

Regional Institutions and FDI Resilience: Evidence from the Brexit Uncertainty Period

Juan Alvarez-Vilanova

London School of Economics & Political Science

j.alvarez-vilanova@lse.ac.uk

February 15, 2026

Abstract

Economic uncertainty sparked by shocks is known to negatively affect inward Foreign Direct Investment, and the uncertainty during the Brexit negotiation period was no exception to this. That said, regional institutions that engage with Multi-national Enterprises, in particular Investment Promotion Agencies, could help to protect inward FDI when ‘bad times’ arrive. This paper seeks to establish whether this is the case, by focusing on the heterogeneous pre-Brexit sector-targeting strategies of UK IPAs and their impact on FDI outcomes during the 2016-2019 Brexit negotiation period. I find that such strategies are associated with an increase in inward FDI into sectors that were relatively under-exposed to Brexit uncertainty and typically more sensitive to such activities, specifically repeat investments in Knowledge Intensive Services (KIS) sectors. Region-sectors where such a strategy was in place pre-2015 were on average 4.4 percentage points more likely to receive repeat KIS sector FDI, with 27.9% higher FDI capital value. Investments in manufacturing, and new FDI more generally, saw no impact. The strongest effects accrue outside of South East England – highlighting the importance of place-based institutional capacity in less agglomerated regions – and for investments explicitly motivated by regional-ecosystem factors. These findings suggest that IPAs’ role in protecting FDI during uncertainty hinges less on the well-understood information-assistance mechanism and more on ecosystem-building. By embedding MNEs into specialised regional ecosystems post-entry, IPAs can provide operational benefits which may prove decisive in the face of harmful but increasingly common uncertainty shocks.

Keywords: Foreign Direct Investment; Investment Promotion Agencies; Brexit; Economic Uncertainty; Regional Development

JEL Codes: F21, F23, R11, R58

1 Introduction

Economic uncertainty sparked by shocks is known to negatively affect international trade and Foreign Direct Investment (FDI) (Dixit & Pindyck 1994). In an era of increasingly frequent disruptions – from geopolitical tensions and trade wars to pandemic-related supply chain fragmentation and tariff threats – the question of how to attenuate the harmful effects of uncertainty on cross-border investment has become pressing for policymakers worldwide (UNCTAD 2024).

A well-established literature points to institutions as key mitigating factors. Institutional frameworks can reduce the ‘tax’ that uncertainty imposes on investment decisions by providing stability, reducing transaction costs, and offering operational support to firms navigating turbulent environments (Buchanan et al. 2012, Mengitsu & Adhikary 2011, Globerman & Shapiro 2002). However, the effectiveness of these institutional mechanisms likely varies across space, as regional economic structures, institutional capacities, and proximity to key markets shape both the severity of uncertainty shocks and institutions’ potential to moderate them.

One specific category of institution in this context is Investment Promotion Agencies (IPAs) – public bodies with the explicit aim of growing inward FDI and harnessing the benefits of internationalisation for economic development more broadly (World Bank 2023). Beyond their traditional mandate of attracting investment, IPAs increasingly play broader roles in regional development, facilitating the green transition, articulating global value chains, and building resilience to shocks (OECD 2023, Crescenzi & Harman 2023, OECD 2026). The theoretical literature identifies two broad channels through which IPAs may influence FDI outcomes. First, they can reduce information asymmetries by providing clarity on regulatory requirements, administrative processes, and investment procedures, thereby lowering barriers MNEs face when investing in unfamiliar markets (Morisset & Andrews-Johnson 2004, Lim 2008). This information-provision role has been empirically validated, with evidence showing that IPAs successfully attract new investors by reducing search and transaction costs associated with entering unfamiliar markets (?). Second, IPAs are increasingly being recognised for their key role in building regional ecosystem assets – the localised resources and relational advantages that MNEs can access through embeddedness in a regional economy, including specialised labour pools, supplier networks, research capabilities, and industry clusters (Beugelsdijk et al. 2010, Heilbron & Aranda Larrey 2020). By becoming embedded in regional ecosystems, MNEs can develop location-specific capabilities and relationships that create incentives for continued regional engagement and expansion, as these assets enhance operational performance and competitiveness (Chidlow et al. 2015, Iammarino & McCann 2013). Yet despite the increasing weight of repeat investments as a share of global FDI flows

(World Bank Group 2019), and survey evidence that IPAs are increasingly active in ecosystem-building domains (OECD 2023), robust empirical evidence on this channel remains scarce.

Moreover, we lack robust empirical evidence on whether and how IPAs protect FDI during periods of fundamental uncertainty, which of the above mechanisms prove decisive, and how effectiveness varies spatially. While the information-provision role addresses asymmetries where clear information exists but is not readily accessible, periods of fundamental uncertainty present a different challenge: a generalised absence of certainty that no amount of current information can resolve. In such contexts, the ecosystem-building role may become more decisive, as access to valuable regional assets and embedded relationships can provide operational benefits that offset uncertainty costs. However, this remains largely untested empirically, particularly regarding how spatial heterogeneity in regional characteristics shapes institutional effectiveness.

The UK’s unexpected Brexit outcome in the 2016 referendum on European Union (EU) membership provides a compelling natural experiment through which to explore this question empirically. Even before formally leaving the EU in January 2020, MNE investors faced prolonged uncertainty during negotiations (2016–2020), unable to predict the UK’s future relationship with the EU regarding trade arrangements and single market access. This uncertainty represented a significant threat to UK investment (Bloom et al. 2019, Dhingra et al. 2016), with empirical studies confirming lower inward FDI following the referendum (Serwicka & Tamberi 2018). Yet these effects did not unfold uniformly: manufacturing sectors faced particularly acute uncertainty from potential tariff barriers and supply chain disruption, while Knowledge Intensive Services sectors experienced less immediate operational threats. Nor did these effects unfold in an institutional vacuum: Britain’s spatially heterogeneous institutional landscape meant that regional IPAs across different localities had already been actively promoting FDI into specific sectors – often tailored to local strengths – in many cases before Brexit was contemplated. MNE investors in certain locations and industries thus received IPA services that may have helped them weather uncertainty, while others did not. This paper exploits this variation to verify whether IPAs can protect inward FDI during fundamental uncertainty.

To do this, I leverage a unique dataset of UK IPAs’ sector-specific strategies from the EU-funded MASSIVE survey (Crescenzi et al. 2018), combined with detailed FDI project information from Bureau van Dijk’s Orbis-crossborder database. By focusing on heterogeneous sector-targeting strategies already in place by 2015 – likely motivated by factors beyond shock resilience – I can significantly mitigate endogeneity concerns common to evaluating causal impacts of IPA strategies. Moreover, the richness of my data enables key methodological innovations: I distinguish between new FDI projects and repeat FDI by established MNEs, recognising that these face different challenges and

sensitivities to institutional support (Chidlow et al. 2015), and I draw on fine-grained data detailing individual projects' motivations to carefully identify FDI spurred by regional ecosystem factors (Love et al. 2025). These distinctions constitute a novel approach to gauge mechanisms through which IPAs operate during uncertainty.

My empirical analysis employs a Difference-in-Differences design studying regional FDI outcomes during the 2016–2019 Brexit negotiation period. I find that, compared to counterfactual region-sectors, pre-2015 IPA sector-targeting strategies increased inward FDI specifically in repeat investments by established MNEs and Knowledge Intensive Services (KIS) sectors. At the extensive margin, targeted region-sectors were 4.4 percentage points more likely to receive repeat KIS FDI. At the intensive margin, they received 11.5% more projects, with 27.9% higher capital value and 29.3% higher job creation – magnitudes consistent with Crescenzi et al. (2021)'s findings on IPA effectiveness. By contrast, new FDI or manufacturing sector FDI saw no IPA impact. This pattern of results suggests that ecosystem-building, rather than information provision, is the primary channel of IPA effectiveness during fundamental uncertainty. Effects concentrate among established investors who are already embedded in regional ecosystems and can directly leverage access to specialised capabilities – skilled labour, R&D networks, industry clusters – to offset broader uncertainty costs. Conversely, new investors (for whom information about unfamiliar markets would be most valuable) show no response, while manufacturing investors facing acute trade-related uncertainty (that no amount of IPA information assistance could resolve) also show no effects.

Importantly, the effects I find exhibit marked spatial variation, with IPA effectiveness concentrating outside South East England and strongest for FDI projects specifically motivated by regional ecosystem factors such as skilled labour access or industry clusters. This spatial pattern reinforces that IPAs' protective role during uncertainty hinges on connecting investors to specialised regional ecosystems – particularly where such assets are valuable but not immediately accessible.

These findings carry an important policy message: regional institutions are far from futile during uncertainty. Rather, their effectiveness shifts from traditional information-provision toward ecosystem-building mechanisms. By embedding existing investors into specialised regional ecosystems – connecting them to skilled labour pools, supplier networks, R&D facilities, and industry clusters – IPAs provide operational benefits that prove decisive when broader uncertainty threatens investment. These are particularly vital in less agglomerated regions where institutional intervention becomes essential for making regional assets accessible to external investors. Beyond the immediate Brexit context, these findings illuminate how place-based institutions can build regional resilience in an era of increasing economic uncertainty, with implications for policy design in contexts ranging from trade wars to geopolitical disruptions.

This paper proceeds as follows. Section 2 reviews literature and develops my conceptual framework, examining Brexit's heterogeneous impacts on FDI, regional institutions' role in building ecosystems that help MNEs withstand uncertainty, and testable hypotheses. Section 3 describes data sources and methodology. Section 4 presents regression results, Section 5 discusses robustness checks, and Section 6 concludes.

2 Conceptual Background & Literature

The Brexit vote in June 2016 mired the UK in a period of deep uncertainty regarding the nature of its future relationship with the EU (Bloom et al. 2019). Even if certain quarters had anticipated the possibility of a 'leave' vote¹, the lack of clarity during the referendum campaign regarding exactly what Brexit entailed made it almost impossible for businesses to anticipate specific impacts and timelines (Dhingra & Sampson 2022). This kind of uncertainty has been well-documented to be particularly significant for foreign investors, effectively increasing the cost of investment (Dixit & Pindyck 1994, Buchanan et al. 2012, Mengitsu & Adhikary 2011).

Perhaps the biggest uncertainty derived from the spectre of losing access to the EU's single market for trade, services, capital and workers (Bailey & De Propris 2017). During negotiations, a wide range of potential outcomes were floated – from a 'soft' Brexit involving continued single market membership (akin to Norway) or customs union participation (similar to Turkey), to a 'hard' Brexit with a limited free trade agreement (comparable to Canada) or even no deal at all – each with vastly different implications for trade frictions, regulatory alignment, and labour mobility. A second concern regarded potential regulatory and policy divergence in safety, quality and environmental standards that businesses must meet to sell into the EU Single Market (Li et al. 2019, Holweg 2019, Bailey & Rajic 2022). For certain MNE investors, the Brexit vote constituted a credible threat of higher future operating costs – whether through trade tariffs, labour costs or regulatory compliance – which significantly undermined the rationale for UK operations.

Given this fundamental uncertainty, the question arises: could regional institutions have played any role in moderating Brexit's impact on FDI? There is growing recognition that territorial institutions – particularly at subnational or regional scale – may significantly influence MNE investment decisions by providing localised information, networks, and stability that buffer against broader uncertainties (OECD 2023, Crescenzi & Harman 2023, OECD 2026). Yet we have very little empirical evidence documenting this in

¹In fact, the consensus among the literature is that Brexit was largely unexpected. Days before the referendum, pollsters put the chances of a 'leave' vote at under 30% (Bell, 2016), while studies of financial markets suggest little evidence these had priced in a leave vote (Davies & Studnicka, 2018). David Cameron, the Prime Minister responsible for calling the referendum, was so confident of a 'remain' win that he forbade government departments from making formal Brexit preparations.

action, either within the specific context of Brexit uncertainty or in other major shock contexts. In fact, the role of regional institutions in forging fruitful connections between MNEs and regions during periods of disruption has been termed a ‘black box’ in the literature (Yeung 2021). This section reviews what we know about how regional institutions, and Investment Promotion Agencies (IPAs) in particular, may influence FDI outcomes, before developing a conceptual framework and testable hypotheses for how these institutions might protect investment during fundamental uncertainty such as that created by Brexit.

2.1 Institutions, IPAs & FDI

Institutions are known to play a vital role in providing the basic guarantees necessary for economic transactions to occur (North 1990), and with regards to FDI can serve to tackle the information asymmetries which are common when MNEs enter a new market (or when a shock creates uncertainty), and which effectively block MNEs from allocating capital efficiently (Williamson 1975, 1985). If such institutions do not exist, or worse still if they exist but are hostile or unpredictable, this causes an operational risk which is effectively factored in as a tax on investing or doing business abroad (Buchanan et al. 2012, Mengitsu & Adhikary 2011). Empirical research has confirmed that national institutions are in fact a major determinant of FDI location (Bailey 2018). However, more recent thinking about FDI location choices has highlighted how institutions which are more regional in scope in fact play a major role, particularly with regards to spatial characteristics like infrastructure and possible production linkages (Beugelsdijk et al. 2010), and locational assets which pertain to FDI, including knowledge resources or learning capabilities. Indeed, MNE location choices are not ‘space-blind’ but rather guided by the search for specific regional assets or advantages (Dunning 2009).

Recognising this, regional institutions are increasingly mobilised to articulate these assets and enhance regional-sectoral ecosystems in ways that influence MNE investment decisions. Perhaps the prime example of these efforts are Investment Promotion Agencies (IPAs) – public bodies with the explicit aim of growing inward FDI and harnessing the benefits of internationalisation for economic development more broadly (World Bank 2023). IPAs engage in a diverse range of activities across the investment lifecycle, from initial marketing and lead generation to post-investment aftercare for FDI retention or expansion support (Loewendahl 2018, Heilbron & Aranda Larrey 2020).

While this breadth of activities might suggest numerous mechanisms through which IPAs influence FDI outcomes, the theoretical literature has coalesced around two primary – though overlapping – roles that capture the essence of how IPAs create value for MNEs. The first role, rooted in economics literature on information asymmetries, conceptualises

IPAs as *information intermediaries* that reduce search costs and transaction frictions for MNEs entering unfamiliar markets. This perspective emphasises how IPAs help overcome the “liability of foreignness” by providing clear, actionable information about regulatory requirements, administrative processes, and investment procedures, thereby lowering the informational barriers that can prevent efficient capital allocation.

The second role, emerging from international business and regional development literature, positions IPAs as *ecosystem orchestrators* that leverage their understanding of regional assets to facilitate the connections between MNEs and local networks. This perspective draws on insights about what MNEs seek from investment locations – access to specialised suppliers, skilled labour, knowledge institutions, and innovation networks – and conceptualises IPAs as actively building and curating these ecosystem connections (McCann & Mudambi 2005, Dunning 2009). Empirical research shows that access to regional supplier networks (Alfaro & Chen 2018), knowledge institutions, and industrial clusters significantly influence both FDI attraction and subsidiary performance, suggesting that institutions capable of facilitating such ecosystem access could play a crucial role in FDI outcomes. As such, IPAs engage in after-care services, foster linkages with suppliers and research organisations, and develop sector-specific skills programmes, effectively facilitating the territorial embedding that international business literature suggests is crucial for MNE success.

Empirical research has confirmed that IPAs are indeed effective at growing FDI inflows into the regions and countries they represent (Harding & Javorcik 2011, Carballo et al. 2021). However, the empirical literature has predominantly focused on the information intermediary role as the primary mechanism through which IPAs influence FDI outcomes. Yet emerging evidence suggests that the ecosystem orchestrator role may also be significant. Crescenzi et al. (2021), focusing on regional IPAs specifically, find that IPA effects concentrate in knowledge-intensive sectors – precisely the types of industries where ecosystem benefits such as access to skilled labour, research institutions, and innovation networks would be expected to matter most. This sectoral pattern hints that mechanisms beyond simple information provision may be at play.

Yet while we know that these ecosystem-building activities are being performed by IPAs, relatively little empirical evidence of this effect exists. Moreover, we know little about whether either (or both) of these potential IPA roles prove particularly decisive in contexts of heightened uncertainty. In stable contexts, the information intermediary role appears well-suited to reducing the transaction costs and information asymmetries that characterise cross-border investment. However, in contexts of fundamental uncertainty – where the future regulatory, trade, or economic environment is genuinely unknown – traditional information provision may be less effective at resolving uncertainties that no amount of current information can address. In such contexts, the ecosystem-orchestrator

role may become more crucial, as access to valuable regional assets and embedded relationships can provide operational benefits that help offset the costs of an uncertain investment environment.

However, the ecosystem-orchestrator role is inherently more complex and resource-intensive than traditional information provision. Building and maintaining regional ecosystems requires sustained coordination across multiple partners – universities, industry associations, skills providers, infrastructure bodies – each operating under distinct mandates, funding streams, and accountability structures (Bachtler et al. 2019). The network governance literature emphasises that effective ecosystem orchestration demands not only sustained relationship-building but also sufficient convening power to align diverse stakeholders around shared objectives and institutional authority to mobilise complementary resources (Sotarauta & Mustikkämäki 2010, Rodríguez-Pose & Garcilazo 2015). These coordination challenges are substantial, suggesting that institutional capacity – in terms of resources, formal powers, and organisational capability – may significantly moderate institutions' ability to deliver ecosystem benefits.

In the UK context, regional institutions vary markedly in their capacity to undertake such complex orchestration. Combined Authorities – statutory bodies with devolved powers over economic development, transport, and skills policy – command substantially greater financial resources, dedicated staff capacity, and formal authority compared to Local Enterprise Partnerships (voluntary partnerships with limited budgets and advisory roles) or Upper Tier Local Authorities such as County Councils, whose investment promotion activities typically constitute a minor function within broader local government responsibilities (Pike et al. 2016, O'Brien & Pike 2015). This institutional heterogeneity, combined with the heterogeneous impacts of Brexit uncertainty across sectors and FDI types, provides an unusually rich empirical setting. The UK's regional IPAs during the Brexit uncertainty period thus offer a unique opportunity to investigate which mechanisms prove decisive when fundamental uncertainty threatens investment decisions – and how institutional capacity moderates these effects.

2.2 Conceptual Framework & Hypotheses

My conceptual framework starts from the understanding that IPAs may influence FDI decisions through two broad mechanisms: information sharing and ecosystem-orchestration. Under the information sharing mechanism, IPAs help MNEs by providing vital information and lowering information asymmetries in targeted sectors where they have built relationships and expertise, making (re)investment decisions less risky through better knowledge of regulatory requirements, administrative processes, and local market conditions. Under the ecosystem-orchestration mechanism, IPAs have an effect by taking action

to build attractive regional ecosystems within which investors become carefully embedded – through aftercare services, fostering supplier linkages, developing sector-specific skills programmes, and facilitating connections with research institutions.

In the specific context of Brexit uncertainty, I hypothesise that the ecosystem-orchestration mechanism is significantly more important, while the information-sharing role takes a back seat. Unlike relatively stable contexts where IPAs solve information asymmetries and reduce the cost of investment for MNEs, Brexit presented not an information asymmetry that could be resolved, but rather a fundamental lack of information which IPAs could not address. Brexit constituted a national-level uncertainty that regional IPAs had little sway over, particularly regarding the future trading relationship between the UK and its main trading partner, the EU. Qualitative evidence confirms the very limited scope for providing ‘new’ information that UK IPAs had during the Brexit uncertainty period (Fuller 2021). Any support that IPAs could continue providing regarding traditional information asymmetries was likely to pale in comparison to the uncertainty at the national level. From the perspective of an MNE weighing up an investment decision in the UK, little did it matter whether an IPA provides locational information when there are fundamental unknowns around whether a UK operation will be able to seamlessly export goods to EU markets or access EU suppliers. Given that FDI decisions constitute cost-benefit analyses, if costs rise so dramatically that the informational benefits from IPAs become negligible, then inward FDI may behave similarly regardless of IPA presence. Instead, I hypothesise that the kind of IPA support that could be decisive during the Brexit uncertainty period was that which had served to foster embeddedness into valuable regional ecosystems over time, and which are not necessarily (or immediately) undone by the Brexit vote. Where these activities had taken place pre-Brexit, I posit that MNE investors could recognise access to ecosystems such that, in the face of costly uncertainty, the benefit from continuing to invest still outweighs the decision not to invest or to divest.

