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The geography of acquisitions and greenfield investments: Firm heterogeneity and regional institutional conditions

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Abstract

This paper investigates how institutional conditions at national and regional levels shape the decisions of Multinational Enterprises (MNEs) to invest abroad by means of either acquisitions or greenfield investments. The empirical analysis covers all foreign direct investment (FDI) projects in the European Union by the largest MNEs in the world to study alternative choices by the same firm and account for firm-level characteristics in investment decisions. The empirical results show that—other things being equal—regions with stronger investment eco-systems are more likely to attract acquisitions, while greenfield investments are more likely in regions with comparatively weaker systemic conditions. However, the regional quality of institutions makes a fundamental difference to the nature of the investment projects attracted by regions: those with high quality of government can attract greenfield investments undertaken by the most productive MNEs. By improving their quality of government, local, and regional policy makers can attract higher quality greenfield investment projects to their constituencies, potentially breaking the vicious circle between low productivity areas and low productivity FDI.

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KEYWORDS
cross-border acquisitions, European Union, firm heterogeneity, foreign direct investment, greenfield investment, institutions, multinational enterprises, regions

1 | INTRODUCTION

Policy makers the world over have traditionally looked at the foreign acquisition of domestic assets as a source of concern more than as an opportunity for domestic growth and development. Scepticism on the desirability of foreign acquisitions is widespread in political discussions and in the media. In the United Nations Conference on Trade and Development, 2000 Investment Report, UNCTAD stressed that acquisitions do not add to productive capacity at the time of entry, but simply transfer ownership from domestic to foreign hands, often accompanied by lay-offs, closing of domestic facilities and, potentially, by a reduction in domestic competition. The report also emphasized that the potential harms are not only economic, but they can also be social, political, and cultural and of course when acquisitions take place in key strategical industries, such as infrastructures, transports, or communications, they may even be seen as threatening sovereignty and security in host countries.

The changing geo-political landscape in the aftermath of Covid-19 and the growing tensions triggered by the conflict in Ukraine have increased national security concerns over foreign activities and reinforced government skepticism on acquisitions (United Nations Conference on Trade and Development, 2022). Some EU countries, such as France, Germany, Italy, and Spain, have recently reduced the threshold share of acquired capital that activates investment screening, particularly in strategic sectors, such as telecommunications and biotechnology. In the United Kingdom a National Security and Investment Act was passed in May 2021, giving the Government new powers to investigate and intervene in potentially hostile mergers, acquisitions and other deals that could threaten UK national security.[1] At the EU level, in 2020 the European Commission published a guidance to call upon all Member States to make full use of their FDI screening mechanisms and invited all Member States to set up these mechanisms in full where still missing or incomplete.[2] As a matter of fact, despite the number of acquisitions remaining relatively constant over the past 10 years (European Commission, 2019), there are growing concerns in Europe about the impact that foreign acquisitions, in particular those undertaken by multinationals from emerging countries, may have on security, public order and the wider economy.[3]

At the other end of the spectrum, policy makers worldwide compete fiercely for the attraction of greenfield investments that involve building new facilities and are seen as a fundamental source of economic growth, knowledge transfer, innovation, and recovery after shocks (United Nations Conference on Trade and Development, 2021; Wang & Sunny Wong, 2009).

Recently, the growing geo-political tensions have exacerbated these polarized views, further increasing reservations on foreign acquisitions while placing the attraction of greenfield investments at the very center of national and regional recovery packages.

The existing economic geography and regional science literature has extensively investigated the subnational regional level location choice of greenfield investments, providing policy makers with consolidated evidence on key attraction factors (Basile et al., 2008; Coughlin & Segev, 2000; Crescenzi et al., 2014; Defever, 2006; Fontagné & Mayer, 2005; Head al., 1995). Considering acquisitions, the international business (IB) literature has widely

[1]For more information see legislation.gov.uk.
[2]For more information see circabc.europa.eu.
[3]According to European Commission (2019), the number of EU firms acquired by Chinese multinationals from 2007 to 2017 went up from 5000 to 28,000, those acquired by Indian MNEs from 2000 to 12,000 and by Russian companies from 1600 to 12,000.

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investigated the location decision of cross border activities of Multinational Enterprises (MNEs) among countries (Hennart & HI Slangen, 2015; Zapkau et al., 2021) but the subnational spatial heterogeneity has been investigated by a smaller literature (Beugelsdijk & Mudambi, 2013). Combining IB with International Economics (IE), Brakman et al. (2023) empirically compare the location behavior of Mergers & Acquisitions (M&As) by domestic and foreign companies, showing that cross-border M&A tend to concentrate in larger agglomerations with better market access. This seminal contribution—with its focus on both subnational heterogeneity and investing-company characteristics—is very aligned with the approach and questions addressed in the present paper.

However, such literature has remained silent on the specific role of regions and their characteristics in the choice of MNEs between acquisitions and greenfield investments. Given the relevance of the economic and geo-political pros and cons of different FDI modes (i.e., greenfield investments or acquisitions), this remains a very relevant knowledge gap to inform evidence based FDI policies at regional and local level.

The IE literature offers some important insights on MNE-specific determinants of the choice between greenfield FDI and acquisitions, while keeping a purely national (and a-spatial) approach. Nocke and Yeaple (2008) show how different national-level characteristics of the host economies interact with the features of the investing companies in the attraction of either greenfield investments or acquisitions. They find that the two modes of FDI differ according to firm-level characteristics such as efficiency, innovation capacity or previous international investment experience, as well as host country-level features such as openness, market size and geographical distance between home and host countries.

This paper takes Nocke and Yeaple (2008) as a starting point to add an economic geography and regional science perspective to the analysis of FDI modes at the subnational level. Regions, with their characteristics and features, are the key conceptual and empirical focus of this paper in their interaction with foreign investors (and their characteristics). We aim to explore the role of regional institutional quality and innovation capacity in explaining the type of FDI that different regions can attract.

Differently from the IB literature which aims to model the full set of behavioral choices of MNEs,[4] this paper investigates the association between the outcome of these decisions—in terms of greenfield investments versus acquisitions—and some national and subnational conditions, such the quality of government and the innovative capacity. Following a consolidated tradition in regional studies (e.g., Ascani et al., 2016; Capello & Lenzi, 2014; Charron et al., 2014; Rodriguez-Pose & Di Cataldo, 2015; Sanso-Navarro & Vera-Cabello, 2016 among others), it brings to the center of the analysis the quality of subnational regional institutions and local host eco-systems.

Our analysis is innovative in several ways. First, we introduce a subnational regional analysis to account for the importance of local factors in shaping the choice between greenfield investments and acquisitions. Second, we consider technological dynamism and institutional conditions at both country and regional level as key features characterizing a strong and dynamic investment eco-system and accordingly, we hypothesize they can be potential determinants of FDI modes. Third, we explore how firm-level heterogeneity at the level of the investing multinationals interacts with the characteristics of the host (national and regional) economy in shaping FDI modes. In so doing we contribute to the literatures in economic geography and regional science that have often stressed the importance of understanding the interaction between firm-level characteristics (such as efficiency or innovativeness), and the national and subnational characteristics of their host territories (Baldwin & Okubo, 2006; Beugelsdijk, 2007; Dicken & Malmberg, 2001; Forslid & Okubo, 2015; Mariotti et al., 2014; Ottaviano, 2011; Saito, 2015; Van Oort et al., 2012).

[4]The IB literature tends to distinguish between ownership modes (i.e. joint venture and wholly owned subsidiary) and establishment modes (greenfield and acquisitions) and, moreover, questions the sequence of location and entry mode choice (see Brouthers et al., 2022; Hennart & Slangen, 2015 for a comprehensive discussion on these issues). While acknowledging the important contribution of this literature and the relevance of such topics, this work wants to provide original empirical evidence of the subnational regional determinants of greenfield versus acquisitions choice, based on an original and rich data set, given the different potential impact these two types of FDI can have on host economies.

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The empirical analysis is based on a new and original database including a large sample of MNEs selected from the Forbes Global 2000 list with at least one investment in the EU-27 and the United Kingdom during the period from 2003 to 2014. The findings suggest that the subnational dimension is indeed relevant in shaping FDI modes over and above national factors. We show that both institutional quality and innovative capacity of the host economies are positively related to a larger propensity to attract acquisitions. However, when jointly considering investing firms and host regions' characteristics, we find that greenfield investments by the most efficient and innovative MNEs (those with the highest potential for regional development) are attracted by supportive institutional environments and high local innovation capacity.

The paper is structured as follows: Section 2 develops the key hypotheses tested in the empirical analysis; Sections 3 and 4 illustrate, respectively, the data set and the variables; Section 5 presents the findings and Section 6 provides a discussion and concludes.

2 | THE CHOICE BETWEEN GREENFIELD INVESTMENT AND ACQUISITIONS IN REGIONS: THE LITERATURE AND THE RESEARCH HYPOTHESES

Acquisitions provide foreign firms with access to resources held by domestic firms through a complete or partial (depending on the type of acquisition) integration of the acquired company into the acquirer's own organizational boundaries. Greenfield investment "does not directly access a local firm as a bundle of organizational resources but allows the entrant to buy or contract for resource components available on local markets, such as real estate and labor." (Meyer et al., 2009, p. 62). These two modes of accessing and controlling foreign activities are fundamentally different in their drivers, conditioning factors and, ultimately, geography (Huallacháin & Reid, 1997; Basile, 2004). Location choices of greenfield FDI and cross-border acquisitions have been widely studied in the literature as well as the firm-level determinants of FDI modes. However, the analysis of the fundamental choice between a greenfield investment and an acquisition from a regional standpoint has been overlooked in the economic literature.

The existing literature in international trade has focused on country-level determinants of FDI mode, such as market size, competition intensity and degree of economic integration (Burger & Ianchovichina, 2017; Eicher & Kang, 2005; Kim, 2009; Mattoo, et al., 2004; Müller, 2007; Qiu & Wang, 2011; Raff et al., 2009). Along these lines, the seminal contribution by Nocke and Yeaple (2008, p. 1) models the MNE establishment strategy as the interaction between macro-level drivers and firm-level characteristics: "the two modes of FDI differ significantly in both the characteristics of the firm that engage in these modes as well as in the characteristics of the host countries in which firms invest."

