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Location choices of Chinese greenfield investments across EU regions: the role of industry and country-of-origin agglomerations

Yifei Wang[a] , Andrea Ascani[b] and Carolina Castaldi[c]

ABSTRACT
The presence of Chinese multinational enterprises (MNEs) in Europe is on the rise, yet they concentrate in specific regions. Traditional spatial explanations of this clustering refer to the co-location of foreign and local firms in the same or related sectors ('industry agglomeration'). Nonetheless, Chinese investors may also favour locations with a presence of Chinese firms and ethnic communities ('country-of-origin agglomeration'). We investigate the combined role of both agglomeration typologies by using data on 1307 Chinese investments in 176 NUTS-2 regions during the period 2009–19. While both agglomerations matter in general, we find a substitution effect of country-of-origin agglomeration offsetting the benefits of industry agglomeration.

KEYWORDS
industry agglomeration; country-of-origin agglomeration; multinational enterprises; foreign direct investment; China

1. INTRODUCTION

The recent wave of globalization has been characterized by the active global expansion of Chinese firms. As the world's second-largest outward foreign investor, China reached US$143 billion of outward foreign direct investment (FDI) in 2018 (Chinese Ministry of Commerce, 2019). Europe has also received US$6.6 billion of Chinese investment, even though mostly concentrated in a few regions.

The growth in Chinese FDI has resulted in an extensive literature examining the determinants of Chinese multinational enterprises' (MNE) location choices. Among these, the motivation to seek strategic assets and augment competitive capabilities appears to be particularly important (Athreye & Kapur, 2009; Luo & Tung, 2007). As latecomers, Chinese MNEs lack intangible resources, such as advanced technologies, marketing techniques and established brands (Lu et al., 2014). Through investing in the world markets, especially in developed countries, MNEs can address competitive disadvantage by acquiring appropriate resources and assets (Child & Rodrigues, 2005).

At the same time, it has been widely recognized that MNEs face significant 'liability of foreignness' when entering new markets (Zaheer, 1995), arising from cultural, political and economic differences. Compared with domestic firms, foreign investors lack local knowledge and therefore face higher information and search costs (Lamin & Livanis, 2013). Furthermore, an additional 'liability of emergingness' applies to foreign investors from emerging markets, such as China, as the institutional, managerial and technological deficits create additional challenges in foreign operations (Lu et al., 2014; Madhok & Keyhani, 2012). Against this background, this paper focuses on two drivers that could explain how Chinese MNEs aim at gaining capabilities while overcoming their liabilities: *industry agglomeration* based on industrial linkages and business network relations (i.e., co-locating with suppliers, customers and firms in the same industry), as well as *country-of-origin agglomeration* that relies on co-ethnic networks (i.e., co-locating with other Chinese firms and communities). Both agglomeration effects appear relevant, but they have been so far mostly studied separately. Therefore, the evidence on their interplay remains scarce, while investigating whether

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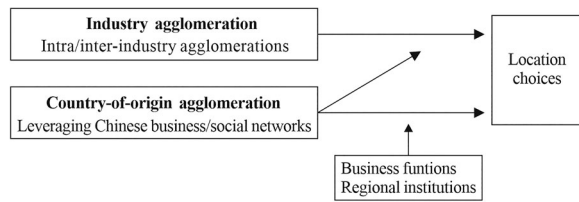Supplemental data for this article can be accessed online at https://doi.org/10.1080/00343404.2022.2142542.

Figure 1. Conceptual model.

and under which circumstances intra-industry business relations and ethnic ties co-influence the locational configuration of Chinese MNEs can offer a new interesting angle of analysis.

From the theoretical standpoint, this paper adds to the growing literature that recognizes agglomeration as an important element in shaping the location choices of MNEs (e.g., Lamin & Livanis, 2013; Stallkamp et al., 2018), by examining both forms of agglomerations simultaneously and considering their joint effects. We also innovatively explore their relationship and heterogeneity across business functions, as the diverse nature of the operations performed by MNEs may also require different locational characteristics. Moreover, our study contributes to recent research on the internationalization of MNEs from emerging markets (Li et al., 2018; Li & Fleury, 2020), by providing insights into the role of agglomerations in the location choices of firms' international investments. By positioning themselves in industry and country-of-origin agglomerations, MNEs from emerging markets are able to connect to different groups of actors in the destination market, accessing diverse sets of knowledge sources, thus reinforcing and establishing their capabilities in global competition.

Importantly, MNEs' location choice and location-specific determinants so far have been mainly analysed at the country level, while only a small but growing number of studies have focused on different regional dimensions (Basile et al., 2008; Cantwell & Piscitello, 2005; Crescenzi et al., 2014; Defever, 2006; Nielsen et al., 2017). In fact, regions are important milieux for foreign investors, as regional knowledge base and innovative context provide crucial conditions for constructing and refining the trajectory of competitive advantage of MNEs (Cantwell & Iammarino, 2001). In this context, Europe is a suitable case for examining how the two forms of agglomerations affect Chinese MNEs' location choices, as European regions differ substantially in terms of social and economic characteristics, as well as in the presence of Chinese MNEs and communities. Also, the concentration of economic clusters and knowledge in European regions enables the identification of industry agglomerations (European Commission, 2019).

Using data on 1307 investment projects of Chinese MNEs in 176 European NUTS-2 regions during the period 2009–19, we implement a conditional logit (CL) methodology in line with most extant works on firm location decisions. Our analysis reveals that while both kinds of agglomerations are positively associated with

the location choices of Chinese MNEs, country-of-origin agglomeration has a substitution effect, which can offset the benefits of industry agglomeration. This is a novel finding in the literature, suggesting that in the presence of strong linkages of ethnic nature, the advantages associated with traditional intra-industry business-to-business transactions can turn out to be less relevant in shaping the location patterns of Chinese MNEs. Moreover, results show that the two agglomerations matter differently across MNEs' business functions, in line with the idea that different sources of agglomeration are related to different typologies of strategic assets. Specifically, the substitution effects of country-of-origin agglomeration hold for service-related activities. Furthermore, our analysis suggests that country-of-origin agglomeration shows a more prominent effect in weak institutional contexts. In our conclusions, we discuss the implications of our results for research and policy.

2. THEORETICAL FRAMEWORK

Investors entering foreign markets face competitive disadvantages arising from their lack of capabilities and knowledge of the host market, and this is particularly so for investors from emerging economies (Luo & Peng, 1999). On one hand, when investing in developed countries, MNEs from emerging markets seek access to sophisticated technology and know-how by co-locating with local companies that own such knowledge (Luo & Tung, 2007). This refers to the importance for these investors to benefit from local industry agglomeration. Co-location allows MNEs to benefit from potential industry spillovers in several forms, such as accessing specialized workers and intermediate goods, developing partnerships with local suppliers and customers, and increasing the likelihood of knowledge spillovers. On the other hand, extant literature has emphasized that firms can obtain knowledge of host markets through country-of-origin agglomeration (Zaheer et al., 2009; Zhou et al., 2007). In this context, country-of-origin agglomeration refers to MNEs co-locating with other firms and communities from the same country of origin. Such agglomeration can provide latecomers with knowledge of the host market's institutional environment and the experience to leverage information about local business systems. In other words, it helps new entrants to reduce information asymmetries and lower the transaction cost of foreign investment.

As Figure 1 shows, we model Chinese MNEs' location choices as resulting from the interaction between industry and country-of-origin agglomerations. While both forms of agglomerations allow MNEs to access strategic resources and knowledge, the underlying mechanisms are different. Therefore, we consider the combined effect of the two agglomerations, to investigate whether country-of-origin agglomeration complement or substitute the benefits of industry agglomeration in the location choice of Chinese MNEs. We also explore the heterogeneous location choices across business functions, and we integrate the role of regional institutions into the analysis.