To investigate my overarching hypothesis – that IPA effectiveness during uncertainty operates primarily through ecosystem-orchestration rather than information-sharing – I define two testable hypotheses regarding the heterogeneous effects I may expect to find. Because FDI of different types, sectors, and motivations is likely differentially influenced by Brexit uncertainty and more or less sensitive to different kinds of IPA activities, finding results in some categories over others can provide strong indication of the mechanism at play.

The first distinction I make is between new FDI and repeat FDI by established investors. If positive effects accrue to established investors rather than new FDI, this provides evidence in favour of the ecosystem-orchestration role, while the opposite would suggest information-sharing as the main channel. The intuition is twofold: first, established

MNE investors considering repeat investment are more exposed to ecosystem-building activities because they already operate in the region and directly experience operational benefits, whereas new investors perceive these as potential rather than realised advantages. Second, established investors have already navigated market entry barriers, so their repeat FDI hinges relatively less on information provision and more on ecosystem embeddedness – access to skilled staff, suppliers, or R&D networks. Conversely, finding effects for new FDI would go against my main hypothesis and suggest that IPA roles in uncertainty contexts are much the same as in stable times.

The second distinction is between FDI in high Brexit uncertainty exposure sectors (manufacturing) and low Brexit uncertainty exposure sectors (Knowledge Intensive Services). A larger effect for KIS FDI would provide further evidence that the operative channel is ecosystem-orchestration. Manufacturing sectors experienced the most severe levels of Brexit uncertainty, with concerns about future access to intricate, ‘just-in-time’ supply chains weighing heavily on operational and investment decisions (Bailey & De Propis 2017, Bailey & Rajic 2022, Bloom et al. 2019). In such contexts, IPA impact may be limited – it matters little whether a region-sector has been exposed to ecosystem-building activities if the broader locational advantage of UK access to the EU single market is in jeopardy. Even established manufacturing investors may find that supply chain disruption threats outweigh benefits from specialised regional ecosystems. Conversely, KIS sectors faced different Brexit uncertainties that were often less immediate and potentially more manageable (Fuller 2021). While some KIS MNEs relied on EU market access, threats could often be managed through less costly adaptations. The gravest threat – continued access to high-skill EU labour – represented a longer-term rather than immediate operational concern. As such, KIS sector MNEs contemplating investment are more likely to proceed if they perceive ecosystem benefits such as specialised R&D capabilities, collaboration with local education and training institutions, or strong relationships with local policy-makers and regulators. If, on the other hand, IPAs’ activities were effective for manufacturing FDI, this would suggest that even in such contexts IPAs continue to operate (at least partly) as traditionally understood: by assisting with information needs.

Table 1 summarises the conceptual framework and hypotheses discussed above. The following section outlines the data and empirical methodology that I take in order to explore these hypotheses.

Table 1: Summary of hypothesis and expected effects, vs. the ‘counter-hypothesis’

Hypothesis	Counter Hypothesis
H1: In times of uncertainty, IPAs’ role in growing FDI is limited to the ecosystem-building channel	C1: In times of uncertainty, IPAs’ role in growing FDI continues to operate through channel of information assistance
Hypothesised effects	Hypothesised effects (counter)
Effect of IPAs concentrates on FDI types deriving relatively greater benefit from ecosystem factors, specifically:	Effect of IPAs is predominantly on FDI types deriving relatively greater benefit from information assistance:
H1.1: Repeat FDI	C1.1: New FDI
H1.2: KIS sector FDI	C1.2: Manufacturing FDI

3 Data & Methodology

To explore these hypotheses, I combine information on the sector-targeting strategies in place by IPAs with geo-located, UK-bound inward FDI from July 2010 to July 2019. The result is a panel dataset of region-sectors in the UK with ‘treatment’ dummies identifying those that were exposed to an IPA targeting strategy in the pre-Brexit period, and outcome data in terms of inward FDI (both new and repeat investment) both in the pre-Brexit vote (July 2010–June 2016) and post-Brexit vote (July 2016–June 2019) period. This section describes the data sources and presents descriptive patterns that motivate my empirical approach.

3.1 Data on Inward FDI into Great Britain

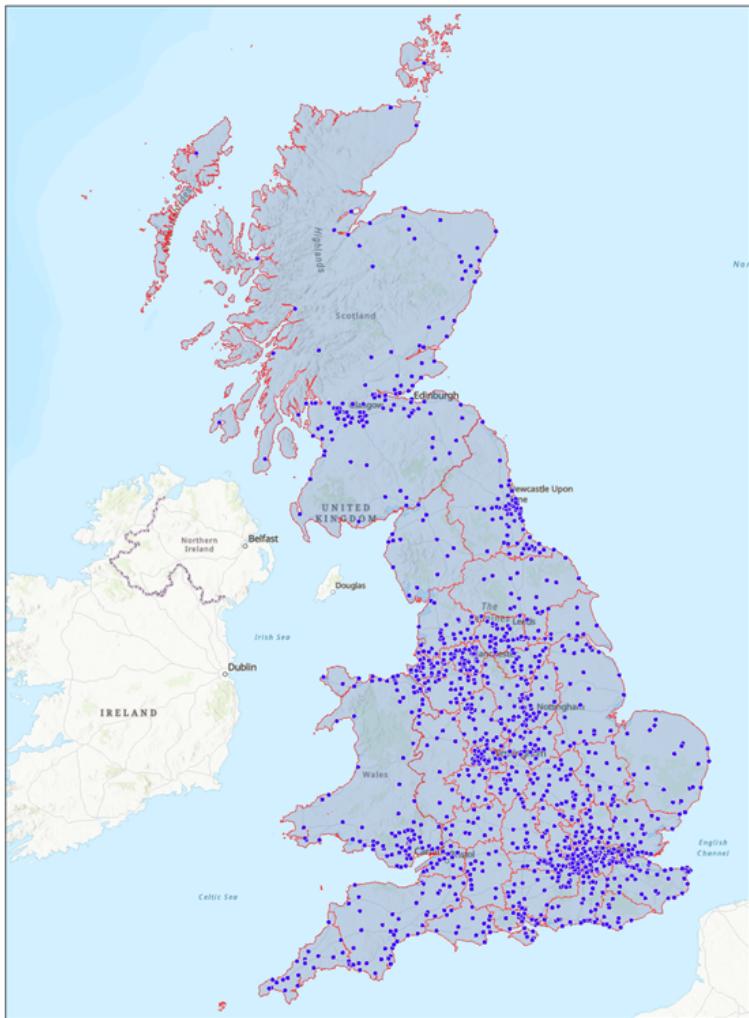


Figure 1: Distribution of FDI projects into Great Britain, 2010-2019.

Source: Orbis-crossborder (Bureau van Dijk / Moody's Analytics 2024).

Data on inward FDI are sourced from the Orbis-crossborder database by Bureau van Dijk (BvD) / Moody's Analytics (Bureau van Dijk / Moody's Analytics 2024). This provides geo-located information on every new FDI project/expansion made in a UK region going as far back as 2003, including capital value, jobs created and the project description, by NACE sector. In the empirical literature, a frequently-used inward FDI dataset is the fDiMarkets database by the Financial Times. However, I opt for the Orbis-crossborder dataset, as it contains systematic information on key variables such as the FDI motivation or the project description, which enables better exploration of treatment effect heterogeneity. The provision of NACE sector that each FDI project takes place in, which is present in the Orbis-crossborder data but not fDiMarkets², is also useful to more

²fDi Markets instead sorts FDI projects into their own sectoral classification, which would require applying a crosswalk onto the NACE classification.

neatly identify investments in Knowledge-Intensive Services (KIS) and manufacturing sectors, which following the discussion in section 2 constitute a key distinction for my analysis.

Given that the Brexit withdrawal agreement was signed in January 2020, plus the fact that the COVID-19 pandemic that closely followed caused a whole uncertainty shock of its own, I restrict the dataset to investments occurring from July 2010 through to June 2019. Moreover, I exclude Northern Ireland from my study, as its unique situation regarding the Irish border – which needed to remain open under the Good Friday Agreement – likely rendered it subject to a different nature and severity of uncertainty compared to Great Britain. Basic descriptives for FDI projects, in terms of number of events, FDI value and job creation, are shown in Table 2.

Table 2: Basic descriptives on inward FDI projects in Orbis-crossborder database for Great Britain, 2010–2019

FDI Project Type	Num. Projects	FDI Cap.	Value (USD M)	FDI Jobs
New	9,013		198,702	503,539
Repeat	3,422		114,404	256,205
Total	12,435		313,106	759,744

Source: Own elaboration with data from Orbis-crossborder by BvD/Moody's Analytics.

3.1.1 Descriptive Patterns in UK FDI During Brexit Uncertainty

Figure 2 shows the evolution of inward FDI into the UK compared to the five biggest EU27 economies. While UK inward FDI remained virtually flat during the July 2016–December 2019 Brexit uncertainty period, FDI into comparator countries grew by almost 40% in value terms. This suggests that the UK’s stagnation was not due to broader global or European trends, but rather a UK-specific phenomenon. Serwicka & Tambari (2018) estimate that the UK experienced 16–20% lower inward FDI following the Brexit vote compared to a synthetic counterfactual.

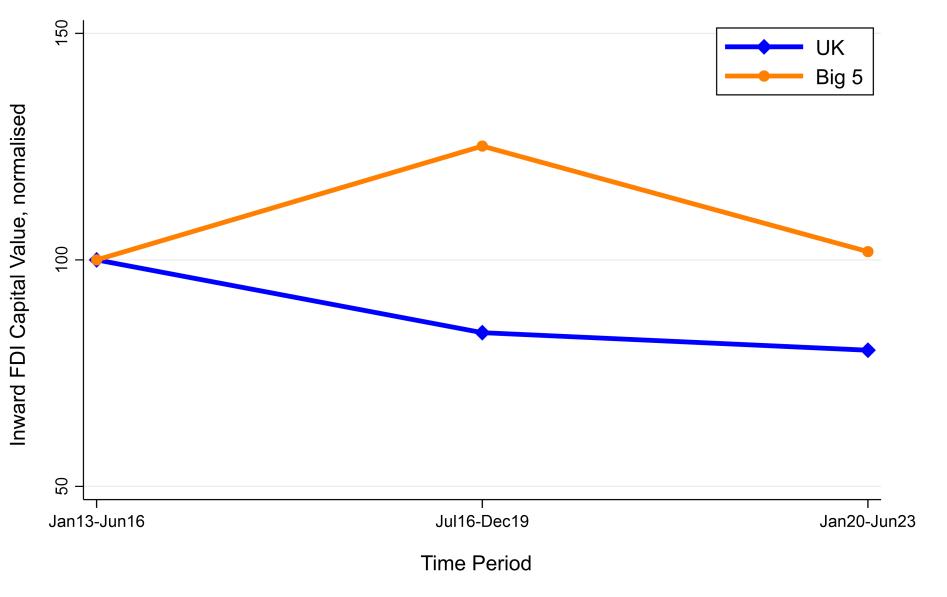


Figure 2: Total value of inward FDI: UK vs. Big 5 EU27 economies (normalised). Big 5 refers to Germany, France, Italy, Spain and Poland.

Source: Own elaboration using data from Orbis-crossborder (Bureau van Dijk / Moody's Analytics 2024).

This aggregate pattern masks significant heterogeneity across investment types and sectors. Figure 3 shows that new FDI projects fell considerably more than repeat investments by established MNEs during the Brexit uncertainty period. This differential response likely reflects the fact that established investors had already absorbed entry costs and developed location-specific knowledge, making additional investment less risky relative to entirely new market entry. Figure 4 reveals stark sectoral divergence: manufacturing FDI fell dramatically while Knowledge-Intensive Services (KIS) sector FDI actually rose. Manufacturing sectors faced acute uncertainty around future tariffs and supply chain access to the EU, whereas KIS sectors – while concerned about labour mobility – faced less immediate operational disruption from potential Brexit outcomes.

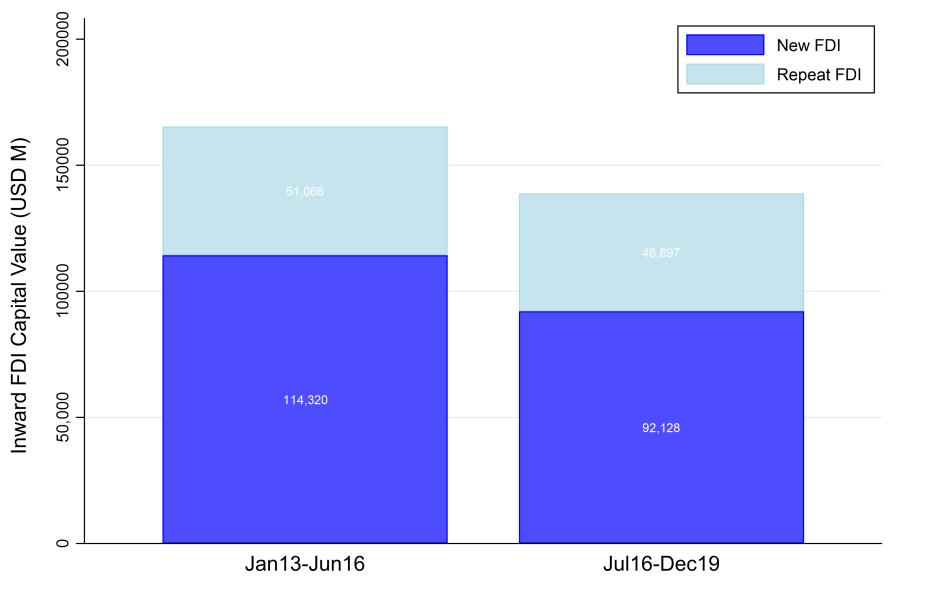


Figure 3: Total value of inward FDI: New vs. Repeat FDI.

Source: Own elaboration using data from Orbis-crossborder (Bureau van Dijk / Moody's Analytics 2024).

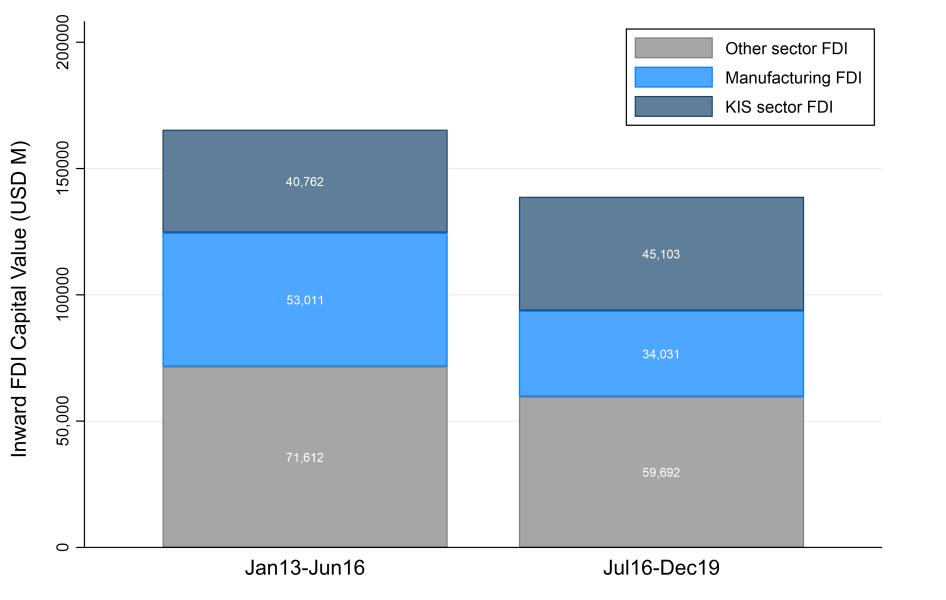


Figure 4: Total value of inward FDI: KIS sectors vs. manufacturing sectors.

Source: Own elaboration using data from Orbis-crossborder (Bureau van Dijk / Moody's Analytics 2024).

Crucially, the impact of Brexit uncertainty varied markedly across UK regions. Figure 5 maps the net change in inward FDI between the pre-Brexit (Jan 2013–Jun 2016) and post-Brexit (Jul 2016–Dec 2019) periods, showing substantial regional heterogeneity in both new and repeat FDI outcomes. Some regions, such as parts of the North

West and Yorkshire, saw relatively modest declines or even increases in FDI, while others – particularly in the Midlands – experienced steep falls. This spatial variation in how regions weathered the Brexit uncertainty shock raises an important question: might differences in regional institutional capacity and policy have played a role in shaping these divergent outcomes? Given that UK regions had varying Investment Promotion Agency strategies in place before the Brexit vote, examining the nature and distribution of these pre-existing policies provides a natural starting point for investigating whether regional institutions helped moderate the negative effects of uncertainty.

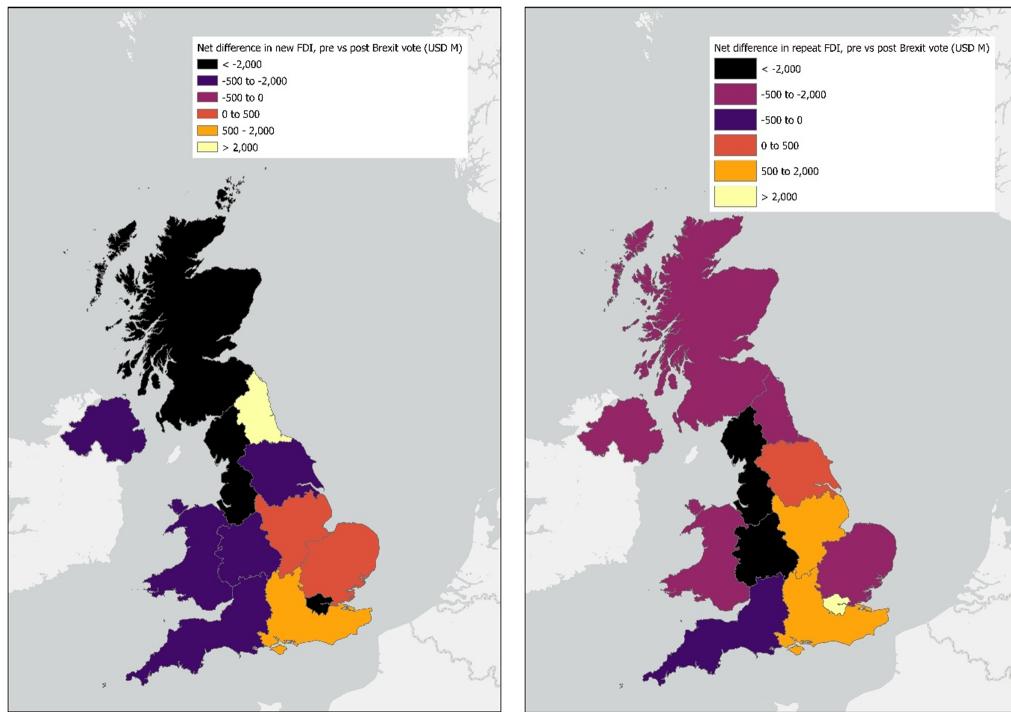


Figure 5: Net change in inward FDI by UK region: new FDI (left) and repeat FDI (right).

Source: Own elaboration using data from Orbis-crossborder (Bureau van Dijk / Moody's Analytics 2024).

3.2 Data on IPA Targeting Strategies

Data on the sector-specific targeting strategies of UK IPAs were collected through the 2018 MASSIVE survey of IPAs in Europe (Crescenzi et al. 2021). This covers 42 IPAs, 40 of which are English, sub-national IPAs while the remaining two are the national IPAs of the two devolved administrations in Great Britain (Scotland and Wales). These are shown in Figure 6, which distinguishes IPAs by institutional form as at 2018, and listed in Appendix ??.

