

*Two heads are better than one:
determinants of European MNC
headquarters dispersion in their home
region*

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Two heads are better than one: Determinants of European MNC's headquarters dispersion in their home region

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ABSTRACT

This study examines the relationship between the complexity of the international activities of European multinational corporations (MNCs) and the regional dispersion of their headquarters (HQ) systems within their home region. To explore this, we assess both external complexity (related to MNC' exposure to different markets) and internal complexity (the nature of the value chain and activities carried out by the MNC) and analyze their effects on headquarters dispersion.

Theoretically, we draw on Information Processing Theory, which recognizes that higher value-added activities (e.g., R&D, marketing) are inherently more complex to manage. As a result, strategic responses to this complexity influence the structure of the headquarters system. Our hypotheses are tested using a sample of 554 new foreign HQ investments by European companies. The findings suggest that the level of complexity drives the regional dispersion of headquarters systems.

From an academic standpoint, we operationalize the complexity of multinational corporations, particularly focusing on internal complexity by considering the characteristics of the value chain and subsidiary activities. Additionally, we connect both internal and external complexity at the regional level to the strategic response of headquarters dispersion from an empirical perspective. Finally, our study suggests that following the regionalization of value chains, headquarters may be reorganized geographically, which is also a topic of interest for policymakers.

1. Introduction

In recent years, there has been growing evidence of the reconfiguration and regionalization of global value chains (UNCTAD, 2021; Pla-Barber et al., 2021b; Witt et al., 2023), including the restructuring of activities within multinational corporations (MNCs), such as headquarters (HQ) and subsidiaries responsible for R&D, production, and marketing.

However, how HQ systems adapt to this new configuration remains an unresolved question. Given the significant impact of HQ location on both firms and states, it is striking that academic research on HQ remains relatively scarce (Kunisch et al., 2020).

This study seeks to shed light on this phenomenon by examining whether the regional configuration of an MNC influences the dispersion of its HQ system. Specifically, we aim to identify the determinants of HQ dispersion at the European level beyond the general degree of internationalization.

HQ plays a central role in multinational management as the physical location where corporate decisions are made. Traditionally, a

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defining feature of corporate headquarters (CHQ) was its singular physical location in the home country (Kunisch et al., 2015; Meyer and Benito, 2016). However, in recent years, various environmental and organizational challenges have driven MNCs to disaggregate and disperse their HQ systems, often through the establishment of regional or divisional HQ (Nell et al., 2017). The reasons and circumstances under which MNCs choose to disperse their HQ remain only partially understood. Given the strategic importance of HQ, these are critical research questions (Nell et al., 2017; Kunisch et al., 2020; Pla-Barber et al., 2021a, 2021b).

Historically, HQ dispersion was linked to the MNC's pursuit of comparative advantages benefiting HQ functions, such as favorable legal and tax regimes or access to financial markets (Chow et al., 2022; da Silva Lopes et al., 2019). Later, during the 1980s and 1990s, many Western MNCs expanded into distant regions and established regional headquarters (RHQ) to manage geographic, cultural, market, and institutional differences (Schütte, 1997; Enright, 2005; Li et al., 2010; Yeung et al., 2001). This latter motivation for HQ dispersion relates to the external complexity arising from exposure to diverse markets with distinct characteristics (Narula, 2014; Schotter et al., 2017; Kunisch et al., 2019). External complexity, defined as the challenges stemming from exposure to multiple environments (Larsen et al., 2023), has been shown to drive HQ dispersion, particularly when MNCs expand into new regions (Nell et al., 2017; Schotter et al., 2017; Kunisch et al., 2019; Valentino et al., 2019).

However, HQ systems are also being dispersed within home regions and in institutionally similar countries (Benito et al., 2011; Kähäri et al., 2017; Botella-Andreu and Lavoratori, 2022), suggesting that previous explanations for HQ dispersion may be incomplete. This aligns with Rosa et al. (2020), who highlight that the majority of MNCs remain home region-oriented. While empirical research on exposure to different environments is limited, some studies, such as Schotter et al. (2017) and Ma et al. (2017), provide some support. However, within the context of external complexity, we focus on a specific region—the home region. Additionally, we develop the argument for internal complexity, which remains empirically unexplored, with few conceptual contributions (see Larsen et al. 2023).

We propose that MNC's value chain complexity also drives HQ dispersion, even within proximate markets (i.e., the home region), and that internal complexity at the activity or task level (Larsen et al., 2023) can trigger such a significant structural change.

We draw on Information Processing Theory (IPT), which has been instrumental in analyzing dispersed HQ systems (Kunisch et al., 2019). IPT emphasizes the need for alignment between information processing demands (resulting from complex environments) and organizational capacities (reflected in MNC structures). While various control and coordination mechanisms can be implemented (Schotter et al., 2017), each corresponds to different levels of flexibility and complexity. Higher complexity requires greater managerial commitment, and a single centralized HQ may be insufficient to oversee the entire organization, necessitating additional layers of decision-making. In this context, a dispersed HQ system represents a structural response to increasing external complexity, often driven by the number of new subsidiaries and geographic expansion (Schotter et al., 2017). Prior studies have primarily interpreted the establishment of foreign HQ as a response to international expansion. However, no research has yet considered the internal complexity at the activity level within the MNC value chain.

Therefore, this study examines the MNC value chain within the home region as a factor that increases information processing requirements. We adopt an intra-firm value chain perspective, considering all value chain activities owned by the MNC through greenfield investments, following the related literature (for a review, see Kano et al., 2020). We argue that foreign HQ tend to disperse when the number of subsidiaries that perform strategically significant value chain activities increases, particularly those requiring high information processing capabilities. Activities such as R&D and marketing add complexity to corporate management due to their impact on future strategy and operational tasks (da Silva Lopes et al., 2019).

Thus, we propose that the HQ configurations of European MNCs within their home region are influenced by the nature and strategic importance of the value chain activities performed by their subsidiaries, *value chain-based complexity*, along with relatively more established external complexity arguments.

To test these hypotheses, we analyze a sample of 554 new foreign HQ investment by European MNCs, focusing on the number of subsidiaries in the region, the number of countries, and the type of activities performed. Our findings contribute to the literature by highlighting value chain configurations as a key driver of HQ dispersion, particularly within the MNC's home region. Given the ongoing reconfiguration of global value chains, this study provides timely insights into HQ systems.

Our study makes several contributions. From an academic perspective, we operationalize MNC complexity by assessing both external complexity (linked to exposure to new markets and the number of subsidiaries) and internal complexity (related to value chain characteristics and subsidiary activities) (Larsen et al., 2023) within the home region, a relatively familiar and geographically closer environment extremely important for the international expansion of the MNC. This empirical focus differentiates our research from previous studies (Schotter et al., 2017). Complexity emerges when firms must process large amounts of new information, typically associated with increased global activity. While international expansion into new markets and regions generates additional information processing demands (Békés et al., 2021), complexity can also arise when firms deepen their presence within a region and incorporate more sophisticated activities—an aspect particularly relevant in the home region. Despite its significance, regional value chain-based complexity has received limited attention in international business research (Larsen et al., 2023; Casson and Lee, 2022).

Second, from an empirical perspective, our study provides further evidence on the factors influencing HQ dispersion by examining the strategic role of high value-added activities and the subsequent effects of different value chain configurations on complex HQ systems. Moreover, we empirically connect both internal and external complexity at the home regional level to HQ dispersion as a strategic response.

Finally, from a practical standpoint, our findings suggest that changes in regional value chain configurations may lead to shifts in HQ systems. This is highly relevant at the regional level and provides valuable insights for subsidiary managers and policymakers, given the significant economic impact of HQ activities.

The rest of the paper is organized as follows. Section 2 presents the theoretical background and hypotheses development. Section 3 describes the data, variables and methodology adopted in the empirical analysis. Section 4 discusses the empirical results and

robustness checks. The final section concludes the paper and discusses the implications of the study.

2. Theoretical background and hypotheses development

2.1. Information processing theory

IPT was developed in the 60s and 70s by Galbraith (1969, 1974), and Thompson (1967), and later adapted to the multinational context by Egelhoff (1988, 1991, 2010). IPT essentially views firms as information processing systems endowed with information processing capacity that is used to cope with external uncertainty. Following Galbraith (1974), uncertainty is the difference between the information required to perform a task and the amount of related information possessed by the firm.