The following subsections provide arguments supporting each of the relationships shown in Figure 1.

2.1. Industry agglomeration and location choice

Agglomeration economies imply that firms get benefits when locating close to other firms in similar or related sectors. As defined by Marshall (1890), three mechanisms induce such benefits: access to specialized labour, access to specialized intermediate goods, and potential knowledge spillovers. The geographical concentration of firms creates a pool of highly qualified workers, thus improving the matching between firms and workers. The benefit of labour market pooling also rests with the opportunities for MNEs to take advantage of the human capital investments made by local firms. By hiring workers with established expertise gained in other firms, MNEs could improve their productivity and adopt relevant knowledge and ideas (Combes & Duranton, 2006). Meanwhile, the motivation to access specialized intermediate goods also encourage firms in the same or related industries to co-locate. Such agglomeration generates positive externalities, as it lowers the costs of obtaining specialized inputs, and generates large levels of demand to warrant efforts to produce highly specialized components (Head et al., 1995).

Importantly, the motivation to access potential knowledge spillovers crucially influences the location behaviour of firms, as co-locating could speed up the flow of ideas and information exchange (Ellison et al., 2010). As knowledge is mainly tacit, the difficulty in both transmitting and absorbing it can be overcome by co-location (Cantwell & Piscitello, 2005). The international business literature has long seen knowledge-seeking as a motivation for international expansion. Cantwell (1989), for example, argued that firms may supplement their existing technological base by expanding geographically to access new knowledge.

In fact, industry agglomeration effects include both intra- and inter-industry agglomerations. Intra-industry agglomeration refers to the presence of firms within a given industry, concentrated in the same geographical area (Baptista & Swann, 1998). In this context, spillovers may take place when MNEs improve their efficiency by copying technologies, production methods, and management practices of local companies through observation or by hiring workers trained by local companies (Javorcik, 2004). This is particularly the case for foreign investors from emerging markets, as advantages in imitating endows their capabilities of combining and integrating outside technologies with their resource base (Luo et al., 2011). In addition, positive externalities could also happen when MNEs face competition in the host market, leading MNEs to allocate their existing resources more efficiently or increase the speed of adopting new technologies (Blomström & Kokko, 1998).

At the same time, inter-industry agglomeration is associated with the co-presence of firms from different industries, especially of firms with vertical linkages, that is, a focal firm and its suppliers and customers. In this context, knowledge spillovers across industries can be established through technological collaborations and alliances between sectors (Broekel & Brachert, 2015), market transactions such as backward and forward linkages (Roper et al., 2008), and user–producer interactions (Baldwin & Von Hippel, 2011). In case domestic firms hold comparative advantages, high competition induced by the motivation of catering to the need of local suppliers provides an incentive for MNEs to upgrade technical and organizational capabilities (Ascani et al., 2020). Similarly, to maintain a certain level of production, vertically linked local suppliers may offer MNEs technical support, training for their labour force, and upgrade their organizational and managerial skills (Crespo & Fontoura, 2007).

A large amount of empirical evidence has shown that knowledge spillovers tend to be locally confined (e.g., Jaffe et al., 1993; Storper & Venables, 2004). Seeking such benefits, MNEs tend to agglomerate depending upon the potential for localized knowledge spillovers (Alcácer & Chung, 2007; Cantwell & Piscitello, 2005). The knowledge-seeking motivation for outward investment is particularly important for MNEs from emerging markets, such as China (Luo & Tung, 2007). To compensate for deficiencies in technology and management skills, Chinese MNEs would actively learn and capture strategic capabilities by accessing potential knowledge spillovers.

2.2. Country-of-origin agglomeration and location choice

MNEs entering a new market face uncertainty rising from the unfamiliarity of the local environment (Zaheer, 1995), and experience information asymmetries that result in high information costs. This holds especially for location-specific information that is needed to investigate the local endowment of factors (Mariotti et al., 2010). While information regarding the price and availability of traditional location factors (labour, raw materials, transportation cost) can be easily obtained, factors related to the local contexts, such as local demand, local institutional environment, regulations and policies, are rarely known in full by foreign investors. Leveraging social networks turns out to be an effective way to reduce information barriers to acquire such knowledge.

Social networks can be characterized as personal ties and connections that are built upon goodwill and trust (Chen, 1994; Granovetter, 1985). As sources of social capital, social networks facilitate cooperative behaviour across network actors through knowledge transfer and learning benefits (Uzzi & Lancaster, 2003). In particular, ethnic networks are specific aspects of social networks that are associated with personal relationship elements, such as national origins or ethnic groups that serve as intermediaries in facilitating information exchange (Zaheer et al., 2009). As latecomers with limited international investment experience, Chinese MNEs are well known to deploy ethnic-based business and social networks to

overcome the institutional and informational barriers in international markets (Karreman et al., 2017). *Guanxi*, the Chinese version of social networks, is often characterized by informal interpersonal connections that are influenced by hierarchical Chinese cultural values and bonded with reciprocal expectations (Park & Luo, 2001).

However, leveraging the benefits of co-ethnic business and social networks to mitigate complex operational barriers abroad is only possible when network actors are spatially well embedded in foreign places (Karreman et al., 2017). In this context, two elements of the co-ethnic networks are of vital importance: firms with the same ethnic ownership that represent the co-ethnic business network, and ethnic communities that represent the co-ethnic social network. Bonded together by social capital, these firms and communities integrate into the host region's society and business environment, while preserving links with their ancestral home country (King, 2012), and thus become the key sources of host region knowledge and information (Stallkamp et al., 2018).

Co-locating with firms and communities offers several advantages for MNEs from the same country of origin. Within the co-ethnic network, market information about suitable business opportunities, as well as advice on cross-border business operations could easily circulate (Buckley et al., 2007; Burchardi et al., 2019). Co-location by country-of-origin also helps newcomers match buyers and suppliers and establish business partnerships, thus lowering the transaction cost of undertaking foreign investment (Rauch & Trindade, 2002). Moreover, the presence of co-ethnic networks helps enhance the legitimacy of certain location choices. Prior decisions and actions by other firms provide legitimization and information to a decision marked by uncertainty, especially when the uncertainty comes from a firm's lack of experience in a market (Henisz & Delios, 2001). The existence of co-ethnic firms and communities also indicate profitable investment opportunities, and it signals a friendly political and regulatory environment that favours foreign investments. By learning from other's foreign experience, MNEs reduce uncertainty surrounding foreign expansion, and will find it easier to tackle internal and external resistance (Guillén, 2002). Considering the potential benefits brought by locating in regions with co-ethnic firms and communities, it is expected that locations with the co-presence of Chinese business and social networks will become attractive destinations for Chinese investors.

2.3. Relationships between the agglomerations

One of the benefits arising from country-of-origin agglomeration is that, with the referral from locally embedded firms and migrants, newcomers can easily develop trust from local partners. In this sense, country-of-origin agglomeration might have a complementarity effect, that firms agglomerate with co-ethnic firms and communities are better able to tap into the potential industry spillovers. Through country-based business associations and informal social networks, co-ethnic firms and migrants could help latecomers develop partnerships with local suppliers, producers, and distributors (Miller et al., 2008). Such cooperation links allow MNEs to share complementary resources and commit to common goals (e.g., improving industry standards, research and development (R&D), common suppliers and consumer awareness) with local partners (Luo & Tung, 2007), thus benefit from industry agglomerations. Besides, leveraging co-ethnic business and social networks also augment new entrants' capabilities of assimilating the knowledge generated from industry agglomeration. Embedded in the transnational knowledge network, firms and migrants could help co-ethnic MNEs extract knowledge spillovers arising from industry concentration in favourable ways, reducing the frictions involved in accessing such spillovers (Hernandez, 2014).