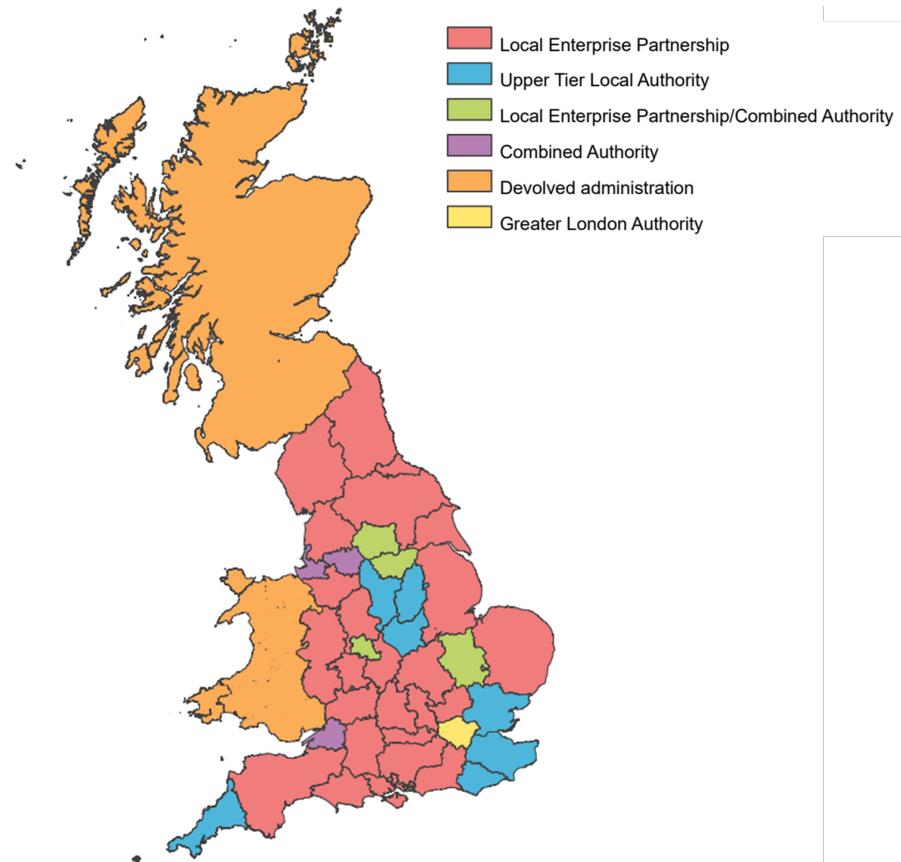


Figure 6: Sample of IPAs in Great Britain, by institution type.

Source: Own elaboration, MASSIVE Survey (2018).

3.2.1 Regional & Sectoral Variation in IPA Targeting Strategies

Of the 42 surveyed IPAs, 34 had sector-targeting strategies at any point in time and 22 had sector-targeting strategies in place before 2015 (and which can therefore be reasonably assumed to have been implemented independently of Brexit and its potential effects). My treatment group consists of the 218 region-sectors which were targeted by the corresponding IPA before 2015, to reflect the fact that Brexit was ‘announced’ in the 2015 Election Conservative Manifesto (published in March 2015). My control group comprises the remaining 622 region-sectors, excluding the few cases where an IPA started targeting a particular sector after 2015 (as these targeting decisions may well have been motivated by Brexit).

Table 3 shows that the treatment and control groups are broadly comparable in terms of regional and sectoral composition, though treated region-sectors are somewhat more likely to be in manufacturing (46.8% vs. 44.4%) and KIS sectors (25.2% vs. 18.2%).

Table 3: Composition of treatment and control groups

Variable	Treatment group	Control group	All
Num. region-sectors	218	622	840
Num. regions represented	24	41	42
<i>Regional composition:</i>			
Share of regions in South East England ^a	26.2%	26.1%	26.2%
Share of Combined Authorities	20.2%	15.5%	16.7%
Share of Local Enterprise Partnerships	39.0%	66.8%	59.5%
Share of County Councils	28.4%	12.6%	16.7%
Share Devolved Administrations ^a	12.4%	5.1%	7.1%
<i>Sectoral composition:</i>			
Num. sectors represented	20	20	20
Share of primary sectors	5.5%	10.6%	10.0%
Share of knowledge-intensive service sectors	25.2%	18.2%	20.0%
Share of other service sectors	18.3%	20.6%	20.0%
Share of manufacturing sectors	46.8%	44.4%	45.0%
Share of energy/utilities sectors	4.1%	5.3%	5.0%

^aIncluding Greater London. Source: MASSIVE Survey (2018).

Figure 7 shows the sectoral distribution of IPA targeting strategies, distinguishing between strategies implemented at any point and those in place before 2015. There is considerable heterogeneity across sectors: while some sectors like food products and biotechnology were often targeted, others saw limited or late adoption of targeting strategies. This variation in regional strategies provides an observable dimension through which to examine whether and how regional institutions may have moderated the negative effects of Brexit uncertainty on inward FDI.

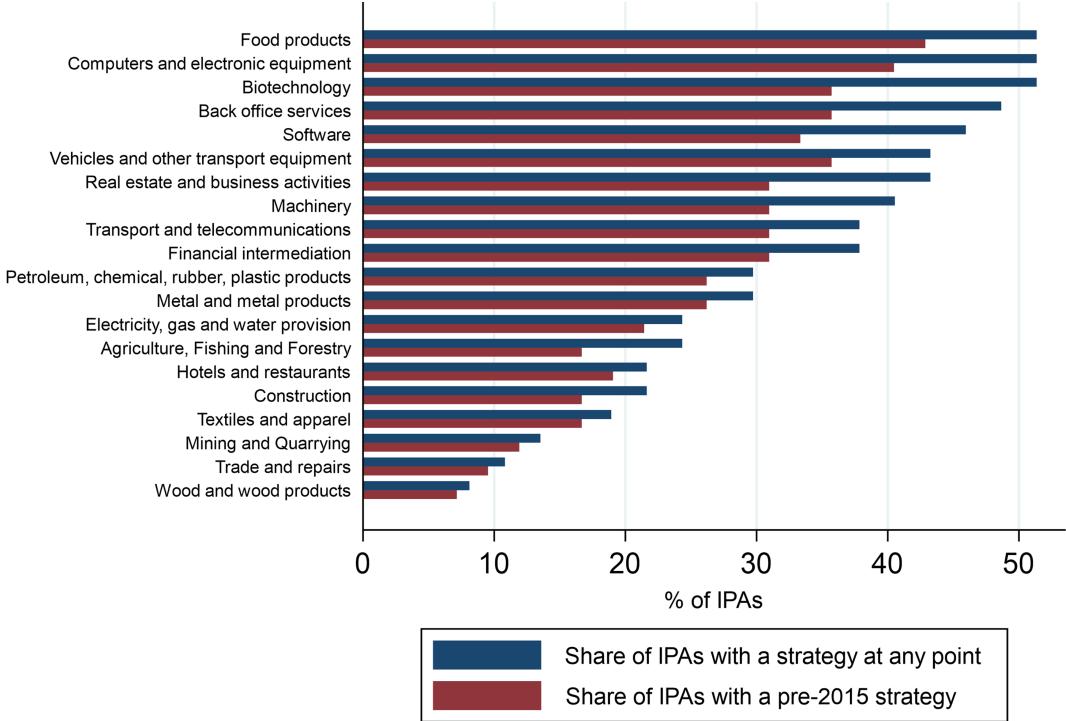


Figure 7: Share of regional IPAs with sector-based strategies by sector.

Source: MASSIVE Survey (2018).

3.3 Empirical Approach

My empirical approach builds on Harding & Javorcik (2011) and Crescenzi et al. (2021), exploiting variation in sector-specific IPA targeting strategies to gauge causal impacts on inward FDI. Identifying such effects is empirically challenging because sector targeting is not random, but rather informed by pre-existing regional strengths or industrial objectives (Loewendahl 2001, 2018). Additionally, regions or sectors may be affected by contemporaneous shocks that correlate with treatment designation and confound results.

To mitigate this, past studies control for confounding variation through time, region and sector fixed effects, and employ staggered difference-in-difference specifications to verify pre-treatment parallel trends (Angrist & Pischke 2008). My approach builds on this work but deviates in two key ways. First, my treatment is the interaction of region-sector exposure to an IPA strategy and being in the post-Brexit period, rather than a time-varying treatment dummy. Since treatment ‘switches on’ simultaneously for all treated units, I estimate a standard Two Way Fixed Effects (TWFE) model, though I also estimate dynamic specifications to evaluate parallel trends. Second, I distinguish from the outset between new FDI and repeat FDI, in reflection of the fact that these face different obstacles and must therefore be considered separately.

Specifically, I estimate the following equations, separately for new and repeat FDI:

$$Y_{rst}^{New} = \beta_0 + \beta_1(Targeted_{rs} \times Post_Brexit_t) + \alpha_{rs} + \delta_{rt} + \gamma_{st} + \varepsilon_{rst} \quad (1)$$

$$Y_{rst}^{Repeat} = \beta_0 + \beta_1(Targeted_{rs} \times Post_Brexit_t) + \alpha_{rs} + \delta_{rt} + \gamma_{st} + \varepsilon_{rst} \quad (2)$$

Where Y_{rst}^{New} and Y_{rst}^{Repeat} denote new and repeat FDI into region r , sector s , time-period t , measured at both extensive (any FDI) and intensive margins (IHS of project count, capital value, jobs created)³. Time periods are defined as 12-month intervals from July 2010 through June 2019, yielding nine periods⁴. Knowledge-intensive service (KIS) sectors follow Eurostat's classification of NACE codes; manufacturing sectors comprise all NACE segment C codes.

$Targeted_{rs}$ equals one if region r targeted sector s before 2015, as gauged from the MASSIVE survey (Crescenzi et al. 2021). This cutoff excludes strategies potentially motivated by Brexit fears following the April 2015 Conservative manifesto pledge, ensuring pre-treatment targeting reflects regional strengths rather than Brexit-related considerations. Region-sectors where IPA strategies were implemented in 2015 or later are excluded from the sample.

$Post_Brexit_t$ denotes periods after the Brexit referendum (from July 2016). The coefficient of interest, β_1 , captures the average change in Y_{rst} during the post-Brexit period for targeted region-sectors relative to untargeted ones. α_{rs} , δ_{rt} , and γ_{st} denote region-sector, region-time, and sector-time fixed effects. ε_{rst} denotes a heteroskedasticity-robust standard error, clustered at the region-sector level.

Exploring my hypotheses about IPAs' role during heightened uncertainty requires moving beyond average treatment effects. I therefore specify the above regressions for subsets of the data, examining heterogeneous effects by FDI sector, MNE motivation, and region characteristics. As discussed in section 2.2, if ecosystem-building dominates, effects should concentrate among repeat FDI and KIS sectors. Moreover, evidence that effects are particularly large for FDI specifically motivated by ecosystem-related factors, or concentrated in less economically dense regions where ecosystem benefits are not readily available, would provide further support for my hypotheses. These heterogeneous effects are explored through sub-sample analysis.

³The IHS transformation is preferred over the natural logarithm because it accommodates zero values, which are common in my data. The IHS transformation approximates the natural logarithm for large values but allows for zeros, maintaining the full sample. The transformation is defined as $IHS(x) = \ln(x + \sqrt{x^2 + 1})$.

⁴The choice of 12-month periods reflects data considerations around sufficient FDI activity per region-sector-period cell. Monthly or quarterly aggregation would result in many zero-valued cells, particularly for smaller regions or less popular sectors.

3.3.1 Additional Empirical Challenges

Several concerns could threaten the empirical validity of this specification. The first relates to the parallel trends assumption. Even though I limit analysis to pre-2015 targeting strategies to minimise endogeneity, this does not guarantee that treated and control region-sectors were following parallel trends in FDI outcomes before Brexit (Angrist & Pischke 2008). If treated region-sectors were already experiencing differential FDI growth prior to Brexit, this would violate parallel trends and bias my estimates. To address this, I specify dynamic treatment effects models that replace the simple post-treatment dummy with individual time period indicators, allowing me to directly test parallel trends and observe the evolution of treatment effects:

$$Y_{rst}^{New} = \beta_0 + \sum_{k \neq -1} \beta_k (Targeted_{rs} \times Period_k) + \alpha_{rs} + \delta_{rt} + \gamma_{st} + \varepsilon_{rst} \quad (3)$$

$$Y_{rst}^{Repeat} = \beta_0 + \sum_{k \neq -1} \beta_k (Targeted_{rs} \times Period_k) + \alpha_{rs} + \delta_{rt} + \gamma_{st} + \varepsilon_{rst} \quad (4)$$

Here, β_k coefficients correspond to the difference between treatment and control for each time period k before or after the final pre-treatment period, with time periods defined identically to specifications (1) and (2).

The second concern acknowledges that IPA targeting strategies are documented to be effective during stable economic periods (Harding & Javorcik 2011, Crescenzi et al. 2021). If IPAs were already successfully attracting additional FDI before Brexit, this would manifest as positive pre-trends, but these would reflect legitimate IPA effectiveness rather than violations of parallel trends. The key question is whether Brexit uncertainty altered the magnitude, sectoral distribution, or mechanisms of IPA effectiveness. To address this and provide context for my main results, I conduct a complementary event study focusing exclusively on the pre-Brexit period (2010–2016), examining effects of new targeting strategy introductions during stable times:

$$Y_{rst}^{New} = \beta_0 + \sum_{k \neq -1} \beta_k \mathbb{1}[t - T_{rs}^* = k] + \alpha_{rs} + \delta_{rt} + \gamma_{st} + \varepsilon_{rst} \quad (5)$$

$$Y_{rst}^{Repeat} = \beta_0 + \sum_{k \neq -1} \beta_k \mathbb{1}[t - T_{rs}^* = k] + \alpha_{rs} + \delta_{rt} + \gamma_{st} + \varepsilon_{rst} \quad (6)$$

Here, $\mathbb{1}[t - T_{rs}^* = k]$ indicates k periods relative to when region-sector rs first received targeting (T_{rs}^*), tracing dynamic effects from introduction. This baseline analysis helps distinguish between normal-times IPA effectiveness and differential effects emerging dur-

ing uncertainty periods. These event studies are estimated both as standard dynamic TWFE and using estimators that correct for potential biases in staggered adoption settings, namely Sun & Abraham (2021).

A third concern relates to potential spillover effects across regions or sectors. However, several features of the UK IPA landscape make such spillovers unlikely in this context. First, UK IPAs operate within well-defined jurisdictions (county, city-region, or devolved administration boundaries) and to an extent compete with one another for FDI, limiting cross-regional spillovers. Second, sector targeting is a well-established and deliberate practice in investment promotion (Loewendahl 2001, 2018), with IPAs typically organising internal teams and expertise around targeted sectors – for example, employing mechanical engineers to lead automotive manufacturing promotion or biomedicine specialists for life sciences sectors. This sector-specific structuring of resources and capabilities reinforces clear boundaries between targeted and non-targeted sectors, reducing the scope for cross-sector contamination of treatment effects. The most plausible spillover concern is temporal: IPAs may have informally targeted sectors before or after formally declaring strategies. I address this concern in Section 5 through sensitivity tests around treatment timing.

A related concern involves heterogeneity in institutional form across UK IPAs – from devolved administrations in Scotland and Wales to Combined Authorities, Local Enterprise Partnerships, and Upper Tier Local Authorities in England – which could introduce variation in treatment intensity or nature. Rather than viewing this as a weakness, I treat institutional heterogeneity as empirically valuable, enabling subsample analysis that sheds light on how institutional capacity moderates IPA effectiveness (Section 4.1). That said, to ensure institutional comparability in my main specifications, I exclude Scotland, Wales and Greater London, focusing exclusively on English regions where IPAs operate under more comparable institutional frameworks. My main results are replicated including Scotland, Wales and Greater London to demonstrate that their inclusion does not substantially alter my findings.

Additional robustness concerns are addressed in Section 5. These include: (i) potential heterogeneous treatment effects arising from ‘flight-to-safety’ dynamics during the Brexit uncertainty period, where historically strong region-sectors may attract disproportionate FDI during uncertainty periods, independent of IPA targeting; and (ii) the potential for pre-existing differential trends in outcomes between targeted and non-targeted region-sectors that are unrelated to uncertainty-specific IPA effects and not fully addressed in my main specifications.

4 Results

This section outlines the results of the regressions specified to verify the hypotheses outlined in section 2.3. For each of my two main outcomes – capital value and number of projects – I show results for three variants of my specification: first, a 'simple' specification that includes just 12-month period and region-sector fixed effects; second, a specification that adds region-by-time and sector-by-time fixed effects to absorb changes in my outcome explained by region-specific or sector-specific shocks; and third, a specification that additionally controls for the interaction between pre-Brexit FDI growth rates and the post-Brexit period, addressing the concern that IPA targeting may have correlated with pre-existing growth trajectories. Results for another two outcomes (number of FDI projects and job creation) are presented in the Appendix.

Table 4: Impact of pre-Brexit IPA targeting on inward FDI into English regions (excl. Greater London), 2010–2019, new vs. repeat investments

	IHS cap. value			Dummy FDI		
	(1)	(2)	(3)	(4)	(5)	(6)
NEW FDI						
Pre-2015 IPA targeting	0.001	-0.010	-0.014	0.001	-0.016	-0.017
× Post-Brexit	(0.096)	(0.126)	(0.125)	(0.021)	(0.030)	(0.030)
Observations	6,900	6,900	6,900	6,900	6,900	6,900
R-squared	0.411	0.497	0.497	0.430	0.506	0.506
REPEAT FDI						
Pre-2015 IPA targeting	0.308***	0.325**	0.323**	0.056**	0.057	0.057
× Post-Brexit	(0.097)	(0.140)	(0.141)	(0.024)	(0.036)	(0.036)
Observations	6,900	6,900	6,900	6,900	6,900	6,900
R-squared	0.332	0.412	0.412	0.343	0.427	0.427
Region-Sector FE	Yes	Yes	Yes	Yes	Yes	Yes
Sector×Time FE	No	Yes	Yes	No	Yes	Yes
Region×Time FE	No	Yes	Yes	No	Yes	Yes
Pre-Brexit Growth × Post	No	No	Yes	No	No	Yes

*** p<0.01, ** p<0.05, * p<0.1. Standard errors are clustered at the region-sector level. New FDI includes Orbis-crossborder projects categorized as "Greenfield" or "New foreign location". Repeat FDI includes projects categorized as "Expansions", "Co-locations" and "Re-locations" under variable "Project type". Dummy FDI indicates whether any FDI project occurred in a given region-sector-time cell (extensive margin). Time periods are 12-month intervals from July 1st to June 30th, beginning on July 1st 2010 and ending in June 30th 2019 (giving 9 time periods). Unit of analysis are region-sector-12month cells. Greater London, Scotland, and Wales are excluded from all regressions, given that these IPAs operate at a fundamentally different scale than regional IPAs, and their inclusion produces unstable estimates that obscure patterns for typical regional agencies. That said, results including these IPAs show similar patterns, and are available upon request. Region-sectors where an IPA strategy was put in place in 2015 or later, and which can be more reasonably assumed to have been influenced by the announcement of the Brexit referendum within the 2015 Conservative election manifesto, are dropped from all regressions.

Table 4 shows results for my full sample of region-sectors. It can be seen how IPA targeting appears to have no effect on new inward FDI into those region-sectors that were targeted. For repeat FDI, however, there is in fact some evidence that such strategies led to a positive increase in FDI during the Brexit negotiation period, particularly when measured at the intensive margin (FDI capital value).

To dig further into these results for repeat FDI, and in line with the theoretical distinction between information-provision and ecosystem-building mechanisms, Table 5 distinguishes between repeat FDI in KIS and manufacturing sectors. As discussed in section 2.3, each faced different threats deriving from Brexit uncertainty, and may therefore exhibit different reactions to treatment.