Information processing comprises the gathering and transforming of data into information that is later stored or communicated to adjust firms' decisions regarding a task (Galbraith, 1974). Therefore, the better the information processing capacity a firm has, the more it can reduce uncertainty pressure. When the difference between the information processing capacity of a firm and the quantum of new processable information enlarges, an increase in complexity ensues. The main source of complexity is the external environment. Especially, sudden contact with new environments such as different countries and/or markets vastly increases the amount of new processable information for the firm; that is why a traditional source of complexity is internationalization (Enright, 2005).

However, Galbraith (1974) and other authors also referred to tasks and the number of different tasks as sources of new information to process, and thus assumed them to be sources of complexity. It is very likely that every firm responds differently to complexity as each firm's information processing capacity is unique and conditioned by its previous experiences. We follow the classification of complexity developed by Larsen et al. (2023) which differentiates between external complexity (a function of the various environments in which the MNC is present) and internal complexity (which is task-based and it resides in the structure and design of the organization).

In an international context, information processing capacity can be built through different mechanisms depending on the need; for instance, through coordination and control mechanisms, expatriates, or structural changes such as HQ dispersion.

Usually, an increased complexity level is adjusted through structural changes. For instance, an MNC developing an internationalization process faces increased uncertainty derived from the increasing external complexity of managing additional and different markets. To adapt to this new reality of increased information processing requirements, the MNC may change its organizational structure – from international divisions to a matrix structure including geographical areas that augment the capacity for processing local country information (Egelhoff, 2010; Piekkari et al., 2010). Therefore, variations in external or internal complexity lead to different information processing requirements which may help understand why their organizational structures change (Egelhoff, 1991).

As mentioned, the sources of MNCs' complexity are varied (Andrews et al., 2022), but research has mainly focused on external complexity stemming from expansion.

Organization theorists have already focused on the concept of the fit between strategy and structure, in search of the best structural combinations and their links with performance (Stopford et al., 1972; Daniels et al., 1984). However, existing notions about the factors determining specific design choices and structural evolution beyond contingent elements are few and rather simplified (Kunisch et al., 2020). IPT can provide a theoretical basis to this question since it focuses on specific responses depending on the complexity variance and structural capacity of firms.

Particularly, recent research suggests that IPT plays a renewed role in understanding different MNC HQ configurations and their implications (Nell et al., 2017; Pla-Barber et al., 2021a, 2021b).

As per large MNCs, in 2004, Rugman and Verbeke demonstrated that for 80 % of the biggest MNCs worldwide, the most important market in terms of sales was the home region. The argument was later extended to cover MNCs' asset distribution with similar results (Rugman and Verbeke, 2008), showing that the strategic locus of most MNCs remains the home region. The results remain currently valid (Rosa et al., 2020) in a world that continues to transition toward a more regional locus (Ciravegna and Michailova, 2022). European MNCs seem particularly determined toward regional movements; for instance, the share of intraregional investment in total FDI stock in 2019 was 69 % in the case of Europe (UNCTAD, 2021).

The above data suggest that although any MNC international expansion can create information processing challenges, most European MNCs tend to invest in their home region, concentrating a big percentage of sales, assets, and activity there. MNCs invest in their home regions continuously, thus creating complexity at the regional level (Verbeke and Asmussen, 2016; Verbeke and Yuan, 2018). The tendency to be more regional than global triggers information processing challenges at the regional level that according to IPT, should be addressed with structural, regional solutions. Nonetheless, it is important to understand what the sources of complexity at the home region level are.

2.2. Headquarters configuration in the home region through the IPT lens

The factors due to which the disaggregation and dispersion of CHQ occur have only recently received attention; Nell et al. (2017) for example, define disaggregation as the organizational division of HQ activities and tasks into smaller, separable activities. Additionally, HQ dispersion is also referred to as “where (disaggregated HQ activities) should be optimally located.” Kunisch et al. (2020) refer to dispersion as the geographical location of disaggregated activities across borders. Although disaggregation and dispersion are two interrelated but separate decisions, HQ dispersion has commanded much less academic attention and is thus the focus of our study.

Motives for dispersing the HQ system are diverse, but few studies have explicitly addressed them (Nell et al., 2017). Historically,

the HQ represented the registered address of the firm, a place usually selected to tap into institutional characteristics such as specific judicial systems (Jones, 2002; da Silva Lopes et al., 2019).

In general, foreign HQ were associated with availing the comparative advantages attributed to HQ activities such as taxes (Foss et al., 2019), access to financial markets (Cassis, 2016), and access to connectivity, and physical and knowledge infrastructure (Belderbos et al., 2017).

Moreover, a different internal perspective focuses on the growth of the MNC as the determinant for new HQ activities. These recent studies rest on IPT assumptions to explain the antecedents of dispersed HQ configurations (Nell et al., 2017; Schotter et al., 2017; Kunisch et al., 2019). These studies address the dispersion of HQ as a structural response to the increased complexity of MNCs' international operations.

As stated above, the degree of potential external complexity in international operations traditionally arises from two sources: first, from the increased number of subsidiaries, and second, from the need to coordinate and converge practices across more diverse country contexts, usually in different regions (Schotter et al., 2017). Therefore, the level of complexity is directly related to the number of subsidiaries and countries. The latter source is called *country-based complexity* and arises from the dynamism added by the general environment of an MNC. The general environment comprises all the events that the company is engaged with in each country (Andrews et al., 2022). For instance, political tensions in one country will endorse a different subsidiary strategy compared to a more stable one. In this sense, a proxy for country-based complexity is represented by the number of countries where the MNC has a presence and therefore, operations. Although telecommunication, information technology, and transport have developed vastly in the last few years (Autio et al., 2021), the distance between countries remains a major factor affecting international business (Beugelsdijk et al., 2020). Especially in the last few years, divergent national institutions arising from different disruptions are accelerating (Meyer and Li, 2022), reversing the trend of convergence that arose in the last decades. Crossing borders still implies adapting to different institutional contexts, which adds complexity and creates more information processing needs. Following IPT, the penetration of different countries and their general environments will essentially represent an increased amount of new information to process. Incrementing new information will push the firm to build more information processing capacity.

Country-based complexity is usually viewed as the global complexity added by any new MNC operation. However, assuming that most MNCs are home region-oriented (Rosa et al., 2020; Rugman and Verbeke, 2008), we posit that *home-region country-based complexity* should be considered as a contextual complexity which influences the dispersion of HQ in the home region, assumed to be better known than other regions. Therefore, in line with previous research, we hypothesize:

H1. The higher the country-based complexity of the MNC in the home region, the higher the probability of dispersing the HQ system in the home region.

Subsidiary-based complexity, the second source of complexity arising from the number of subsidiaries, is identified by the literature as an established source of external complexity (Andrews et al., 2022; Schotter et al., 2017). Every new subsidiary in the MNC adds a corresponding level of entropy to the organization as they have different realities. This is because the more cross-border actors there are in an organization, the bigger the extent of interaction and systemic problems that are generated (Eden and Nielsen, 2020) and consequently, the higher the complexity. For instance, as the MNC footprint in a new region grows, it becomes increasingly difficult to coordinate and control the network of subsidiaries (Yeung et al., 2001). In such situations, not only geographical distance but also the need for new information and the cost of gathering it, force MNCs toward structural responses to improve their information processing capacities; this can be accomplished through the establishment of RHQ (Enright, 2005; Yeung et al., 2001; Kähäri et al., 2017), regional management centers (Piekkari et al., 2010) or both (Chakravarty et al., 2017; Schotter et al., 2017) and other HQ types (Birkinshaw et al., 2017; Kunisch et al., 2019). However, as corroborated by previous studies (Rosa et al., 2020; Verbeke and Yuan, 2018; Rugman and Verbeke, 2008), the bulk of MNCs continue to concentrate most of their activity (and therefore subsidiaries) in their home regions. Therefore, we isolate the effect of *home-region subsidiary-based complexity* as an antecedent to HQ dispersion in the home region.

Therefore, in line with previous research, we hypothesize:

H2. The higher the subsidiary-based complexity of the MNC in the home region, the higher the probability of dispersing the HQ system in the home region.

The basic idea derived from previous literature is that the more complex the external environment becomes in pursuit of a growth strategy, the more the HQ system will disaggregate and disperse. In this context, some studies confirm that the higher the number of new subsidiaries or presence in new countries, the level of sales, or diversification in new markets (all proxies of information capacity requirements), the higher the propensity toward HQ dispersion (Ma et al., 2013; Schotter et al., 2017; Kunisch et al., 2019).