By contrast, benefits arising from country-of-origin agglomeration could help MNEs business-wise, thus lowering the need to access local industry agglomerations. In other words, co-locating with firms and communities that originated from the same country also has the potential to offer MNEs access to specialized labour, inputs and knowledge spillovers. In this sense, country-of-origin agglomeration could have a substitution effect that offsets the benefits of industry agglomeration. First, the host region's local ethnic population provides a pool of skilled ethnic labour resources. Although hiring local staff helps mitigate operational complexities, to facilitate the management of local employees and address local authorities, Chinese MNEs often rely on local ethnic Chinese, who act as cultural and social bridges between Chinese managers and local personnel (Klossek et al., 2012). Given their bilingual skills and experience with both local and Chinese culture and work practices, Chinese communities represent a reliable source for this specific group of staff that are highly favoured by Chinese MNEs. Second, the large stock of Chinese firms represents potential business partners for entrants, that MNEs could benefit from the ethnically similar suppliers of both intermediate goods and factor services (Miller et al., 2008). Through co-ethnic firms and migrants, MNEs can also easily identify foreign partners and reconfigure dynamically to new locations (Teece et al., 1997), thus will be less driven by industry agglomerations in their location choices. Furthermore, shared cultural backgrounds and language help build trust within country-of-origin agglomerations, thereby promoting information sharing and knowledge transfer (Tan & Meyer, 2011). Formal business networks such as country-based business associations, as well as informal social ties, including personal or family relationships between expatriates in the local community, allow the transmission of strategic knowledge, investment experience, and business information (Berns et al., 2021; Tan & Meyer, 2011). The trustworthiness within ethnic networks facilitates overt knowledge sharing, and make it easier for newcomers to learn best practices (Miller

et al., 2008). In other words, country-of-origin agglomeration might be the prevailing driver of location choice, irrespective of the presence of strong industry agglomerations. This leads to two competing hypotheses:

Hypothesis 1a: For Chinese MNEs, co-locating with other Chinese firms and ethnic communities helps them leverage the benefits of industry agglomeration (complementarity).

Hypothesis 1b: For Chinese MNEs, co-locating with other Chinese firms and ethnic communities offsets the benefits of industry agglomeration (substitution).

2.4. Functional heterogeneity

The literature in economic geography has recently focused on the fragmentation of international activities of MNEs across business functions (Ascani et al., 2016). This stream of research has linked MNEs' location behaviour with the fragmentation of the production process into different functions (Defever, 2006). Business functions along the value chain differ in the degree of information and knowledge intensity, as well as their demand for factor inputs (Burger et al., 2013). Falling spatial transaction costs enable segmentation of the value chain, allowing MNEs to locate business activities in locations that best fit their specific strategic objectives and functional responsibilities (Castellani et al., 2022). The two kinds of agglomerations, in this sense, represent different typologies of strategic assets that fulfil the needs of specific business functions.

For production-related activities, such as manufacturing, the motivation to access specialized labour pools, suppliers, and customers, as well as acquire inter-firm corporations drives them to direct to industry agglomerations. Similarly, the distribution of R&D centres is mostly affected by the access to industrial clusters. Since the geographical concentration of innovative activity could generate more innovative output (Audretsch & Feldman, 1996), R&D activities benefit more from industry agglomerations through knowledge spillovers.

By contrast, sophisticated service functions, such as headquarters and business services, requires well-educated and highly skilled labours, whereas sales, marketing and logistics functions, rely on intensive experience and social networks to expand their business, identify and satisfy the need of local customers (Karreman et al., 2017). As a well-integrated migrant population, co-ethnic firms and communities represent potential customer groups, and could provide newcomers with such explicit knowledge, hence catering to the need of service-related functions. Furthermore, many MNEs from emerging markets lack professional knowledge in international accounting, taxation, and auditing, as well as in the host market's business law and judicial system. Although they could hire indigenous talents to handle such functions, many activities involve planning and coordination interactively with the head office. To mitigate these challenges, they need to rely on co-ethnic business and social

networks to find suitable employees, thus filling the void in professional knowledge and performing coordination with the other subsidiaries (Luo & Tung, 2007). In such cases, the potential benefits arising from country-of-origin agglomeration outweigh the attraction of industry clusters. Therefore, it is expected that the location choices of MNEs focusing on these functions are primarily driven by the motivation to agglomerate with firms and communities that have the same country of origin.

Hypothesis 2: The relations of industry and country-of-origin agglomerations with location choices of Chinese MNEs are heterogeneous across business functions, with a stronger substitution effect for functions more dependent on local market knowledge.

2.5. Institutional environment

Co-ethnic business and social networks help mitigate the institutional and informational obstacles in international markets, hence their relative importance differs in different institutional environments. High-quality institutions are able to provide support services to foreign firms, while low-quality institutions imply hazards of expropriation and transactional uncertainty (McEvily & Zaheer, 1999). When the local institution framework only provides weak protection for market transactions and information exchange, foreign investors perceive high uncertainty, and will have lower trust in public information and local business partners. In this case, inter-firm relationships rely more on trust (Tan & Meyer, 2011), and MNEs may leverage personal relationships and tap into co-ethnic business and social networks to seek information and trustworthy source of knowledge. Within country-of-origin agglomerations, shared cultural backgrounds and languages cultivate trust, thereby promoting the sharing of sensitive business information, such as methods of dealing with unstable institutions.

In the absence of formal and reliable market-supporting institutions, informal mechanisms that fill these voids will emerge (Kim & Song, 2017). Co-ethnic communities facilitate market transactions through non-market mechanisms, such as by facilitating the establishment of business relationships and providing access to qualified raw materials, which can be perceived as particularly beneficial for foreign MNEs. As such, co-ethnic networks represent an important and enduring informal mechanism for addressing market inefficiencies when MNEs face significant institutional uncertainty (Stallkamp et al., 2018). Therefore, we expect that firms investing in regions with weak institution environments will have a greater tendency to co-locate with firms and communities from the same country-of-origin, thus leading to the following hypothesis:

Hypothesis 3: For Chinese MNEs, the positive effect of country-of-origin agglomerations is more prominent in regions with weak institutions.

3. DATA AND METHODS

3.1. Data description

We use data on Chinese firms' greenfield investments in European NUTS-2 regions. Greenfield investment refers to the international expansion of firms, and it involves the greenfield establishment of subsidiaries and facilities within target markets. Unlike mergers and acquisitions, greenfield investments are not conditioned by previous capital instalments. Hence, this typology of firm cross-border involvement is particularly appropriate to study the location decision of MNEs (e.g., Ascani et al., 2016; Defever, 2006).