Nocke and Yeaple (2008) investigate the choice between greenfield FDI and acquisitions as a positive assortative matching process between headquarters/investing companies and their new subsidiaries. In a different paper (Nocke & Yeaple, 2007), they show that this choice depends on the distribution of internationally mobile factors (such as technology) and internationally immobile resources (such as localized knowledge about domestic markets) that vary across firms.

This framework can convincingly explain how firms choose between greenfield investments and acquisitions, but three key conceptual elements are missing to understand the regional geography of FDI mode choices and its drivers. In this paper, we aim at addressing these gaps. First, based on well-established point in both economic geography and regional science (see e.g., Basile et al., 2008; Crescenzi et al., 2014; Iammarino & McCann, 2013), we consider and explicitly model subnational heterogeneity in the distribution of internationally mobile factors, accounting for MNE strategic choices which are influenced by the variety and quality of a set of highly localized assets. Second, in a context of increased technological competition, we investigate how the local innovative capacity, and the institutional conditions shape firm strategies vis-à-vis their host economies, influencing the regional geography of FDI mode choices. Third, we model a fine-grained geography of FDI mode choices

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accounting for the interactions between external (national and regional) conditions and firm-level characteristics (Baldwin & Okubo, 2006; Brakman et al., 2023; Forslid & Okubo, 2015; Ottaviano, 2011, 2012; Saito, 2015).

Therefore, we analyse the regional geography of choices between greenfield investments and acquisitions proposing an original conceptual framework, which extends Nocke and Yeaple (2008) accounting for: (a) the critical role of regional eco-systems, in addition to national specificities; (b) the spatial subnational heterogeneity of technological dynamism and institutional conditions as key features of supportive investment eco-systems; and (c) the interaction of (a) and (b) with the diversity of investing companies.

The diversity and heterogeneity of subnational conditions shapes investment costs and we can expect that this will also influence the choice between greenfield investments and acquisitions, along the lines outlined above. Following this line of reasoning, we develop and test two hypotheses on the regional geography of FDI mode choice.

The first hypothesis looks at the gap in production costs between the home economy of the investing company and the host economy of its foreign subsidiary. Nocke and Yeaple (2008) posit that the lower the gap in production costs the higher is the probability of acquisitions vis-à-vis greenfield investments, due to the lower cost savings to compensate for the higher cost (and risk) of a completely new (greenfield) foreign establishment. Greenfield investments occur when their higher costs and inherent risks are counter-balanced by potential gains derived from some sort of locational advantage that can be better accessed through a more direct presence of the investing company. The scant literature on this issue shows that greenfield investments are more common in regions with high demand levels, low labor costs and good public infrastructures while acquisitions are positively related to local agglomeration factors and availability of potential targets (Huallacháin & Reid, 1997; Basile, 2004).

What the existing literature has so far overlooked is the role of access to new localized knowledge and learning, which is increasingly a key source of competitive advantage for most MNEs (Amendolagine et al., 2018). Following this line of reasoning, access to foreign intangible factors is contingent upon the selection of the correct FDI mode that can offer better access to localized networks and knowledge pools embedded into local eco-systems. To conceptualize and operationalize empirically the factors enabling access to these localized knowledge assets, economic research has largely focused on the measurable aspects of (formal) institutions influencing MNE operations abroad by directly shaping the returns on their investments and the associated risk, and indirectly impacting upon other key investment drivers such as human capital and infrastructure availability and quality (Knack & Keefer, 1995). Therefore, leveraging the literature on both the FDI impacts of the regional dimension of institutions (Phelps et al., 2003 on the United Kingdom; Du et al., 2008 looking at Chinese regions) and the determinants of cross-border acquisitions (Lawrence et al., 2021; Rossi & Volpin, 2004), we hypothesize that a stronger institutional environment characterized by better and more supportive and transparent institutions, will make it easier for investors to identify and capture the intangible assets available in the local eco-system. This hypothesis is consistent with Davies et al. (2018), who find that a weak institutional context can hinder cross border acquisitions more than greenfield investments, since they make more difficult the necessary agreement between acquiror and target' owner (particularly when the primary object of acquisition is intangible assets). Conversely, opaquer and less well-defined institutional environments will make it necessary for MNEs to enter host economies with a stronger direct presence on the ground, establishing local operations directly through greenfield investments whose higher cost will be justified by an otherwise more difficult access to local knowledge. As result we specify the first hypothesis as follows:

H1 Other things being equal, MNEs will choose acquisitions to invest in foreign regions with stronger eco-systems while they will rely on greenfield investments in regions with weaker systemic conditions.

Accounting for the interaction between heterogeneity at the firm level and in host regional eco-systems is a further original contribution in our hypothesis building on the regional geography of FDI mode choices. Nocke and Yeaple (2008) show that more efficient companies are more likely to opt for greenfield investments than

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acquisitions. This is because the cost for establishing new plants abroad is high, calling for larger investments to leverage scale economies. Therefore, the most productive investors (i.e., those with higher managerial capabilities) can "afford" to "build" foreign subsidiaries "from the ground up" through greenfield investments. The higher entry cost of undertaking greenfield investments with respect to acquisitions and exports is modeled by Stepanok (2015), confirming that more productive companies are more likely to undertake greenfield investments. Empirically, this result has been confirmed for Japan (Raff et al., 2012) and Poland (Klimek, 2011).

Ceteris paribus, subnational regions with stronger eco-systems are expected to attract more FDI by reducing the entry costs for foreign investors and enhancing the return from investments (Ascani et al., 2016; Crescenzi et al., 2014). Improving the quality of institutions can boost MNE investment both directly—by reducing risk—and indirectly—by enhancing the development of other important investment location factors, such as infrastructures and innovation (Knack & Keefer, 1995; Rodriguez-Pose & Di Cataldo, 2015). In turn, high quality local institutions can enhance competition among foreign investors to secure access to these scarce factors, allowing only the "strongest" firms to undertake the more costly type of FDI, that is greenfield. This logic is aligned with the type of sorting presented in Brakman et al. (2023), whereby more productive firms can overcome higher entry costs to directly access "prime" locations and benefit from traditional agglomeration benefits and market access (in the framework of Brakman et al., 2023) or from supportive regional institutions and eco-systems in our framework.

Thus, although according to H1 better institutional conditions are more likely to drive acquisitions here we hypothesize that more efficient MNEs possess the resources and managerial capabilities to leverage greenfield FDI and directly plug into regions endowed with stronger eco-systems, while less productive firms will still prefer acquisitions that offer an easier entry-point to the local pool of knowledge (Nocke & Yeaple, 2008). Our second hypothesis reads as follows:

H2 Other things being equal, more efficient MNEs will undertake greenfield investments to plug into foreign regions with stronger eco-systems while less efficient firms will prefer acquisitions.

If the two hypotheses above are verified, the geography of FDI mode choices can be modeled as a process of spatial matching between the most dynamic local institutional eco-systems and the most productive high-management-quality firms through greenfield FDI. These are the connections with the highest payoff for both investing firms and host economies. Conversely, the global geography of acquisitions serves as the backbone for more routine matching between investing firms and local economies.

3 | THE DATASET

The above hypotheses are tested with an original database including all greenfield investments and acquisitions in the EU-27 and the United Kingdom undertaken by the Forbes Global 2000 companies, identified in terms of four equally weighted metrics: assets, market value, sales, and profits.

The rationale for our focus on investments by Forbes 2000 companies is multifold. First, while for testing Hypothesis 2 it would be ideal to link each and every individual inward investment in the EU with its investing company, this is practically impossible. In fact, for smaller investors firm-level characteristics are often missing from large multicountry firm-level databases widely used in the literature such as Orbis by Bureau Van Dijk.

Second, Forbes Global 2000 companies not only account for a large share of total inward investments in the EU regions, but they are also likely to undertake differentiated internationalization strategies in terms of their regional location and FDI mode, making it possible to unveil the patterns of interest. This is clearly a condition in our analysis of the geography of FDI mode choices (and its interaction with firm-level characteristics): given that the sample includes firms undertaking multiple foreign investments with different modes in different regions this generates enough variability for the estimation.

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Third, the Forbes Global 2000 companies account for more than 40 per cent of the total value of FDI inflows in the EU-28 during the years from 2003 to 2014 (United Nations Conference on Trade and Development, 2018); moreover, the time trend of the total value of their greenfield FDI and acquisitions in the same area is broadly comparable to that of total FDI from all investors (see Appendix A for a comparison).

The dataset combines multiple sources and Figure B1 presents a visual representation about the different steps followed to build it. For each Forbes Global 2000 company all greenfield investments and acquisitions between 2003 and 2014 are included in the database, which links a large sample of large investors with all their foreign investments. Information about the characteristics of the investing companies is compiled from the Worldscope Database by Thomson Reuters, Orbis by Bureau van Dijk and Orbis Intellectual Property. Information about greenfield projects is drawn with a manual name-matching procedure from fDi Markets by the Financial Times, the best available source to analyze FDI at the sector and subnational level.[5] Information about acquisitions are retrieved from Zephyr by Bureau van Dijk, identifying the BvD-ID associated to acquirers in each acquisition, and restricting the sample to majority-owned foreign affiliates, therefore excluding minority, noncontrolling acquisitions because they could not be considered as an alternative choice to fully-owned greenfield projects.[6] In addition, to guarantee that there is always a real alternative choice between greenfield investments and acquisitions, we exclude from the sample the greenfield investments in subnational destinations where there is not any potential acquisition target in the same NACE 2-digit sector. Finally, we drop commercial greenfield subsidiaries, classified by fDi Markets as sale or retail business activities. This is to increase the functional homogeneity across the investments in our database, given that market seeking investments are more likely to take the form of greenfield projects rather than acquisitions (Anderson & Sutherland, 2015; Davies et al., 2018; Moghadam et al., 2019).