While the above appears to be a generalization, deepening IPT opens the discussion to how one information processing requirement differs from another and why. This is because, beyond defining the complexity as home-regional and external to the company, the type of activity presents another source of complexity in international operations within the firm organization (Larsen et al., 2023). Different activities require greater information processing efforts than others (Galbraith, 1974; Tushman and Nadler, 1978). For example, while opening ten new subsidiaries may increase the information processing requirements of the MNC more than when only two are opened, the actual information required will depend also on the type of activities or tasks performed by those subsidiaries. If the ten subsidiaries are focused on production and lead to routinized tasks, it is possible to raise information processing capacity with simpler coordination mechanisms, such as expatriates (Lee, 2022). Whereas, if the two new subsidiaries are strategic in nature, dedicated to more knowledge-intensive and value-added tasks, or other non-routine activities which significantly impact company strategies, a more complex information capacity mechanism will be needed, like, a foreign HQ. For instance, Forsgren et al. (1995)

found that divisional HQ of Swedish MNCs were created close to Centers of Excellence (subsidiaries that agglutinate MNC activities of strategic importance), and Benito et al. (2011) found a similar result. Further studies show the interest of CHQ and other HQ in getting involved in the activities of subsidiaries dealing with important R&D projects (Ciabuschi et al., 2012, 2017; Decreton et al., 2019). This evidence highlights the interest of the CHQ in its internal value chain configuration. The complexity of the value chain configuration is determined by the nature of the different activities performed along it.

Although the complexity of the value chain of MNCs has previously been studied in relation to their location choices and the spatial organization of activities (Alcacer and Delgado, 2016; Castellani et al., 2021), there remains a lack of understanding of how MNCs' structures change or adapt to the complexity of their internal activities, especially at the regional level.

Therefore, from the IPT perspective, subsidiaries of high value-added activities usually come with higher information processing requirements that increase the complexity of corporate management-level strategizing and decision-making. Processing and aggregating information on non-routine tasks and high value-added activities may require greater control of the HQ over those subsidiaries (da Silva Lopes et al., 2019). Therefore, the nature of the subsidiaries' activities is considered a source of internal complexity: the third source of complexity, which we refer to as *value chain-based complexity*.

Based on the above discussion, we claim that the nature of FDI activity is a source of complexity that needs to be included in the analysis. Therefore, we hypothesize:

H3. The higher the value chain-based complexity of the MNC in the home region, the higher the probability of dispersing the HQ system in the home region.

Fig. 1 represents our hypothesis at the home-region level.

3. Empirical strategy

3.1. Data

We aim to investigate the decision of an MNC to disperse its HQ system by creating an HQ unit in a foreign country within its home region. For the purpose of analysis, we obtain data on new greenfield FDI from fDi Intelligence's fDi Markets.¹ The database tracks greenfield investments across different industries and countries worldwide and has been widely used by several scholars (Belderbos et al., 2017; Castellani and Lavoratori, 2020; among others). For the period 2003–2016, the dataset contains approximately 154,737 investment projects in 193 countries. For each investment, the database provides a rich set of information, such as the name of the parent company, the country of origin and destination of the projects, and the business activities involved in the projects (e.g., HQ, R&D, manufacturing, business services, logistics and marketing and sales).

We focus on new foreign investments in HQ activities undertaken by European companies during the period 2003–2016. fDi Markets provides information on the business function of each FDI event, relying on the information reported by the company. "Headquarters" is assigned as a business function when a company establishes a new HQ via FDI (different from the CHQ), motivated by the aim of supporting customers across regions, consolidating the company's business in the region, and driving new growth; having regional headquarters; building a new corporate office responsible for finance operations, marketing and sales, and product development management; and platform communications and business development in the region. These activities are consistent with the representative activities performed by HQ, as highlighted by Alfoldi et al. (2012).

In addition, we obtain firm-level data from Bureau van Dijk's Orbis database,² relying on the details of the company name, city, and country of origin to merge the two databases.

The final sample is composed of 554 new investment projects in foreign HQ undertaken by 471 European companies during 2003–2016, replete with all the relevant firm- and project-level data crucial for the analysis. These firms are from 28 European countries, and the top twelve are major investors, that is the United Kingdom (23 %), Germany (22 %), France (8.3 %), Italy (5.8 %), the Netherlands (5.6 %), Denmark (4.8 %), Switzerland (4.8 %), Spain (4.2 %), Sweden (4.2 %), Finland (3.8 %), Ireland (3.8 %) and Belgium (2.2 %); these countries account for 92 % of the FDI in the sample.

3.2. Dependent variable

The dependent variable is the binary choice of locating a new FDI project identified as HQ, in a country different from the home country of the focal firm: within the home region or in a non-home region. The variable *Home* assumes a value of one if the HQ investment is in the home region of the focal company (Europe), and zero when located in a non-home region (i.e., outside Europe). In the final sample, the FDI projects take place in 54 different countries. In 31 % of cases (172 out of 554), the MNC decides to establish a foreign HQ in the home European region, where the United Kingdom, France, Spain, Germany, Denmark, and the Netherlands are preferred destinations. In these cases, the variable assumes a value of one. In the non-home region cases (69 %), North America is the largest recipient (28.7 % in the United States), followed by Asia (8 % in Singapore and 6.5 % in China). Table 1 provides a list of destination countries.

¹ For additional details, please see <https://www.fdimarkets.com/>

² For additional details, please see <https://www.bvdinfo.com/en-gb/our-products/data/international/orbis>

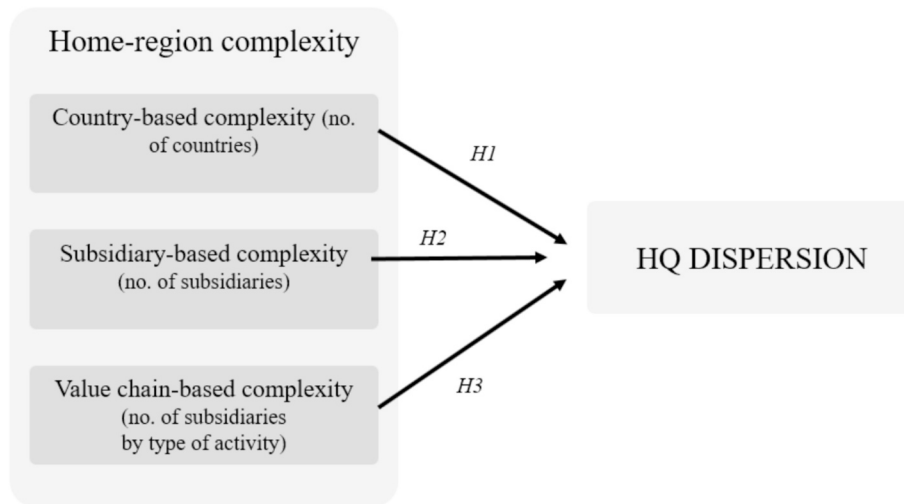


Fig. 1. Conceptual framework: Complexity sources at the home-region level.

Table 1

Distribution of FDI in HQ activities, by destination country.

Destination Country	Freq.	Percent	Destination Country	Freq.	Percent
United States	159	28.7	Hungary	2	0.36
Singapore	44	7.94	Japan	2	0.36
China	36	6.5	Lebanon	2	0.36
United Kingdom	36	6.5	Nigeria	2	0.36
United Arab Emirates	31	5.6	Norway	2	0.36
France	24	4.33	Slovakia	2	0.36
Hong Kong	18	3.25	Taiwan	2	0.36
Spain	17	3.07	Thailand	2	0.36
Germany	16	2.89	Turkey	2	0.36
Canada	14	2.53	Angola	1	0.18
India	12	2.17	Bahrain	1	0.18
Australia	11	1.99	Colombia	1	0.18
Denmark	11	1.99	Cuba	1	0.18
Netherlands	11	1.99	Czech Republic	1	0.18
Brazil	10	1.81	Egypt	1	0.18
Ireland	9	1.62	Finland	1	0.18
Malaysia	9	1.62	Jordan	1	0.18
Romania	7	1.26	Luxembourg	1	0.18
South Africa	7	1.26	Mozambique	1	0.18
Switzerland	7	1.26	Panama	1	0.18
Austria	6	1.08	Peru	1	0.18
Italy	5	0.9	Poland	1	0.18
Sweden	5	0.9	Portugal	1	0.18
Belgium	4	0.72	Qatar	1	0.18
Philippines	3	0.54	Saudi Arabia	1	0.18
Russian Federation	3	0.54	Uruguay	1	0.18
Serbia	3	0.54	Vietnam	1	0.18
Total	554	100			

3.3. Independent variables

Following our theoretical propositions and to test [H1](#), we compute a measure of *country-based complexity* for the geographical dispersion of the MNC's network of subsidiaries within the home region – since a higher level of dispersion may increase complexity in managing and coordinating dispersed organizational structures. Using data from fDi Markets, we compute *No. foreign countries in Europe* as the cumulated number of countries where the company is present with FDI in the region (from 2003 until t-1), the establishment of subsidiaries is captured with greenfield FDI projects.

