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The multinational enterprise and the localization of its functions: the case of CNH Industrial

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INTRODUCTION

In a world which is becoming increasingly globalized, and which is going through profound economic changes, *multinational enterprises* (MNEs) have certainly taken a leading role. These footloose global players are capable of making more than entire nations (Green, 2016), and governments seek to attract their direct investments with the expectation that they will create jobs and benefit local firms, ultimately contributing to the creation of national wealth. As it is well known, however, their behavior is not always flawless, and many observers are raising concerns about their excessive competitive power, and their long-run impact on the economies and on the environment of the countries they decide to invest in.

Leaving this mixed feelings aside, it is anyway undeniable that "MNEs are a fundamental feature of modern economies" (Barba Navaretti & Venables, 2004), and a deeper analysis of their nature and of how they operate is certainly worth the effort. Many scholars have already treated this subject in different times and under different perspectives, and the body of work on MNEs is surely impressive. Therefore, for the sake of clarity, it becomes compelling to state the three main questions this thesis will try to give an answer to: 1) why do firms choose to become MNEs? 2) How do MNEs expand their operations? 3) Where do MNEs choose to locate their activities and why?

In order to answer these questions, this thesis will be organized in the following way. The first chapter will move from a definition of what MNEs are and of what their history is, through an analysis of the motives pushing firms to become multinational, to the identification of the impact that such MNEs have on the countries in which they are present. The second chapter will then delve into the process that MNEs follow when they want to either increase in size, or to modify the spatial distribution of their activities, explaining the motivations and the consequences of their behavior. Finally, the third

chapter will be concerned with MNEs' decisions on the localization of functions (in particular, manufacturing and R&D).

These chapters together will represent the theoretical foundations on which the fourth and last chapter will be built. The focus will shift from MNEs in general to just one them, CNH Industrial: with over 63,000 employees, and more than 110 facilities spread all over the world, this company is one of the best examples of real-world MNEs. After a description of the history of this enterprise and of the way it operates its activities, the discussion will be centered around the analysis of its evolution through the lenses of the theories illustrated in the first three chapters. This will represent a challenging attempt to look deeper into the evolutive dynamics of a real-world enterprise, and to add value to what would otherwise be just a reconstruction of its history without any interpretation.

1 THE MULTINATIONAL ENTERPRISE

It is impossible to discuss in depth the behavior of MNEs without having first clarified what MNEs are, why do they exist, how do they have evolved, and what is their impact on the countries in which they are present. The following paragraphs can be therefore considered as introductory for the more specific dissertations of the following chapters.

1.1 What is a multinational enterprise and how it can be measured

According to economists Barba-Navaretti and Venables, an MNE is a firm that owns a significant equity share (typically 50% or more) of another company operating in a foreign country (Barba Navaretti & Venables, 2004). This foreign country is generally denoted as the *host-country*, as opposed to the *home-country,* which is where the MNE's headquarters are located.

In principle, there are multiple ways to keep track of the activities of an MNE operating abroad, depending on the level of aggregation chosen. Data such as the number of people employed or the evolution of sales volumes are useful in understanding the dynamics of firms at a microeconomic level, but they lack of standardization and are often hard to find. Therefore, in order to also take into account the broad perspective adopted in this thesis, it is best to rely on data on flows of *Foreign Direct Investment* (FDI), which is the instrument that an MNE uses to create, acquire or expand a foreign subsidiary (Barba Navaretti & Venables, 2004). More precisely, FDI "reflects the aim of obtaining a lasting interest by a resident entity of one economy (direct investor) in an enterprise that is resident in another economy (the direct investment enterprise) (Duce, 2003), where "lasting interest" implies the existence of a long-term relationship and of a significant influence on the management of the direct investment enterprise. Quantitatively speaking, the IMF defines the owner of

10% of the ordinary shares of a foreign company as a direct investor (IMF, 1993). FDI flows include equity capital, reinvested earnings and other direct investment capital, and are different from *portfolio investments*, which can be divested easily and which are not made with the aim of exerting a significant influence on the management of the firm (Barba Navaretti & Venables, 2004).