The final sample includes 7338 investments, of which 2001 are acquisitions (27%) and 5337 are greenfield investments (73%). The distribution of greenfield investments and acquisitions in our sample is consistent with aggregate data provided by UNCTAD,[7] showing that acquisitions and greenfield investments represent, respectively, 29% and 71% of the total number of FDI directed to the EU between 2003 and 2014 (i.e., our spatial and temporal analytical framework).[8]

All investments are geocoded at OECD Territorial Level 2, which combines EUROSTAT NUTS 1 and NUTS 2 regions in a consistent and harmonized fashion. The investments in the data set are undertaken by 976 firms: 729 of them (75%) have undertaken more than one investment (mostly in different regions), and 452 (46.3%) have been involved both in acquisitions and greenfield investments.

Following Nocke and Yeaple (2008), we aggregate investments so that for each firm a location-industry pair is counted at most once. Therefore, given the regional focus of our research, each observation in the data set represents a new investment in one of the EU-28 subnational regions in a specific industrial sector (defined at NAICS 2-digit level). The empirical analysis distinguished between two subperiods, 2003–2008 and 2009–2014, to account for the international financial crisis of 2008. The empirical analysis then pools the two subperiods.

Considering the geography of FDI, the UK and Germany receive the largest shares of total inward investments: respectively 20% and 11% of the total. Spain is also an important destination for greenfield investments (10.5%), while France is the third most important target for acquisitions (10.7%). Eastern European countries are attractive mainly for greenfield investments, in particular Poland (8.3%) and Romania (6.3%) (Table 1).

[5]A detailed discussion of the features of the data set and its coverage vis-à-vis other data sources on global FDI is included in Crescenzi et al. (2014) and Dogaru et al. (2015).

[6]While we acknowledge that regional (institutional) factors could also affect alternative ownership modes such as joint ventures (Dang et al., 2020; Driffield et al., 2016), our focus is on the choice between greenfield investments and acquisitions, because we are interested to explore the potential different impact these two FDI modes can have on host economies.

[7]Data are available at UNCTAstat.

[8]It is worth to notice that according to UNCTAD, in the same period and geographical area in value terms, the share of greenfield investments and acquisitions is different, namely 49% and 51%.

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TABLE 1 Destination of investments by mode of entry: 2003–2014 (# and %).

Country	Greenfield	Acquisitions	Total	HHI[a]
United Kingdom	929 (17.41)	538 (26.89)	1467 (19.99)	0.10
Germany	562 (10.53)	258 (12.89)	820 (11.17)	0.07
Spain	559 (10.47)	119 (5.95)	678 (9.24)	0.19
France	442 (8.28)	214 (10.69)	656 (8.94)	0.19
Poland	444 (8.32)	54 (2.7)	498 (6.79)	0.14
Romania	334 (6.26)	32 (1.6)	366 (4.99)	0.18
Netherlands	211 (3.95)	143 (7.15)	354 (4.82)	0.18
Ireland	226 (4.23)	61 (3.05)	287 (3.91)	0.81
Italy	148 (2.77)	139 (6.95)	287 (3.91)	0.24
Czech Republic	246 (4.61)	37 (1.85)	283 (3.86)	0.22
Belgium	185 (3.47)	69 (3.45)	254 (3.46)	0.19
Hungary	240 (4.5)	13 (0.65)	253 (3.45)	0.33
Sweden	125 (2.34)	72 (3.6)	197 (2.68)	0.31
Austria	115 (2.15)	28 (1.4)	143 (1.95)	0.27
Denmark	68 (1.27)	64 (3.2)	132 (1.8)	0.45
Slovakia	112 (2.1)	9 (0.45)	121 (1.65)	0.29
Bulgaria	91 (1.71)	15 (0.75)	106 (1.44)	0.31
Portugal	76 (1.42)	17 (0.85)	93 (1.27)	0.37
Other EU countries[b]	224 (4.19)	119 (5.95)	343 (4.69)	0.80
Total	5337 (100)	2001 (100)	7338 (100)	0.46

[a]$HHI_i = \sum s_{ij}^s$, where s_{ij} is the share of investments to region j of total investments to country i.

[b]Cyprus, Estonia, Finland, Greece, Lithuania, Latvia, Luxemburg, Malta, and Slovenia.

Source: fDi Markets and BvD Zephyr.

The Herfindahl Index (HHI), that captures the within-country concentration across subnational regions, shows that investment projects are rather spread in the top destination countries (such as the United Kingdom and Germany), while they are relatively more spatially concentrated in smaller Eastern European countries (such as Bulgaria, Hungary, and Slovakia) and in Scandinavia (Denmark and Sweden). At the subnational level, acquisitions are mostly concentrated within regions located in EU-15[9] countries, namely the UK, Germany, France, Spain, Netherlands, Italy (Figure 1) while greenfield projects are more geographically spread (Figure 2).

Table 2 describes the sectoral distribution of investors according to the Eurostat classification.[10] Investments from MNEs in medium-high tech manufacturing sectors and knowledge-intensive services represent more than 60% of all projects. Greenfield investment projects are particularly concentrated in the automotive industry (9.2%), while acquisitions are concentrated in electronics (9.15%) and machinery (8.3%). Considering services, investments in financial and insurance industries attract the largest share of deals.

[9]The EU15 comprise the following 15 countries: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden, United Kingdom.

[10]The Eurostat classification refers to NACE 2-digit sectors.

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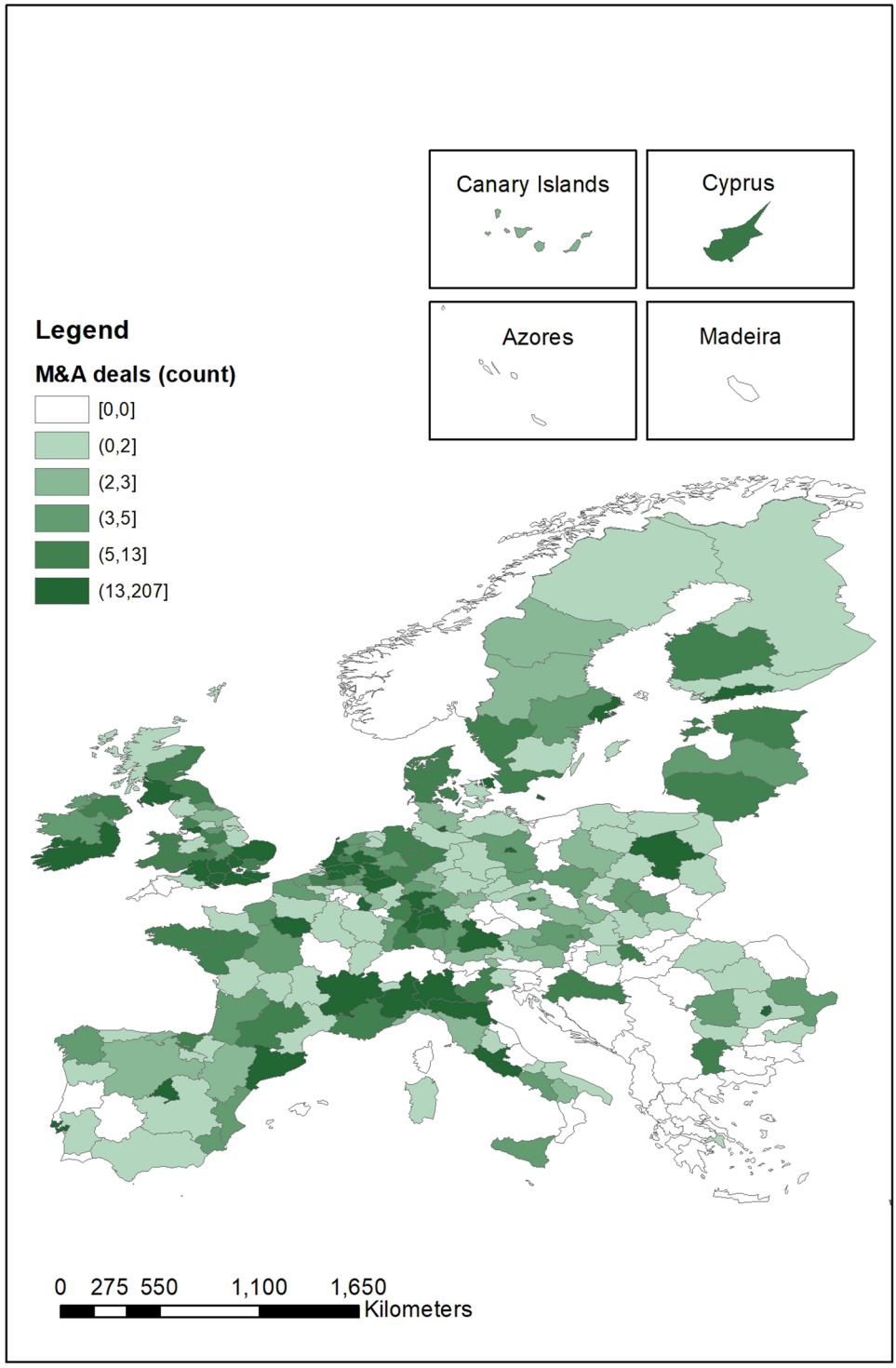

FIGURE 1 Geographical distribution of foreign acquisitions by 'Forbes Global 2000' companies in the European Union (2003–2014). Note: Classes in the legend are quintiles of the distribution of the count of foreign acquisitions. Source: BvD Zephyr. [Color figure can be viewed at wileyonlinelibrary.com]