Table 5: Impact of pre-Brexit IPA targeting on inward repeat FDI into English regions (excl. Greater London), 2010–2019, manufacturing vs. KIS sector

	IHS cap. value			Dummy FDI		
	(1)	(2)	(3)	(4)	(5)	(6)
MANUFACTURING FDI						
Pre-2015 IPA targeting	0.158**	0.124	0.122	0.038**	0.022	0.022
× Post-Brexit	(0.073)	(0.112)	(0.112)	(0.016)	(0.024)	(0.025)
Observations	6,900	6,900	6,900	6,900	6,900	6,900
R-squared	0.342	0.399	0.399	0.325	0.386	0.386
KNOWLEDGE-INTENSIVE SERVICES FDI						
Pre-2015 IPA targeting	0.151***	0.171***	0.169***	0.038**	0.041**	0.041**
× Post-Brexit	(0.052)	(0.064)	(0.064)	(0.015)	(0.020)	(0.020)
Observations	6,900	6,900	6,900	6,900	6,900	6,900
R-squared	0.474	0.547	0.547	0.465	0.538	0.538
Region-Sector FE	Yes	Yes	Yes	Yes	Yes	Yes
Sector×Time FE	No	Yes	Yes	No	Yes	Yes
Region×Time FE	No	Yes	Yes	No	Yes	Yes
Pre-Brexit Growth × Post	No	No	Yes	No	No	Yes

*** p<0.01, ** p<0.05, * p<0.1. Standard errors are clustered at the region-sector level. Each outcome refers to FDI projects listed in Orbis-crossborder as “Expansions”, “Co-locations” and “Re-locations” under variable “Project type”. Dummy FDI indicates whether any FDI project occurred in a given region-sector-time cell (extensive margin). Time periods are 12-month intervals from July 1st to June 30th, beginning on July 1st 2010 and ending in June 30th 2019 (giving 9 time periods). Unit of analysis are region-sector-12month cells. KIS sectors identified in line with Eurostat definition of KIS NACE sectors, as detailed in [https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Glossary:Knowledge-intensive_services_\(KIS\)](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Glossary:Knowledge-intensive_services_(KIS)). Manufacturing sector FDI are all projects falling under NACE code C. Greater London, Scotland, and Wales are excluded as they are where an IPA strategy was put in place in 2015 or later, and which can be more reasonably assumed to have been influenced by the announcement.

It can be seen how IPA strategies were effective in protecting repeat FDI where these applied to KIS sectors. For manufacturing sectors – where trade-related Brexit uncertainty was particularly acute – we find no robust evidence of IPA targeting effectiveness.

While the simple specification (column 1) suggests a positive effect, this disappears when we control for region-specific and sector-specific time trends (columns 2-3), indicating that the initial result likely reflected confounding shocks rather than genuine treatment effects.

For KIS sectors, IPA targeting strategies implemented pre-2015 are associated with substantially larger repeat FDI investments during the Brexit uncertainty period. Region-sectors where such strategies were in place received investments that were, on average, 18.4% larger in capital value and 20.6% larger in job creation compared to non-targeted region-sectors.⁵ At the extensive margin, targeted region-sectors were 4.1 percentage points more likely to receive repeat KIS FDI. Results for number of projects (6.7% increase under OLS) do not survive specification using Poisson Pseudo-Maximum Likelihood, the appropriate estimator for count data, indicating sensitivity to distributional assumptions (results available upon request).

Figure 8: Dynamic treatment effects on KIS repeat FDI

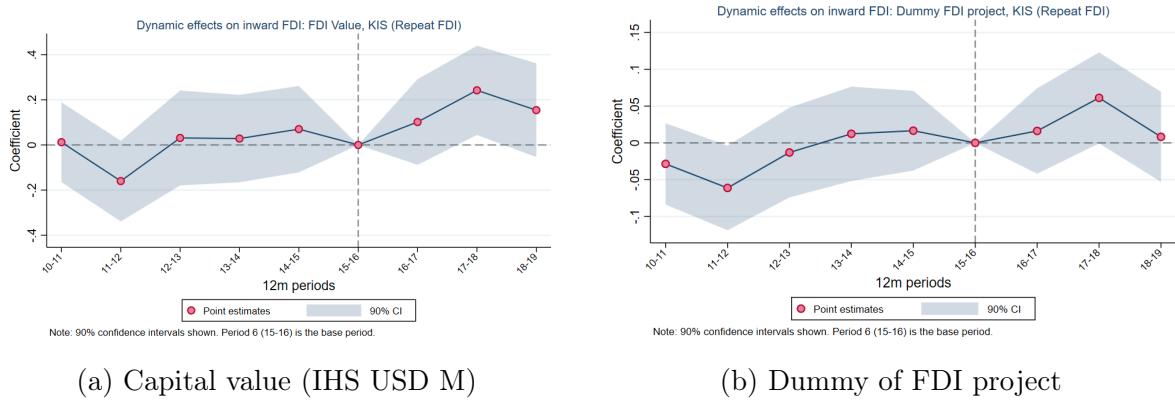


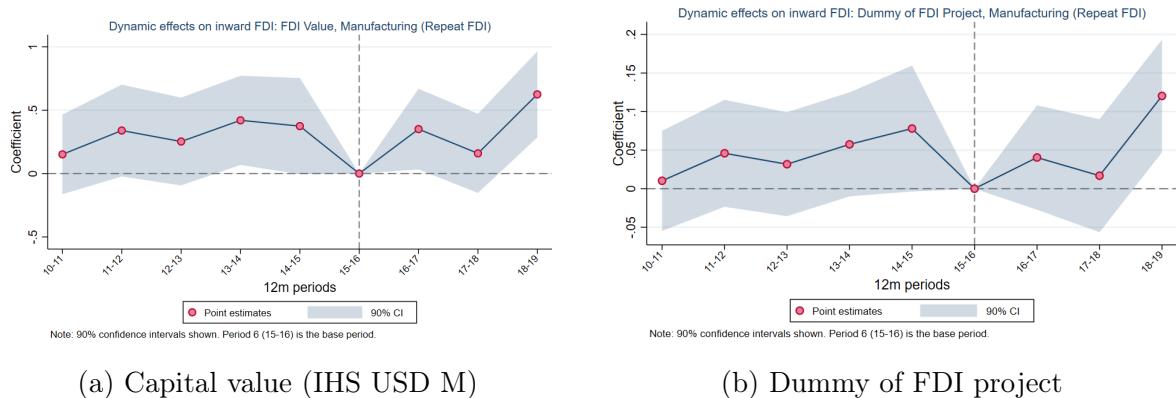
Figure 8 presents event study estimates, confirming parallel pre-trends between treated and control region-sectors. Pre-treatment coefficients hover around zero and remain statistically insignificant, validating our identification strategy. Post-Brexit, treatment effects emerge and persist across all three post-treatment periods, consistent with IPAs providing sustained protection against uncertainty shocks. Event study results for my other two outcomes, IHS job creation and IHS number of projects, are shown in Figure A1. When including Greater London, Scotland and Wales (see Figure A2), which as discussed are not considered fully comparable to English IPAs in terms of resourcing and capabilities (and are therefore excluded in our main results), dynamic effects on KIS repeat FDI follow a similar pattern - if anything, the post-treatment effect becomes stronger. Notably, effects are more pronounced on the intensive margin (capital value) than the extensive margin (whether any FDI occurred), suggesting that IPA targeting primarily

⁵Percentage changes are calculated as $(e^\beta - 1) \times 100$ where β is the estimated coefficient from the preferred specification (column 2) using IHS-transformed outcomes.

influenced the scale of existing investors' commitments rather than simply maintaining their presence in the region. Dynamic estimates for manufacturing repeat FDI (shown in Figure 9 below), on the other hand, confirm the absence of robust treatment effects in these sectors, with both pre- and post-treatment coefficients remaining statistically indistinguishable from zero.

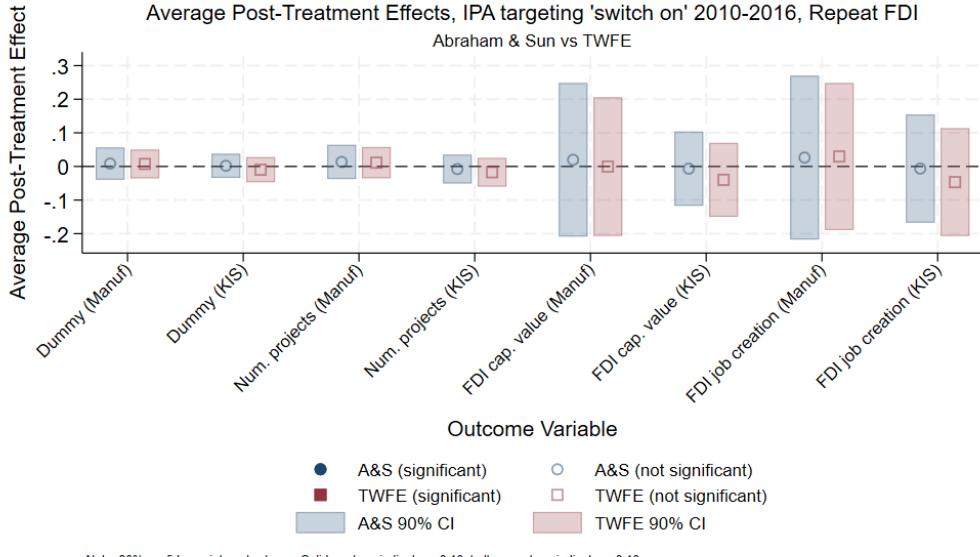
A natural question arising from the existing literature on IPA effectiveness is whether the positive effects observed for KIS repeat FDI are truly specific to the post-Brexit uncertainty period, or simply reflect the well-documented effectiveness of IPA targeting in normal times. If the latter, my results would represent a continuation of pre-existing IPA impacts rather than evidence that uncertainty contexts specifically activate additional, ecosystem-building mechanisms. Indeed, the dynamic results for manufacturing repeat FDI just presented (Figure 9) hint this may be occurring: positive (though insignificant) coefficients of similar magnitude appear in both pre- and post-Brexit periods, with no discernible break at the referendum.

Figure 9: Dynamic treatment effects on Manufacturing repeat FDI



Both under a standard TWFE model and when applying corrections for potential biases in staggered estimation (Sun & Abraham 2021), IPA targeting strategies show no significant association with increased inward FDI during the pre-Brexit period (2010–2016), for either manufacturing or KIS sectors (Figure 10). While this null result should be interpreted with caution given the limited post-treatment windows available, it provides reassurance that the positive effects observed for KIS repeat FDI under specifications (1)–(4) are unique to the post-Brexit uncertainty period rather than reflecting a continuation of pre-existing trends.

Figure 10: Average post-treatment effects of IPA targeting strategies switching on between 2010 and 2016, repeat FDI.



Note: The equivalent figure for new FDI is shown in Appendix Figure A3. Individual event study plots for each outcome are available upon request.

This pattern – where IPA effectiveness ‘switches on’ during the Brexit uncertainty shock – suggests that English IPAs play a distinct protective role during crises. The concentration of effects in repeat KIS FDI – which is relatively more sensitive to ecosystem-related factors in investment decision-making – suggests that ecosystem-building mechanisms, rather than traditional information-provision, drive IPA effectiveness under uncertainty. The following section explores heterogeneous effects within KIS repeat FDI to further investigate this channel.

4.1 Heterogeneous Effects

In order to further characterise the channel through which IPA targeting operates to protect inward FDI during times of uncertainty, in this section I further distil results by geography and FDI motivation. If stronger effects accrue to certain parts of the UK (for example, regions that are traditionally more/less economically dynamic), or for FDI projects motivated by particular factors (for example, those that cite access to a particular regional asset), then this may provide reinforcing evidence that the mechanism in play in such a context is indeed more associated with ecosystem-building than with information-sharing.

4.1.1 Geographic Heterogeneity

Table 6: Impact of pre-Brexit IPA targeting on inward repeat KIS FDI into English regions, 2010–2019, South East England vs. Outside South East England

	IHS cap. value			Dummy FDI		
	(1)	(2)	(3)	(4)	(5)	(6)
SOUTH EAST ENGLAND)						
Pre-2015 IPA targeting	-0.060	0.203	0.177	-0.034	-0.162	-0.172
× Post-Brexit	(0.083)	(0.628)	(0.635)	(0.023)	(0.127)	(0.129)
Observations	1,770	1,770	1,770	1,770	1,770	1,770
R-squared	0.423	0.536	0.536	0.368	0.495	0.495
Outside South East England						
Pre-2015 IPA targeting	0.235***	0.196***	0.196***	0.067***	0.055***	0.055***
× Post-Brexit	(0.064)	(0.062)	(0.062)	(0.018)	(0.019)	(0.019)
Observations	5,130	5,130	5,130	5,130	5,130	5,130
R-squared	0.494	0.566	0.566	0.498	0.568	0.568
Region-Sector FE	Yes	Yes	Yes	Yes	Yes	Yes
Sector×Time FE	No	Yes	Yes	No	Yes	Yes
Region×Time FE	No	Yes	Yes	No	Yes	Yes
Pre-Brexit Growth × Post	No	No	Yes	No	No	Yes

*** p<0.01, ** p<0.05, * p<0.1. Standard errors are clustered at the region-sector level. Each outcome refers to FDI projects listed in Orbis-crossborder as “Expansions”, “Co-locations” and “Re-locations” under variable “Project type”. Dummy FDI indicates whether any FDI project occurred in a given region-sector-time cell (extensive margin). Time periods are 12-month intervals from July 1st to June 30th, beginning on July 1st 2010 and ending in June 30th 2019 (giving 9 time periods). IPA regions in South East England include: Berkshire LEP, Buckinghamshire LEP, Coast-to-Capital LEP, East Sussex CC, Enterprise M3 LEP, Essex CC, Hertfordshire LEP, Kent CC, Oxfordshire LEP and Solent LEP. Greater London is excluded. Unit of analysis are region-sector-12month cells. KIS sectors identified in line with Eurostat definition of KIS NACE sectors, as detailed in [https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Glossary:Knowledge-intensive_services_\(KIS\).Region](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Glossary:Knowledge-intensive_services_(KIS).Region) — sectors where an IPA strategy was put in place in 2015 or later, and which can be more reasonably assumed to have been influenced by the announcement.

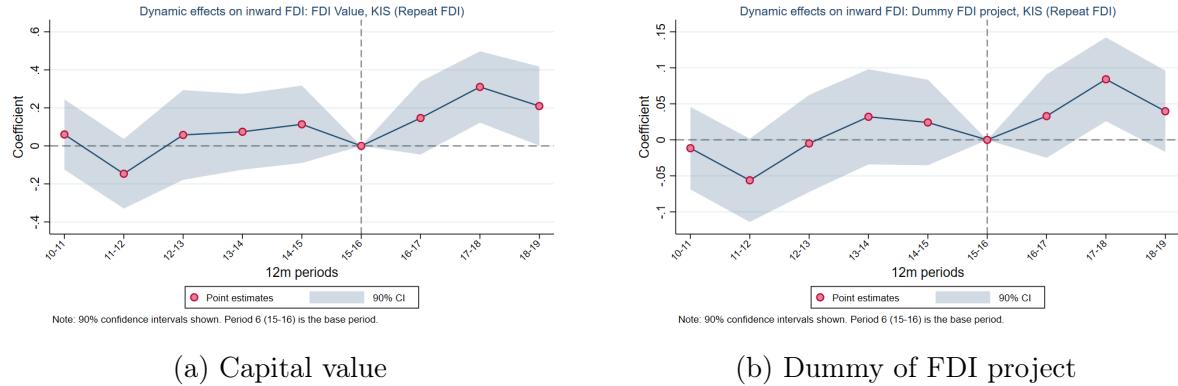
Table 6 examines geographic variation in IPA effectiveness, distinguishing between South East England (excluding Greater London) and the Outside South East England. If ecosystem-building mechanisms drive IPA effectiveness during uncertainty, effects should concentrate in regions where institutional infrastructure is less developed—outside the economically prosperous core where firms already have ready access to established networks and ecosystem benefits.

The results strongly support this prediction. IPA targeting shows robust positive effects in the Outside South East England, with a 21.6% increase in capital value (column 2) and 5.7 percentage point increase in the probability of receiving repeat KIS FDI (column 5). In contrast, we find no significant effects within South East England across any specification or outcome. This geographic heterogeneity provides indicative evidence

for the ecosystem-building mechanism: IPAs protect FDI during uncertainty by embedding firms within regional networks and support structures – functions that add greatest value where such infrastructure must be actively constructed rather than where it already exists.

Figure 11 presents event study estimates for rest of England (i.e., non-South East), confirming parallel pre-trends and the emergence of significant treatment effects post-Brexit. This demonstrates that IPA effectiveness 'switched on' during the Brexit uncertainty period specifically in regions where ecosystem-building activities are most valuable.

Figure 11: Dynamic treatment effects on KIS repeat FDI – Outside South East England



4.1.2 Institutional Capacity

Table 7 distinguishes between effects for regions where the IPA role is taken on by a Combined Authority (CA), and those where this falls to smaller institutions such as Local Enterprise Partnerships (LEPs) or Upper Tier Local Authorities (UTLAs). Combined Authorities are statutory bodies with devolved powers and substantially greater resources than LEPs or UTLAs, making them better equipped for the complex coordination required for ecosystem-building activities (Pike et al. 2016, O'Brien & Pike 2015). If ecosystem-orchestration is indeed the primary channel through which IPAs protect FDI during uncertainty, effects should concentrate in these better-resourced, more capable institutions.

Table 7: Impact of pre-Brexit IPA targeting on inward repeat KIS FDI into English regions, 2010–2019, Combined Authorities IPAs vs. All other IPAs

	IHS cap. value			Dummy FDI		
	(1)	(2)	(3)	(4)	(5)	(6)
COMBINED AUTHORITY IPAs						
Pre-2015 IPA targeting	0.395***	0.220**	0.219**	0.128***	0.083***	0.083***
× Post-Brexit	(0.109)	(0.094)	(0.094)	(0.035)	(0.030)	(0.030)
Observations	1,785	1,785	1,785	1,785	1,785	1,785
R-squared	0.602	0.694	0.694	0.598	0.692	0.692
LEPs/UTLAs						
Pre-2015 IPA targeting	0.048	0.110	0.107	0.001	0.008	0.007
× Post-Brexit	(0.055)	(0.086)	(0.086)	(0.014)	(0.024)	(0.024)
Observations	5,115	5,115	5,115	5,115	5,115	5,115
R-squared	0.382	0.464	0.464	0.355	0.443	0.443
Region-Sector FE	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Sector × Time FE	No	Yes	Yes	No	Yes	Yes
Region × Time FE	No	Yes	Yes	No	Yes	Yes
Pre-Brexit Growth × Post	No	No	Yes	No	No	Yes

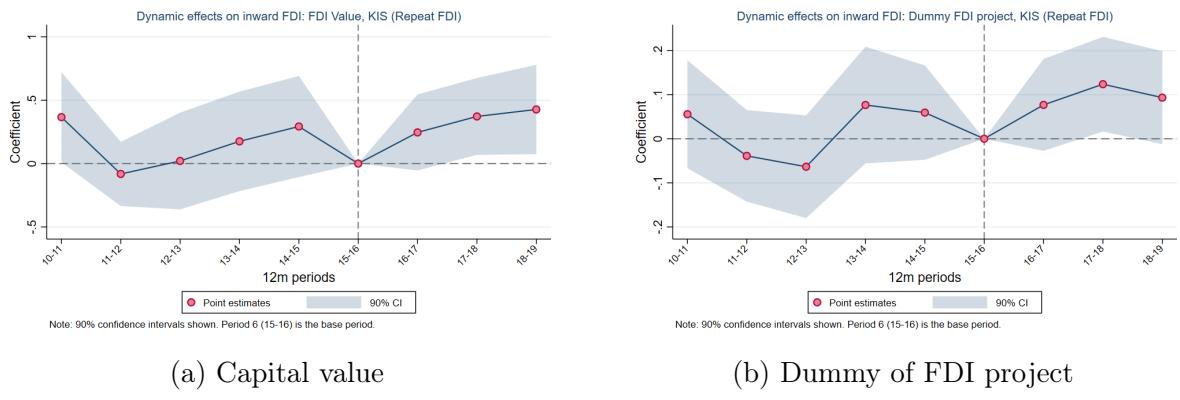
*** p<0.01, ** p<0.05, * p<0.1. Standard errors are clustered at the region-sector level. Each outcome refers to FDI projects listed in Orbis-crossborder as “Expansions”, “Co-locations” and “Re-locations” under variable “Project type”. Dummy FDI indicates whether any FDI project occurred in a given region-sector-time cell (extensive margin). Time periods are 12-month intervals from July 1st to June 30th, beginning on July 1st 2010 and ending in June 30th 2019 (giving 9 time periods). Unit of analysis are region-sector-12month cells. Combined Authority IPAs are those where the FDI promotion service was provided within the context of a Combined Authority as at 2018, or comparable regional institutional forms (such as city-regions) which preceded these but were similarly characterised by their greater powers compared to other local authorities: Greater Manchester CA, West Midlands CA, Cambridgeshire & Peterborough CA, Tees Valley CA, West of England CA, Sheffield-City Region, Leeds City Region, Liverpool City Region, North East Combined Authority. KIS sectors identified in line with Eurostat definition of KIS NACE sectors, as detailed in [https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Glossary:Knowledge-intensive_services_\(KIS\)](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Glossary:Knowledge-intensive_services_(KIS)). Greater London, Scotland, and Wales are excluded from all regressions. Region sectors where an IPA strategy was put in place in 2015 or later, and which can be more reasonably assumed to have been influenced by the announcement of Brexit Growth × Post controls for the interaction between region-sector-specific pre-Brexit FDI growth rates (IHS-transformed, calculated as the difference in average FDI between periods 4–6 and periods 1–3) and a post-Brexit indicator, addressing the concern that IPA targeting may have correlated with pre-existing growth trajectories.