To test [H2](#), we compute a measure of the presence of the company in the home region (Europe) to capture the *subsidiary-based complexity* of the MNCs in the region, i.e., *No. FDI in Europe*, as the cumulated number of FDI projects undertaken by the company in the region (from 2003 until t-1); we use data from fDi Markets.

To test [H3](#), the third explanatory variable captures the probability of dispersing the HQ system with a foreign HQ in the home

region, and is associated with *value chain-based complexity* in the region. Thus, we identify the value chain knowledge-intensive activities in the MNC's portfolio of FDI projects established through greenfield FDI year by year. Following Mudambi (2008), we classify the value chain activities based on their value creation potential. In the list of business functions provided by fDi Markets, "Research and Development (R&D)," "Design, Development and Testing (DDT)," and "Sales, Marketing and Support (S&M)" can be considered high value-added activities. In contrast, "Manufacturing" operations can be considered low value-added activities. Thus, we create the measure *No. FDI in value-added activities* as the number of FDI projects undertaken by the company in the home region in R&D, DDT, and S&M activities, using data from fDi Markets. We compute the variable as a cumulative count of the projects from 2003 (the first year of the database) until $t-1$ (the year before the focal investment under investigation).

To test this hypothesis further, we create a similar measure for the projects in manufacturing activities (*No. FDI in manufacturing*); an increasing number of manufacturing operations in the region is not expected to influence the probability of establishing a foreign HQ in the region. We also control for the total number of FDI undertaken by the company worldwide (i.e., *No. FDI total*) to control for the presence of the company in the rest of the world; this allows us to interpret these measures as intensities. All explanatory variables are computed for the year before the focal investment decision, so all potential endogeneity problems are accounted for. The variables are calculated for the companies under investigation, using the entire dataset of FDI projects available.

3.4. Alternative measures and control variables

The advantage of the fDi Markets database is that it allows the differentiation of the specific activity involved in each FDI event (e.g., HQ, R&D, manufacturing) and computation of time-varying variables as cumulated measures in the year before the focal investment. However, fDi Markets tracks only greenfield projects, so it may offer only a partial picture of the whole network of subsidiaries, and we run the risk of underestimating these effects. For these reasons, as a further robustness check, we use subsidiary information provided by Orbis for each firm, to compute alternative variables to capture the degree of internationalization of the MNC. We compute *intra-regional presence* as the ratio of foreign subsidiaries in Europe to the total number of subsidiaries of the focal firm, to measure the level of embeddedness in the region, and thus, subsidiary-based complexity in the home region. We measure country-based complexity within the home region as the number of foreign countries with foreign subsidiaries; in other words, the geographical dispersion of subsidiaries within the home region (i.e., *No. foreign countries in Europe, Orbis*). We also compute *international depth* as the number of foreign subsidiaries relative to the total number of subsidiaries, to capture the degree of internationalization of the company.

Finally, we control for several firm characteristics: we include the age of the company (*Age*) computed as the difference between the year of incorporation provided by Orbis and the year of investment decision from fDi Markets data; the *Size* of the company, computed as a dummy variable assuming value one if the company is classified as very large by Orbis, zero otherwise (i.e., large and medium-sized); and the location of the country of origin within the European region, creating a dummy for the European sub-region of origin (i.e., Eastern, Northern, Southern and Western³). We also control for whether the destination country is among the tax haven countries, to ascertain if the decision of investing in a foreign country is driven by tax-saving motivations (Laamanen et al., 2012). We include the dummy variable *Tax Haven* which assumes a value of one if the country is classified as a tax haven, zero otherwise.⁴

Table 2 summarizes the descriptions of the variables and their sources.

3.5. Econometric approach

This study aims to investigate the heterogeneity across firms investing in HQ activities abroad. In other words, for firms that decide to engage in HQ activities abroad, we investigate the characteristics and activities that drive them to disperse their HQ function in the home region. However, this may create a sample selection bias because we do not account for the previous related decision to engage in foreign HQ activities. To control for this possible source of bias, we estimate a two-stage model à la Heckman (Heckman, 1979; Certo et al., 2016): in the first stage we estimate the probability of an observation entering the sample (i.e., the probability of investing in HQ activities abroad) using a probit model; and in the second stage, we predict the outcome of interest (i.e., the decision between investing in HQ activities in the home region (Europe) vs. outside). To account for potential sample selection bias we include the inverse mills ratio (λ) as an additional regression in the second stage.⁵ For the second stage, given that the dependent variable is a binary choice (home region = 1; non-home region = 0), we estimate a probit regression and linear probability model. The database is a cross-section, thus each FDI decision enters the model only once. We also control for year- and industry-related unobserved effects. Some companies take more than one investment decision during the period – to control for this, we clustered the standard errors by MNC.

Table 3 reports the descriptive statistics and correlations for all the variables used in the study.

³ Eastern countries are Bulgaria, Czech Republic, Hungary, Poland, Romania, Slovakia, Ukraine; Northern countries are Denmark, Estonia, Finland, Iceland, Ireland, Norway, Sweden and United Kingdom; Southern countries are Andorra, Italy, Portugal, Serbia and Spain; Western countries are Austria, Belgium, France, Germany, Liechtenstein, Luxembourg, Monaco, Netherlands, Switzerland. For additional details, please see <https://guides.ucf.edu/countries>

⁴ Among the eight major pass-through economies, the countries in our sample classified as tax havens are Ireland, The Netherlands, Luxembourg, Hong Kong, and Singapore (Damgaard et al., 2018).

⁵ To estimate the two stages, we use two different approaches: (1) the "Heckman, twostep" package in Stata 17; (2) we estimate the two stages by using "probit" for the first stage and "regress" and "probit" for the second stage, and manually compute the λ . Results are consistent.

Table 2
Description and source of variables.

Variable	Description	Source
DV: Home	Dummy variable =1 if the investment is located in the home region of the focal company (Europe), and zero when located in a non-home region (i.e., outside Europe)	fDi Markets
<i>Country-based complexity</i>		
No. foreign countries (log)	Cumulative number of countries where the company is present with FDI in the European region (from 2003 until t-1), in log	fDi Markets
No. foreign countries (log), Orbis	Number of foreign countries in the European region with foreign subsidiaries	Orbis
<i>Subsidiary-based complexity</i>		
No. FDI in Europe (log)	Cumulative number of FDI projects undertaken by the company in the European region (from 2003 until t-1), in log	fDi Markets
Intra-regional presence	Share of foreign subsidiaries in Europe to the total number of subsidiaries of the focal firm	Orbis
<i>Value chain-based complexity</i>		
No. FDI in value-added activities (log)	Cumulative count of FDI projects from 2003 until t-1 (the year before the focal investment under investigation) in value-added activities (i.e., Research and Development, "Design, Development and Testing", "Sales, Marketing and Support"), in log	fDi Markets
No. FDI total (log)	Total number of FDI undertaken by the company worldwide	fDi Markets
No. FDI in manufacturing (log)	Cumulative count of FDI projects from 2003 until t-1 (the year before the focal investment under investigation) in manufacturing activities, in log	fDi Markets
International depth	Number of subsidiaries to the total number of subsidiaries	Orbis
age (log)	Difference between the year of incorporation provided by Orbis and the year of the investment decision from fDi Markets	Orbis/fDi Markets
Size: large	Dummy variable = 1 if the company is classified as very large by Orbis, zero otherwise (i.e., large and medium-sized)	Orbis
Company subregion (Eastern Europe)	Dummy variable = 1 if the company's country of origin is located in the Eastern sub-European area. Eastern countries are Bulgaria, Czech Republic, Hungary, Poland, Romania, Slovakia, Ukraine.	fDi Markets
Company subregion (Northern Europe)	Dummy variable = 1 if the company's country of origin is located in the Northern sub-European area. Northern countries are Denmark, Estonia, Finland, Iceland, Ireland, Norway, Sweden and United Kingdom.	fDi Markets
Company subregion (Southern Europe)	Dummy variable = 1 if the company's country of origin is located in the Southern sub-European area. Southern countries are Andorra, Italy, Portugal, Serbia and Spain.	fDi Markets
Company subregion (Western Europe)	Dummy variable = 1 if the company's country of origin is located in the Western sub-European area. Western countries are Austria, Belgium, France, Germany, Liechtenstein, Luxembourg, Monaco, Netherlands, Switzerland.	fDi Markets
Tax Haven country	Dummy variable =1 if the country is classified as a tax haven, zero otherwise. Among the eight major pass-through economies, countries in our sample classified as tax havens are Ireland, The Netherlands, Luxembourg, Hong Kong, and Singapore.	Damgaard et al. (2018)