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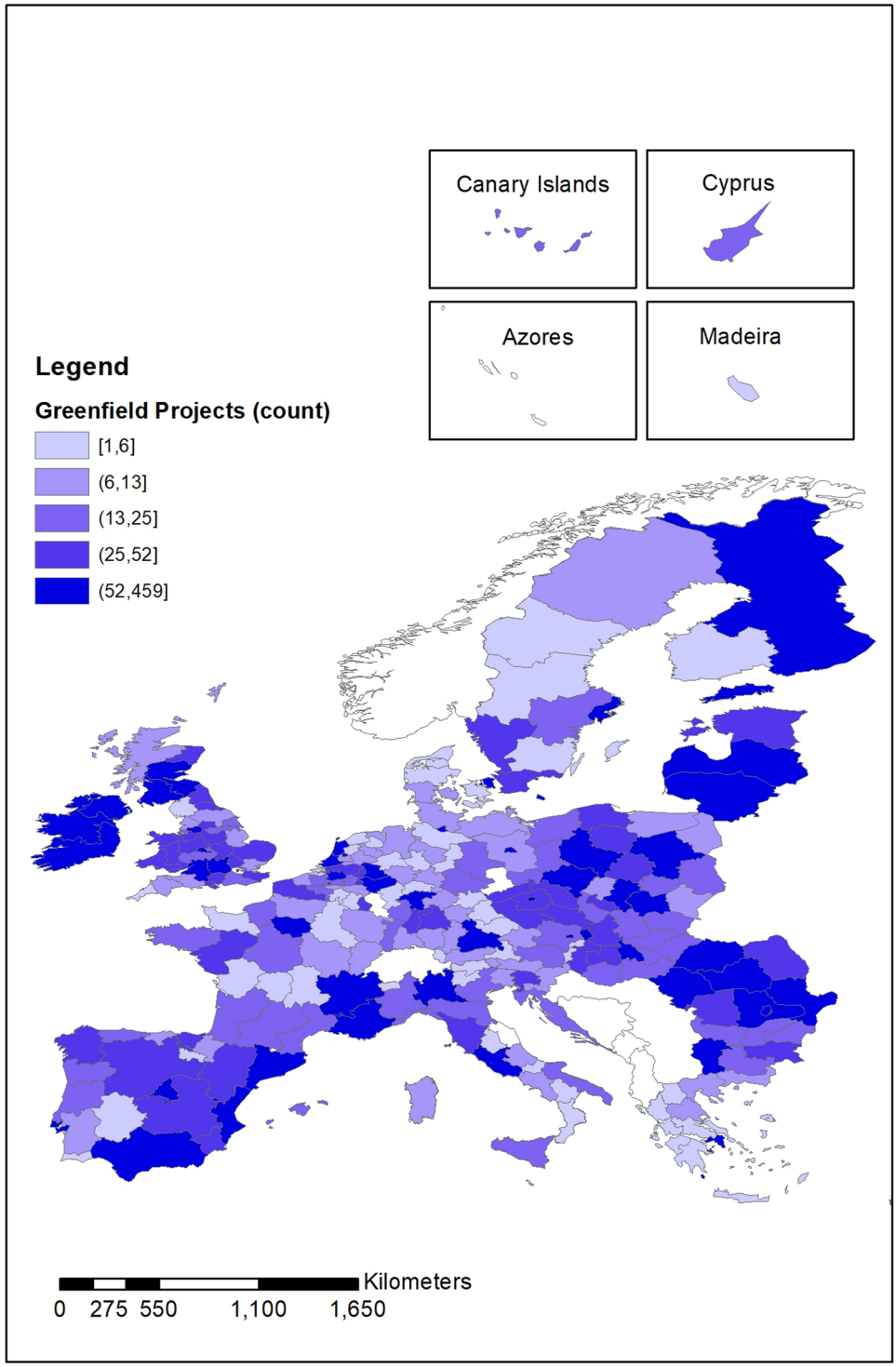

FIGURE 2 Geographical distribution of greenfield inward foreign investment projects by 'Forbes Global 2000' companies in the European Union (2003–2014)". Note: Classes in the legend are quintiles of the distribution of the count greenfield FDI projects. *Source*: fDi Markets by the Financial Times. [Color figure can be viewed at wileyonlinelibrary.com]

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TABLE 2 Sectoral distribution: 2003–2014 (# and %).

	Greenfield	Acquisitions	Total
Agriculture and mining	***91 (1.71)***	***43 (2.15)***	***134 (1.83)***
Mining and quarrying	90 (1.69)	40 (2)	130 (1.77)
Medium-low tech manufacturing	***542 (10.16)***	***281 (14.04)***	***823 (11.22)***
Food, beverage, tobacco	144 (2.70)	48 (2.4)	192 (2.62)
Rubber; plastics; other nonmetallic mineral products	147 (2.75)	48 (2.4)	195 (2.66)
Metals	94 (1.76)	88 (4.4)	182 (2.48)
Other manufacturing	157 (2.94)	97 (4.85)	254 (3.46)
Medium-high tech manufacturing	***1692 (31.7)***	***625 (31.23)***	***2317 (31.58)***
Chemicals	184 (3.45)	97 (4.85)	281 (3.83)
Pharmaceuticals	219 (4.1)	59 (2.95)	278 (3.79)
Electronics	352 (6.6)	183 (9.15)	535 (7.29)
Electrical equipment	185 (3.47)	54 (2.7)	239 (3.26)
Machinery and equipment	260 (4.87)	166 (8.3)	426 (5.81)
Motor vehicles and other transport equipment	492 (9.22)	66 (3.3)	558 (7.6)
Less intensive knowledge services	***1299 (24.34)***	***452 (22.59)***	***1751 (23.86)***
Electricity and gas	243 (4.55)	51 (2.55)	294 (4.01)
Wholesale and retail trade	302 (5.66)	173 (8.65)	475 (6.47)
Transportation and storage	335 (6.28)	44 (2.2)	379 (5.16)
Knowledge-intensive services	***1713 (32.1)***	***600 (29.99)***	***2313 (31.52)***
Information and communication	415 (7.78)	171 (8.55)	586 (7.99)
Financial and insurance activities	1016 (19.04)	249 (12.44)	1265 (17.24)
Other service activities	282 (5.28)	180 (9)	462 (6.3)
Total	*5337 (100)*	*2001 (100)*	*7338 (100)*

Note: Bold values indicate aggregate sectors, whose main components are specified in the lines below.
Source: fDi Markets and BvD Zephyr.

4 | THE MODEL AND THE VARIABLES

The empirical analysis models the probability of a particular region and sector to receive either a greenfield project or the acquisition of an existing local firm by a foreign MNE. This approach departs from standard location choice analyses that aim to model *where* (usually greenfield) investments are located. Conversely, here we investigate *how* multinationals undertake their investments in the regions. This probability is modeled through a standard logit model that builds upon and extends Nocke and Yeaple (2008), estimating the probability of receiving a greenfield investment (vs. an acquisition) as a function of a set of characteristics of the host regions and of the investors. The model is specified as follows:

$$P(y_{irsf}) = \frac{1}{1 + \exp(-\alpha - X_{irsf}\beta)},$$

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where *y* is the dependent variable, taking value 1 if investment project *i* is a greenfield investment and 0 if it is an acquisition,[11] *X* is a vector of explanatory variables at firm, regional and national level, *r* is the region where the investment takes place, *s* is the sector, *f* is the investor. As in Nocke and Yeaple (2008) the model is static, and all variables are computed in the first year of each subperiod.

All models include investor-industry fixed effects and subperiod fixed effects (i.e., the model includes a dummy TIME CONTROL, taking value 1 for projects undertaken in the 2009–2014 subperiod and 0 for observations in the 2003–2008 subperiod). The fixed effects account for all time-invariant unobservable characteristics of the investing companies that might affect their investment decisions (including e.g., different home countries, company culture, managerial strategies etc.) as well as for sector-specific preferences for one foreign investment mode over the other. In addition, in a separate specification included among the robustness checks we also add fixed effects at the destination/target sector and country level. These additional sets of fixed effects control for the specificities of the sectors of the foreign investment (over and above the main sector of operation of the investing company) and of the host country (including its overall investment and labor costs, historical legacy and quality of government etc.). Standard errors are clustered at investor level.

The regressors include two sets of explanatory variables: (a) variables at the host country/region level (Hypotheses #1 and #2) and (b) investor-level variables (Hypotheses #2). In what follows, we discuss and justify the key variables included in the empirical analysis. Details about all variables and their sources are presented in Table 3.

In the selection of the key characteristics of the investors, we follow Nocke and Yeaple (2008) and introduce two variables: (1) the overall efficiency of the investing company, computed as the logarithm of net sales per employee in US$ dollars (SALES_EMPLOYEES); (2) the dynamic efficiency of investors and their innovation capacity, measured as the cumulative (log) number of patents filed at the European Patent Office (INNOV).[12]

In addition, we include in the model controls at the level of the investing company: (a) the size of the investors, measured by the log number of employees (EMP); (b) the diversification in different industries (DIV) calculated as the number of industrial sectors (defined at SIC 4-digit level) in which the investor operates[13]; (c) the (log) number of countries in which the investing companies operate to control for the investors' internationalization level (COUNTRIES); and (d) a dummy variable which takes value of 1 if the parent company already has at least one subsidiary in the same county at the year of the investment, and 0 otherwise (EXP).

Then, the model includes two proxies for the quality of the host-region eco-system. The first is a measure of the regional institutional quality (QoG_REGION), measured by the European Quality of Government Index (Charron et al., 2013, 2014), a survey-based indicator on European regions compiled by the University of Gothenburg. The index is based on questionnaires gauging the quality and impartiality of public services and the perception of corruption by local citizens. Responses to the survey are aggregated at the NUTS1 or NUTS2 level for the EU-28, identifying four different dimensions of government quality: control of corruption, government effectiveness, rule of law, and government accountability (Charron et al., 2013, 2014). The second is the innovation level (EPO_PC_REGION), proxied by the number of patent applications (per million inhabitants) to the European Patent Office.

A set of host economy controls at the national and regional level completes the specification of the model. At the regional level, we include the logarithm of the real GDP per capita of host regions (GDP_PC_REGION)—a key proxy for the level of productivity of the local economy and (indirectly) for its labor costs—as well as for other regional characteristics which are customary in the literature on MNE location choices (e.g., Basile et al., 2008) and that might also influence the investment mode. We control for the quality of infrastructure, measured by the

[11]Only 1% of the regional/industry units of analysis attracts multiple greenfield investments and/or acquisitions by the same investor. In these rare cases, the observation is coded as an acquisition, given the lower frequency of acquisitions in the sample.

[12]This variable is different from the ratio of R&D expenditure on total sales included in Nocke and Yeaple (2008), which could not be included because of the high number of missing values in Worldscope.

[13]This is different from Nocke and Yeaple (2008), who calculate a concentration index of sales across industrial sectors. Because we lack such information, we prefer to use a different proxy for diversification.

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TABLE 3 The variables.