The results support this institutional capacity hypothesis. Combined Authority IPAs show robust positive effects, with a 24.5% increase in capital value (column 2) and 8.7 percentage point increase in FDI probability (column 5). In contrast, LEPs and UTLAs show no significant effects across any specification or outcome. This stark contrast suggests that ecosystem-building during uncertainty requires institutional capacity – statutory authority, devolved powers, and adequate resources – that fragmented LEPs and UTLAs lack.

However, the dynamic estimates for Combined Authorities (Figure 12) reveal some-

what noisier pre-trends than observed in the full sample or geographic splits, with pre-treatment coefficients showing more variability around zero. While this could reflect the smaller sample of CA regions reducing precision, it may also indicate that CA-targeted sectors were experiencing differential trends before Brexit. The post-treatment effects remain clearly positive and larger in magnitude than pre-treatment fluctuations, but the interpretation should acknowledge this additional uncertainty. The concentration of effects in CAs – institutions with greater capacity for complex ecosystem coordination – nevertheless provides additional evidence that ecosystem-building (as opposed to information provision) appears to drive IPA effectiveness during uncertainty.

Figure 12: Dynamic treatment effects on KIS repeat FDI – Combined Authorities



4.2 Investment motivations and IPA effectiveness

The preceding analyses have used theory-guided heterogeneity to interpret the mechanisms through which IPAs protect FDI under uncertainty. The concentration of effects in repeat investments, in knowledge-intensive services, and in regions with greater institutional capacity all point toward ecosystem-building – rather than information provision – as the operative channel. In this section, we provide more direct evidence by examining investors’ stated motivations for their projects.

The FDI data include information on the primary factors motivating each investment, which we group into two categories: ecosystem-related motivations (access to skilled labour, proximity to suppliers, knowledge spillovers, and cluster benefits) and non-ecosystem motivations (domestic market potential, access to European markets, and natural resource availability). If IPA targeting operates through ecosystem-building, we would expect the protective effect during Brexit uncertainty to concentrate among investments where ecosystem factors were the stated motivation.

This analysis requires an important caveat. Motivation data were recorded inconsistently in the early years of our sample, becoming more systematic only from 2016

onward. To address this, we restrict the sample to the 2013-2019 period and retain only region-sectors where at least one project recorded a motivation during the sample period, ensuring comparability across observations. We also exclude projects with unknown motivations, so that our comparison is between projects where ecosystem factors were explicitly cited versus projects where non-ecosystem factors were explicitly cited. These restrictions reduce our sample and shorten the pre-treatment period, but they are necessary for a meaningful comparison.

Results for new FDI, reported in Table A5, show no significant effects regardless of motivation. This is consistent with the expectation that, under heightened uncertainty, IPA effectiveness may not extend to investors who are new to the country: the entry costs facing first-time investors become prohibitive once the uncertainty 'tax' is factored in, and information provision by IPAs does little to resolve fundamentally unresolvable policy uncertainty. Ecosystem benefits, by contrast, flow primarily to established investors who have already absorbed entry costs and can leverage existing benefits provided by tailored regional ecosystems. If this logic is correct, we should observe IPA effects among repeat investors, concentrated in projects where ecosystem factors were the stated motivation.

Table 8: Impact of pre-Brexit IPA targeting on inward repeat FDI into English regions, by investment motivation, 2013–2019

	IHS cap. value			Dummy FDI		
	(1)	(2)	(3)	(4)	(5)	(6)
ECOSYSTEM-MOTIVATED						
Pre-2015 IPA targeting	0.155*	0.238**	0.228**	0.039	0.063**	0.061**
× Post-Brexit	(0.087)	(0.112)	(0.111)	(0.024)	(0.031)	(0.031)
Observations	1,875	1,854	1,854	1,875	1,854	1,854
R-squared	0.277	0.438	0.439	0.271	0.431	0.432
OTHER-MOTIVATED						
Pre-2015 IPA targeting	0.440***	0.285*	0.292*	0.104***	0.064*	0.066*
× Post-Brexit	(0.122)	(0.167)	(0.168)	(0.029)	(0.037)	(0.037)
Observations	1,875	1,854	1,854	1,875	1,854	1,854
R-squared	0.266	0.468	0.468	0.287	0.479	0.480
Region-Sector FE	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Sector×Time FE	No	Yes	Yes	No	Yes	Yes
Region×Time FE	No	Yes	Yes	No	Yes	Yes
Pre-Brexit Growth × Post	No	No	Yes	No	No	Yes

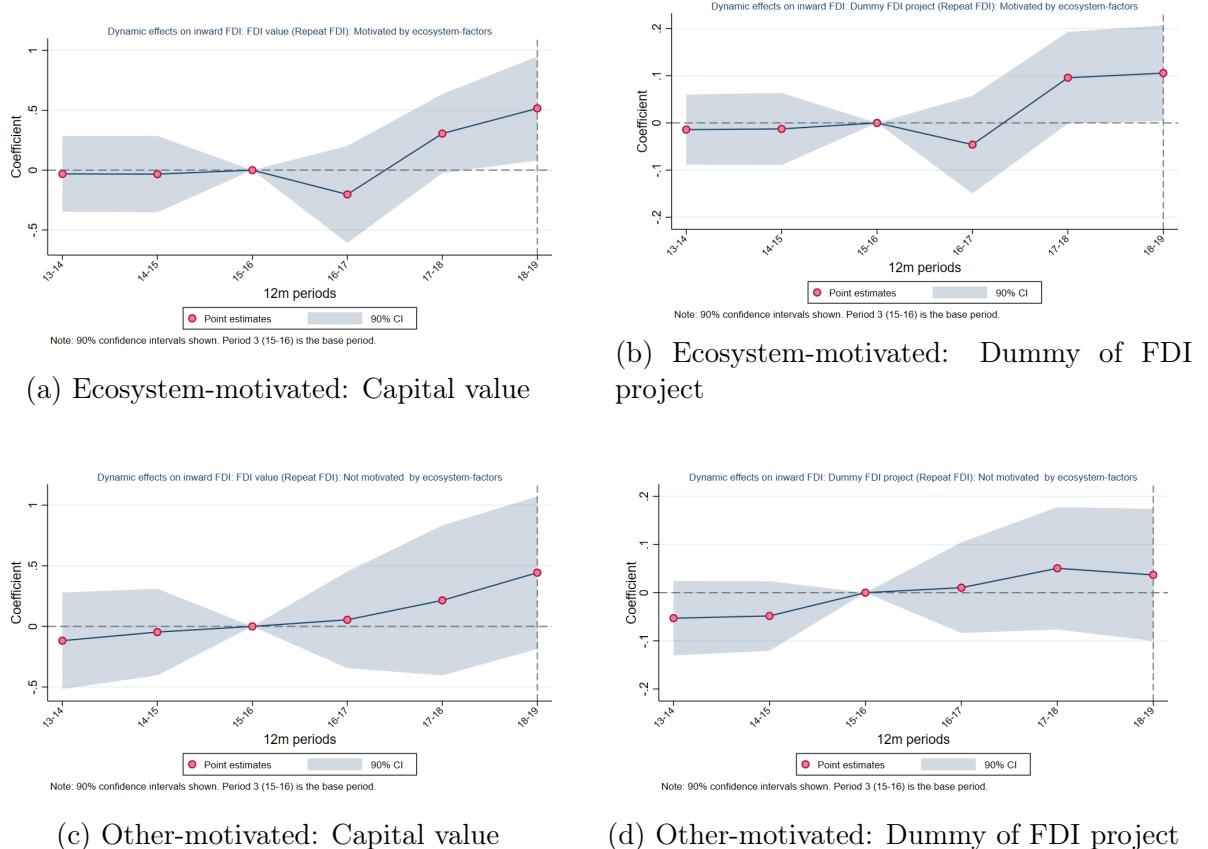
*** p<0.01, ** p<0.05, * p<0.1. Standard errors are clustered at the region-sector level. Each outcome refers to FDI projects listed in Orbis-crossborder as “Expansions”, “Co-locations” and “Re-locations” under variable “Project type”. Dummy FDI indicates whether any FDI project occurred in a given region-sector-time cell (extensive margin). Time periods are 12-month intervals from July 1st to June 30th, beginning on July 1st 2013 and ending in June 30th 2019 (giving 6 time periods). Unit of analysis are region-sector-12month cells. Ecosystem-motivated FDI includes projects where investors cited ecosystem-related factors (access to skilled labour, proximity to suppliers, knowledge spillovers, cluster benefits) as the primary motivation. Other-motivated FDI includes projects citing non-ecosystem factors (domestic market potential, access to European markets, natural resource availability); projects with unknown motivations are excluded. Motivation data were recorded inconsistently before 2016; to ensure comparability, the sample is restricted to the 2013–2019 period and retains only region-sectors where at least one project recorded a motivation during the sample period. Greater London, Scotland, and Wales are excluded from all regressions. Region-sectors where an IPA strategy was put in place in 2015 or later are dropped from all regressions. Pre-Brexit Growth × Post controls for the interaction between region-sector-specific pre-Brexit FDI growth rates (IHS-transformed, calculated as the difference in average FDI between periods 4–6 and periods 1–3) and a post-Brexit indicator.

Table 8 presents evidence consistent with this prediction. For ecosystem-motivated repeat FDI, IPA targeting is associated with a 25.6% increase in investment value and a 6.3 percentage point increase in the probability of receiving any investment during the Brexit uncertainty period. These effects are statistically significant at the 5% level and robust to the inclusion of sector-time and region-time fixed effects.

For non-ecosystem-motivated repeat FDI, the coefficients are also positive and weakly significant in the static specification. However, the dynamic analysis in Figure 13 reveals an important distinction. The ecosystem-motivated results display clean pre-trends: coefficients for 2013–14 and 2014–15 are close to zero, with the effect emerging only after the Brexit referendum. In contrast, the non-ecosystem-motivated results show a pronounced

upward pre-trend, with coefficients rising steadily across the pre-treatment period. This pattern suggests that the apparent effect for non-ecosystem-motivated FDI may reflect differential pre-existing trajectories in treated region-sectors rather than a causal response to IPA targeting during uncertainty. Taken together, the evidence indicates that IPA targeting protected repeat FDI during Brexit uncertainty specifically where investors valued ecosystem factors – consistent with the ecosystem-building mechanism identified in the preceding analyses.

Figure 13: Dynamic effects of IPA targeting on repeat FDI, by investment motivation



When we disaggregate by sector, the ecosystem-building interpretation finds further support. Table 9 shows that for repeat KIS FDI – where our main effects are concentrated – the distinction between motivation types is especially clear. Ecosystem-motivated KIS repeat FDI shows a significant effect on both the extensive margin (5.1 percentage points) and the intensive margin (coefficient of 0.128, equivalent to an increase of 13.6% in FDI project capital value). Non-ecosystem-motivated KIS repeat FDI, by contrast, shows no significant effect once sector-time and region-time fixed effects are included, with coefficients that are smaller in magnitude and statistically insignificant. Results for my two additional outcomes, presented in Figure A7, confirm these patterns.

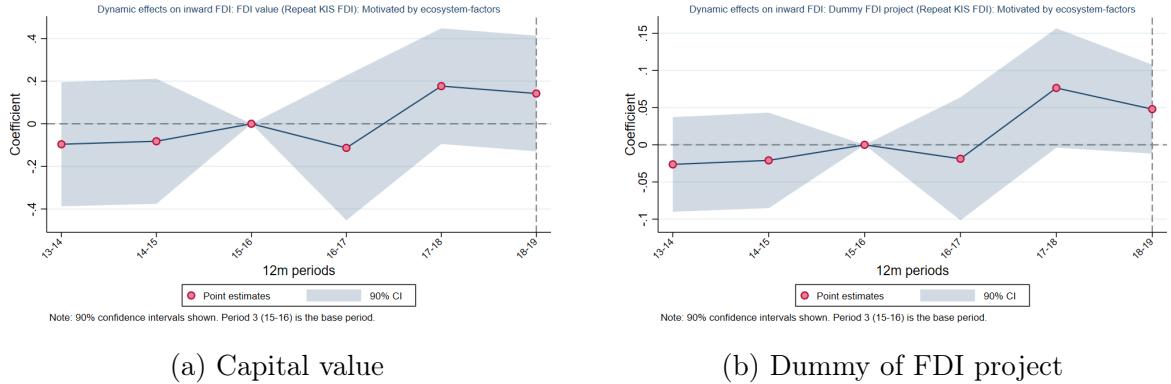
Table 9: Impact of pre-Brexit IPA targeting on inward repeat KIS FDI into English regions, by investment motivation, 2013–2019

	IHS cap. value			Dummy FDI		
	(1)	(2)	(3)	(4)	(5)	(6)
ECOSYSTEM-MOTIVATED						
Pre-2015 IPA targeting	0.128*	0.130*	0.128*	0.050**	0.051**	0.051**
× Post-Brexit	(0.072)	(0.076)	(0.077)	(0.021)	(0.024)	(0.024)
Observations	1,875	1,854	1,854	1,875	1,854	1,854
R-squared	0.314	0.449	0.449	0.318	0.458	0.458
OTHER-MOTIVATED						
Pre-2015 IPA targeting	0.177**	0.135	0.138	0.044**	0.034	0.035
× Post-Brexit	(0.082)	(0.111)	(0.112)	(0.019)	(0.026)	(0.026)
Observations	1,875	1,854	1,854	1,875	1,854	1,854
R-squared	0.257	0.435	0.435	0.245	0.432	0.432
Region-Sector FE	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Sector × Time FE	No	Yes	Yes	No	Yes	Yes
Region × Time FE	No	Yes	Yes	No	Yes	Yes
Pre-Brexit Growth × Post	No	No	Yes	No	No	Yes

*** p<0.01, ** p<0.05, * p<0.1. Standard errors are clustered at the region-sector level. Each outcome refers to FDI projects listed in Orbis-crossborder as “Expansions”, “Co-locations” and “Re-locations” under variable “Project type”. Dummy FDI indicates whether any FDI project occurred in a given region-sector-time cell (extensive margin). Time periods are 12-month intervals from July 1st to June 30th, beginning on July 1st 2013 and ending in June 30th 2019 (giving 6 time periods). Unit of analysis are region-sector-12month cells. KIS sectors identified in line with Eurostat definition of KIS NACE sectors, as detailed in [https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Glossary:Knowledge-intensive_services_\(KIS\).Ecosystem](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Glossary:Knowledge-intensive_services_(KIS).Ecosystem) – motivated FDI includes projects where investors cited ecosystem – related factors (access to skilled labour, proximity to suppliers, knowledge spillovers, cluster benefits) as the primary motivation. Other-motivated FDI includes projects citing non-ecosystem factors (domestic market potential, access to European markets, natural resource availability) – 2019 period and retains only region-sectors where at least one project recorded a motivation during the sample period. Greater London, Scottish sectors where an IPA strategy was put in place in 2015 or later are dropped from all regressions. Pre – Brexit Growth × Post controls for the interaction between region-sector-specific pre-Brexit FDI growth rates (IHS-transformed, calculated as the difference in average FDI between periods 4–6 and periods 1–3) and a post-Brexit indicator.

Figure 14 presents the dynamic effects for ecosystem-motivated KIS repeat FDI. The patterns are reassuring: pre-treatment coefficients for 2013–14 and 2014–15 are close to zero and statistically insignificant, consistent with parallel trends prior to the Brexit referendum. The effect emerges in the 2017–18 period and persists into 2018–19, with point estimates that are positive and – for the extensive margin – statistically distinguishable from zero. The slight dip in 2016–17, immediately following the referendum, mirrors the pattern observed for all repeat FDI and may reflect an initial shock period before IPA-supported ecosystem benefits could stabilise investment flows.

Figure 14: Dynamic effects of IPA targeting on ecosystem-motivated repeat KIS FDI



The results for repeat FDI into manufacturing sectors, reported in Table 10, present an interesting contrast that nonetheless aligns with theoretical expectations. Given that manufacturing FDI faced acute trade-related Brexit uncertainty, we disaggregate investment motivations beyond the simple ecosystem versus non-ecosystem distinction used for KIS. Specifically, we separate non-ecosystem motivations into domestic market potential (firms seeking to serve UK consumers) and market access/trade (firms seeking to serve European markets via UK operations), allowing us to test whether any observed effects reflect tariff-jumping logic versus broader attempts to mitigate trade uncertainty. For ecosystem-motivated manufacturing repeat FDI, we find no significant effect—coefficients are close to zero and precisely estimated. This is consistent with the interpretation that under severe uncertainty about future trading arrangements, ecosystem benefits alone were insufficient to sustain manufacturing investment, regardless of how attractive the local skills base or supplier network.

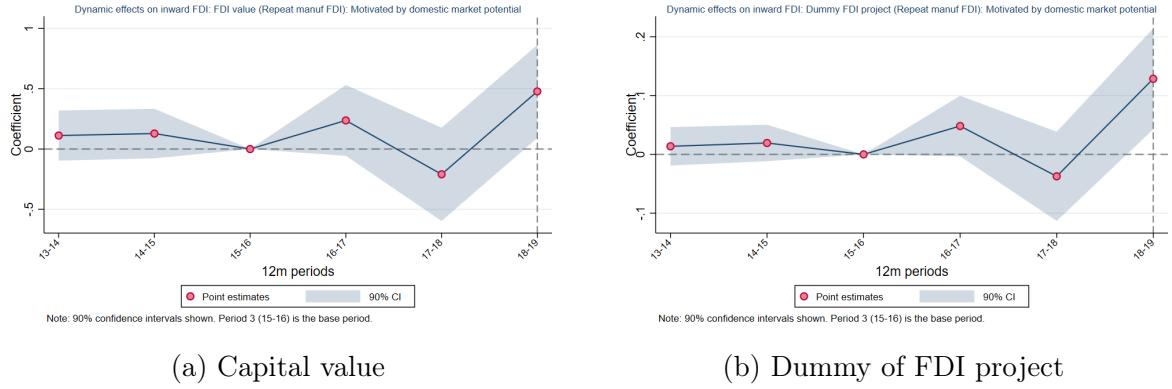
For non-ecosystem-motivated manufacturing repeat FDI, the disaggregation reveals important heterogeneity. Domestic-market-motivated investments show weakly positive effects, suggesting potential tariff-jumping behavior where firms expanded UK production to maintain access to UK consumers. While it is true that these effects hold for only one outcome (FDI project dummy), and the dynamic effects demonstrate that the impact does not hold uniformly across all three post-Brexit vote periods (see Figure 15), market access/trade-motivated investments – those most directly exposed to Brexit trade uncertainty – show null effects throughout. Results for job creation and number of projects (Appendix Table A7 & Figure A8) show similar patterns. This pattern suggests that while there may have been some modest IPA effectiveness for manufacturing FDI oriented toward the domestic market, IPAs could not systematically protect manufacturing investments during this period, particularly those predicated on using the UK as a platform to serve European markets.