The sample includes 1307 investment projects from mainland China to 176 NUTS-2 regions within 25 European countries for the period 2009–19.[1] The pooled dataset is based on a combination of the occurrence (or non-occurrence) of a greenfield investment project in each region, and the potential sample size would be 230,032 (1307 new greenfield investments*176 regions). However, due to missing values on regional characteristic measurements, the pooled data contain 198,328 observations. The greenfield FDI data were derived from fDi Markets, an online database that monitors cross-border greenfield investments worldwide. In fDi Markets, information on the foreign investment projects is collected by *Financial Times* analysts through a variety of sources, including thousands of media sources, industry organizations and investment agencies, and data purchased from market research and publication companies. Moreover, each identified project is cross-referenced against multiple sources, with a primary focus on direct company sources. For each project, the database provides detailed information on the investor, destination area, and other information including the year, the belonging sectors, and business functions. Although the identification of projects is based on corporate announcements, this database provides relevant information for examining the location decisions of MNEs. It has been used by international organizations as a source for tracking multinational investment activities (United Nations Conference on Trade and Development (UNCTAD), 2020), and has been widely applied in studies investigating the location choices of MNEs (e.g., Anderson & Sutherland, 2015; Ascani et al., 2016; Castellani & Pieri, 2013; Crescenzi et al., 2014).

To capture the socio-economic characteristic of the destination regions, we originally combine data from several different sources, including Eurostat, the World Bank, the World Input–Output Database (WIOD), the Quality of Government Institute, and the European Patent Office's Worldwide Patent Statistical Database (PATSTAT).

3.2. Measures

Our dependent variable is the location choice of a new Chinese foreign investment in European regions. More specifically, this is captured by a dummy variable Y_{ij},

equal to 1 when a region j receives a greenfield investment from Chinese firm i; 0 otherwise. Figure 2 presents the distribution of Chinese greenfield investments across European regions. As shown, Chinese investment projects are highly clustered in regions around Düsseldorf, London, Frankfurt and Paris.

To measure intra-industry agglomeration in European regions, we exploit the share of employment in each industry in the regional employment (Glaeser et al., 1992). According to Alcácer and Chung (2007), such measurement indicates the level of specialization in each economic sector, and thus has been widely used to proxy agglomeration economies. Similarly, inter-industry agglomeration is measured by the share of employment from other sectors with vertical linkages, and is constructed using the WIOD tables for European countries (Timmer et al., 2015). Following Javorcik (2004), two proxy variables are calculated: the proportion of input purchased from upstream sectors, and the proportion of output supplied to downstream sectors. Summing these proportions multiplied by the corresponding share of employed workers in the local labour force, the resulting index captures the existence of specialized suppliers and customers.

As for country-of-origin agglomeration, the Chinese business network is proxied by the number of prior investments of Chinese MNEs in each region. For each project and region, the number is calculated by counting all the previous Chinese investment projects from fDi markets. To determine the Chinese social network dummy, we perform a two-step procedure. First, following Karreman et al. (2017), we examine the distribution of overseas Chinese communities by scrutinizing the Bilateral Migration Matrix provided by the World Bank, selecting countries with Greater Chinese migrant stock larger than 10,000. Seven countries stand out from the process, including Germany, France and the UK. Next, by combining information from national statistical offices, news coverage, and the ethnographies of Chinatowns, and cross-examining the data with previous studies focusing on the distribution of Chinese migrants across EU countries (e.g., Giese, 2003; Guerassimoff, 2003), we construct a Chinese social network dummy to flag regions with large Chinese communities in the early 2000s. Such procedure yields a list of 40 European NUTS-2 regions with a significant Chinese community, as presented in Table A1 in Appendix A in the supplemental data online.

In line with the international business and economic geography literature on firms' location choices, this paper also accounts for variables that might confound the relationship between Chinese greenfield investment and the agglomeration variables (Ascani et al., 2016; Defever, 2006). First, demand is considered as one of the main factors that attract Chinese investors into European markets. Internal demand reflects the market size of the destination region, and it is measured by the regional gross domestic product (GDP). External demand is captured by regional market accessibility, while both the distance to the closest port and major airport are included. Regarding the supply factors, this paper controls for characteristics related to
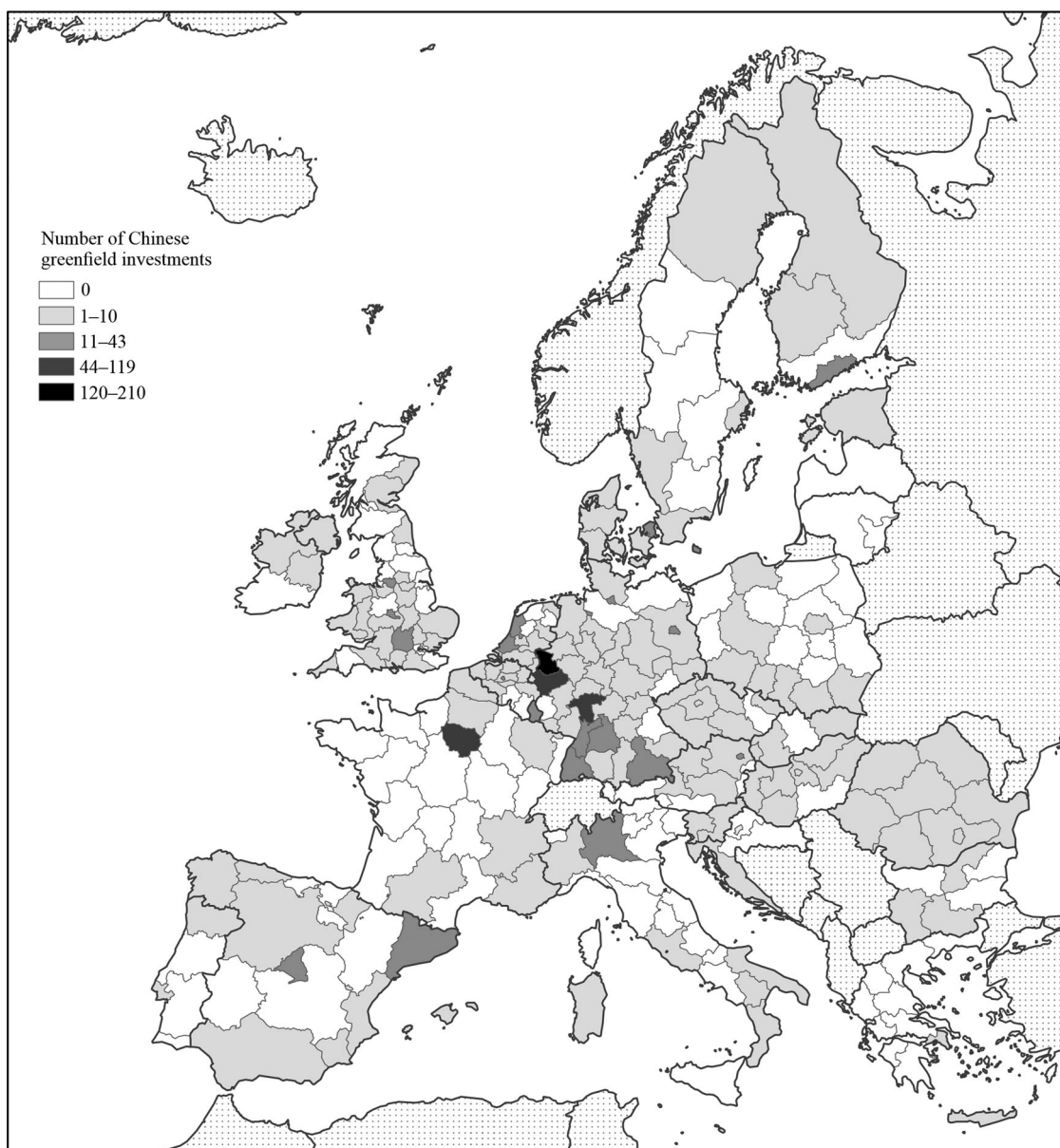
Figure 2. Number of Chinese greenfield investments in European regions, 2009–19.

local labour markets, including long-term unemployment rate, wage costs, and education level. The cost of capital is measured by the corporate tax rate at the national level. In addition, we include population density to control for the importance of cities in generating externalities, and the number of patent applications to measure regional technological intensity. The quality of local institutions is measured through the quality of government indicators at the regional level (Charron et al., 2014, 2015, 2019), and country dummies are also included as control variables. For each of the control variables, we include the value in the year before each investment project was made.

