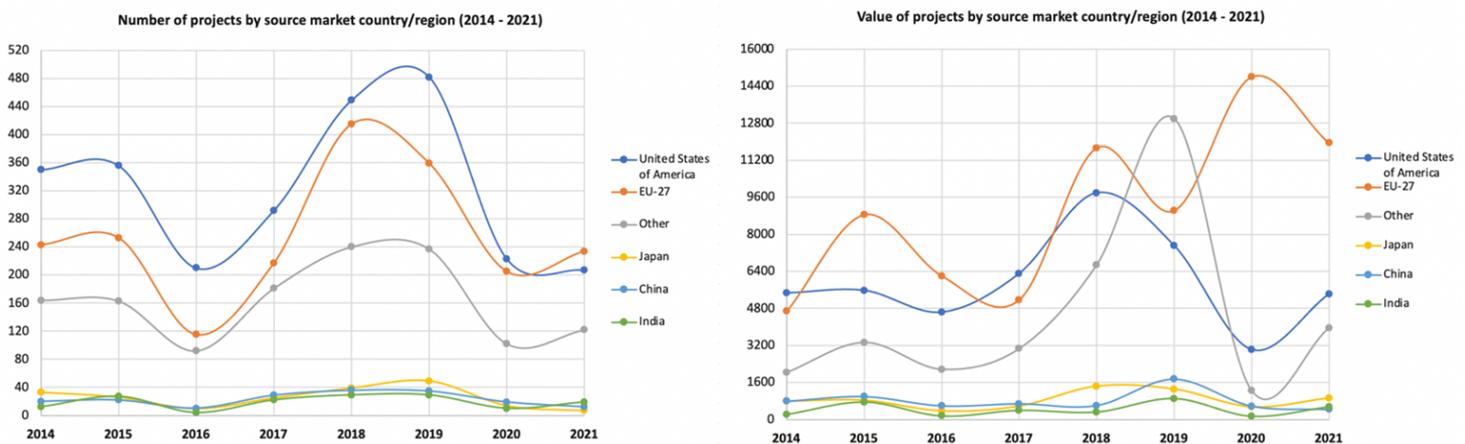
Looking across the UK as a whole, Figure 1 depicts an overall trend of inward greenfield project investment. The pattern of project count has experienced major changes between 2014 and 2021; the flow of capital expenditure fluctuated, with three spikes occurring (typically as a result of a few mega projects) during our observation period.

Project inflows enjoyed a relatively stable period during 2014 - 2015 but there was an evident decline starting from early 2016. The timing appears to be earlier than the Brexit vote in June 2016, which suggests that political uncertainties unleashed by Brexit presented potential challenges to FDI months before the referendum.

Subsequently, the recorded inflow increased more than 16 billion GBP from 2016 to 2018, which itself is bigger than the value in 2016 (around 14 billion GBP). We can get a sense of this rising trend from the line charts in Figure 2. The number of projects was on a slight downward slope starting from 2019, although the value of capital expenditure started to fall off until 2020, ending a three-year growth period.

In 2020, the decline of greenfield investment in the UK reached 52% in project count and 40% in capital expenditure against 2019. This dramatic decrease is reflected by aggregate FDI flows in the distribution of both source markets and regional destinations over the period.

Figure 2. Number and capital expenditure of projects by source market country, 2014-2021



Source: Orbis Crossborder Investment database and authors' own calculations

## Variations by Source Country

In terms of source market composition, the USA and EU27 were the leading contributors to the UK FDI projects, with on average 40% and 32% of recorded project investments originated from the USA and EU27, respectively, during 2014-2021. Capital expenditure showed the opposite case, with EU27 occupying 43% of the total value across the period, larger than the 29% from the USA.

In Figure 2, the number of projects from all the sources dropped in 2016, and experienced a three-year growth period until the end of 2019. This downward trend in 2016 is also reflected in the value graph, which shows EU27 reaching its local trough in 2017.