Table 10: Impact of pre-Brexit IPA targeting on inward repeat manufacturing FDI into English regions, by investment motivation, 2013–2019

	IHS cap. value			Dummy FDI		
	(1)	(2)	(3)	(4)	(5)	(6)
ECOSYSTEM-MOTIVATED						
Pre-2015 IPA targeting	-0.013	0.020	0.013	-0.013	-0.014	-0.015
× Post-Brexit	(0.050)	(0.073)	(0.072)	(0.011)	(0.016)	(0.016)
Observations	1,875	1,854	1,854	1,875	1,854	1,854
R-squared	0.222	0.429	0.432	0.212	0.417	0.419
OTHER-MOTIVATED: DOMESTIC MARKET POTENTIAL						
Pre-2015 IPA targeting	0.211***	0.087	0.088	0.058***	0.034	0.035*
× Post-Brexit	(0.074)	(0.098)	(0.099)	(0.018)	(0.021)	(0.021)
Observations	1,875	1,854	1,854	1,875	1,854	1,854
R-squared	0.185	0.353	0.353	0.194	0.360	0.361
OTHER-MOTIVATED: MARKET ACCESS/TRADE						
Pre-2015 IPA targeting	0.074	-0.001	-0.005	0.037**	0.019	0.019
× Post-Brexit	(0.050)	(0.057)	(0.059)	(0.016)	(0.017)	(0.017)
Observations	1,875	1,854	1,854	1,875	1,854	1,854
R-squared	0.215	0.387	0.387	0.223	0.397	0.397
Region-Sector FE	Yes	Yes	Yes	Yes	Yes	Yes
Sector×Time FE	No	Yes	Yes	No	Yes	Yes
Region×Time FE	No	Yes	Yes	No	Yes	Yes
Pre-Brexit Growth × Post	No	No	Yes	No	No	Yes

*** p<0.01, ** p<0.05, * p<0.1. Standard errors are clustered at the region-sector level. Each outcome refers to FDI projects listed in Orbis-crossborder as “Expansions”, “Co-locations” and “Re-locations” under variable “Project type”. Dummy FDI indicates whether any FDI project occurred in a given region-sector-time cell (extensive margin). Time periods are 12-month intervals from July 1st to June 30th, beginning on July 1st 2013 and ending in June 30th 2019 (giving 6 time periods). Unit of analysis are region-sector-12month cells. Manufacturing FDI includes all projects falling under NACE code C. Ecosystem-motivated FDI includes projects citing ecosystem-related factors (access to skilled labour, proximity to suppliers, knowledge spillovers, cluster benefits). Domestic market potential includes projects citing access to UK domestic market. Market access/trade includes projects citing access to European markets or export opportunities; projects with unknown motivations are excluded. Motivation data were recorded inconsistently before 2016; to ensure comparability, the sample is restricted to the 2013–2019 period and retains only region-sectors where at least one project recorded a motivation during the sample period. Greater London, Scotland, and Wales are excluded from all regressions. Region-sectors where an IPA strategy was put in place in 2015 or later are dropped from all regressions. Pre-Brexit Growth × Post controls for the interaction between region-sector-specific pre-Brexit FDI growth rates (IHS-transformed, calculated as the difference in average FDI between periods 4–6 and periods 1–3) and a post-Brexit indicator.

Figure 15: Dynamic effects of IPA targeting on domestic market-motivated repeat manufacturing FDI



Taken together, these results provide direct evidence that the protective effect of IPA targeting during Brexit uncertainty operated primarily through ecosystem-building mechanisms. The effect concentrates among investments where investors explicitly valued ecosystem factors, emerges cleanly in the post-referendum period without problematic pre-trends, and is strongest in knowledge-intensive services where ecosystem considerations are theoretically most salient. The manufacturing results, far from undermining this interpretation, reinforce it: where ecosystem logic did not apply, IPA effectiveness was limited to facilitating a distinct type of investment – tariff-jumping by firms committed to serving the UK domestic market.

5 Robustness Checks

This section addresses two potential concerns that could affect the interpretation of my main results: the possibility of ‘flight to quality’ effects biasing estimates upward, and the concern that results may reflect pre-existing differential trends between targeted and non-targeted region-sectors rather than genuine responses to Brexit uncertainty.

5.1 Flight to Safety Effects

A potential concern is that parallel pre-trends, while necessary for identification, are not sufficient to rule out bias if treated and control units experience differential shocks precisely at the moment of treatment (??). Following the Brexit vote, certain region-sectors may have experienced additional positive shocks to FDI unrelated to IPA targeting but correlated with treatment status. For example, historically successful clusters like London-finance or Cambridge-biotechnology might attract ‘flight to safety’ FDI during uncertainty periods, where MNEs retreat toward established, safe investment locations.

If such leading region-sectors are also more likely to have been targeted by IPAs (due to their economic importance), this correlation could upwardly bias my estimates of targeting effectiveness – even if pre-trends appear parallel.

To address this, I augment specifications (3) and (4) with an additional control term that identifies historically leading region-sectors and allows for time-varying effects during the Brexit period:

$$Y_{rst}^{New} = \beta_0 + \sum_{k \neq -1} \beta_k (Targeted_{rs} \times Period_k) + \sum_{k \neq -1} \phi_k (Leading_{rs} \times Period_k) + \alpha_{rs} + \delta_{rt} + \gamma_{st} + \varepsilon_{rst} \quad (7)$$

$$Y_{rst}^{Repeat} = \beta_0 + \sum_{k \neq -1} \beta_k (Targeted_{rs} \times Period_k) + \sum_{k \neq -1} \phi_k (Leading_{rs} \times Period_k) + \alpha_{rs} + \delta_{rt} + \gamma_{st} + \varepsilon_{rst} \quad (8)$$

Where $Leading_{rs}$ identifies region-sectors with historically strong FDI performance based on their pre-2015 profile. Specifically, I construct a composite strength score for each region-sector that captures both the quality and magnitude of its historical FDI specialisation:

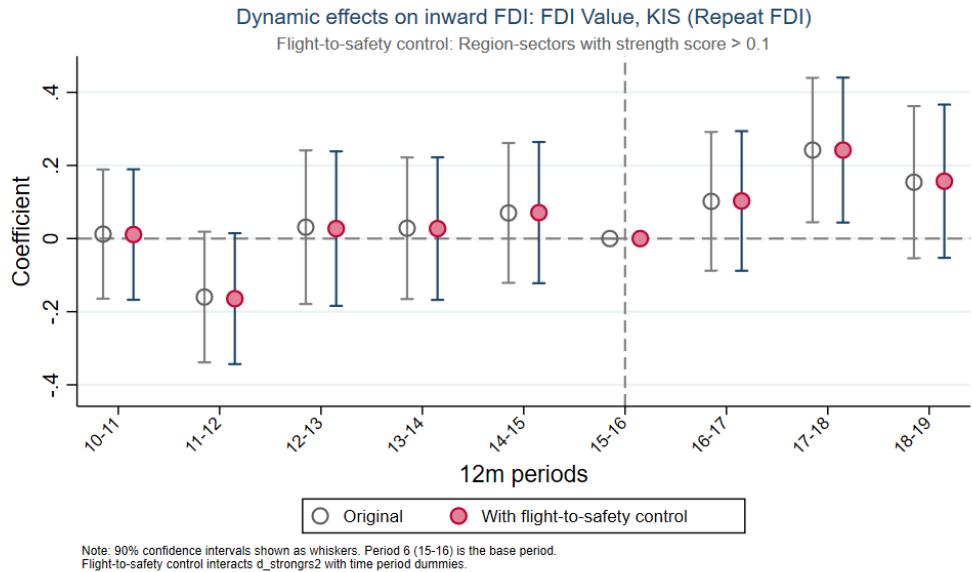
$$StrengthScore_{rs} = \left(\frac{\sum_{t < 2015} FDI_{rst}^{HighQuality}}{\sum_{t < 2015} FDI_{rst}^{All}} \right) \times \left(\frac{\sum_{t < 2015} FDI_{rst}^{HighQuality}}{\sum_{r,t < 2015} FDI_{st}^{HighQuality}} \right) \quad (9)$$

The first term measures the share of region-sector rs 's FDI that is high-quality (based on business functions indicating headquarters, R&D, or innovation activities), capturing whether the region-sector's FDI profile tilts toward high-value activities. The second term measures region-sector rs 's share of all high-quality FDI in sector s , capturing the region-sector's importance as a destination for quality investment within its sector. I define $Leading_{rs} = \mathbb{1}(StrengthScore_{rs} > 0.1)$, identifying region-sectors in the top tier of this composite measure. Results are robust to alternative thresholds (0.05, 0.20), available upon request.

Figure 16 presents the dynamic treatment effects for repeat KIS FDI capital value when including this additional control. The results remain substantively unchanged from the main specification. Two factors explain this stability. First, the correlation between treatment status and region-sector strength is modest ($\rho = 0.038$, $p < 0.01$): while IPAs were somewhat more likely to target stronger region-sectors, the relationship is weak, limiting the scope for flight-to-safety dynamics to confound my estimates. Second,

examination of the $Leading_{rs} \times Period_k$ coefficients reveals no significant differential FDI growth in leading region-sectors during the post-Brexit period – the flight-to-safety surge that this test is designed to capture does not appear to be a prominent feature of post-Brexit FDI patterns in my data. Together, these findings suggest that while flight-to-safety is a theoretically important concern in uncertainty contexts, it does not materially bias the treatment effects estimated in this study.

Figure 16: Dynamic treatment effects on KIS repeat FDI capital value with and without flight-to-quality control



5.2 Pre-existing Differential Trends

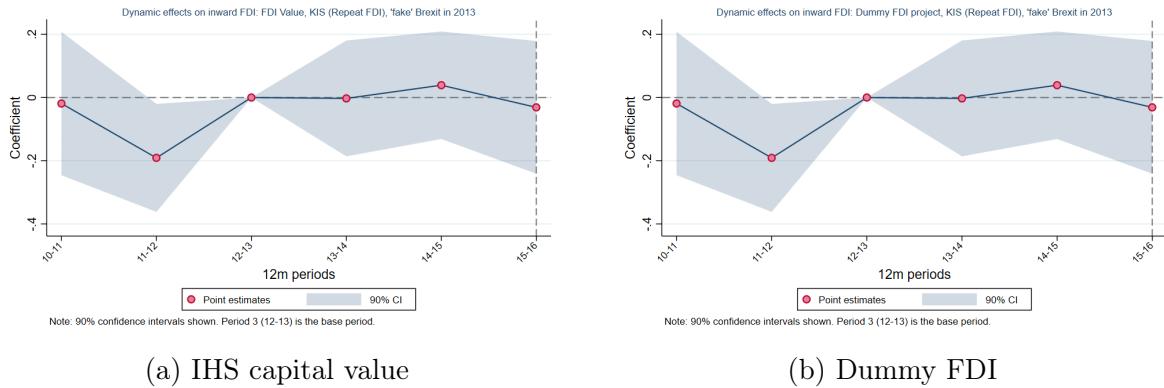
A related concern is that the estimated treatment effects may reflect pre-existing differential trends between targeted and non-targeted region-sectors rather than genuine responses to Brexit uncertainty. If IPAs systematically targeted region-sectors that were already on upward FDI trajectories, the post-Brexit divergence I attribute to IPA effectiveness could simply be a continuation of these pre-existing dynamics.

I address this concern through two complementary approaches. First, my preferred specifications include a control for pre-Brexit FDI growth interacted with a post-Brexit indicator ($PreBrexitGrowth_{rs} \times Post_t$). This parametric adjustment allows region-sectors with stronger pre-treatment growth to follow different post-treatment trajectories, absorbing any mechanical relationship between historical momentum and post-Brexit outcomes. As reported in Tables 5–9, the inclusion of this control does not materially attenuate the estimated treatment effects, suggesting that differential pre-existing momentum is not driving the results.

Second, I implement a placebo test that provides a more direct assessment of whether the treatment-control comparison yields spurious effects in periods when no true effect should exist. Specifically, I restrict the sample to the pre-Brexit period (2010–2016) and estimate the dynamic specification with a ‘fake’ Brexit date in 2013, using the 2012–13 period as the base. If my results were driven by pre-existing differential trends rather than a genuine response to Brexit uncertainty, I would expect to observe significant ‘effects’ emerging in the fake post-treatment periods (2013–14, 2014–15, 2015–16).

Figure 17 presents the results of this placebo test for repeat KIS FDI. The pattern is reassuring: coefficients in the fake post-treatment periods are small, statistically insignificant, and show no systematic upward drift. This contrasts sharply with the main results (Figure ??), where clear positive effects emerge in the actual post-Brexit periods (2017–18, 2018–19). The absence of spurious effects under fake treatment timing strengthens confidence that the estimated post-2016 effects represent genuine institutional responses to Brexit uncertainty rather than the continuation of pre-existing trends.

Figure 17: Placebo test: Dynamic treatment effects with fake Brexit date in 2013



Taken together, these two approaches provide convergent evidence that the main results are not artefacts of pre-existing differential trends. The parametric growth control addresses the concern within the main specification, while the placebo test demonstrates that the difference-in-differences design does not generate spurious effects when applied to periods without genuine treatment.

5.3 Additional Sensitivity Tests

I conduct a series of additional robustness checks, with full results available upon request.

First, I implement sensitivity tests around treatment timing to address the concern that IPAs may have informally targeted sectors before or after formally declaring strategies. The precise timing of when IPA targeting becomes ‘operative’ is inherently un-

certain: formal strategy announcements may lag behind informal prioritisation, or conversely, declared strategies may take time to translate into active promotion efforts. To assess whether results are sensitive to these timing ambiguities, I implement ‘rounding’ approaches that adjust treatment start dates by one year in either direction (i.e., if a strategy began in 2013, testing whether counting 2012 as treated, or delaying treatment until 2014, materially affects results). Results remain robust across these alternative treatment timing specifications, suggesting that formal strategy declarations reliably capture when targeting activities became operative.

Second, I test sensitivity to alternative approaches to statistical inference. My main specifications cluster standard errors at the region-sector level, reflecting the structure of the panel and allowing for arbitrary serial correlation within region-sectors. As a robustness check, I re-estimate the key specifications using two-way clustering at both the region and sector levels, which allows for correlation across region-sectors within the same region or the same sector. I also implement wild cluster bootstrap standard errors, which may provide more reliable inference when the number of clusters is moderate. Results remain substantively unchanged across these alternative inference approaches, confirming that the statistical significance of my findings is not driven by particular modelling choices regarding the error structure.

6 Conclusions

Uncertainty sparked by shocks is known to negatively affect inward Foreign Direct Investment, and the uncertainty during the Brexit negotiation period was no exception to this. Comparing to a scenario where Brexit had not happened, the UK saw lower FDI inflows in the years following the Brexit referendum when uncertainty was highest (Serwicka & Tamberi 2018, Bloom et al. 2019). However these effects are highly heterogeneous by sector, FDI type and, most importantly, by region. This paper has investigated whether the UK’s regional institutions, specifically Investment Promotion Agencies’ targeted strategies to support particular sectoral ecosystems before Brexit was even contemplated, created the conditions for MNE investors to better resist uncertainty, explaining why certain types of FDI, or FDI in certain sectors, held up better than others.

Drawing on literature from International Business and Economic Geography, I posit that MNEs operating in a regional ecosystem characterised by greater density of and access to certain key assets, at least partly because regional institutions have targeted resources toward building this, are likelier to perceive certain benefits which motivate their continued FDI when faced with costly uncertainty. I find that pre-2015 IPA sector-targeting strategies were effective at increasing inward FDI in the form of KIS sector

repeat FDI specifically, in line with my hypotheses around the sectors and FDI types most likely to see an impact in such a context. At the extensive margin, targeted region-sectors were 4.4 percentage points more likely to receive repeat KIS FDI. At the intensive margin, they received 11.5% more projects, with 27.9% higher capital value and 29.3% higher job creation. By contrast, new FDI and manufacturing sector investments saw no significant impact.

Importantly, my analysis reveals meaningful geographic and motivational heterogeneity in these effects. The positive impact of pre-Brexit IPA targeting strategies is significantly stronger in regions outside the relatively wealthier and more agglomerated South East of England. In other words, regional institutions proved most effective precisely where ecosystems are less dense and immediately accessible, requiring active institutional intervention in connecting investors to key regional assets. Additionally, when examining FDI projects by their stated motivations, I find the strongest effects for investments explicitly motivated by regional ecosystem factors, such as access to specialised talent pools, research capabilities, or supplier networks. These findings provide evidence for my proposed mechanism: institutional effectiveness during uncertainty stems primarily from the ability to build and facilitate access to regional assets that remain valuable despite broader uncertainty.

This paper constitutes a contribution to our understanding of how regional institutions can help to support the broader aims of regions vis-à-vis internationalisation, namely to attract quality, durable investments that can foster regional resilience to shocks. My findings highlight the specific importance of ecosystem-building activities in less advantaged regions, suggesting that targeted institutional support is most valuable where market mechanisms alone fail to create accessible regional assets. This has significant implications for regional development policy, suggesting that strategies should focus not only on information provision but on deeper ecosystem development, particularly in regions lacking natural agglomeration advantages. IPAs offer one institutional vehicle for this work, but the broader lesson extends to regional development agencies, local authorities, and other place-based institutions charged with supporting economic resilience.

However, much more research is needed, particularly with regards to disentangling exactly how regional institutions operate to deliver these kinds of ecosystem benefits, including what type of coordination exists with other regional and institutional actors. Further attention should also focus on how the heterogeneous and often limited institutional capabilities of British regional IPAs, particularly following the dissolution of England's Regional Development Agencies in 2011, may have influenced their ability to engage successfully with MNEs and economic internationalisation more broadly. Finally, future work might also explore whether these results hold in other uncertainty contexts beyond Brexit, and whether institutional capabilities developed during one crisis enhance

resilience to subsequent shocks.

References

- Alfaro, L. & Chen, M. X. (2018), ‘Selection and market reallocation: Productivity gains from multinational production’, *American Economic Journal: Economic Policy* **10**(2), 1–38.
- Angrist, J. D. & Pischke, J.-S. (2008), *Mostly harmless econometrics: An empiricist’s companion*, Princeton University Press, Princeton.
- Bachtler, J., Martins, J. O., Wostner, P. & Zuber, P. (2019), ‘Governing regional economic development under place-based approaches in europe’, *Growth and Change* **50**(1), 149–177.
- Bailey, D. & De Propis, L. (2017), ‘Brexit and the UK automotive industry’, *National Institute Economic Review* **242**(1), R51–R59.
- Bailey, D. & Rajic, V. (2022), ‘Post-brexit trade and regulatory divergence in the UK manufacturing sector’, *Cambridge Journal of Regions, Economy and Society* **15**(1), 45–63.
- Bailey, N. (2018), ‘Exploring the relationship between institutional factors and FDI attractiveness: A meta-analytic review’, *International Business Review* **27**(1), 139–148.
- Beugelsdijk, S., McCann, P. & Mudambi, R. (2010), ‘Place, space and organization: Economic geography and the multinational enterprise’, *Journal of Economic Geography* **10**(4), 485–493.
- Bloom, N., Bunn, P., Chen, S., Mizen, P. & Smietanka, P. (2019), The impact of brexit on UK firms, Working paper, National Bureau of Economic Research.
URL: <https://www.nber.org/papers/w26218>
- Buchanan, B. G., Le, Q. V. & Rishi, M. (2012), ‘Foreign direct investment and institutional quality: Some empirical evidence’, *International Review of Financial Analysis* **21**, 81–89.
- Bureau van Dijk / Moody’s Analytics (2024), ‘Orbis-crossborder data, 2013-2023’. Accessed: May 2024.
- Carballo, J., Gallo, M. & Ottaviano, G. (2021), ‘Investment promotion and FDI inflows: Evidence from a global dataset’, *World Economy* **44**(7), 2035–2057.
- Chidlow, A., Salciuviene, L. & Young, S. (2015), ‘Do I stay or do I go? Sub-national drivers for post-entry subsidiary development’, University of Birmingham Research Archive.