	Mean	S.D.	# of obs.	Description	Source
GREEN	0.71	0.45	4995	1 if greenfield investments, 0 if acquisition	Zephyr (Bureau van Dijk); fDi Market (Financial Times)
SALES_EMPLOYEE	5.82	0.87	4995	Sales/employee (log)	Worldscope (Thomson Reuters)
TFP	3.96	0.61	4955	Sales/employee (log)−1/3 capital/employee (log)	Worldscope (Thomson Reuters)
INNOV	3.07	3.37	4995	# EPO patents (log)	Orbis intellectual property
EXPERIENCE	0.80	0.40	4995	Previous country experience dummy	Orbis (Bureau van Dijk)
EMPLOYEES	10.72	1.48	4995	# Employees (log)	Worldscope database (Thomson Reuters)
DIV	5.703	2.19	4995	# SIC sectors	Worldscope (Thomson Reuters)
COUNTRIES	3.51	0.89	4995	# countries with subsidiaries (log)	Orbis (Bureau van Dijk)
QoG_REGION	0.16	0.95	4995	Quality of government (regional level)	Charron et al. (2013), (2014)
QoG_COUNTRY	0.16	0.88	4995	Quality of government (national average)	Charron et al. (2013), (2014)
QoG_REGION_REL	0.01	0.35	4995	Quality of government (regional deviation from national average)	Charron et al. (2013), (2014)
EPO_PC_REGION	3.95	1.71	4961	N. of EPO patents per capita (region-level, log)	OECD database
EPO_PC_COUNTRY	3.95	1.53	4961	N. of EPO patents per capita (country-level average, log)	OECD database
EPO_PC_REGION_REL	−0.01	0.76	4961	N. of EPO patents per capita (regional deviation from country-level average, log)	OECD database
OPEN	0.58	0.21	4995	Log of (exports plus imports)/GDP	Penn World Tables
DISTANCE	7.71	1.19	4995	Origin-destination country distance (log)	CEPII database
AGGLOMERATION_REGION	9.21	1.07	4995	# companies in the target region (log)	Orbis (Bureau van Dijk)
GDP_PC_REGION	10.18	0.60	4995	GDP per capita (region, log)	EUROSTAT
MOTORWAYS_GDP_REGION	0.01	0.01	4995	Km of motorways per million euros of GDP	EUROSTAT
HC_REGION	26.63	8.68	4995	% of employed people (aged 25–64) with completed higher education	EUROSTAT

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kilometers of motorways per million euros of GDP (MOTORWAYS_GDP_REGION), for the level of human capital (HC_REGION) proxied by the percentage of employed people aged 25–64 with higher education and finally, for agglomeration effects by the total number of companies within the same region of the investment (AGGLOMERATION). At the country level the model includes controls for the host countries' degree of openness (OPEN) proxied by the ratio of the sum of exports and imports to GDP, along with the geographical distance between the origin and the destination country (DISTANCE).

5 | EMPIRICAL RESULTS

Table 4 presents the results of the logit analysis. The estimation of the baseline model is reported in column 1 and confirms that more productive and efficient investing companies are more likely to invest in foreign host countries through greenfield investments rather than acquisitions adding a validation to the Nocke and Yeaple's (2008) finding at the regional level.[14] Large sunk costs and higher risk associated with the creation of brand-new foreign subsidiaries can be covered more easily by more productive MNEs. Dynamic efficiency and innovative capabilities—proxied by the patenting portfolio of the investing company—go in the same direction: more innovative companies are—ceteris paribus—more likely to undertake greenfield investment projects to leverage their technological advantage in foreign markets directly (Meyer et al., 2009; Tekin-Koru, 2012). Being undertaken by more productive and innovative firms, greenfield investments can bring into the regional economy higher value added, including highly productive activities not otherwise present in the regional eco-system.

Considering other firm-level control variables, we find that previous investment experience in the same country as the new investment (EXPERIENCE) decreases the probability of opting for greenfield investments when accessing a new regional economy. By leveraging better availability of domestic knowledge to identify possible target companies, investing companies can avoid the higher costs associated with greenfield projects and opt for acquisitions. This finding is in line with the existing literature (Ravenscraft & Scherer, 1987; Slangen & Hennart, 2008; Tekin-Koru, 2012) and confirms the idea of greenfield investments as less influenced by path-dependency, making this form of investment more appealing when directed to less advanced economies. Both the industrial diversification (DIV)[15] and degree of internationalization (COUNT) of investing MNEs are not statistically significant. At the country level, our results confirm that more open economies (i.e., with larger values of OPEN_COUNTRY) are more likely to attract greenfield investments. However, in contrast to Nocke and Yeaple (2008)—whose analyses are based on a sample including only US investing companies—we do not find a significant effect of the geographical distance between FDI origin and destination countries.

In column 2 the model is extended to include a full set of regional controls. Higher productivity regions—those with a higher GDP per capita—are less likely to attract greenfield investments because they have higher local production costs[16] and more competition on the factor market, increasing start up sunk costs for the investors. In addition, more dynamic regions are more likely to offer suitable domestic targets for acquisitions. This aligns with the evidence that agglomeration economies—captured by the local density of domestic firms (AGGLOMERATION REGION)—offering a larger number of potential candidates for acquisition lower the probability of greenfield projects. These results suggest that overall, low-productivity, low-agglomeration regions are—ceteris paribus—better positioned for the attraction of greenfield investments than acquisitions. This attractiveness for greenfield projects with respect to acquisitions is reinforced by better accessibility and infrastructural endowment captured by

[14]As a robustness check, we replicate the models presented in Table 1 in Nocke and Yeaple (2008). Results are provided in the Appendix C (Table C1) and mostly confirm the original findings, suggesting that our model is well specified and offer regional-level results consistent with Nocke and Yeaple (2008).
[15]Industrial diversification is not significant also in Slangen and Hennart (2008).
[16]More direct proxies for production costs at the regional level are notoriously not available for a large sample of EU regions.

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TABLE 4 Econometric analysis.

Greenfield 1 acquisitions 0	(1)	(2)	(3)	(4)	(5)	(6)
SALES_EMPLOYEES	0.5299***	0.5287***	0.5173***	0.4619***	0.4527**	0.7482***
	(0.0904)	(0.0910)	(0.0912)	(0.0899)	(0.1945)	(0.2040)
INNOV	0.0366	0.0380*	0.0421*	0.0419*	0.0420*	0.0423*
	(0.0228)	(0.0229)	(0.0231)	(0.0231)	(0.0231)	(0.0231)
EXPERIENCE	−0.7299***	−0.7323***	−0.6488***	−0.6527***	−0.6492***	−0.6520***
	(0.1550)	(0.1547)	(0.1568)	(0.1570)	(0.1568)	(0.1571)
EMPLOYEES	0.5075***	0.5092***	0.4873***	0.4868***	0.4869***	0.4887***
	(0.0552)	(0.0552)	(0.0552)	(0.0553)	(0.0552)	(0.0551)
DIV	−0.0246	−0.0264	−0.0263	−0.0261	−0.0261	−0.0272
	(0.0326)	(0.0328)	(0.0329)	(0.0329)	(0.0330)	(0.0329)
COUNTRIES	−0.1131	−0.1158	−0.1356	−0.1340	−0.1354	−0.1348
	(0.1030)	(0.1037)	(0.1033)	(0.1031)	(0.1033)	(0.1024)
OPEN_COUNTRY	0.4117**	0.2675	0.6351***	0.6217***	0.6330***	0.6242***
	(0.1888)	(0.1939)	(0.2090)	(0.2089)	(0.2095)	(0.2086)
DISTANCE_COUNTRY	0.0495	0.0539	0.0488	0.0508	0.0493	0.0491
	(0.0456)	(0.0458)	(0.0455)	(0.0455)	(0.0455)	(0.0455)
GDP_PC_REGION	−1.2789***	−1.1219***	−0.4743**	−0.4616**	−0.4714**	−0.4651**
	(0.1232)	(0.1589)	(0.1842)	(0.1847)	(0.1843)	(0.1836)
AGGLOMERATION_REGION		−0.0794*	−0.0948*	−0.0978*	−0.0953*	−0.0957*
		(0.0458)	(0.0503)	(0.0506)	(0.0504)	(0.0508)
MOTORWAYS_GDP_REGION		16.4034*	28.3945***	28.9724***	28.4126***	29.5056***
		(8.5093)	(9.8697)	(9.8642)	(9.8738)	(9.8602)

(Continues)

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TABLE 4 (Continued)

Greenfield 1 acquisitions 0	(1)	(2)	(3)	(4)	(5)	(6)
HC_REGION		0.0011	−0.0033	−0.0035	−0.0033	−0.0036
		(0.0064)	(0.0067)	(0.0067)	(0.0067)	(0.0067)
QoG_REGION			−0.1678**	−1.0423***	−0.1685**	−1.4989***
			(0.0785)	(0.3484)	(0.0785)	(0.4359)
EPO_PC_REGION			−0.1983***	−0.1986***	−0.2822	0.2141
			(0.0531)	(0.0531)	(0.2236)	(0.2586)
SALES_EMPLOYEES × QoG_REGION				0.1508**		0.2305***
				(0.0593)		(0.0756)
SALES_EMPLOYEES × EPO_PC_REGION					0.0146	−0.0720
					(0.0377)	(0.0446)
Constant	4.2935**	3.2830	−2.3757	−2.1618	−2.0275	−3.7998
	(2.1380)	(2.1707)	(2.2318)	(2.2456)	(2.4557)	(2.4421)
TIME CONTROL	✓	✓	✓	✓	✓	✓
INVESTOR INDUSTRY FE	✓	✓	✓	✓	✓	✓
Observations	4961	4961	4961	4961	4961	4961
Log-likelihood	−2.5e+03	−2.5e+03	−2.5e+03	−2.5e+03	−2.5e+03	−2.5e+03

Note: The dependent variable is a dummy variable, taking value 1 in case of greenfield investments and 0 in case of acquisitions. Robust standard errors are shown in parentheses and clustered by investor.

***, **, * indicate significance level at 1%, 5%, 10%.

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road density (MOTORWAYS) (Basile, 2004). In contrast to Tekin-Koru (2012), we do not find any significant effect in the FDI mode choice from the local human capital level.