Table 1 provides the definitions and sources of all the variables employed in the analysis. All the variables are measured at the NUTS-2 regional level, except for the corporate tax rate and the wage cost, which are measured at the country level.[2] For the input–output, wage, and

government quality data that are only available for part of the period, we impute the missing values with data from the nearest available year. For all the explanatory variables, except for the Chinese social network dummy, we standardize the measurements by subtracting their mean values and dividing them by standard deviations. To examine potential multicollinearity problems, Table 2 reports descriptive statistics and pairwise correlations between variables. It should be noted that there could be some overlaps between the measures for Chinese business network and industry agglomeration. However, as Table 2 indicates, weak correlations exist between these measurements, suggesting that they are able to capture different kinds of regional characteristics.

Unobserved location-specific characteristics of the host regions (omitted variables) may raise some endogeneity concerns. To address this potential bias, we cross-

Table 1. Variable definitions and sources.

Variable	Description	Years	Source
Dependent variable			
Location choice	Dummy indicating location choices among 176 destination regions	2009–19	fDi markets
Independent variables			
Industry agglomeration			
Intra-industry agglomeration	Share of same industry employment in regional employment	2008–18	Eurostat
Inter-industry agglomeration	Share of vertical-related industry employment in regional employment	2008–14	WIOD, Eurostat
Country-of-origin agglomeration			
Chinese business network	Number of prior investments of other Chinese multinational enterprises (MNEs) in the same region	2008–18	fDi markets
Chinese social network	Dummy indicating the presence of large local Chinese communities in the early 2000s		World Bank; National Statistical Office
Control variables			
Market size	Gross domestic product (GDP) of the destination region	2008–18	Eurostat
Accessibility by air	Distance to the closest major airport (with more than 1.5 million passengers annually)		Eurostat
Distance to port	Distance to the closest port		Eurostat
Unemployment rate	Regional unemployment rate	2008–18	Eurostat
Wage costs	Average annual wage per worker (€)	2008, 2012, 2016	Eurostat
Education level	Share of the workforce with a tertiary degree	2008–18	Eurostat
Corporate tax rate	Statutory corporate tax rate	2008–18	Eurostat
Population density	Population density of the destination region	2008–18	Eurostat
Technological intensity	Number of patent applications to the European Patent Office (EPO) (by region of inventor location)	2008–18	PATSTAT
Institutional quality	Indicator of government quality	2010, 2013, 2017	Quality of Government Institute

examined the historic presence of a Chinese community in all the regions presented in Table A1 in Appendix A in the supplemental data online. As indicated by Christiansen (2005) and Pieke and Speelman (2017), Chinese communities in Europe in the early 1900s mainly consisted of sailors and traders, and their major settlements are the north-western European port cities of Cardiff, London, Liverpool, Rotterdam, Amsterdam, Antwerp and Hamburg. Furthermore, Skeldon (1996) reports that Paris, Milan, Berlin, Hamburg, Amsterdam, Rotterdam and Marseilles were the main communities of small traders. As a result, early Chinese migrants are highly clustered in port and major cities across European countries. Since we include distance to port, market size and population density as control variables, our controls are able to account for the regional characteristics that may lead to biased results.

3.3. Methodology

The methodological approach of this paper is based on the estimation of a conditional logit (CL) model widely applied in studies on location choices (e.g., Lavoratori et al., 2020; Li et al., 2018). Each investment project's location choice is considered to be the outcome of a discrete choice among available alternatives (McFadden, 1973). The estimation relies on expanding the sample with all possible alternatives, hence the total number of observations will be the product of investment projects and regions (1307*176).[3] The model assumes that firms choose locations with the greatest value, and the value depends on regional characteristics:

$$V_{ij} = \alpha X_{ij} + \beta Z_{ij} + \gamma C_{ij} + e_{ij}$$

where V_{ij} represents the expected value of firm i in region j, X_{ij} and Z_{ij} are the industry agglomeration and country-

Table 2. Descriptive statistics and pairwise correlations (N = 198,328).

	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1 Location choice	0.007	0.081	1														
2 Intra-industry agglomeration	0.021	0.030	0.052	1													
3 Inter-industry agglomeration	0.092	0.034	0.079	0.198	1												
4 Chinese business network	5.269	16.075	0.177	0.141	0.282	1											
5 Chinese social network	0.191	0.393	0.101	0.115	0.139	0.402	1										
6 ln Market size	10.673	0.870	0.099	0.137	0.313	0.405	0.487	1									
7 Accessibility by air	24.836	39.145	−0.036	−0.082	−0.257	−0.150	−0.197	−0.459	1								
8 Distance to port	24.002	47.354	−0.021	−0.021	−0.131	−0.092	−0.043	−0.195	0.348	1							
9 Unemployment rate	0.049	0.013	−0.016	−0.120	−0.270	−0.086	−0.162	−0.047	−0.043	−0.046	1						
10 ln Wage costs	10.220	0.621	0.033	0.077	0.247	0.134	0.246	0.582	−0.450	−0.397	−0.123	1					
11 Education level	0.299	0.101	0.044	0.161	0.485	0.176	0.067	0.419	−0.356	−0.219	−0.111	0.480	1				
12 Corporate tax rate	24.865	6.208	0.032	0.006	0.018	0.123	0.261	0.483	−0.337	−0.255	0.165	0.620	0.080	1			
13 Population density	490.088	1078.284	0.078	0.149	0.450	0.290	0.266	0.296	−0.186	−0.065	0.029	0.143	0.366	0.056	1		
14 ln Technological intensity	7.795	3.124	0.093	0.144	0.333	0.349	0.465	0.814	−0.457	−0.249	−0.194	0.702	0.485	0.519	0.237	1	
15 Institutional quality	0.302	0.963	0.029	0.094	0.277	0.109	0.202	0.446	−0.317	−0.294	−0.361	0.839	0.503	0.392	0.090	0.659	1

of-origin agglomeration measures for each i in region j, respectively; C_{ij} denotes the control characteristics of region j. Assuming that e_{ij} are independent and identically distributed residuals with the Type I extreme value distribution, the probability that region j is chosen by firm i is:

$$P(Y_{ij} = 1) = P(V_{ij} > V_{ik}\text{ for all }k \neq j)$$
$$= \frac{\exp(\alpha X_{ij} + \beta Z_{ij} + \gamma C_{ij})}{\sum_k exp(\alpha X_{ik} + \beta Z_{ik} + \gamma C_{ik})}$$

where $k = 1$ to m are all regions chosen by at least one firm during 2009 and 2019. The function can be estimated by using the maximum likelihood method.

We include interaction terms to examine the relationship between industry and country-of-origin agglomerations. To test the heterogeneity of our results, the CL model is run by splitting up the sample into subgroups. Following recent literature in economic geography that focuses on the fragmentation of international activities of MNEs across business functions (e.g., Ascani et al., 2016; Crescenzi et al., 2014), we define four subgroups based on the following business functions: headquarters and business services (HQ); innovative activities (INNO); sales, logistics, and distribution (SALES, LOG&DIST); manufacturing-related activities (MANU), and the number of investment projects for each function is 298, 131, 726 and 152, respectively. Table A2 in Appendix A in the supplemental data online provides the classification of business functions.