4. Results

4.1. Main results: HQ dispersion and complexity in the home region

Following the empirical strategy discussed in the previous section, the Orbis-matched HQ investment projects, are merged with all investment projects undertaken by European companies over the period 2003–2016 in all other value chain activities (e.g., R&D, business service, logistics, retail). This returns a final sample of 40,900 projects. We estimate the relationship between having HQ activities abroad and a set of company-project level factors derived from fDi Markets. In detail, one of the restrictions of the two-step approach is the exclusion restriction; therefore the first stage should include at least one variable that can explain the first-stage outcome but is excluded from the second stage. In the first stage, the dependent variable is a binary measure that equals one if the value chain activity of the investment is HQ, and zero if otherwise. The explanatory variables are: the cumulated number of total projects undertaken by the company from 2003 until t-1; the number of foreign countries worldwide with FDI investment as the cumulated number at t-1 (*No. foreign countries*) and at the end of the period (*No. foreign countries₂*); and the cumulated number of projects in manufacturing and value-added activities globally at t-1. We also include a measure of the importance of these activities in the home region (as the share of manufacturing and value-added activities in the home region), the area of origin of the investment, sector (of the event), and year dummies.

From the correlation matrix, we observe that all correlation coefficients are mostly lower than 0.6. However, the only exception is the high correlation between global footprint (No. of FDI projects globally) and subsidiary dispersion (number of foreign countries

Table 3
Descriptive statistics and correlation

Variable	Obs	Mean	Std. dev.	1	2	3	4	5	6	7	8	9	10	11	12				
A. First stage																			
1 DV: HQs = 1	40,900	0.01	0.12	1															
2 No. FDI projects	40,900	1.18	1.48	−0.02	1														
3 No. foreign countries	40,900	0.98	1.15	−0.02	0.98	1													
4 No. foreign countries 2	40,900	1.79	1.03	−0.01	0.84	0.85	1												
5 No. FDI projects in man. Activities	40,900	0.25	0.73	0.01	0.47	0.47	0.40	1											
6 No. FDI projects in value added activities	40,900	0.39	0.76	0.01	0.59	0.61	0.49	0.55	1										
7 Share value added activities in the home region	40,900	0.10	0.26	0.02	0.28	0.31	0.22	0.20	0.48	1									
8 Share of manuf. Activities in the home region	40,900	0.05	0.17	0.01	0.26	0.27	0.22	0.55	0.23	0.12	1								
9 Company subregion (Southern)	40,900	0.15	0.35	−0.01	−0.04	−0.04	−0.04	−0.08	−0.10	−0.05	−0.02	1							
10 Company subregion (Western)	40,900	0.44	0.50	0.00	0.08	0.09	0.10	0.14	0.12	0.05	0.06	−0.37	1						
11 Company subregion (Northern)	40,900	0.38	0.49	0.01	−0.02	−0.04	−0.04	−0.07	−0.03	−0.02	−0.04	−0.32	−0.70	1					
12 Company subregion (Eastern)	40,900	0.03	0.16	0.00	−0.08	−0.08	−0.09	−0.05	−0.05	−0.01	−0.02	−0.07	−0.15	−0.13	1				
Variable	Obs	Mean	Std. dev	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
B. Second stage																			
1 DV: home = 1	554	0.31	0.46	1															
2 No. foreign countries in Europe(log)	554	0.47	0.72	0.06	1														
3 No. foreign countries in Europe (log), Orbis	554	1.13	1.28	0.08	0.48	1													
4 No. FDI in Europe (log)	554	0.54	0.89	0.06	0.99	0.46	1												
5 Intra-regional presence, Orbis	554	0.29	0.33	0.25	0.12	0.43	0.11	1											
6 No. FDI in value-added activities (log)	554	0.22	0.45	0.04	0.70	0.33	0.65	0.08	1										
7 No. FDI in manufacturing (log)	554	0.16	0.48	−0.02	0.57	0.40	0.59	0.07	0.34	1									
8 No. FDI total (log)	554	0.93	1.21	−0.01	0.91	0.48	0.91	0.06	0.61	0.57	1								
9 International depth, Orbis	554	2.07	2.15	0.01	0.48	0.93	0.47	0.32	0.34	0.39	0.51	1							
10 Age (log)	554	2.89	1.21	0.04	0.28	0.44	0.27	0.15	0.19	0.26	0.32	0.46	1						
11 Size: large	554	0.57	0.49	0.07	0.34	0.59	0.33	0.22	0.25	0.26	0.38	0.62	0.33	1					
12 Company subregion (Southern)	554	0.11	0.31	0.11	−0.02	−0.01	−0.01	0.03	−0.06	−0.05	−0.03	−0.01	0.01	−0.01	1				
13 Company subregion (Western)	554	0.45	0.50	0.00	0.17	0.14	0.16	0.06	0.13	0.13	0.15	0.15	0.08	0.04	−0.32	1			
14 Company subregion (Northern)	554	0.42	0.49	−0.09	−0.15	−0.12	−0.15	−0.07	−0.10	−0.08	−0.12	−0.11	−0.07	−0.02	−0.30	−0.77	1		
15 Company subregion (Eastern)	554	0.02	0.15	0.06	−0.03	−0.08	−0.03	−0.03	0.03	−0.05	−0.05	−0.10	−0.06	−0.02	−0.05	−0.13	−0.13	1	
16 Tax Haven country	554	0.15	0.36	−0.05	0.05	0.02	0.04	0.04	0.09	−0.02	0.04	0.04	−0.03	0.04	−0.08	0.03	0.02	0.01	1

Table 4
Exploring the decision of establishing an HQ abroad.

Dependent variable: 1 = foreign HQ activities	Mod_1	Mod_2
No. FDI projects	−0.1946** (0.0837)	−0.1394*** (0.0319)
No. foreign countries	0.1144 (0.0996)	
No. foreign countries_2		0.0561* (0.0344)
No. FDI projects in man. Activities	0.0553 (0.0376)	0.0499 (0.0377)
No. FDI projects in value added activities	0.0785* (0.0408)	0.0820** (0.0410)
Company subregion (Southern)	0.1811 (0.1249)	0.1815 (0.1252)
Company subregion (Western)	0.2005* (0.1151)	0.1956* (0.1154)
Company subregion (Northern)	0.2695** (0.1145)	0.2665** (0.1148)
Share value added activities in the home region	0.1308* (0.0781)	0.1412* (0.0773)
Share of manuf. Activities in the home region	0.0956 (0.1095)	0.1065 (0.1099)
Constant	−2.5615*** (0.2883)	−2.6739*** (0.2970)
Industry Fixed Effects	Yes	Yes
Year Fixed Effects	Yes	Yes
Observation	40,900	40,900
McFadden's pseudo R ²	0.040	0.040
Count R ²	0.986	0.986
Log-Lik Full Model	−2832.444	−2831.742

Notes: Dependent variable is the binary choice of investing in HQ activities abroad. Estimated coefficients from a probit regression are reported in the table. Standard errors are clustered by firm and reported in parentheses. P-values are reported in right-hand columns. Asterisks denote confidence levels: * $p < 0.10$, ** $p < 0.05$ and *** $p < 0.01$.

with FDI). This may be due to the fact that the number of countries in which a firm has subsidiaries may be correlated with the minimum number of subsidiaries an MNC has in the region (Schotter et al., 2017). Moreover, the econometric analysis reported in Table 4 shows that country-based and subsidiary-based add explanatory power to the model, and affect the probability of establishing an HQ unit abroad.⁶ The findings show that HQ disaggregation is not just a matter of international growth (number of subsidiaries), as there can be companies with a relatively big international presence but no foreign HQ unit; it is more related to how the firm grows internationally, in terms of the activities performed abroad and its geographical dispersion. In fact, while the number of FDI projects in manufacturing is not significant, the number of projects in value-added activities is positive and significant, as is the share of value-added activities in the home region. This is the first insight into the role of specific value chain activities in the investment decisions of HQ activities abroad.