During the pandemic, the number of projects fell by 54% from USA and 43% from EU27 in 2020 against 2019. It is also worth mentioning that investment from other source market countries had the sharpest decline, at over 90% in capital expenditure in 2020. However, the number of projects and capital expenditure from EU27 had already started to decline in 2019. Surprisingly, capital expenditure of EU27 experienced an unusual rise during 2020, which was attributed to a variety of mega projects from Spain and Germany. For example, Scottish Power was involved in two different projects to set up four wind farms in the UK worth 8,500 million GBP in total, leading to the peak of capital in August 2020. Detailed information about those projects is listed in Table 1. What is noteworthy is that all the listed seven projects are related to wind farm operators and belong to electricity business functions.

Projects originated from the USA and rest of the world typically explained the recoveries of greenfield investment within the UK in 2021. Notably, one project, announced in October 2021, saw Scottish Power announce a 6,000 million GBP expansion to its wind power farm in East Anglia, which contributed to another surge in capital expenditure in Figure 1.

Table 1. Mega projects with largest capital expenditures originated from EU27, 2020

Source market country	Year	Project number	Project headline	Investing company name	Capital expenditure (million GBP)	Project type	Project business function	Project business description	Market served
Spain	2020	499729368	Scottish Power to open 3 wind farms in UK	SCOTTISHPOWER RENEWABLES (UK) LTD	6500	New	Electricity	Wind farm operator	Domestic
Spain	2020	671220784	Scottish Power opens a wind farm in UK	SCOTTISHPOWER RENEWABLES (UK) LTD	2500	New	Electricity	Wind farm operator	Domestic
Germany	2020	175796446	RWE to expand offshore wind farm in Gwynt y Môr, UK	RWE AG	574	Expansion	Electricity	Wind farm operator	Not specified
Germany	2020	672524141	RWE to expand offshore wind farm in Rampion, UK	RWE AG	574	Expansion	Electricity	Wind farm operator	Not specified
Germany	2020	689449516	RWE to expand offshore wind farm in Greater Gabbard, UK	RWE AG	574	Expansion	Electricity	Wind farm operator	Not specified
Germany	2020	898225101	RWE to expand offshore wind farm in Galloper, UK	RWE AG	574	Expansion	Electricity	Wind farm operator	Not specified
Germany	2020	937023690	RWE to open wind farm in Clachaig, UK	RWE AG	233	New	Electricity	Wind farm operator	Domestic

Source: Orbis Crossborder Investment database

## Mergers and Acquisitions

Inflows of UK cross-border M&A deals present a relatively stable picture between 2014 and 2019, with a slight drop in deals during 2016-2017. However, almost all the target regions and all the source countries/regions experienced varied declines in 2020, due to the pandemic. To our relief, a clearer revival trend can be observed for both the number and value of M&A deals, compared to greenfield projects.