4. RESULTS

4.1. Baseline results

Table 3 provides the results of the conditional (fixed effects) logit model, with interaction terms to test the hypotheses regarding the relationship between two kinds of agglomerations (Hypotheses 1).[4] Columns 1–4 include the interaction effects separately, while column 5 includes all of them. The interaction terms in columns 1–4 are negative. In column 5, two out of four interaction terms are negative and significant. Overall, the evidence supports Hypothesis 1b instead of Hypothesis 1a. These findings suggest a substitution effect of country-of-origin agglomeration: co-ethnic networks can lower the attraction of industry agglomerations. This emphasizes the importance of co-ethnic networks in shaping the location choices of Chinese MNEs.

Furthermore, as column 5 shows, the presence of Chinese social networks appears to offset the attraction of intra-industry agglomeration, while Chinese business networks have a more prominent substitution effect for inter-industry agglomeration. This aligns with the literature that identifies co-ethnic communities as sources for bilingual employees that help Chinese MNEs mitigate industry-specific operational complexities (Karreman et al., 2017). Chinese MNEs could rely on the ethnic population in the host region to facilitate the recruitment process,

hence reducing the need for possible labour pooling effects brought by intra-industry agglomerations. Similarly, Chinese business networks could help entrants identify ethnically similar suppliers and customers, so that newcomers do not need to co-locate with domestic firms to access the potential benefits of inter-industry agglomeration.

As a result, the existence of Chinese business networks in the host region substitutes the benefits of inter-industry agglomeration.[5]

As for control variables, column 5 suggests that market size has a statistically significant relation with Chinese MNEs' location choices. With regard to the supply side,

Table 3. Chinese multinational enterprises' (MNE) location choice in NUTS-2 regions – with interaction terms.

	(1)	(2)	(3)	(4)	(5)
Intra-industry agglomeration	0.263***	0.346***	0.131***	0.121***	0.344***
	(0.042)	(0.056)	(0.021)	(0.020)	(0.055)
Inter-industry agglomeration	0.174***	0.191***	0.365***	0.346***	0.332***
	(0.042)	(0.043)	(0.052)	(0.071)	(0.073)
Chinese business network	0.166***	0.155***	0.198***	0.156***	0.201***
	(0.014)	(0.014)	(0.015)	(0.014)	(0.016)
Chinese social network	0.619***	0.626***	0.646***	0.668***	0.638***
	(0.115)	(0.114)	(0.116)	(0.115)	(0.116)
Intra-industry agglomeration*Chinese business network	−0.030***				−0.081
	(0.007)				(0.137)
Intra-industry agglomeration*Chinese social network		−0.229***			−0.167***
		(0.051)			(0.060)
Inter-industry agglomeration*Chinese business network			−0.053***		−0.049***
			(0.008)		(0.010)
Inter-industry agglomeration*Chinese social network				−0.180***	0.027
				(0.063)	(0.072)
ln Market size	0.863***	0.878***	0.775***	0.875***	0.776***
	(0.123)	(0.123)	(0.122)	(0.124)	(0.123)
Accessibility by air	−0.059	−0.050	−0.012	−0.037	−0.008
	(0.078)	(0.078)	(0.077)	(0.079)	(0.077)
Distance to port	−0.051	−0.053	−0.044	−0.053	−0.044
	(0.053)	(0.053)	(0.052)	(0.053)	(0.052)
Unemployment rate	0.371***	0.361***	0.415***	0.378***	0.418***
	(0.070)	(0.070)	(0.071)	(0.072)	(0.072)
ln Wage costs	−3.297***	−3.316***	−3.476***	−3.357***	−3.490***
	(0.936)	(0.930)	(0.956)	(0.935)	(0.952)
Education level	−0.024	−0.045	−0.003	−0.046	−0.013
	(0.074)	(0.074)	(0.073)	(0.075)	(0.074)
Corporate tax rate	−0.544***	−0.519***	−0.602***	−0.539***	−0.599***
	(0.132)	(0.132)	(0.135)	(0.132)	(0.135)
Population density	−0.125***	−0.125***	−0.104***	−0.114***	−0.106***
	(0.037)	(0.037)	(0.036)	(0.037)	(0.036)
ln Technological intensity	0.458***	0.460***	0.457***	0.449***	0.445***
	(0.104)	(0.105)	(0.104)	(0.105)	(0.105)
Institutional quality	−0.177	−0.176	−0.086	−0.124	−0.081
	(0.134)	(0.134)	(0.134)	(0.136)	(0.137)
Number of observations	198,328	198,328	198,328	198,328	198,328
Pseudo-R^2	0.236	0.235	0.238	0.235	0.239
Log-likelihood	−5008.140	−5011.863	−4996.205	−5017.404	−4987.045

Note: Robust standard errors are shown in parentheses. *$p < 0.10$, **$p < 0.05$, ***$p < 0.01$. ln, natural logarithm.
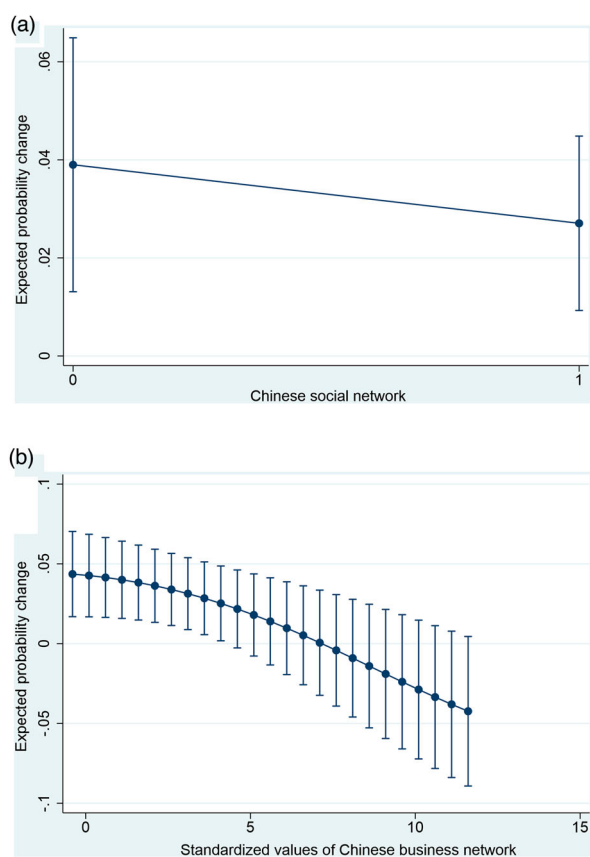
Figure 3. Substitution effects of country-of-origin agglomerations: (a) expected probability of the effect of intra-industry agglomeration on location choices across regions with/without large Chinese communities; and (b) expected probability change of the effect of inter-industry agglomeration on location choices across regions with different size of Chinese business networks.

both local labour market characteristics (i.e., unemployment rate and wage costs) and the corporate tax rate affect the location choice of Chinese MNEs. Population density and technological intensity also show a significant effect on the probability of Chinese investments.[6]

Since it is difficult to infer the shape of the interaction effect in non-linear models, Figure 3 presents visualizations of the marginal effects for the statistically significant interaction terms in the full model. The downward-sloping shapes of marginal effects visualize the substitution effect of country-of-origin agglomeration factors. For instance, Figure 3(a) suggests that while intra-industry agglomeration has a positive effect on the location choices of Chinese MNEs, such an effect is more prominent in regions without the presence of large Chinese communities. Similarly, Figure 3(b) indicates that the positive effect of inter-industry agglomeration is decreasing, as the size of the Chinese business network grows.