By introducing the two key regional variables of interest—the regional quality of government (QoG) and innovation performance (EPO_PC)—the model in column 3 aims at testing Hypothesis #1. The estimated coefficients show that higher institutional quality at the regional level lowers the probability of choosing greenfield FDI with respect to acquisitions. Good institutions guarantee a more transparent and information-rich business context (Alon et al., 2020; Cai & Seviril, 2012; Higgins & Rodriguez, 2006; Meyer et al., 2009), reducing the uncertainty about the quality of potential targets (Akerlof, 1970; Stigler, 1961). making it possible to pursue complex operations such as cross-border acquisitions, saving on the huge sunk costs associated with greenfield investments. Moreover, innovative regional economies offer similar opportunities to investors: high innovative regions are also less likely to attract greenfield projects. Where more valuable (and internationally scarce) corporate assets are available locally, foreign acquisitions are more likely to happen. By pursuing this strategy, foreign MNEs have more to gain when they acquire a company with all its existing linkages within a domestic innovative eco-system, characterized by a good institutional environment, and much less to lose in terms of entry and sunk costs as well as possible knowledge leakages. For regions that on the contrary would ideally want to maximize knowledge leakages to enhance their local economy, good quality institutions might be a double-edged sword when it comes to international connectivity through FDI, as they might expose the local environment to foreign absorption through higher transparency.

The ultimate balance and assessment of the role of local quality of government and innovation for the possibility to reap the benefits from global connectivity comes from the testing of Hypothesis #2. The models reported in columns 4 and 5 investigate what types of firms are attracted to places characterized by high innovativeness and good institutional quality by means of a set of interactions terms between investors' productivity and host economy eco-systems. The first model (column 4) introduces an interaction term between investors' productivity and institutional quality of the host region. The interaction term is positive and significant, suggesting that highly productive MNEs are more likely to invest through greenfield FDI than acquisitions in regions with high quality of government. Figure 3 shows the average marginal effects of MNE productivity (Figure 3a) on the probability of greenfield investments corresponding to different intensities of regional quality of government. The positive effect of MNE productivity on the probability of undertaking greenfield investments with respect to acquisitions becomes larger when the regional quality of government is higher. This suggests that the regional quality of government fosters a selection of more productive MNEs that invest—as they typically do—through greenfield FDI projects. This result unveils a possible additional channel through which institutions foster regional development (Rodríguez-Pose, 2013), by enhancing the opportunity for attracting greenfield investments by more productive investors.

The following model (column 5) estimates the interaction terms between MNE productivity and the innovation capacity in the host regions. In this case, the interaction term is not statistically significant. Figure 3b shows how the marginal effect of MNE productivity on the probability of greenfield investments with respect to acquisitions varies across different intensities of regional innovation. On the one hand, regional innovation seems to behave as better institutions, by making it easier for more productive MNEs to undertake greenfield investments rather than acquisitions. On the other hand, the mediating role of regional innovation with respect to MNE productivity in the choice between greenfield FDIs and acquisitions has a lower magnitude and weaker statistical significance vis-à-vis the quality of regional institutions.

Finally, the last model (column 6) includes both interaction terms studied in the two previous models, confirming the strong significance of the interaction term between MNE productivity and the host region institutional quality.[17]

[17]Following a suggestion by an anonymous referee, we have replicated the models in columns 2–5 by controlling for the EU regional funds, finding that they are positively and significantly associated to the probability to receive greenfield investments. The remaining findings of the empirical analysis presented in this section are confirmed. The econometric tests are available from the authors upon request.

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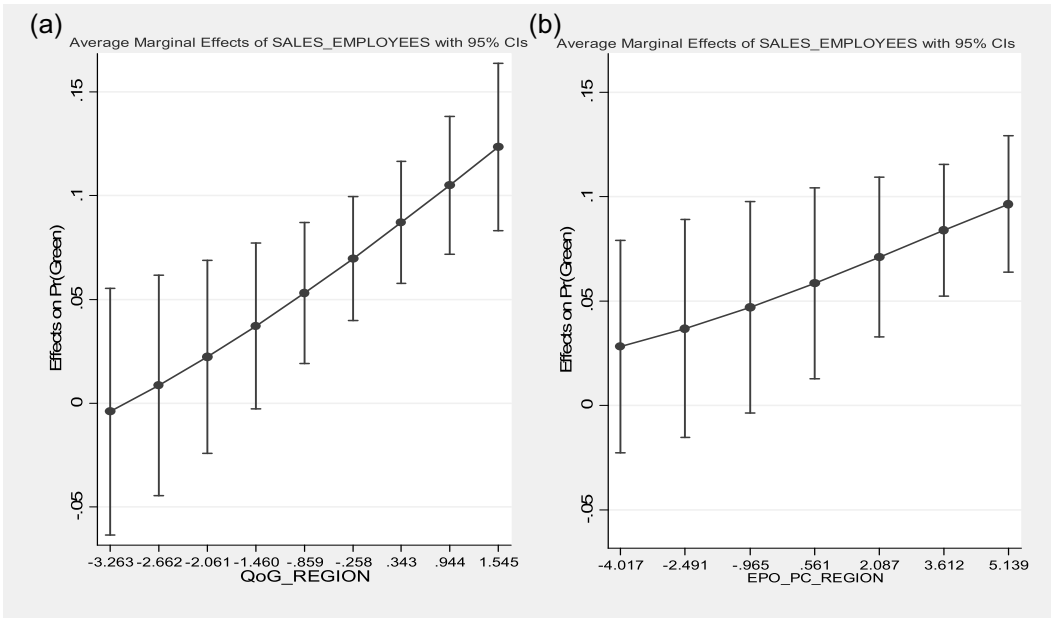

FIGURE 3 Marginal effects of firm-level productivity at different region-level investment eco-systems. *Source*: Authors' elaborations.

6 | ROBUSTNESS CHECKS

Tables 5–7 report a set of robustness checks.[18] In Table 5 we estimate alternative measures of regional ecosystems and investors' productivity: (a) the quality of government is measured with two alternatives indexes—rule of law (column 1) and government effectiveness (column 2) and (b) the innovative capacity with the regional R&D expenses share on GDP (column 3). The results reported in columns 4 and 5 of Table 5 confirm the results in Table 4, measuring investors' productivity by total factor productivity, calculated as in Raff et al. (2012)[19]:

Table 6 disentangles national from regional effects. In columns 1 and 2 we split regional values of institutional quality and innovation capacity in two dimensions: country-level mean values and regional deviation from the country mean. The results confirm the dominant role of the regional quality of institution in the interaction with investors' productivity, since the interaction involving the country-level mean value is not statistically significant.

The empirical analysis suggests that—*ceteris paribus*—higher institutional quality at the regional level correlates with a lower probability of undertaking greenfield FDI. However, this correlation might well be the outcome of broader structural processes. For example, regions with higher institutional quality are often more developed and, therefore, have higher production costs. This is the reason why, under the constraint of data availability for our large sample of EU regions, the model controls for several regional characteristics associated with higher overall economic development and, possibly, higher production costs such as GDP per capita and infrastructural density. The same logic can be applied to more innovative regional economies: core regions are more innovative than peripheral regions, but core regions also have higher production costs than peripheral regions, which make them

[18]We thank anonymous referees for suggesting some of these robustness tests.

[19]Total Factor Productivity is computed as follows. TFT = LN (SALES/EMPLOYEES) - 1/3 LN (CAPITAL/EMPLOYEES). This measure of total factor productivity can suffer from endogeneity and simultaneity biases due to measurement errors and potential correlation between inputs and unobserved productivity. Nevertheless, more precise measures of total factor productivity (see for instance Levinsohn & Petrin, 2003) are not available since in the data set the values of the intermediate inputs are missing for many companies.

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TABLE 5 Robustness checks for alternative measures of regional quality of government, regional innovation, and investors' productivity.

	Regional quality of government and innovation			Investors' productivity	
	(1)	(2)	(3)	(4)	(5)
SALES EMPLOYEES	0.4741***	0.4625***	0.4697***		
	(0.0922)	(0.0869)	(0.1330)		
TFP				0.4012***	0.4587*
				(0.1174)	(0.2503)
GDP_PC_REGION	−0.4622**	−0.4935***	−0.7022***	−0.4375**	−0.4472**
	(0.1822)	(0.1830)	(0.1532)	(0.1860)	(0.1836)
QoG_REGION			−0.2543***	−0.8282**	−0.1651**
			(0.0767)	(0.3473)	(0.0779)
EPO_PC_REGION	−0.2098***	−0.2391***		−0.2072***	−0.2054
	(0.0504)	(0.0491)		(0.0527)	(0.1994)
RULE_LAW_REGION	−0.8114**				
	(0.3437)				
SALES_EMPLOYEES × RULE_LAW_REGION	0.1162**				
	(0.0588)				
GOV_EFF_REGION		−1.1853***			
		(0.3068)			
SALES_EMPLOYEES × GOV_EFF_REGION		0.1905***			
		(0.0525)			
RDGDP_REGION			−0.3231		
			(0.2535)		
SALES_EMPLOYEES × RDGDP_REGION			0.0385		
			(0.0420)		
TFP × QoG_REGION				0.1678*	
				(0.0871)	
TFP × EPO_PC_REGION					−0.0001
					(0.0485)
Constant	−2.1488	−1.9238	0.1729	−0.8449	−0.9967
	(2.2341)	(2.2160)	(2.2454)	(2.1843)	(2.3398)
INVESTOR INDUSTRY FE	✓	✓	✓	✓	✓
TIME CONTROL	✓	✓	✓	✓	✓

(Continues)

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TABLE 5 (Continued)

	Regional quality of government and innovation			Investors' productivity	
	(1)	(2)	(3)	(4)	(5)
Observations	4961	4961	4505	4955	4955
Log pseudolikelihood	−2.5e+03	−2.5e+03	−2.2e+03	−2.5e+03	−2.5e+03

Note: The dependent variable is a dummy variable, taking value 1 in case of greenfield investments and 0 in case of acquisitions. Robust standard errors are shown in parentheses and clustered by investor.

***, **, * indicate significance level at, respectively, 1%, 5%, 10%.

TABLE 6 Robustness checks splitting regional effects and adding fixed effects.