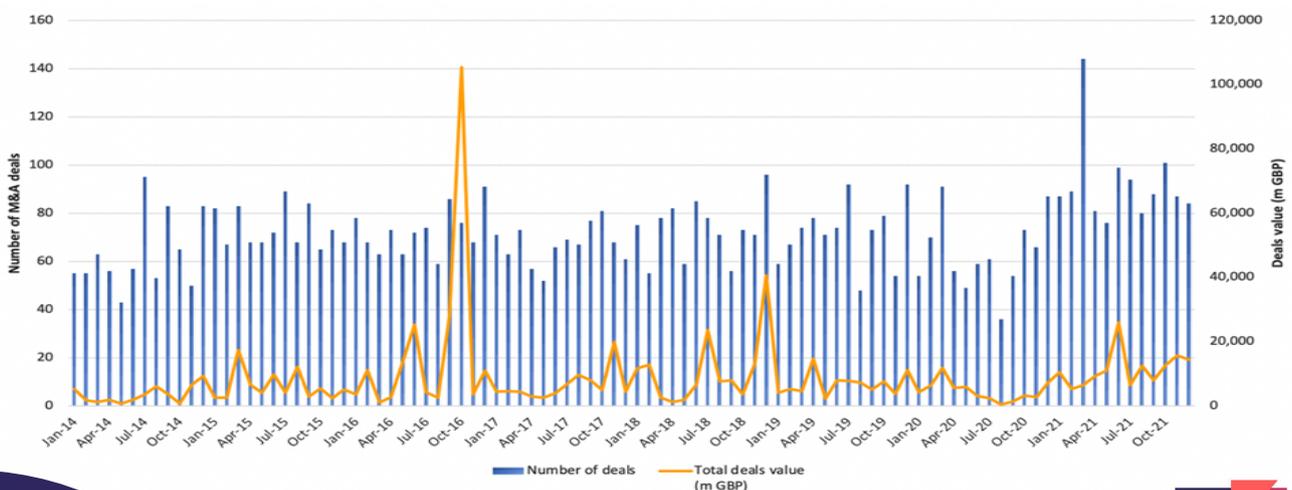
Performance of cross-border M&A deals shows a different picture from greenfield projects. Across our observation period, the number of deals went through the first minor drop of 5% in 2016 and this declining trend extended to 2017. Then the quantity slightly rebounded in 2018, followed by another fall starting from 2019 until the end of 2020. However, it revived in 2021, with a 32% growth in number against 2020.

The deal value followed the trend of number on the whole, but there was a notable spike in October 2016, due to AB InBev's acquisition of SABMiller via Newbelco at a value of over 100 billion GBP.

Drawing the outline of deal value presents some interesting facts. Contrasting with the fall in deal number, East of England and South East England's deal value reached a peak in 2016. Two large deals contributed to the value spike in the East of England, with SoftBank acquiring ARM Holdings in Cambridge, worth over 24 billion GBP, and Jazz Pharmaceuticals completing an acquisition of GW Pharmaceuticals in Histon at the cost of nearly 5 billion GBP. The peak in South East England is primarily due to UK Asset Resolution's completed sale of NRAM to Cerberus at the value of 13 billion GBP.

Both the number and value of deals are not evenly distributed across target regions. Not surprisingly, London still held a safe lead, followed by South East England. They accounted for 41% and 15% on average of total M&A deals during our observation, respectively. Deal value appears to be even more concentrated in London, with it occupying an average value share of 62% between 2014-2021.

Figure 3. Monthly number and value of cross-border M&A deals in the UK, 2014-2021



Source: Orbis Crossborder Investment database

## What Does This Mean For Productivity?

It has long been recognised that inward investment into the UK is not just a major source of employment, but also innovation and productivity growth, given that multinational enterprises (MNEs) are known to have specific firm advantages, including productivity advantage, over domestic firms, which allows them to internationalise.

There are essentially two mechanisms by which inward investment can boost the destination region's productivity. The first is typically referred to as the 'batting average' effect, or the direct effect, which represents the fact that (new) inward investors or their affiliates exhibit higher productivity than the average level of the given region; their presence thereby increases average productivity. The second is whether (and how) the presence of inward investment generates productivity growth in the wider economy, typically explained in terms of a range of indirect effects that have come to be labelled as 'FDI spillovers'.

It is also recognised that FDI from other developed countries, particularly in the form of greenfield FDI, contributes the most in this regard because superior technology, in the forms of physical capital, superior products and managerial knowledge, is generally embedded in FDI flows. It is therefore clear that, despite the downturn following Brexit (and more significantly Covid-19), the shares of inward investment from the richest countries remain fairly consistent.

The UK's value position for inward FDI is going to change post Brexit and Covid-19 and we can reasonably expect that the motives behind future inward investors might not be the same as we have seen before. Given that motives for undertaking FDI determine not only the nature of direct international knowledge transfer to the local economy, but also the firm's engagement with the ecosystem of local businesses, it is worth exploring the pattern shift in project motives in order to maximise the benefits of such investment.