4.2. Heterogeneous location choices across business functions

We further examine the relationship between two kinds of agglomerations by re-estimating the complete

specification separately for investments across different types of business functions. As Table 4 shows, while innovative activities and manufacturing are positively associated with intra-industry agglomeration and Chinese business network, respectively, the substitution effect of country-of-origin agglomeration only stands for service-related functions. Furthermore, apart from previous results that show a general substitution effect of country-of-origin agglomeration, estimations per business function suggest that the effect only holds for Chinese business network. In particular, for sales, logistics and distribution functions, Chinese business network substitutes the benefits of both forms of industry agglomerations; while for headquarters and business services, it only offsets the attraction of inter-industry agglomeration. In general, results provide evidence for Hypothesis 2, which states that substitution effect holds especially for functions that are more dependent on local market knowledge.

Country-of-origin agglomeration is associated with market-related strategic assets, as the existence of Chinese business network signal local market information that facilitates the operation of Chinese MNEs (Tan & Meyer, 2011). For service-related functions, the importance of country-of-origin agglomeration lies in their motivation to enhance market-related capabilities and access explicit knowledge on local language, business environment and customer preference (Karreman et al., 2017). Especially when targeting local markets requires MNEs to overcome cultural and institutional barriers (Goerzen et al., 2013), Chinese business network could serve as useful resources that help entrants build marketing channels and expand sales in foreign markets. As exemplified by Berns et al. (2021), early entrants in the foreign market often have a strong desire to connect with home-country service providers, due to language and cultural barriers. Therefore, for service-related functions, country-of-origin agglomeration, in particular the presence of Chinese business network, becomes the prominent driver of location decisions, substituting the potential benefits arising from industry agglomerations.

Besides, results on control variables further indicate the heterogeneous location choices of business functions. Innovative activities show a preference for regions with large market size and high technological intensity, while manufacturing activities are more responsive to local unemployment rate and corporate tax rate. The location choices of service-related functions are significantly affected by market size and local labour market characteristics.

4.3. The role of institutional environments

In Table 5, we interact country-of-origin agglomeration factors with institutional quality measurement to test Hypothesis 3. Columns 1 and 2 include the interaction effects separately, and column 3 includes both terms. The interaction terms between Chinese business network and institutional quality in columns 1 and 3 are statistically negative and significant. Overall, the evidence supports

Table 4. Chinese multinational enterprises' (MNE) location choice in NUTS-2 regions – functional heterogeneity.

	(1) HQ	(2) INNO	(3) SALES, LOG&DIST	(4) MANU
Intra-industry agglomeration	0.148	0.454**	0.379***	0.370*
	(0.116)	(0.187)	(0.088)	(0.212)
Inter-industry agglomeration	0.430**	0.011	0.494***	−0.061
	(0.181)	(0.174)	(0.125)	(0.160)
Chinese business network	0.123***	0.027	0.237***	0.172***
	(0.041)	(0.062)	(0.020)	(0.056)
Chinese social network	1.157***	0.154	0.718***	0.197
	(0.309)	(0.362)	(0.167)	(0.301)
Intra-industry agglomeration*Chinese business network	−0.001	−0.017	−0.014*	−0.008
	(0.012)	(0.043)	(0.008)	(0.037)
Intra-industry agglomeration*Chinese social network	−0.105	−0.180	−0.126	0.065
	(0.114)	(0.251)	(0.084)	(0.268)
Inter-industry agglomeration*Chinese business network	−0.033**	0.012	−0.055***	−0.027
	(0.016)	(0.037)	(0.012)	(0.049)
Inter-industry agglomeration*Chinese social network	−0.207	−0.076	−0.122	0.183
	(0.179)	(0.187)	(0.110)	(0.270)
ln Market size	1.020***	0.730**	1.084***	0.091
	(0.331)	(0.371)	(0.186)	(0.234)
Accessibility by air	−0.346	−0.082	−0.181	0.023
	(0.267)	(0.186)	(0.174)	(0.114)
Distance to port	−0.117	−0.024	−0.124	0.020
	(0.112)	(0.139)	(0.088)	(0.097)
Unemployment rate	0.395***	0.077	0.356***	0.374**
	(0.152)	(0.239)	(0.104)	(0.177)
ln Wage costs	−3.880*	−2.667	−6.213**	−2.235
	(2.154)	(2.815)	(2.673)	(1.434)
Education level	0.360**	0.097	−0.107	−0.033
	(0.176)	(0.246)	(0.101)	(0.216)
Corporate tax rate	−0.158	−0.281	−0.743***	−0.770**
	(0.246)	(0.301)	(0.230)	(0.315)
Population density	−0.064	−0.066	−0.131**	−0.021
	(0.076)	(0.101)	(0.054)	(0.115)
ln Technological intensity	0.477*	0.644**	0.244	0.231
	(0.276)	(0.274)	(0.152)	(0.261)
Institutional quality	−0.082	−0.481	−0.045	0.009
	(0.351)	(0.443)	(0.184)	(0.328)
Number of observations	47,423	19,952	108,367	22,586
Pseudo R^2	0.317	0.162	0.319	0.089
Log-likelihood	−1030.042	−550.626	−2470.281	−691.433

Note: Robust standard errors are shown in parentheses. *$p < 0.10$, **$p < 0.05$, ***$p < 0.01$. ln, natural logarithm.

Hypothesis 3, which claims that the importance of country-of-origin agglomeration is more prevailing in a weak institutional context.

When host regions are characterized by weak institutions, informal relationships are a crucial part of doing business (Stallkamp et al., 2018). To cope with the unstable institutions, firms may leverage co-ethnic business networks to reduce uncertainty and access key resources. Within Chinese business networks, ethnic ties and shared socio-cultural background foster trust, thereby substituting poor institutions and facilitating foreign operations.

Table 5. Chinese multinational enterprises' (MNE) location choice in NUTS-2 regions – with institutional quality as interaction terms.

	(1)	(2)	(3)
Intra-industry agglomeration	0.115***	0.114***	0.115***
	(0.019)	(0.019)	(0.019)
Inter-industry agglomeration	0.184***	0.182***	0.181***
	(0.042)	(0.042)	(0.042)
Chinese business network	0.241***	0.153***	0.253***
	(0.034)	(0.014)	(0.037)
Chinese social network	0.623***	0.645***	0.576***
	(0.115)	(0.127)	(0.131)
Institutional quality*Chinese business network	−0.157***		−0.179***
	(0.057)		(0.063)
Institutional quality*Chinese social network		−0.056	0.123
		(0.142)	(0.154)
ln Market size	0.884***	0.877***	0.890***
	(0.124)	(0.123)	(0.124)
Accessibility by air	−0.050	−0.064	−0.044
	(0.079)	(0.078)	(0.079)
Distance to port	−0.048	−0.052	−0.049
	(0.052)	(0.053)	(0.053)
Unemployment rate	0.375***	0.360***	0.361***
	(0.070)	(0.073)	(0.073)
ln Wage costs	−3.024***	−3.270***	−2.986***
	(0.901)	(0.930)	(0.900)
Education level	0.009	−0.029	0.013
	(0.075)	(0.075)	(0.076)
Corporate tax rate	−0.504***	−0.515***	−0.513***
	(0.130)	(0.133)	(0.131)
Population density	−0.130***	−0.125***	−0.130***
	(0.037)	(0.037)	(0.037)
ln Technological intensity	0.450***	0.477***	0.447***
	(0.105)	(0.104)	(0.106)
Institutional quality	−0.098	−0.167	−0.152
	(0.140)	(0.158)	(0.159)
Number of observations	198,328	198,328	198,328
Pseudo-R^2	0.235	0.234	0.235
Log-likelihood	−5017.468	−5021.490	−5017.117

Note: Robust standard errors are shown in parentheses. *$p < 0.10$, **$p < 0.05$, ***$p < 0.01$. ln, natural logarithm.