	Splitting regional effects		Additional fixed effects		
	(1)	(2)	(3)	(4)	(5)
SALES EMPLOYEES	0.4993***	0.3516*	0.4866***	0.4134**	0.4533***
	(0.0952)	(0.2052)	(0.0951)	(0.1918)	(0.0926)
GDP_PC_REGION	−0.6557***	−0.4664**	−0.5489**	−0.5462**	0.4471
	(0.1688)	(0.1850)	(0.2399)	(0.2406)	(0.7469)
QoG_REGION			−0.9440***	−0.1632	−1.4728**
			(0.3388)	(0.1126)	(0.6932)
EPO_PC_REGION			−0.2029***	−0.3622	0.0432*
			(0.0687)	(0.2272)	(0.0238)
SALES_EMPLOYEES × QoG_REGION			0.1343**		0.1669***
			−0.0545		(0.0548)
SALES_EMPLOYEES × EPO_PC_REGION				0.0277	
				(0.0382)	
QoG_COUNTRY	−0.9256**				
	(0.4169)				
QoG_REGION_REL	−2.0986***				
	(0.7649)				
SALES_EMPLOYEES × QoG_COUNTRY	0.0895				
	(0.0713)				
SALES_EMPLOYEES × QoG_REGION_REL	0.3338**				
	(0.1296)				
EPO_PC_COUNTRY		−0.5221**			
		(0.2404)			
EPO_PC_REGION_REL		0.4037			
		(0.3952)			

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TABLE 6 (Continued)

	Splitting regional effects		Additional fixed effects		
	(1)	(2)	(3)	(4)	(5)
SALES_EMPLOYEES × EPO_PC_COUNTRY		0.0397			
		(0.0408)			
SALES_EMPLOYEES × EPO_PC_REGION_REL		−0.0994			
		(0.0685)			
Constant	−0.8988	−1.3058	−16.2687***	−15.0775***	2.7503
	(2.2473)	(2.4776)	(2.7407)	(3.0206)	(8.6621)
INVESTOR INDUSTRY FE	✓	✓	✓	✓	✓
TIME CONTROL	✓	✓	✓	✓	✓
SUBSIDIARY INDUSTRY FE			✓	✓	
DESTINATION COUNTRY FE			✓	✓	
DESTINATION REGION FE					✓
Observations	4995	4961	4940	4940	4645
Log pseudolikelihood	−2.5e+03	−2.5e+03	−2.3e+03	−2.3e+03	−2.3e+03

Note: The dependent variable is a dummy variable, taking value 1 in case of greenfield investments and 0 in case of acquisitions. Robust standard errors are shown in parentheses and clustered by investor.
***, **, * indicate significance level at, respectively, 1%, 5%, 10%.

less likely to attract greenfield FDI. To rule out these possible confounding factors and further test the robustness of our main results we include target/destination country and industry fixed effects in columns 3 and 4 and destination region fixed effects in column 5. This additional set of fixed effects controls for potentially unobserved (or unobservable) national, regional, and sectoral characteristics of the host destinations. The main results remain qualitatively unchanged.

Finally, we address the potential endogeneity of the quality of institutions, given that the survey-based measure adopted in the main empirical analysis might be affected by the economic performance of the region which, in turn, is related to the type of FDI received. This is done by introducing as instrument for the regional quality of government the regional literacy rate in 1880 (Rodriguez-Pose & Di Cataldo, 2015; Tabellini, 2010). Then, we estimate a control function approach, adding to the main model the residual of an econometric test in which the quality of institutions is regressed against all the controls and the instrument. Besides, we test an instrumental variable probit model, with a conditional maximum-likelihood estimator (Table 7). Column 1 reports the results of the estimation of the reduced form equation. The instrument is significantly correlated with the potential endogenous variable. Columns 2 and 3 reproduce the models reported in columns 3 and 4 of Table 4, estimating a control function approach. Columns 4 and 5 report the results related to the same models, estimated by using a maximum likelihood estimator. Both the econometric approaches confirm the main findings illustrated in Section 5 and there is no empirical evidence of endogeneity, given that the residual of the first-stage regression is not significant in the second stage regression (columns 2 and 3) and the Walt test (in columns 4 and 5) does not reject the null hypothesis of exogeneity of the quality of institution variable. Therefore, the models without the instrumental variable are preferred.

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TABLE 7 Robustness check for endogeneity of quality of institutions variable.

	First-stage regression	Control-function		IV-probit	
	(1)	(2)	(3)	(4)	(5)
	QoG_REGION	GREEN	GREEN	GREEN	GREEN
SALES_EMPLOYEES	−0.0029	0.2926***	0.2456***	0.2891***	−0.3700
	(0.0116)	(0.0566)	(0.0591)	(0.0564)	(0.2264)
INNOV	−0.0035	0.0239	0.0237	0.0236	0.0058
	(0.0031)	(0.0146)	(0.0146)	(0.0145)	(0.0136)
EXPERIENCE	0.1181***	−0.2962***	−0.2947***	−0.2927***	−0.0646
	(0.0285)	(0.1019)	(0.1018)	(0.1030)	(0.1745)
EMPLOYEES	0.0013	0.2849***	0.2849***	0.2816***	0.1176
	(0.0073)	(0.0342)	(0.0343)	(0.0347)	(0.1262)
DIV	0.0028	−0.0100	−0.0101	−0.0099	0.0099
	(0.0043)	(0.0202)	(0.0203)	(0.0199)	(0.0141)
COUNTRIES	−0.0367***	−0.1070*	−0.1063	−0.1057*	−0.0755
	(0.0115)	(0.0648)	(0.0652)	(0.0635)	(0.0502)
OPEN_COUNTRY	−0.2329***	0.3398***	0.3275**	0.3358***	0.0075
	(0.0509)	(0.1298)	(0.1297)	(0.1300)	(0.2386)
DISTANCE_COUNTRY	0.0003	0.0231	0.0239	0.0229	0.0261
	(0.0082)	(0.0276)	(0.0276)	(0.0271)	(0.0201)
GDP_PC_REGION	−0.1798***	−0.5982***	−0.5858***	−0.5912***	−0.0512
	(0.0390)	(0.1188)	(0.1191)	(0.1196)	(0.3284)
AGGLOMERATION_REGION	−0.2078***	−0.0999	−0.1069*	−0.0987	−0.1247***
	(0.0093)	(0.0645)	(0.0646)	(0.0624)	(0.0337)
MOTORWAYS_GDP_REGION	30.6884***	20.6006***	21.4668***	20.3592***	20.8390***
	(2.3113)	(7.8887)	(7.8819)	(7.5133)	(4.0921)
HC_REGION	0.0296***	0.0127*	0.0130*	0.0125*	0.0085**
	(0.0016)	(0.0074)	(0.0074)	(0.0071)	(0.0033)
QoG_REGION		−0.4751**	−1.1491***	−0.4695**	−9.3826***
		(0.2274)	(0.3478)	(0.2180)	(1.6496)
EPO_PC_REGION	0.3004***	0.0329	0.0403	0.0325	0.1227*
	(0.0127)	(0.0822)	(0.0822)	(0.0809)	(0.0713)
SALES_EMPLOYEES × QoG_REGION			0.1129**		1.5310***
			(0.0443)		(0.2836)
RESIDUALS OF MODEL (1)		0.3232	0.3437		
		(0.2333)	(0.2337)		

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TABLE 7 (Continued)

	First-stage regression	Control-function		IV-probit	
	(1)	(2)	(3)	(4)	(5)
	QoG_REGION	GREEN	GREEN	GREEN	GREEN
RATE OF LITERACY IN 1880	0.0077***				
	(0.0006)				
Constant	1.6291***	1.6474	1.8158	1.6281	1.6288
	(0.3490)	(1.4146)	(1.4296)	(1.4006)	(1.1557)
Wald test of exogeneity				1.66	1.95
p Value				0.1982	0.1627

Note: The dependent variable is a dummy variable, taking value 1 in case of greenfield investments and 0 in case of acquisitions. Robust standard errors are shown in parentheses and clustered by investor. Investor industry fixed effects and time control are added in all models.

***, **, * indicate significance level at, respectively, 1%, 5%, 10%.

7 | CONCLUSIONS

While policy debates are characterized by polarized views on the differential benefits of greenfield investments vis-à-vis acquisitions the drivers of these decisions have remained significantly under-researched. This paper has tried to fill this gap by developing and testing a new set of hypotheses on the regional dimension of this process. By leveraging an original data set which combines a multiplicity of data sources at firm, country and regional levels, the empirical analysis sheds new light on the role of firm and regional level determinants on the MNE choice between greenfield investments and acquisitions. The findings show that—other things being equal—MNEs prefer acquisitions to control activities in regions with stronger investment eco-systems, while they choose greenfield investments in regions with weaker systemic conditions. However, the regional quality of government makes a fundamental difference on the nature of the investments attracted by regions: those with high quality of government can attract greenfield investments undertaken by the most productive MNEs.

The empirical analysis has some limitations that should be carefully considered when assessing these results. First, similarly to Nocke and Yeaple (2008) and all the existent literature on the topic, the empirical analysis does not consider a more complex decision framework where companies first decide whether to invest abroad and, in a second stage, choose between establishing a new subsidiary or acquiring a foreign company. Second, the paper is unable to model the full set of behavioral choices of MNEs that take center stage in the IB literature on this topic. On the contrary the paper studies the association between the observable outcome of these decisions—in terms of greenfield FDI versus acquisitions—and national and subnational conditions in terms of innovation and quality of government. While the IB literature is crucially important to better understand the behavior of MNEs and ideally influence their managerial choices, our paper aims to shed new light on the role of regional characteristics in shaping the typology of global investors and investment that they attract. Third, the measures of firm-level productivity and innovation are significantly constrained by data availability issues at both firm and regional level.

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While more research and better data are certainly needed to address these limitations, these findings confirm the importance of accounting simultaneously for heterogeneity at firm-level and in host regional eco-systems and corroborate the need to provide granular evidence to inform policy making in this area of growing strategic interest. They indicate that by reinforcing their investment eco-system, and by improving their quality of government, local and regional policy makers can attract higher quality investments to their constituencies, potentially breaking the vicious circle between low productivity areas and low productivity FDI. This vicious circle is a fundamental problem for regional policies in less developed regions. Our results unveil an important channel that can explain how stronger institutions and more supportive eco-systems can boost regional development trajectories. By increasing the probability of greenfield investments by more productive firms in weaker regions, the quality of the regional investment eco-system can make a real difference.