Turning now to M&A, it is generally known that any contribution that cross-border M&A makes to UK productivity appears to be more indirect, depending on the extent to which changes of ownership lead to higher levels of investment, assets or knowledge transfer from the parent company to the acquired firm. Equally, the effects also vary by the rationale for different acquisitions. For example, it is clear from a perusal of the "mega deals" in Table 2 that many of these are either what one may call "technology sourcing FDI" – that is to say that the objective of the acquiring company is to acquire the knowledge or intellectual property of the target firm from the local environment, or to access new markets.

Typically, M&A deals with such motivation are associated with lower levels of subsequent productivity growth than, for example, those motivated by the desire of the acquirer to lever its existing technology into new markets.

Table 2. M&A deals with largest value from investors in Japan, US and EU27, 2016

Investor country	Year	Deal number	Deal headline	Investor name	Deal value (mGBP)	Target name	Target city	Deal type	Target business description	Deal status
Japan	2016	1909117798	SoftBank acquires ARM Holdings	SOFTBANK GROUP CORPORATION	24346	ARM HOLDINGS PLC	Cambridge	Acquisition 100%	Computer microprocessors manufacturer	Completed
Japan	2016	1909282677	Mitsui Sumitomo acquires Amlin	mitsui SUMITOMO INSURANCE CO., LTD	3468	AMLIN PLC	Great Missenden	Acquisition 100%	Insurance services	Completed
Japan	2016	1909400809	Asahi acquires Peronii, Grolsch, Meantime and Miller Brands from SAB	ASAHI GROUP HOLDINGS LTD	2298	MEANTIME BREWING COMPANY LTD	London	Acquisition 100%	Beer manufacturer	Completed
United States of America	2016	1909231046	Visa acquires Visa Europe	VISA INC.	16347	VISA EUROPE LTD	London	Acquisition 100%	Credit card payment system services	Completed
United States of America	2016	1909212077	UK Asset Resolution completes sale of NRAM to Cerberus	CERBERUS CAPITAL MANAGEMENT LP	13000	NRAM PLC	Fleet	Acquisition 100%	Residential mortgage banking services	Completed
United States of America	2016	1909306719	Equinix acquires Telecity	EQUINIX INC.	2507	TELECITY GROUP PLC	London	Acquisition 100% - bid 2 increased bid	Online premium network-independent data centre hosting services	Completed
Belgium	2016	1909466293	AB InBev acquires SABMiller via Newbelco	NEWBELCO SA/NV	100672	SABMILLER PLC	London	Acquisition 100% bid 2 - increased bid	Beer manufacturer	Completed
Ireland	2016	1909277914	Paddy Power acquires Betfair	PADDY POWER PLC	3003	BETFAIR GROUP PLC	London	Acquisition 100%	Betting shop operator	Completed
Luxembourg	2016	1909313692	Ardagh Group acquires plants from Ball and Rexam	ARDAGH GROUP SA	2536	BALL CORPORATION'S 3 UK PLANTS		Acquisition 100%	Metal can manufacturer	Completed

Source: Orbis Crossborder Investment database

## Upcoming Research

Clearly, patterns of FDI and their effects will vary between UK regions. As discussed before, the structure of greenfield in terms of project types, motives and types of market served can influence whether and how local sectors are able to benefit from such investment. More importantly, regional disparities in FDI performance will help to explain, at least to some extent, the variations in productivity within regions as well as between them. This is becoming one of the most important questions within the levelling up debate. It is also imperative to know what types of activities and business functions are undertaken by inward investors, considering that not all the business activities are knowledge-intensive with superior technology. To address the above questions, the coming notes in the series will cover each aspect and further discuss what they mean for productivity.

Secondly, we will get a sense of the grand trends described above for the different regions of the UK. Inward investment performance has varied greatly between UK regions, so it is important to get a sense of whether the changes described above vary across the UK. Initial findings, for example, suggest that the North East England, West Midlands and South East England still show the momentum to grow. As such, this regional variation will be the focus of our next report.