5. CONCLUSIONS

This paper has offered an original investigation of Chinese MNEs' investment location choices in European regions, focusing on the combined role of industry and country-of-origin agglomerations. At the regional level, both kinds of agglomeration appear as key location determinants for this type of investment. Theoretically, we developed a conceptual framework that combines the insights from research on industry spillovers and co-ethnic networks, determinants of MNEs' location decisions. An innovative element in our framework is that we suggested two alternative combinations of the different agglomeration effects, namely complementarity or substitution, and

we innovatively explore these combinations across different value chain activities. We also examined the relative importance of country-of-origin agglomeration in different institutional environments.

Employing data on 1307 greenfield investment projects of Chinese MNEs in European NUTS-2 regions over the period 2009–19, we find that while both industry and country-of-origin agglomerations matter for the location choices of these firms, country-of-origin agglomeration substitutes the potential benefits offered by industry agglomeration. An explanation for this result is that co-locating with other Chinese firms and communities provides Chinese newcomers with business information that helps them achieve commercial success, thus

lowering the attraction of regions with potential industry spillovers. This is an original finding in the strand of literature on the location choices of MNEs, suggesting that in the presence of ethnic-based linkages the benefits associated with traditional intra-industry business-to-business interactions can be less relevant in shaping the location patterns of Chinese MNEs. Within the co-ethnic networks, results also signal the difference between the two elements, such that the Chinese social network offsets the benefits of intra-industry agglomeration, while the Chinese business network has a more prominent substitution on inter-industry agglomeration. Besides, our analysis of projects by business functions, revealed important differences in the drivers of location choice, which can be related to the different roles played by each agglomeration type in response to the requirements of different typologies of business operations in terms of strategic assets. Specifically, the substitution effects of country-of-origin agglomeration hold for business operations based on market-related capabilities, such as service-related functions. In addition, by extending the analysis to different institutional environments, our results suggest that the importance of country-of-origin agglomeration is more prevailing in a weak institutional context.

This paper extends the work of Tan and Meyer (2011), who focus on the co-location of firms operating in the same sector and firms from the same country of origin as the measurement for industry and country-of-origin agglomerations, respectively. We also draw attention to inter-industry agglomeration, particularly relevant for sale and logistics investments, and we recognize co-ethnic communities, next to business communities, which indeed turn out to be strongly related to location choice of Chinese investment. By focusing on regions as units of analysis, this paper provides empirical evidence that echoes the recent calls to scale down investigations of MNE strategies to the subnational level (Hutzschenreuter et al., 2020; Stallkamp et al., 2018). As mentioned by Beugelsdijk and Mudambi (2014), most research focuses on countries as units of analysis and neglects critical phenomena that occur at more fine-grained scales. This paper addresses this concern by recognizing regions as spatial dimensions of analysis, thus accounting for within-country variations.

These findings deliver important implications for policy and managerial practices. On one hand, our study contributes to the policy debate on the attractiveness of places to MNEs. For MNEs from emerging markets, such as China, strategic asset seeking motivations are associated with the aim to learn by gaining specific industry experience. Policymakers are typically aware of the importance of strong industrial clusters, but they tend to underestimate the importance of country-of-origin agglomeration. Our study suggests that Chinese investors' decisions strongly relate to the presence of Chinese communities and firms. This has two important implications. First, regions that welcomed Chinese investment early might have an advantage in attracting further investment. Second, our results on substitution effects between industry and co-ethnic agglomerations suggest that Chinese companies and communities might develop as independent 'clusters-within-clusters'. Such a process might lead to tensions among local and Chinese actors and ultimately represent a missed opportunity for regional knowledge exchange. On the other hand, our results also have implications for MNE executives concerned with foreign market entry decisions. Chinese managers with the incentive to establish European subsidiaries could consider positioning themselves in industrial clusters where they can leverage co-ethnic networks. By underlining the functional heterogeneity in firms' location choices, our results also imply that MNE executives could benefit from making investment decisions based on the nature of their business activities.

We envision several avenues for further research to address some of the limitations of our analysis. First, following the recent acknowledgement from the international business literature that emerging economies are not a homogenous category, we should stress that our findings only concern Chinese firms and cannot be read as one-size-fits-all claims for all MNEs from emerging economies. Future research could replicate our analysis by investigating whether agglomerations matter for MNEs from other selected emerging economies. Second, although shares of sectoral employment are widely used to capture industrial agglomerations (Alcácer & Chung, 2007), the lack of direct measurement of knowledge spillovers is a well-known limitation of these measures. Further research could capture industry agglomerations by means of other measurements, such as the number of companies operating in a certain sector and the extent to which they collaborate locally. Likewise, due to data limitations, we could only implement a dummy variable to measure Chinese social networks. Although our measurements are able to capture the existence of large Chinese communities, we are unable to test whether the magnitude of the positive effects generated by Chinese social networks depends on the size of local Chinese communities. Further research could proxy the Chinese social network by other means, such as the number of Chinese restaurants in each region. Third, although this study shed some light on the heterogeneity of location choices across business functions, our focus was on the effect of industry and country-of-origin agglomerations. Drawing on previous studies that examine the geographical concentration of headquarters (Bel & Fageda, 2007) and the intra-firm co-location behaviour of manufacturing activities (Lavoratori et al., 2020), future research could further unpack the distinct location behaviour of MNEs along the value chains by integrating elements such as functional and intra-firm agglomerations. Finally, the results of this paper highlight the importance of ethnic links in shaping the location choices of Chinese MNEs. While such country-of-origin agglomeration could be favourable for MNEs, the substitution effect implies that Chinese MNEs may operate in 'enclaves' and lack interactions with local firms. Hence, a key issue for future research is to explore the implications for host regions. In a context where policymakers aim to attract foreign investment to boost regional economic development, it is crucial to understand the actual effects that it brings to the host economy. Further studies could investigate how Chinese MNEs interact with

other local economic actors and integrate into the host regions, for instance by means of in-depth case studies.

DISCLOSURE STATEMENT

No potential conflict of interest was reported by the authors.

NOTES

1. EU-27, plus the UK. Malta, Latvia and Lithuania were removed due to missing values.
2. With the exception of Belgium and Germany (only available at the NUTS-1 level), the indicator of government quality is available at the NUTS-2 level.
3. Due to missing values on regional characteristic measurements, the pooled data contain 198,328 observations.
4. We perform a step-wise regression to test the sensitivity of the estimates to the model specification. As Table A3 in Appendix A in the supplemental data online shows, when variables are gradually introduced, the significance of relevant variables remains stable.
5. We would like to clarify that the effect is generated by the agglomeration of Chinese investors, but not by the general international openness of the region. As Table A4 in Appendix A in the supplemental data online shows, after controlling for the number of FDI projects in each region, our findings remain stable.
6. Given that country-level factors might also play a crucial role in shaping the location choices of MNEs, following Crescenzi et al. (2014, 2016), we explore the nested logit model (NLM) as an alternative empirical strategy, which relaxes the assumption of independence of irrelevant alternatives (IIA). As Table A5 in Appendix A in the supplemental data online shows, our key results remain unchanged in the NLM specification.

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