URL: <https://research.birmingham.ac.uk/en/publications/do-i-stay-or-do-i-go-sub-national-drivers-for-post-entry-subsidia>

Crescenzi, R., Di Cataldo, M. & Giua, M. (2018), ‘Massive survey of european investment promotion agencies’. Data collected as part of European Research Council (ERC) Starting Grant “Multinationals, Institutions and Innovation in Europe” (Project MASSIVE).

Crescenzi, R., Di Cataldo, M. & Giua, M. (2021), ‘FDI inflows in Europe: Does investment promotion work?’, *Journal of International Economics* **132**.

Crescenzi, R. & Harman, O. (2023), ‘Global value chains from a regional perspective’, *Cambridge Journal of Regions, Economy and Society* **16**(1), 27–44.

Dhingra, S., Ottaviano, G., Sampson, T. & Van Reenen, J. (2016), The impact of brexit on foreign investment in the UK, Brexit Analysis 3, Centre for Economic Performance.

Dhingra, S. & Sampson, T. (2022), Expecting brexit, Discussion Paper DP16970, Centre for Economic Policy Research.

URL: <https://ssrn.com/abstract=4026876>

Dixit, A. K. & Pindyck, R. S. (1994), *Investment under uncertainty*, Princeton University Press, Princeton.

Dunning, J. H. (2009), ‘Location and the multinational enterprise: A neglected factor?’, *Journal of International Business Studies* **40**(1), 5–19.

Fuller, C. (2021), ‘Understanding the impact of brexit: The case of foreign software corporations in Scotland and South East England’, *European Urban and Regional Studies* **28**(2), 173–191.

Globerman, S. & Shapiro, D. (2002), ‘Global foreign direct investment flows: The role of governance infrastructure’, *World Development* **30**(11), 1899–1919.

Harding, T. & Javorcik, B. S. (2011), ‘Roll out the Red Carpet and They Will Come: Investment promotion and FDI inflows’, *Economic Journal* **121**(557), 1445–1476.

Heilbron, A. & Aranda Larrey, Y. (2020), Strengthening service delivery of investment promotion agencies: The comprehensive investor services framework, Technical report, World Bank Group, Washington, D.C.

URL: <http://documents.worldbank.org/curated/en/375281584479055974/Strengthening-Service-Delivery-of-Investment-Promotion-Agencies-The-Comprehensive-Investor-Services-Framework>

- Holweg, M. (2019), ‘The brexit car crash: How the end of frictionless trade will affect Britain’s automotive sector’, *Global Strategy Journal* **9**(1), 37–43.
- Iammarino, S. & McCann, P. (2013), ‘Multinationals and economic geography: Location, technology and innovation’, *Edward Elgar Publishing*.
- Li, X., Qiu, L. D. & Yu, M. (2019), ‘Brexit: China, Britain, and the EU in global trade’, *Journal of International Economics* **118**, 1–12.
- Lim, S.-H. (2008), ‘How investment promotion affects attracting foreign direct investment: Analytical argument and empirical analyses’, *International Business Review* **17**(1), 39–53.
- Loewendahl, H. (2001), ‘A framework for FDI promotion’, *UNCTAD Journal of Transnational Corporations* **10**.
- Loewendahl, H. (2018), Innovations in foreign direct investment attraction, Technical Note IDB-TN-1572, Inter-American Development Bank.
- URL:** <https://publications.iadb.org/en/innovations-foreign-direct-investment-attraction>
- Love, J. H., Driffield, N., Lavoratori, K. & Yang, Y. (2025), ‘FDI motives redux: Exploring behavioral assumptions in international business research’, *Multinational Business Review*.
- McCann, P. & Mudambi, R. (2005), ‘Analytical differences in the economics of geography: The case of the multinational firm’, *Journal of International Business Studies* **36**(3), 329–330.
- Mengitsu, B. & Adhikary, B. K. (2011), ‘The institutional determinants of foreign direct investment inflows in Africa’, *Review of Development Economics* **15**(3), 472–490.
- Morisset, J. & Andrews-Johnson, K. (2004), The effectiveness of promotion agencies at attracting foreign investment, Occasional Paper 16, Foreign Investment Advisory Service, Washington, D.C. ISBN 0-8213-5606-2.
- North, D. C. (1990), *Institutions, institutional change, and economic performance*, Cambridge University Press, Cambridge.
- O’Brien, P. & Pike, A. (2015), ‘City deals, decentralisation and the governance of local infrastructure funding and financing in the UK’, *National Institute Economic Review* **233**, R14–R26.

OECD (2023), Subnational investment promotion and decentralisation in the OECD: Strategies and institutions, Business and Finance Policy Papers 40, OECD.
URL: <https://doi.org/10.1787/ffd0927d-en>

OECD (2026), ‘Mapping of investment promotion agencies in OECD countries’. Forthcoming.

Pike, A., Kempton, L., Marlow, D., O’Brien, P. & Tomaney, J. (2016), ‘Decentralisation: Issues, principles and practice’.

URL: <https://research.ncl.ac.uk/ibuild/outputs/reports/>

Rodríguez-Pose, A. & Garcilazo, E. (2015), ‘Do institutions matter for regional development?’, *Regional Studies* **49**(7), 1034–1047.

Serwicka, I. & Tambari, N. (2018), ‘Not backing Britain: FDI decisions post-brexit’, *Economics Letters* **171**, 214–217.

Sotarauta, M. & Mustikkämäki, N. (2010), ‘Power and influence tactics in the promotion of regional development: An empirical analysis of the work of finnish regional development officers’, *Geoforum* **41**(5), 895–904.

Sun, L. & Abraham, S. (2021), ‘Estimating dynamic treatment effects in event studies with heterogeneous treatment effects’, *Journal of Econometrics* **225**(2), 175–199.

UNCTAD (2024), ‘World investment report 2024: Investment facilitation and digital government’.

Williamson, O. E. (1975), *Markets and hierarchies: Analysis and anti-trust implications*, The Free Press, New York.

Williamson, O. E. (1985), *The economic institutions of capitalism*, The Free Press, New York.

World Bank (2023), State of investment promotion agencies: Evidence from WAIAPA-WBG’s joint global survey, Technical report.

URL: <https://waipa.org/state-of-investment-promotion-agencies/>

World Bank Group (2019), Retention and expansion of foreign direct investment: Political risk and policy responses, Technical report, World Bank, Washington, DC.

URL: <https://openknowledge.worldbank.org/handle/10986/33082>

Yeung, H. W.-c. (2021), ‘Global production networks and the new geographies of development’, *Economic Geography* **97**(2), 113–138.

7 Appendix

Table A1: Impact of pre-Brexit IPA targeting on inward FDI into English regions (excl. Greater London), 2010–2019, new vs. repeat investments (additional outcomes)

	IHS num. jobs			IHS num. projects		
	(1)	(2)	(3)	(4)	(5)	(6)
NEW FDI						
Pre-2015 IPA targeting	-0.070	-0.060	-0.066	-0.033	-0.011	-0.013
× Post-Brexit	(0.119)	(0.146)	(0.145)	(0.038)	(0.041)	(0.041)
Observations	6,900	6,900	6,900	6,900	6,900	6,900
R-squared	0.464	0.558	0.558	0.551	0.690	0.690
REPEAT FDI						
Pre-2015 IPA targeting	0.326***	0.296*	0.295*	0.081***	0.080**	0.080**
× Post-Brexit	(0.118)	(0.176)	(0.176)	(0.031)	(0.041)	(0.041)
Observations	6,900	6,900	6,900	6,900	6,900	6,900
R-squared	0.354	0.437	0.437	0.397	0.496	0.496
Region-Sector FE	Yes	Yes	Yes	Yes	Yes	Yes
Sector×Time FE	No	Yes	Yes	No	Yes	Yes
Region×Time FE	No	Yes	Yes	No	Yes	Yes
Pre-Brexit Growth × Post	No	No	Yes	No	No	Yes

*** p<0.01, ** p<0.05, * p<0.1. Standard errors are clustered at the region-sector level. New FDI includes Orbis-crossborder projects categorized as “Greenfield” or “New foreign location”. Repeat FDI includes projects categorized as “Expansions”, “Co-locations” and “Re-locations” under variable “Project type”. Time periods are 12-month intervals from July 1st to June 30th, beginning on July 1st 2010 and ending in June 30th 2019 (giving 9 time periods). Unit of analysis are region-sector-12month cells. Greater London, Scotland, and Wales are excluded from all regressions. Region-sectors where an IPA strategy was put in place in 2015 or later, and which can be more reasonably assumed to have been influenced by the announcement of the Brexit referendum within the 2015 Conservative election manifesto, are dropped from all regressions. Pre-Brexit Growth × Post controls for the interaction between region-sector-specific pre-Brexit FDI growth rates (IHS-transformed, calculated as the difference in average FDI between periods 4–6 and periods 1–3) and a post-Brexit indicator, addressing the concern that IPA targeting may have correlated with pre-existing growth trajectories.

Table A2: Impact of pre-Brexit IPA targeting on inward repeat FDI into English regions (excl. Greater London), 2010–2019, manufacturing vs. KIS sector (additional outcomes)

	IHS num. jobs			IHS num. projects		
	(1)	(2)	(3)	(4)	(5)	(6)
MANUFACTURING FDI						
Pre-2015 IPA targeting	0.169**	0.103	0.101	0.036**	0.020	0.020
× Post-Brexit	(0.083)	(0.130)	(0.130)	(0.018)	(0.026)	(0.026)
Observations	6,900	6,900	6,900	6,900	6,900	6,900
R-squared	0.341	0.398	0.398	0.356	0.417	0.417
KNOWLEDGE-INTENSIVE SERVICES FDI						
Pre-2015 IPA targeting	0.194***	0.190**	0.187**	0.059***	0.066**	0.065**
× Post-Brexit	(0.071)	(0.092)	(0.092)	(0.020)	(0.026)	(0.026)
Observations	6,900	6,900	6,900	6,900	6,900	6,900
R-squared	0.487	0.556	0.556	0.518	0.593	0.593
Region-Sector FE	Yes	Yes	Yes	Yes	Yes	Yes
Sector×Time FE	No	Yes	Yes	No	Yes	Yes
Region×Time FE	No	Yes	Yes	No	Yes	Yes
Pre-Brexit Growth × Post	No	No	Yes	No	No	Yes

*** p<0.01, ** p<0.05, * p<0.1. Standard errors are clustered at the region-sector level. Each outcome refers to FDI projects listed in Orbis-crossborder as “Expansions”, “Co-locations” and “Re-locations” under variable “Project type”. Time periods are 12-month intervals from July 1st to June 30th, beginning on July 1st 2010 and ending in June 30th 2019 (giving 9 time periods). Unit of analysis are region-sector-12month cells. KIS sectors identified in line with Eurostat definition of KIS NACE sectors, as detailed in [https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Glossary:Knowledge-intensive_services_\(KIS\)](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Glossary:Knowledge-intensive_services_(KIS)). ManufacturingsectorFDIareallprojectsfallingunderNACEcodeC. GreaterLondon, Scotland, and WalesareexcsectorswhereanIPAstrategywasputinplacein2015orlater, andwhichcanbemorereasonablyassumedtohavebeeninfluencedbytheannouncedBrexitGrowth× Post controls for the interaction between region-sector-specific pre-Brexit FDI growth rates (IHS-transformed, calculated as the difference in average FDI between periods 4–6 and periods 1–3) and a post-Brexit indicator, addressing the concern that IPA targeting may have correlated with pre-existing growth trajectories.

Figure A1: Dynamic treatment effects on KIS repeat FDI (additional outcomes)

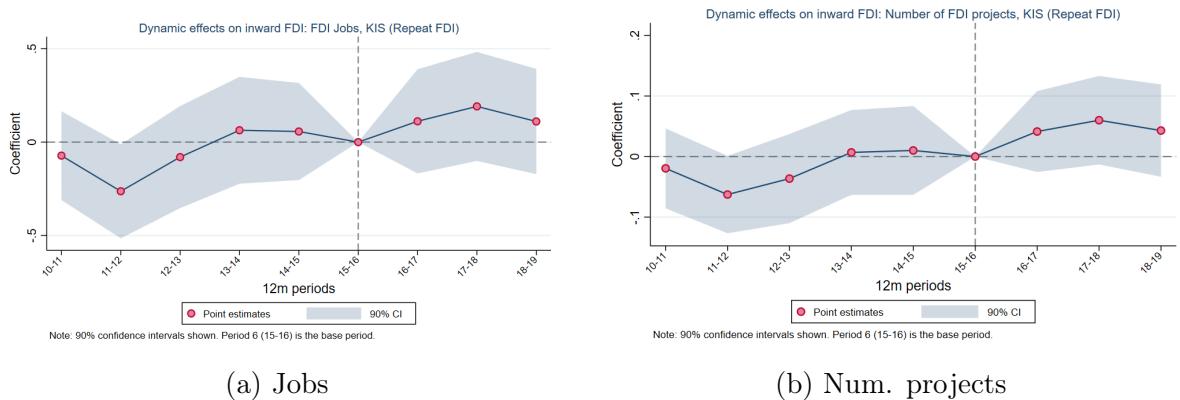


Figure A2: Dynamic treatment effects on KIS repeat FDI: incl. London, Scotland & Wales

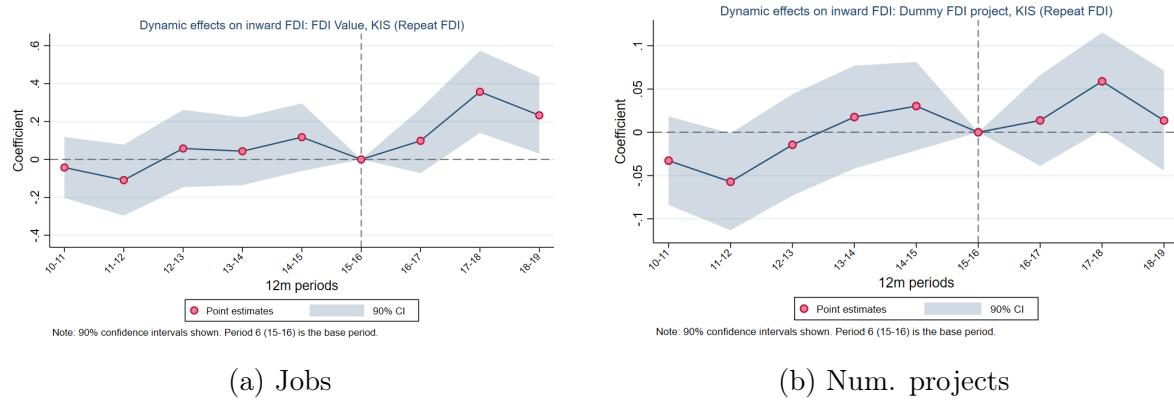
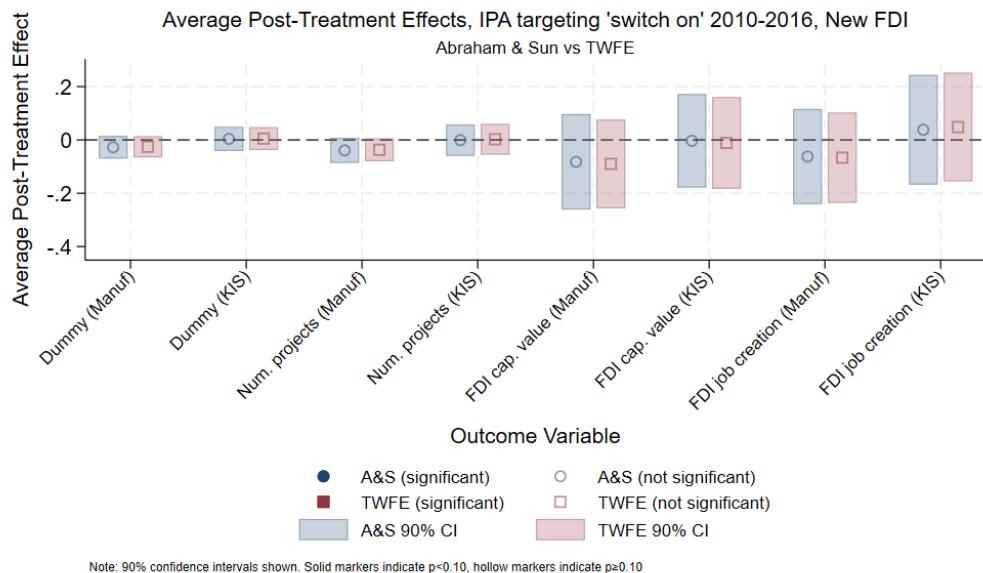


Figure A3: Average post-treatment effects of IPA targeting strategies switching on between 2010 and 2016, new FDI.



Note: Individual event study plots for each outcome are available upon request.