1.2 Multinational enterprise through history

That of MNEs is a long-standing phenomenon which has originated several centuries ago, and the features of the MNEs of today are the result of an evolutive process that has gone through the most important civilizations and the pivotal events of history. For this reason, in order to better understand the way of being of modern MNEs, it is first useful to take a historical perspective and examine the birth, the diffusion, and the affirmation of this organizational form.

1.2.1 Precursors of the multinational enterprise

History shows that the origins of MNEs lie very far back in the past. Commercial entities capable of creating added value in multiple locations through a hierarchical organizational structure and through the use of a multiethnic manpower were already present in ancient times (Goldstein & Piscitello, 2007). According to Karl Moore and David Lewis, the first genuine multinational enterprises in recorded history can be already found in the second millennium B.C., in the form of the businesses operated by the ancient Assyrian colonists (Moore & Lewis, 1999). From that moment onwards, in spite of some sharp discontinuities, it was a progression through the civilizations of the Phoenicians, with their economy characterized by a high degree of centralization, and by a strong connection between the business world, the army and the navy; of the Greeks, with their idea of a commercial sector built on the initiative of the private enterprises, and on the minimization of the state's intervention; and of the Romans, who essentially continued on the pattern laid down by

the Greeks, while at the same time taking the concept of multinational enterprise on a higher level both in terms of scale and of organization (Chandler & Mazlish, 2005; Moore & Lewis, 1999).

Subsequently, the history of MNEs went on through the fall of the Easter Roman Empire, with many European businesses starting to invest across political jurisdictions already in the fourteenth century: the Medici bank with its headquarters in Florence and its branches in Geneva, Lyon, Basel, Bruges, Avignon and London, and the Hanseatic League, born from the co-operation of merchants from 200 cities in seven different nations, are two among the most notable examples (Chandler & Mazlish, 2005; Goldstein & Piscitello, 2007).

With the beginning of the Age of Exploration, a transformation took place with regard to the form and to the intensity of the international trade in general, and this translated into the rise of new MNEs: the trading companies. These enterprises acted as intermediaries guaranteeing the quality of the products being sold and bought on the new global market, and they played a crucial role in the commerce of precious goods such as silk and spices (Goldstein & Piscitello, 2007). In those same years (in particular during the mid-seventeenth and eighteenth centuries) European merchant trading houses created other types of multinationals enterprises by sending their relatives to North America as representatives of their firms in loco, and to manage the stocks of goods shipped to the colonies (Chandler & Mazlish, 2005).

1.2.2 Birth of the modern multinational enterprise

The MNE as it is known today, however, did not really appear until the 19th century, with the emergence of industrial capitalism and of the change in firms' behavior that this event entailed. This period saw a significant growth in the volumes of sales of goods and services, and in the flows of people and capital, favored by the technological progress and by a climate of peace. A transportation and communication revolution took place, with the spread of railroads and steamships, and the introduction of innovations such as the

telegraph, which translated in the possibility for firms to manage and coordinate the operations of their facilities in ways that were inconceivable before. This fact was particularly relevant for MNEs: the increased speed in good delivery and information transmission allowed them to expand the range of their operation and to increasingly penetrate within the boundaries of countries (Chandler & Mazlish, 2005; Goldstein & Piscitello, 2007). This turned out to be a period of significant economic turmoil, as testified by the birth of MNEs in sectors in which the investments required were huge, and so were the potential profits: the metals and mining industry, the oil industry, the forest industry and the agro-industry were just some of the many available examples of this phenomenon. Besides, aside from the desire to make profits, there were also other motivations behind the increasing tendency towards the internationalization of the operations, i.e. the attempt to avoid land transport costs (that were high at that time), the difficulties in protecting the intellectual property, and the monetary impact of custom duties and other non-duty-related barriers.