As for the second stage of our econometric strategy, Table 5 reports the models' results pertaining to the decision to establish a foreign HQ within the home region.

From models 1–7, we include the hypothesis-testing variables, including all the control variables, year and sector dummies and use two estimation techniques (i.e., probit and linear probability model – LPM). Controlling for the selection biases, the coefficient for the inverse Mills ratio (λ)⁷ is statistically significant in almost all specifications, revealing a self-selection effect. This suggests that the selection of firms investing in HQs abroad in the first stage influences the second-stage decision.

We also provide a variety of measures to assess the goodness of model fit (Hoetker, 2007). It is worth noting that the log-likelihood increases when we include the variables of interest. This confirms the role of the main explanatory variables, which include value-added activities within the home region, as a determinant of the decision to establish a foreign HQ in the home region. We derive the same conclusion from the increase in the pseudo-R-squared and (adjusted) count R-squared.

Starting with the controls, we appreciate that while age does not influence the decision to establish a foreign HQ in the home region, size matters; therefore, larger firms have a higher inclination to do so. The coefficients are positive and significant, suggesting that the dispersion of HQ is a phenomenon not only related to the expansion and experience of the MNC, but to a more complex combination of events (Pla-Barber et al., 2021a, 2021b). Regarding the variables that capture the international configuration of the

⁶ The mean variance inflation factor (VIF) for both models is below 5. We also check the individual VIFs, and the highest value is 60 for the no. foreign countries. As a further robustness check, we remove the highly correlated variables, and include them separately and see if the results hold. This is the case. Results are available under request to the authors.

⁷ The λ is calculated manually, as the ratio of the probability density function to the cumulative density function, using the estimates from Mod_1 (Table 4). However, the values are highly correlated at 99 %.

Table 5

Exploring the decision of establishing a foreign HQ in the home region.

Dependent variable: 1 = Home region (within Europe)	Mod 1	Mod 2	Mod 3	Mod 4	Mod 5	Mod 6	Mod 4a	Mod 5a	Mod 6a	Mod 7 [§]
No. foreign countries in Europe(log)	0.8506*** (0.2386) ([0.0004])			0.5783** (0.2662) ([0.0298])		0.3414 (0.5513) ([0.5357])	0.1798** (0.0775) ([0.0208])		0.1218 (0.1854) ([0.5115])	1.6772* (0.9819) ([0.0876])
No. FDI in Europe (log)		0.6629*** (0.2144) ([0.0020])			0.4611** (0.2244) ([0.0399])	0.2136 (0.4638) ([0.6452])		0.1403** (0.0644) ([0.0298])	0.0518 (0.1531) ([0.7354])	−0.7325 (0.7212) ([0.3098])
No. FDI in value-added activities (log)			0.6438*** (0.1912) ([0.0008])	0.4000* (0.2249) ([0.0754])	0.4721** (0.2162) ([0.0290])	0.4202* (0.2275) ([0.0647])	0.1231* (0.0720) ([0.0882])	0.1440** (0.0711) ([0.0433])	0.1272* (0.0721) ([0.0784])	1.2225** (0.5070) ([0.0159])
No. FDI in manufacturing (log)			0.1072 (0.1646) ([0.5147])	0.0874 (0.1773) ([0.6223])	0.0588 (0.1754) ([0.7375])	0.0695 (0.1715) ([0.6853])	0.0217 (0.0549) ([0.6925])	0.0135 (0.0556) ([0.8082])	0.0171 (0.0544) ([0.7529])	0.9217 (0.6654) ([0.1660])
No. FDI total (log)	−0.5824*** (0.1561) ([0.0002])	−0.5648*** (0.1755) ([0.0013])	−0.2981*** (0.0868) ([0.0006])	−0.5395*** (0.1569) ([0.0006])	−0.5475*** (0.1703) ([0.0013])	−0.5560*** (0.1699) ([0.0011])	−0.1672*** (0.0429) ([0.0001])	−0.1670*** (0.0449) ([0.0002])	−0.1705*** (0.0448) ([0.0002])	−0.3486*** (0.0869) ([0.0001])
Age (log)	0.0312 (0.0558) ([0.5763])	0.0396 (0.0569) ([0.4862])	0.0231 (0.0548) ([0.6734])	0.0284 (0.0587) ([0.6285])	0.0354 (0.0598) ([0.5539])	0.032 (0.0604) ([0.5959])	0.0107 (0.0189) ([0.5726])	0.013 (0.0193) ([0.5014])	0.0116 (0.0195) ([0.5522])	0.0255 (0.0666) ([0.7019])
Size: large	0.3767*** (0.1386) ([0.0066])	0.3814*** (0.1409) ([0.0068])	0.3750*** (0.1398) ([0.0073])	0.3922*** (0.1442) ([0.0065])	0.4018*** (0.1450) ([0.0056])	0.3965*** (0.1445) ([0.0061])	0.1260*** (0.0473) ([0.0080])	0.1285*** (0.0477) ([0.0074])	0.1268*** (0.0474) ([0.0077])	0.2502 (0.1698) ([0.1406])
Company subregion (Southern)	−0.0641 (0.4372) ([0.8834])	−0.0655 (0.4341) ([0.8801])	0.0138 (0.4371) ([0.9748])	0.2414 (0.4189) ([0.5644])	0.2472 (0.4176) ([0.5539])	0.2429 (0.4182) ([0.5613])	0.0813 (0.1434) ([0.5712])	0.0837 (0.1428) ([0.5581])	0.0818 (0.1431) ([0.5682])	0.1614 (0.4654) ([0.7288])
Company subregion (Western)	−0.4185 (0.4146) ([0.3129])	−0.4016 (0.4110) ([0.3285])	−0.3279 (0.4138) ([0.4282])	−0.0874 (0.3912) ([0.8233])	−0.0712 (0.3892) ([0.8549])	−0.0817 (0.3901) ([0.8342])	−0.03 (0.1318) ([0.8200])	−0.0243 (0.1310) ([0.8530])	−0.0284 (0.1314) ([0.8290])	0.8972** (0.4030) ([0.0260])
Company subregion (Northern)	−0.4211 (0.4149) ([0.3101])	−0.423 (0.4117) ([0.3042])	−0.3373 (0.4148) ([0.4161])	−0.0929 (0.3934) ([0.8132])	−0.085 (0.3921) ([0.8284])	−0.0898 (0.3926) ([0.8191])	−0.0375 (0.1318) ([0.7764])	−0.0344 (0.1311) ([0.7933])	−0.0365 (0.1315) ([0.7814])	0.7663* (0.3994) ([0.0550])
Tax Haven country	−0.1942 (0.1776) ([0.2740])	−0.1763 (0.1797) ([0.3267])	−0.2068 (0.1741) ([0.2348])	−0.1838 (0.1766) ([0.2978])	−0.1811 (0.1770) ([0.3062])	−0.183 (0.1767) ([0.3005])	−0.0632 (0.0552) ([0.2524])	−0.0622 (0.0554) ([0.2624])	−0.0629 (0.0553) ([0.2560])	−0.0482 (0.2106) ([0.8190])
lambda	1.1487*** (0.3167) ([0.0003])	1.0401*** (0.3207) ([0.0012])	1.6965*** (0.3610) ([0.0000])	1.2212*** (0.3725) ([0.0010])	1.1841*** (0.3695) ([0.0014])	1.1942*** (0.3678) ([0.0012])	0.3741*** (0.1133) ([0.0010])	0.3653*** (0.1128) ([0.0013])	0.3681*** (0.1123) ([0.0011])	0.8376* (0.4595) ([0.0683])
Constant	−3.3542*** (0.9476) ([0.0004])	−3.1323*** (0.9515) ([0.0010])	−4.7297*** (1.0338) ([0.0000])	−8.1297*** (1.1419) ([0.0000])	−8.0843*** (1.1305) ([0.0000])	−8.0776*** (1.1316) ([0.0000])	−1.0877*** (0.3506) ([0.0020])	−1.0812*** (0.3473) ([0.0020])	−1.0767*** (0.3482) ([0.0021])	−7.8675*** (1.3370) ([0.0000])
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sector Fixed Effects	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	554	554	554	546	546	546	546	546	546	546
Log-Lik Full Model	−312.8717	−314.0987	−315.6127	−299.8077	−299.8864	−299.6896				−178.6004
McFadden's pseudo R2	0.088	0.085	0.080	0.113	0.112	0.113				0.138
Count R2	0.720	0.722	0.709	0.733	0.725	0.727				0.879
Adjusted Count R2	0.099	0.105	0.064	0.136	0.112	0.118				0.043
R2							0.135	0.135	0.136	
Methods	Probit	Probit	Probit	Probit	Probit	Probit	LPM	LPM	LPM	Probit

Notes: Dependent variable is the binary choice of investing in the home region versus non-home regions. Estimated coefficients from a probit regression are reported in the table. Standard errors are clustered by firm and reported in parentheses. P-values are reported below the standard errors in square brackets. Asterisks denote confidence levels: *p < 0.10, **p < 0.05 and ***p < 0.01. [§]estimations based on European home sub-regions.