Even though global capital markets are increasingly competitive, it is possible for all types of regions to act and improve the quality of their investment eco-systems. Most countries have active Investment Promotion Agencies (IPAs) operating at national and subnational levels to attract inward investments. Recent empirical evidence on the impact of IPAs in Europe (Crescenzi et al., 2021) shows that subnational regional IPAs, operating near investors' operations, play a key role in boosting the total amount of greenfield FDI received as well as the jobs directly created by foreign investors, and this is particularly true in less developed regions. These findings are highly complementary to the evidence offered by our paper: local institutional quality and investment eco-system characteristics interact with firm-level decisions and in so doing they can potentially shape regional development trajectories.

Nevertheless, we know that FDI—even by the most productive MNEs—are neither a necessary nor a sufficient condition for local economic development in less advanced regions. There are several examples of foreign-owned plants specialized in low value-added activities in peripheral regions. The attraction of the "right" type of investments to maximize local employment and spillovers remains a complex task that needs to balance a multiplicity of factors. Understanding the drivers of the choice between greenfield FDI and acquisition of an existing company is a key (although still partial) input for these policies, to allow for better focused and tailored national and regional policies.

Finally, the evidence produced in this paper sheds some new light on the geographical implications of supranational (e.g., at the EU level) or national policies aimed at discouraging the foreign acquisition of domestic firms. These policies—often justified on strategic or national security grounds—might curtail an important global connectivity channel for the most advanced regions with implications on overall efficiency, but potentially rebalancing effects in favor of less developed regions with good institutional quality. The latter might benefit from a partial shift towards greenfield investments in a context where acquisitions are actively discouraged.

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DATA AVAILABILITY STATEMENT

The data that support the findings are available in ORBIS at https://www.bvdinfo.com/en-gb/our-products/data/international/orbis and fDi Markets by the Financial Times https://www.fdimarkets.com/.

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APPENDIX A

Sample validation.

Figure A1 shows that the total value of investments to the EU, undertaken by companies listed in Forbes 2000 follows similar patterns with respect to the total value of inward FDI, according to the two sources in this article: fDi Markets and BvD Zephyr.

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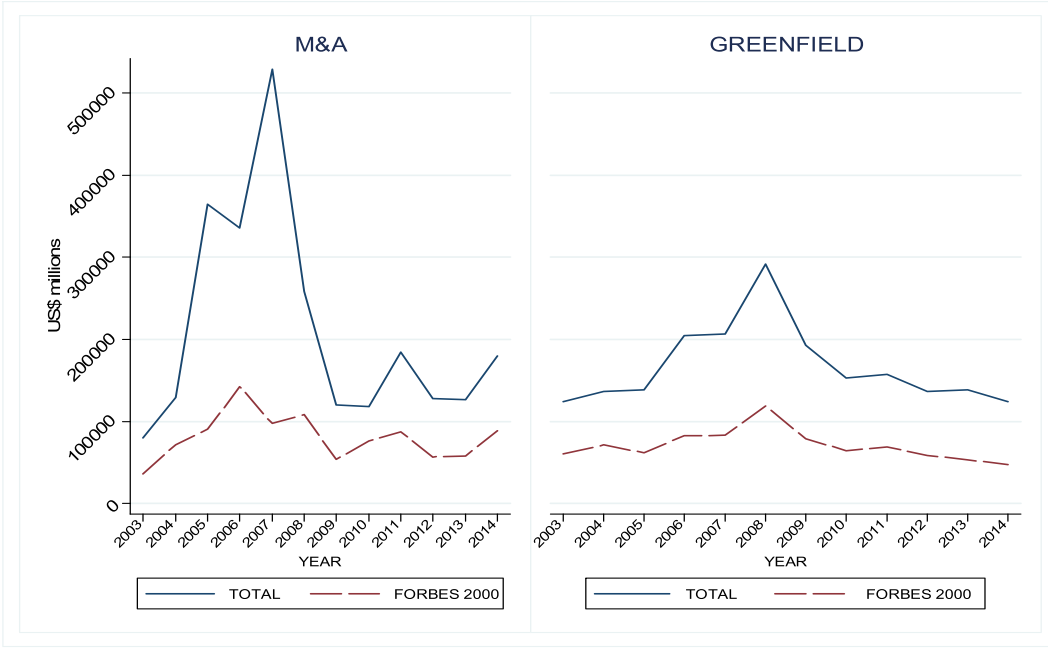

FIGURE A1 Marginal effects of firm-level productivity at different region-level investment eco-systems. *Source*: Authors' elaborations.

APPENDIX B

Figure B1

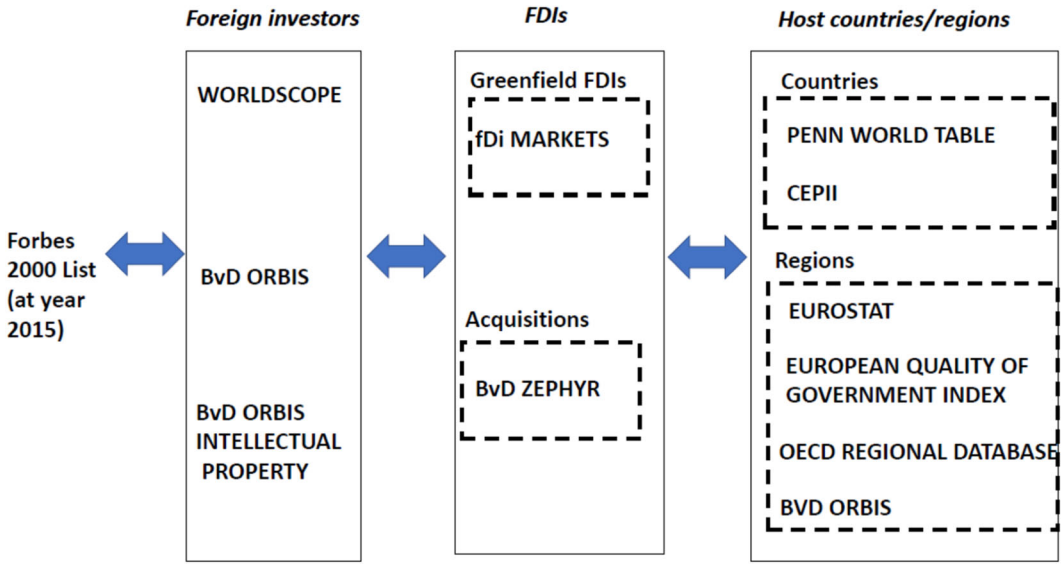

FIGURE B1 The dataset. [Color figure can be viewed at wileyonlinelibrary.com]

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APPENDIX C

The benchmark model: Nocke and Yeaple (2008).

As a benchmark, in Table 1 we replicate the models of Nocke and Yeaple (2008) with our database testing the choice between greenfield investments and acquisitions across different countries, and in Table 3 across subnational regions. The output variable is equal to 1 when a greenfield investment is undertaken and to 0 for an acquisition. To test a model as similar as possible to Nocke and Yeaple (2008), we also include firm-level sales as an alternative measure for efficiency and the population size of the host countries (POP) as an additional control Table C1 reports the results, which are largely consistent with those obtained by Nocke and Yeaple (2008), including when we introduce fixed effects for affiliated industries and host countries. The only difference is the sign of the geographical distance between home and host countries.

TABLE C1 The benchmark models: Nocke and Yeaple (2008.)

	Baseline		Firm-level controls		Industry/country fixed effects	
	(1)	(2)	(3)	(4)	(5)	(6)
USSALE	0.3354***		0.3968***		0.3917***	
	(0.0374)		(0.0455)		(0.0483)	
SALES_EMPLOYEES		0.4337***		0.4682***		0.4677***
		(0.0726)		(0.0798)		(0.0860)
LOG_EPO			0.0424**	0.0389*	0.0256	0.0222
			(0.0208)	(0.0210)	(0.0213)	(0.0215)
EMP		0.3404***		0.4035***		0.4008***
		(0.0391)		(0.0483)		(0.0508)
EXP_D			−0.6394***	−0.6251***	−0.7399***	−0.7343***
			(0.1245)	(0.1291)	(0.1293)	(0.1339)
DIV			−0.0153	−0.0219	−0.0025	−0.0073
			(0.0290)	(0.0287)	(0.0297)	(0.0296)
COUNT			−0.1299	−0.1030	−0.1403	−0.1090
			(0.0872)	(0.0903)	(0.0868)	(0.0904)
RGDPPC	−0.8771***	−0.8831***	−0.8702***	−0.8716***		
	(0.0777)	(0.0797)	(0.0789)	(0.0808)		
POP	−0.0459	−0.0752**	−0.0085	−0.0392		
	(0.0375)	(0.0380)	(0.0390)	(0.0394)		
OPEN	0.7865***	0.7001***	0.8780***	0.7746***		
	(0.2076)	(0.2110)	(0.2126)	(0.2147)		
DISTANCE	0.1671***	0.1492***	0.0996**	0.0859**		
	(0.0405)	(0.0406)	(0.0412)	(0.0411)		
Constant	0.5996	0.3851	0.9559	0.7765	−19.0046***	−19.9850***
	(1.6472)	(1.6400)	(1.8568)	(1.8510)	(1.6632)	(1.5953)

(Continues)

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TABLE C1 (Continued)

	Baseline		Firm-level controls		Industry/country fixed effects	
	(1)	(2)	(3)	(4)	(5)	(6)
FE:Parent industry	✓	✓	✓	✓	✓	✓
FE: Precrisis period	✓	✓	✓	✓	✓	✓
FE:Affiliate industry					✓	✓
FE:Host country					✓	✓
Observations	4901	4777	4858	4735	4821	4701
ll	−2.8e+03	−2.7e+03	−2.8e+03	−2.7e+03	−2.5e+03	−2.4e+03

Note: Dependent variable: GREEN = 1 if greenfield and 0 if acquisitions. Robust standard errors are shown in parentheses and clustered by investor.

***, **, * indicate significance level at, respectively, 1%, 5%, 10%.

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