Table A3: Impact of pre-Brexit IPA targeting on inward repeat KIS FDI into English regions, 2010–2019, South East England vs. Outside South East England (additional outcomes)

	IHS num. jobs			IHS num. projects		
	(1)	(2)	(3)	(4)	(5)	(6)
SOUTH EAST ENGLAND						
Pre-2015 IPA targeting	-0.131	-0.202	-0.231	-0.037	-0.090	-0.094
× Post-Brexit		(0.106)	(0.767)	(0.775)	(0.025)	(0.156)
Observations	1,770	1,770	1,770	1,770	1,770	1,770
R-squared	0.422	0.528	0.528	0.432	0.550	0.550
Outside South East England						
Pre-2015 IPA targeting	0.323***	0.229**	0.228**	0.096***	0.078***	0.078***
× Post-Brexit		(0.088)	(0.089)	(0.089)	(0.026)	(0.026)
Observations	5,130	5,130	5,130	5,130	5,130	5,130
R-squared	0.510	0.581	0.581	0.542	0.617	0.617
Region-Sector FE	Yes	Yes	Yes	Yes	Yes	Yes
Sector×Time FE	No	Yes	Yes	No	Yes	Yes
Region×Time FE	No	Yes	Yes	No	Yes	Yes
Pre-Brexit Growth × Post	No	No	Yes	No	No	Yes

*** p<0.01, ** p<0.05, * p<0.1. Standard errors are clustered at the region-sector level. Each outcome refers to FDI projects listed in Orbis-crossborder as “Expansions”, “Co-locations” and “Re-locations” under variable “Project type”. Time periods are 12-month intervals from July 1st to June 30th, beginning on July 1st 2010 and ending in June 30th 2019 (giving 9 time periods). IPA regions in South East England include: Berkshire LEP, Buckinghamshire LEP, Coast-to-Capital LEP, East Sussex CC, Enterprise M3 LEP, Essex CC, Hertfordshire LEP, Kent CC, Oxfordshire LEP and Solent LEP. Greater London is excluded. Unit of analysis are region-sector-12month cells. KIS sectors identified in line with Eurostat definition of KIS NACE sectors, as detailed in [https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Glossary:Knowledge-intensive_services_\(KIS\).Unit_of_analysis_is_a_region_sector_12monthcells.Region_sectors_where_an_IPA_strategy_was_put_in_place_in_2015_or_later_and_which_can_be_more_reasonably_assumed_to_have_been_influenced_by_the_announcement](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Glossary:Knowledge-intensive_services_(KIS).Unit_of_analysis_is_a_region_sector_12monthcells.Region_sectors_where_an_IPA_strategy_was_put_in_place_in_2015_or_later_and_which_can_be_more_reasonably_assumed_to_have_been_influenced_by_the_announcement)

Figure A4: Dynamic treatment effects on KIS repeat FDI, Outside South East England (additional outcomes)

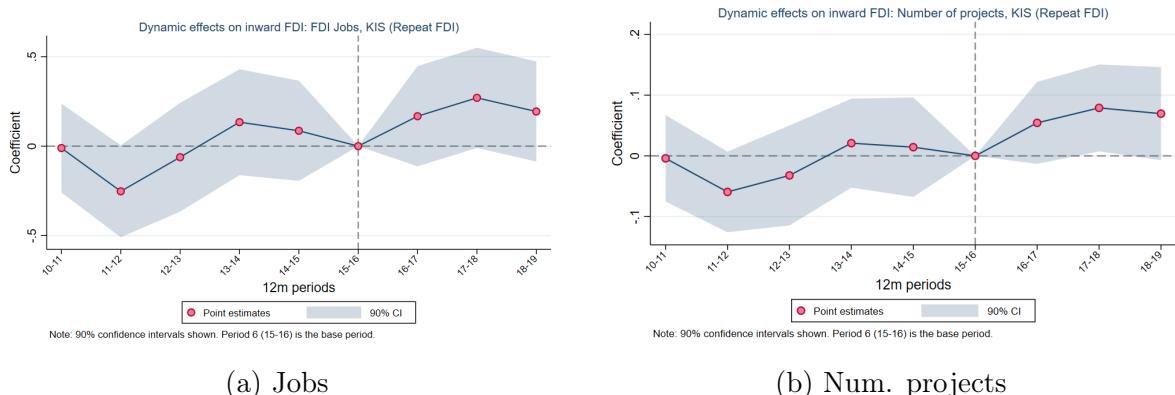
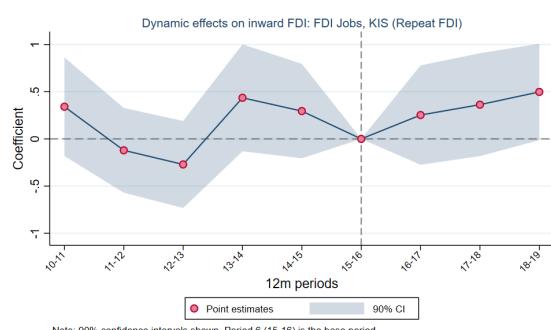


Table A4: Impact of pre-Brexit IPA targeting on inward repeat KIS FDI into English regions, 2010–2019, Combined Authorities IPAs vs. All other IPAs (additional outcomes)

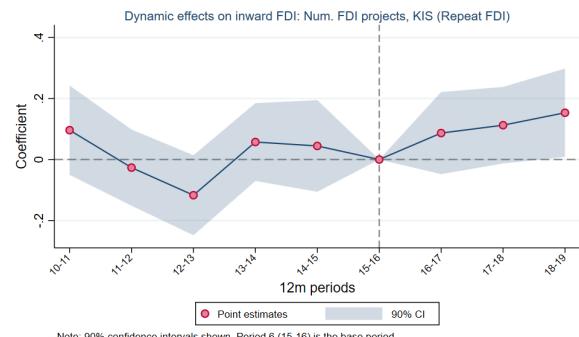
	IHS num. jobs			IHS num. projects		
	(1)	(2)	(3)	(4)	(5)	(6)
COMBINED AUTHORITY IPAs						
Pre-2015 IPA targeting	0.577***	0.258	0.258	0.193***	0.109**	0.108**
× Post-Brexit	(0.156)	(0.158)	(0.158)	(0.052)	(0.048)	(0.048)
Observations	1,785	1,785	1,785	1,785	1,785	1,785
R-squared	0.618	0.706	0.706	0.630	0.724	0.724
LEPs/UTLAS						
Pre-2015 IPA targeting	0.030	0.085	0.081	0.002	0.010	0.009
× Post-Brexit	(0.072)	(0.111)	(0.111)	(0.017)	(0.025)	(0.025)
Observations	5,115	5,115	5,115	5,115	5,115	5,115
R-squared	0.378	0.460	0.460	0.389	0.477	0.477
Region-Sector FE	Yes	Yes	Yes	Yes	Yes	Yes
Sector×Time FE	No	Yes	Yes	No	Yes	Yes
Region×Time FE	No	Yes	Yes	No	Yes	Yes
Pre-Brexit Growth × Post	No	No	Yes	No	No	Yes

*** p<0.01, ** p<0.05, * p<0.1. Standard errors are clustered at the region-sector level. Each outcome refers to FDI projects listed in Orbis-crossborder as “Expansions”, “Co-locations” and “Re-locations” under variable “Project type”. Time periods are 12-month intervals from July 1st to June 30th, beginning on July 1st 2010 and ending in June 30th 2019 (giving 9 time periods). Unit of analysis are region-sector-12month cells. Combined Authority IPAs are those where the FDI promotion service was provided within the context of a Combined Authority as at 2018, or comparable regional institutional forms (such as city-regions) which preceded these but were similarly characterised by their greater powers compared to other local authorities: Greater Manchester CA, West Midlands CA, Cambridgeshire & Peterborough CA, Tees Valley CA, West of England CA, Sheffield-City Region, Leeds City Region, Liverpool City Region, North East Combined Authority. KIS sectors identified in line with Eurostat definition of KIS NACE sectors, as detailed in [https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Glossary:Knowledge-intensive_services_\(KIS\)](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Glossary:Knowledge-intensive_services_(KIS)). Greater London, Scotland, and Wales are excluded from all regressions. Region – sectors where an IPA strategy was put in place in 2015 or later, and which can be more reasonably assumed to have been influenced by the announcement of Brexit Growth × Post controls for the interaction between region-sector-specific pre-Brexit FDI growth rates (IHS-transformed, calculated as the difference in average FDI between periods 4–6 and periods 1–3) and a post-Brexit indicator, addressing the concern that IPA targeting may have correlated with pre-existing growth trajectories.

Figure A5: Dynamic treatment effects on KIS repeat FDI, Combined Authority IPAs (additional outcomes)



(a) Jobs



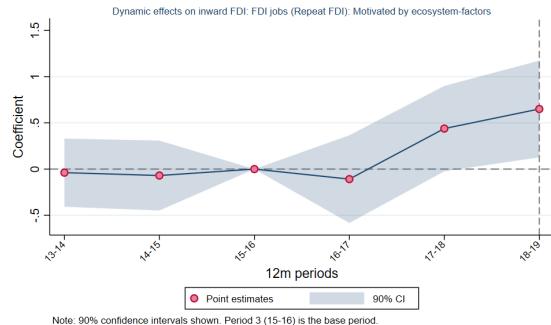
(b) Num. projects

Table A5: Impact of pre-Brexit IPA targeting on inward new FDI into English regions, by investment motivation, 2013–2019

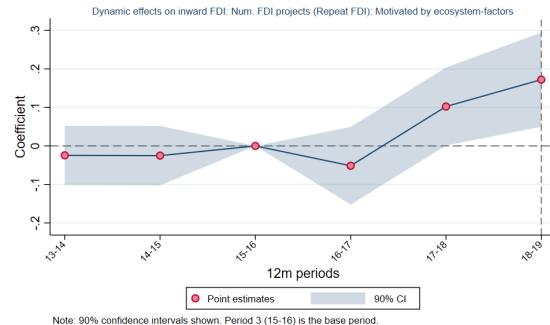
	IHS cap. value			Dummy FDI		
	(1)	(2)	(3)	(4)	(5)	(6)
ECOSYSTEM-MOTIVATED						
Pre-2015 IPA targeting	0.115	0.092	0.094	0.041	0.030	0.031
× Post-Brexit	(0.102)	(0.159)	(0.160)	(0.030)	(0.041)	(0.041)
Observations	1,875	1,854	1,854	1,875	1,854	1,854
R-squared	0.259	0.404	0.404	0.281	0.412	0.413
OTHER-MOTIVATED						
Pre-2015 IPA targeting	-0.119	0.065	0.084	-0.029	0.038	0.040
× Post-Brexit	(0.138)	(0.211)	(0.208)	(0.032)	(0.046)	(0.046)
Observations	1,875	1,854	1,854	1,875	1,854	1,854
R-squared	0.329	0.447	0.449	0.394	0.519	0.519
Region-Sector FE	Yes	Yes	Yes	Yes	Yes	Yes
Sector×Time FE	No	Yes	Yes	No	Yes	Yes
Region×Time FE	No	Yes	Yes	No	Yes	Yes
Pre-Brexit Growth × Post	No	No	Yes	No	No	Yes

*** p<0.01, ** p<0.05, * p<0.1. Standard errors are clustered at the region-sector level. Each outcome refers to FDI projects listed in Orbis-crossborder as “Greenfield” or “New foreign location” under variable “Project type”. Dummy FDI indicates whether any FDI project occurred in a given region-sector-time cell (extensive margin). Time periods are 12-month intervals from July 1st to June 30th, beginning on July 1st 2013 and ending in June 30th 2019 (giving 6 time periods). Unit of analysis are region-sector-12month cells. Ecosystem-motivated FDI includes projects where investors cited ecosystem-related factors (access to skilled labour, proximity to suppliers, knowledge spillovers, cluster benefits) as the primary motivation. Other-motivated FDI includes projects citing non-ecosystem factors (domestic market potential, access to European markets, natural resource availability); projects with unknown motivations are excluded. Motivation data were recorded inconsistently before 2016; to ensure comparability, the sample is restricted to the 2013–2019 period and retains only region-sectors where at least one project recorded a motivation during the sample period. Greater London, Scotland, and Wales are excluded from all regressions. Region-sectors where an IPA strategy was put in place in 2015 or later are dropped from all regressions. Pre-Brexit Growth × Post controls for the interaction between region-sector-specific pre-Brexit FDI growth rates (IHS-transformed, calculated as the difference in average FDI between periods 4–6 and periods 1–3) and a post-Brexit indicator.

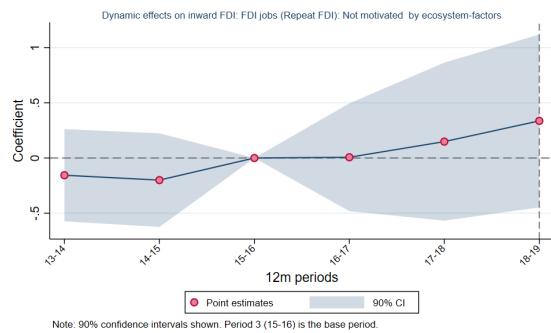
Figure A6: Dynamic effects of IPA targeting on repeat FDI, by investment motivation (additional outcomes)



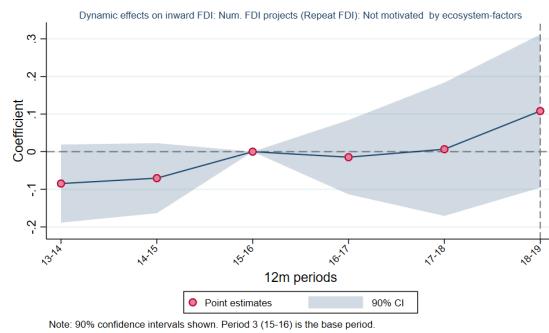
(a) Ecosystem-motivated: Jobs



(b) Ecosystem-motivated: Num. FDI projects



(c) Other-motivated: Jobs



(d) Other-motivated: Num. FDI projects

Table A6: Impact of pre-Brexit IPA targeting on inward repeat KIS FDI into English regions, by investment motivation, 2013–2019 (additional outcomes)

	IHS num. jobs			IHS num. projects		
	(1)	(2)	(3)	(4)	(5)	(6)
ECOSYSTEM-MOTIVATED						
Pre-2015 IPA targeting	0.297***	0.272**	0.270**	0.076***	0.068**	0.067**
× Post-Brexit	(0.110)	(0.122)	(0.121)	(0.029)	(0.027)	(0.027)
Observations	1,875	1,854	1,854	1,875	1,854	1,854
R-squared	0.342	0.485	0.485	0.368	0.513	0.513
OTHER-MOTIVATED						
Pre-2015 IPA targeting	0.230**	0.124	0.128	0.064**	0.047	0.048
× Post-Brexit	(0.103)	(0.130)	(0.132)	(0.027)	(0.034)	(0.034)
Observations	1,875	1,854	1,854	1,875	1,854	1,854
R-squared	0.255	0.438	0.439	0.252	0.439	0.439
Region-Sector FE	Yes	Yes	Yes	Yes	Yes	Yes
Sector×Time FE	No	Yes	Yes	No	Yes	Yes
Region×Time FE	No	Yes	Yes	No	Yes	Yes
Pre-Brexit Growth × Post	No	No	Yes	No	No	Yes

*** p<0.01, ** p<0.05, * p<0.1. Standard errors are clustered at the region-sector level. Each outcome refers to FDI projects listed in Orbis-crossborder as “Expansions”, “Co-locations” and “Re-locations” under variable “Project type”. Time periods are 12-month intervals from July 1st to June 30th, beginning on July 1st 2013 and ending in June 30th 2019 (giving 6 time periods). Unit of analysis are region-sector-12month cells. KIS sectors identified in line with Eurostat definition of KIS NACE sectors, as detailed in [https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Glossary:Knowledge-intensive_services_\(KIS\).Ecosystem](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Glossary:Knowledge-intensive_services_(KIS).Ecosystem) – motivated FDI includes projects where investors cited ecosystem – related factors (access to skilled labour, proximity to suppliers, knowledge spillovers, cluster benefits) as the primary motivation. Other-motivated FDI includes projects citing non-ecosystem factors (domestic market potential, access to European markets, natural resource availability) – 2019 period and retains only region-sectors where at least one project recorded a motivation during the sample period. Greater London, Scotland, sectors where an IPA strategy was put in place in 2015 or later are dropped from all regressions. Pre – Brexit Growth × Post controls for the interaction between region-sector-specific pre-Brexit FDI growth rates (IHS-transformed, calculated as the difference in average FDI between periods 4–6 and periods 1–3) and a post-Brexit indicator.

Figure A7: Dynamic effects of IPA targeting on ecosystem-motivated repeat KIS FDI (additional outcomes)

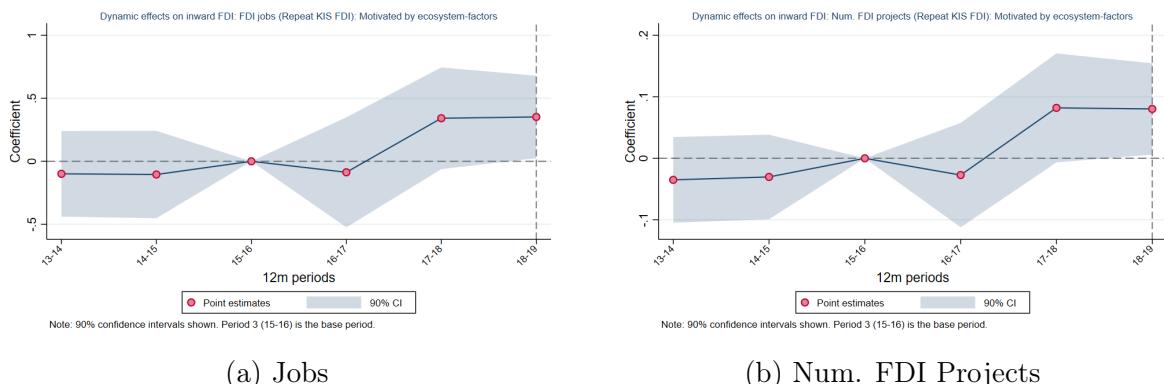
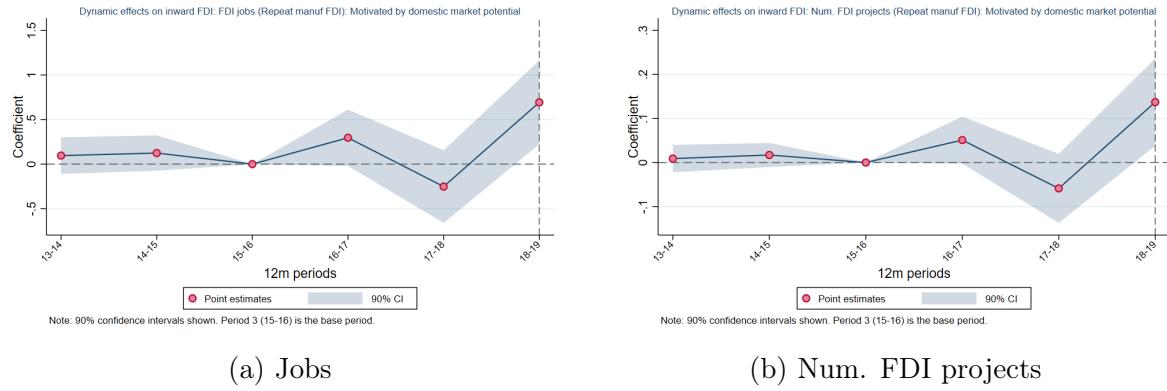


Table A7: Impact of pre-Brexit IPA targeting on inward repeat manufacturing FDI into English regions, by investment motivation, 2013–2019 (additional outcomes)

	IHS num. jobs			IHS num. projects		
	(1)	(2)	(3)	(4)	(5)	(6)
ECOSYSTEM-MOTIVATED						
Pre-2015 IPA targeting	-0.040	-0.020	-0.026	-0.008	-0.006	-0.007
× Post-Brexit	(0.056)	(0.080)	(0.080)	(0.011)	(0.017)	(0.017)
Observations	1,875	1,854	1,854	1,875	1,854	1,854
R-squared	0.216	0.431	0.433	0.206	0.401	0.402
DOMESTIC MARKET POTENTIAL						
Pre-2015 IPA targeting	0.267***	0.169	0.172	0.057**	0.033	0.034
× Post-Brexit	(0.091)	(0.119)	(0.119)	(0.020)	(0.025)	(0.025)
Observations	1,875	1,854	1,854	1,875	1,854	1,854
R-squared	0.192	0.344	0.344	0.197	0.353	0.353
MARKET ACCESS/TRADE						
Pre-2015 IPA targeting	0.133*	0.010	0.009	0.029*	0.002	0.002
× Post-Brexit	(0.074)	(0.085)	(0.086)	(0.016)	(0.019)	(0.019)
Observations	1,875	1,854	1,854	1,875	1,854	1,854
R-squared	0.218	0.380	0.380	0.228	0.392	0.392
Region-Sector FE	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Sector×Time FE	No	Yes	Yes	No	Yes	Yes
Region×Time FE	No	Yes	Yes	No	Yes	Yes
Pre-Brexit Growth × Post	No	No	Yes	No	No	Yes

*** p<0.01, ** p<0.05, * p<0.1. Standard errors are clustered at the region-sector level. Each outcome refers to FDI projects listed in Orbis-crossborder as “Expansions”, “Co-locations” and “Re-locations” under variable “Project type”. Time periods are 12-month intervals from July 1st to June 30th, beginning on July 1st 2013 and ending in June 30th 2019 (giving 6 time periods). Unit of analysis are region-sector-12month cells. Manufacturing FDI includes all projects falling under NACE code C. Ecosystem-motivated FDI includes projects citing ecosystem-related factors (access to skilled labour, proximity to suppliers, knowledge spillovers, cluster benefits). Domestic market potential includes projects citing access to UK domestic market. Market access/trade includes projects citing access to European markets or export opportunities; projects with unknown motivations are excluded. Motivation data were recorded inconsistently before 2016; to ensure comparability, the sample is restricted to the 2013–2019 period and retains only region-sectors where at least one project recorded a motivation during the sample period. Greater London, Scotland, and Wales are excluded from all regressions. Region-sectors where an IPA strategy was put in place in 2015 or later are dropped from all regressions. Pre-Brexit Growth × Post controls for the interaction between region-sector-specific pre-Brexit FDI growth rates (IHS-transformed, calculated as the difference in average FDI between periods 4–6 and periods 1–3) and a post-Brexit indicator.

Figure A8: Dynamic effects of IPA targeting on domestic market-motivated repeat manufacturing FDI



(a) Jobs

(b) Num. FDI projects