MNC's network of subsidiaries, a greater number of FDI negatively affects the probability of investing in the home region, but captures a general international presence. In contrast, the intra-regional presence of the MNC increases the probability of having a foreign HQ in the home region. Indeed, Mod_1 shows that the country-based complexity within the region, measured by the number of foreign countries with previous investment projects (*No. foreign countries in Europe*), can increase the probability of investing in the home region ($\beta = 0.85$ and $p < 0.00$; average marginal effect: 0.27). This is because such organizational complexity increases further due to the diversity of external contexts in the portfolio of subsidiaries (Schotter et al., 2017). These results align with previous studies on the complexity-in-IB studies (Casson and Li, 2022), and provide new empirical evidence by focusing on the home region of the company, thereby supporting H1.

Subsidiary-based complexity in the home region (measured with *No. FDI in Europe*) in Mod_2 presents a positive and significant effect ($\beta = 0.66$ and $p < 0.00$; average marginal effect: 0.21). The greater the number of FDI in the region, as a proxy of the number of MNC's subsidiaries, the higher the probability of locating a foreign HQ activity in the home region. This supports the second hypothesis, and relates to the idea that one region can be the key source of revenue and strategic resources for an MNC, justifying a regional strategy that translates into a greater engagement in the regional host countries through FDI and beyond export activity

Table 6

Exploring the decision of establishing a foreign HQ in the home region, robustness checks.

Dependent variable: 1 = Home region (within Europe)	Mod_1	Mod_2	Mod_3	Mod_3a	Mod_4 [§]
No. foreign countries in Europe (log)	0.5715*** (0.1425) ([0.0001])		0.3022** (0.1399) ([0.0307])	0.0785** (0.0389) ([0.0441])	0.5905*** (0.1912) ([0.0020])
Intra-regional presence		1.1027*** (0.2050) ([0.0000])	0.9333*** (0.2130) ([0.0000])	0.3166*** (0.0711) ([0.0000])	1.8905*** (0.4100) ([0.0000])
No. FDI in value-added activities (log)	0.2748* (0.1652) ([0.0963])	0.2909* (0.1733) ([0.0933])	0.2981* (0.1742) ([0.0870])	0.0865 (0.0579) ([0.1359])	0.9131** (0.4450) ([0.0402])
No. FDI in manufacturing (log)	-0.0897 (0.1542) ([0.5610])	0.0161 (0.1620) ([0.9210])	-0.013 (0.1641) ([0.9369])	-0.0103 (0.0497) ([0.8356])	0.5781 (0.5317) ([0.2769])
International depth (No. of subsidiaries)	-0.3379*** (0.0968) ([0.0005])	-0.0952* (0.0512) ([0.0632])	-0.2510** (0.0976) ([0.0101])	-0.0698*** (0.0262) ([0.0080])	-0.2550*** (0.0635) ([0.0001])
Age (log)	0.0124 (0.0611) ([0.8396])	0.0219 (0.0625) ([0.7258])	0.0154 (0.0624) ([0.8055])	0.0069 (0.0199) ([0.7288])	0.0453 (0.0794) ([0.5684])
Size: large	0.2637* (0.1580) ([0.0952])	0.2816* (0.1573) ([0.0734])	0.2579* (0.1582) ([0.1030])	0.0855* (0.0514) ([0.0966])	0.2679 (0.2020) ([0.1849])
Company subregion (Southern)	0.2192 (0.4253) ([0.6062])	0.1938 (0.4537) ([0.6692])	0.2066 (0.4478) ([0.6445])	0.0686 (0.1693) ([0.6854])	-0.6032 (0.5447) ([0.2682])
Company subregion (Western)	-0.1294 (0.3993) ([0.7460])	-0.1699 (0.4287) ([0.6918])	-0.156 (0.4227) ([0.7121])	-0.0487 (0.1602) ([0.7614])	0.3182 (0.4315) ([0.4608])
Company subregion (Northern)	-0.191 (0.3999) ([0.6329])	-0.2214 (0.4277) ([0.6047])	-0.2072 (0.4218) ([0.6232])	-0.0655 (0.1600) ([0.6823])	0.1272 (0.4433) ([0.7742])
Tax Haven country	-0.1595 (0.1744) ([0.3606])	-0.2009 (0.1808) ([0.2666])	-0.1862 (0.1811) ([0.3039])	-0.0586 (0.0532) ([0.2712])	-0.0076 (0.2272) ([0.9734])
lambda	0.8174** (0.3522) ([0.0203])	0.6877** (0.3339) ([0.0394])	0.7423** (0.3404) ([0.0292])	0.2385** (0.1064) ([0.0255])	0.0188 (0.4531) ([0.9670])
Constant	-6.6571*** (1.0772) ([0.0000])	-6.1623*** (1.0646) ([0.0000])	-6.2393*** (1.0774) ([0.0000])	-0.5560* (0.3471) ([0.1099])	-3.5420*** (1.3659) ([0.0095])
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes
Sector Fixed Effects	Yes	Yes	Yes	Yes	Yes
Observations	546	546	546	546	546
Log-Lik Full Model	-300.092	-292.4687	-290.509	-303.523	-144.816
McFadden's pseudo R2	0.112	0.134	0.140		0.301
Count R2	0.718	0.747	0.745		0.897
Adjusted Count R2	0.089	0.183	0.178		0.188
R2				0.167	
Methods	Probit	Probit	Probit	LPM	Probit

Notes: Dependent variable is the binary choice of investing in the home region versus non-home regions. Estimated coefficients from a probit regression are reported in the table. Standard errors are clustered by firm and reported in parentheses. P-values are reported below the standard errors in square brackets. Asterisks denote confidence levels: * $p < 0.10$, ** $p < 0.05$ and *** $p < 0.01$. [§]Estimations based on European home sub-regions.

(Rugman and Verbeke, 2004; Ma et al., 2017). Moreover, for the corporate HQ, a greater number of subsidiaries concentrated in a region increases the costs of coordinating and monitoring a complex network.

We extend these findings further by looking at value chain-based complexity within the home region; following H3, in Mod_3 we include the type of activities performed in the home region, distinguishing between high and low value-added FDI activities in the region. We appreciate that the coefficient of *No. FDI in value-added activities* is positive and significant ($\beta = 0.64$ and $p < 0.00$), thus a greater number of FDI in (R&D or marketing) knowledge-intensive activities within the home region increases the probability of establishing a foreign HQ in the region. This result indicates that the types of activities in the subsidiaries are a source of possible complexity and therefore, a source of information processing requirements, which confirms the third hypothesis.

This is reaffirmed by the non-significant effect of *No. FDI in manufacturing*. We control for the total number of FDI in the region and thus, the main explanatory variables can be interpreted as shares and not absolute values (Castellani et al., 2021; Schotter et al., 2017). However, as a further robustness check, we compute the presence of value-added and manufacturing FDI activities in the European region as a share of the total number of FDI, and the results hold.

We include the variables individually in Models 1–3 in Table 5 and progressively add all hypothesis-testing variables together and sectoral fixed effects in Models 4–6. From the correlation matrix (Table 3b), we observe that all correlation coefficients are mostly lower than 0.6, except *No. foreign countries in Europe* (country-based complexity) and *No. FDI in Europe* (subsidiary-based complexity); this is explained by the fact that the number of countries in which a firm invests may be related to the number of FDI projects in the region, as discussed earlier. Following Lindner et al. (2019), omitting important variables can be a more serious issue than adding potentially collinear variables, as multicollinearity per se does not introduce any bias. In fact, we observe that this inflates the standard errors of the two correlated variables – therefore, it leads to lower *t* values and higher *p*-values, but does not affect their coefficients or other explanatory variables. The findings are consistent across probit and LPM estimations.

Therefore, following our hypothesis development, greater embeddedness in the region drives the MNC to open a foreign HQ in the home region, rendering this even more important when the geographical dispersion of the MNC's network within the region is high, and embeddedness in the region relates to strategically important activities like high value-added functions along the value chain. It is less important in the case of low value-added activities like manufacturing.

4.2. Robustness checks

As discussed in Section 3.4, fDi Markets data have both advantages and disadvantages. The most important advantage is that the data allow differentiation of the specific activity involved in each FDI event, beyond sectoral differences and specificities. Simultaneously, fDi Markets tracks only greenfield projects, so it may offer a partial representation of the network of subsidiaries. To address this issue and check the reliability and sensitivity of the measures computed using fDi Markets data, we compute intra-regional presence in the home region, relying on the current list of subsidiaries provided by Orbis for each firm, and their locations (countries). We also calculate the general international presence as an alternative measure of the related control variable in the baseline models. We replicate the main specifications of Table 5, and report the results in Table 6. The findings support the previous conclusion: a higher (general) international presence (foreign subsidiaries/total subsidiaries) does not increase the probability of investing in an HQ function in the home region, while a higher intra-regional presence (no. of subsidiaries in the region) has a positive and significant effect (Ma et al., 2017). Additionally, the number of foreign countries with foreign subsidiaries, as an alternative measure of country-based complexity using Orbis data, has a significant positive effect consistent across specifications. The results related to value chain-based complexity hold.

Finally, one aspect of this study is to look at HQ dispersion within institutionally similar countries, and we focus on the European region as the home region of our focal companies. The European Union is the deepest politically integrated scheme in the world. Within it, there is a long path of convergence in terms of economic and political formal structures such as common regional institutions, regulations, and policies. However, it could be argued that some European countries have different institutional contexts; therefore, we test if the argument holds for sub-regions that are institutionally similar. In so doing, we use the classification of sub-regions discussed above (i.e., Eastern, Northern, Southern and Western) and use these instead of the whole Europe as the destination of the HQ investments. The dependent variable is now a binary variable which assumes value one if the company has established its foreign HQ within the home sub-region, and all the hypothesis testing variables are computed at the sub-regional level. We find that among the 172 (out of 554) cases of companies establishing a foreign HQ unit in the home region, 71 (41 %) are located within the home sub-region. The results, reported in the last columns of Table 5 (Mod_7) and Table 6 (Mod_4), support our argument by confirming the study's main findings. Thus, when looking at a sub-regional level, where countries are even more similar in institutional terms, our hypotheses hold, evidencing the importance of value chain activities over the level of internationalization. We can also test this by looking at the institutional distance across countries. We use the well-known Worldwide Governance Indicator, 'rule of law' (RL) - for additional details <https://worldbank.org/en/publication/worldwide-governance-indicatorsand>, and compute the distance between home and host countries. We observe that, on average, the distance is lower for countries within the European region (home) compared to other (outside Europe) countries which present higher heterogeneity. Furthermore, we include the RL distance as a further robustness check. We find that our main results hold, and the RL distance has a significant and negative coefficient, both using within-home region and sub-region as dependent variable.⁸

⁸ The results are available upon request to the authors.

5. Conclusions and implications

In this study, we address the phenomenon of HQ dispersion by disentangling the different features contributing to the establishment of foreign HQ in the home region. Specifically, we address the factors influencing the existence of foreign HQ in the home region and emphasize the determinants of European MNCs' establishment of foreign HQ within Europe (their home region). This study suggests that a foreign HQ is an MNC's information processing response to value chain complexity.

Our contribution is twofold: at the theoretical level, we rely on IPF to advance the complexity-in-IB literature by introducing the nature of subsidiary activities as a new dimension of complexity in the international footprint, building on internal and external types of complexity (Larsen et al. 2023). Common sources of external complexity in IB are usually country- and subsidiary-based, which account for the different environments that the MNC is exposed to, and the size of the network of subsidiaries. However, the nature of the subsidiaries' tasks seems to matter; these may involve non-routine activities that need formal hierarchical structures to meet increased information processing requirements. Our study connects foreign HQ as a structural hierarchical mechanism responding to this need; this helps explain the phenomenon of dispersion of CHQ when it also occurs in non-distant places. IPT is a baseline to study MNC heterogeneity and its influence on their structural configuration. This theory not only creates an understanding of complex HQ configurations beyond access to comparative advantages but also attends to the specific needs and processing requirements of each company (Pla-Barber et al., 2021a, 2021b). Therefore, MNCs vary in the degree of complexity of international activities and, consequently, can vary their information processing requirements. Following IPT, we advance the complexity-in-IB literature by introducing the nature of subsidiary activities as a dimension of internal complexity in the international footprint. High value-added activities, such as R&D or marketing, come with higher information processing requirements and, these requirements are increased when MNCs internationalize them. At the regional level, MNCs seem to be managing such requirements by dispersing their HQ functions, a structural mechanism that has been rarely studied.

Second, at the empirical level, we contribute with updated research highlighting the need for improved measurement of the complex MNC reality and particularly of the international business footprint of the MNC (Casson and Li, 2022; Békés et al., 2021; Andrews et al., 2022). While previous works focused on international sales and assets (Rugman and Verbeke, 2004; Rosa et al., 2020) and the number of subsidiaries and countries (Schotter et al., 2017) we incorporate the nature of the activities of the MNC's international subsidiaries. We suggest this be accomplished by including the importance of the value chain organization in the region.

Third, the dispersion of headquarters is a phenomenon that has only recently begun to be studied, and about which little is known (Nell et al., 2017). The dispersion of the most central unit of the multinational corporation is a reflection of the ongoing evolution of MNCs in response to environmental changes, including the ambiguity of previously well-defined unit boundaries (Menz et al., 2021). This dispersion appears to be a response to the internalization of complex activities in the international environment, raising new questions about the internal structure of the MNC. Our study contributes to this conversation at the regional level.

Our study has several implications. First, it sheds light on the different antecedents behind HQ dispersion, which are of interest to academics and practitioners. Our study suggests that different external demands and requirements associated with activity complexity are related to the dispersion of the HQ system beyond comparative advantages and expansion operations. It also reflects the importance of measuring complexity from different contexts, in this case, the home-region. An automatic implication is that a potential concentration or regionalization of value chains may affect MNC HQ systems. We therefore suggest that in the current post-pandemic environment, reshoring and concentration of some value chains from a regional perspective (Pla-Barber et al., 2021a, 2021b) may bring changes in MNCs' international organizations. Policy makers may thus be enabled to understand the possible consequences for MNCs and countries, as new HQ are established.

Our study has some limitations that create avenues for future research. From an empirical perspective, our data tracks only greenfield projects, so it may offer a partial picture of the whole network of subsidiaries. However, this decision was made due to the availability of information on value chain business functions only for greenfield investment projects, which is critical for testing our hypotheses and is an interesting feature of the fDi Markets data. Future research may explore the relationship between global value chains and HQ configurations in further depth. Dispersed HQ may be the center of a network that not only comprises owned subsidiaries but also other external actors in the value chain. Furthermore, it is worth exploring other hidden motivations and mechanisms for HQ dispersion by developing qualitative studies or either, new measures and thus re-evaluating previous results. For instance, this research suggests that MNCs display a different propensity to configure HQ systems. This demonstrates that the differences in managers' dynamics regarding HQ systems depend on different factors, including the country of origin (Menz et al., 2021), which deserves further attention. The relationship between institutional inertia and other institutional characteristics, and complex CHQ systems remains blurred. Finally, a certain degree of heterogeneity exists within manufacturing activities, in terms of the maturity of the production process and sectoral specificities (Pisano and Shih, 2012; Asheim and Gertler, 2005), which generates different levels of knowledge and information codifiability, as well as coordination and control requirements. Future research should delve into this aspect, and the effect of the adoption of advanced manufacturing technologies in the context of Industry 4.0. This can help codify and standardize some knowledge-intensive and production-related research activities, and render them easy to transfer across value chain activities and borders.

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CRediT authorship contribution statement

Ana Botella Andreu: Writing – review & editing, Writing – original draft, Supervision, Resources, Conceptualization. **Katiuscia Lavoratori:** Writing – review & editing, Writing – original draft, Supervision, Resources, Methodology, Conceptualization.

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Data availability

The authors do not have permission to share data.

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