The situation for MNEs (but of course not just for them) dramatically changed during the years of the two World Wars, and forced them to modify their way of conducting business. Nationalist impulses and protectionism made it increasingly difficult to invest abroad, and the confused political landscape did not make things easier. On top of that, the Great Depression slowed down the economy of the United States, which were the only world power whose firms were in a situation of advantage with respect to their European competitors. Unsurprisingly then, a great number of MNEs chose to focus on their national markets, and to steer away from foreign investments.

Surprisingly, the three decades following the Second World War turned out to be extremely positive in terms of economic and social development, in spite of an initial phase characterized by mistrust and restrictions to the circulation of capital. During the 1950s, while in many countries nationalizations and expropriations were complicating the operations of MNEs, the leadership of the United States and of its enterprises became uncontestable. This situation did not change in the following decade either, but things certainly got better for MNEs from all over the world, as testified by the rise of new types

of MNEs, such as those specialized in offering support services to firms, and by the increase of FDI in many sectors, including the production of copper, steel, and aluminum, and the extraction of petroleum.

During the 1970s, the United States' leadership took a hit when the dollar became weaker, and American firms became a target for European and Japanese MNEs. This was a decade of growth for MNEs in general, thanks to the higher degree of market integration and to the liquidity of international markets, but in spite of all the work done through the years, at the beginning of the 1980s the ratio between the total of FDI and the Gross World Product was still just 5%.

With the 1990s and the 2000s, the process of globalization sped up, and thanks to the progressive reduction of trade barriers, the level of FDI grew considerably (see Figure 1). Developing countries went through a phase of liberalizations and of stabilization, opening their economies to foreign investments, and the improvements in information and communication technologies (both in terms of cost and performance) helped MNEs in carrying out their activities in an even more efficient wat than before. Besides, the increased importance of financial activities and the liquidity of markets made it easier for firms to expand their operations abroad.

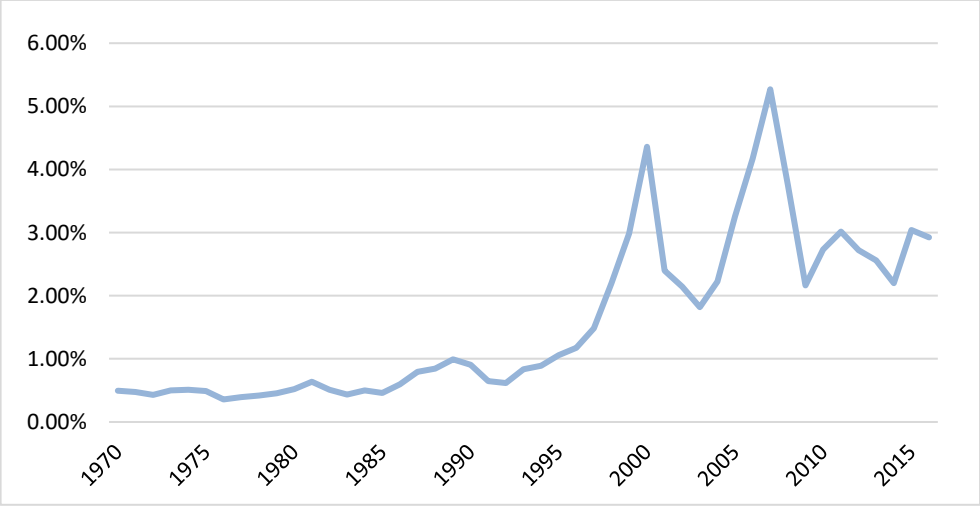

Figure 1 ***Net inflows of FDI (% of GDP).*** **Source: The World Bank, 2017**

1.3 Why do firms become multinational: the types of FDI

When firms choose to follow an "international strategy", they generally go through a decision-making process that can be modeled in two phases. First of all, they need to identify an opportunity that might be grasped abroad, such as the relocation of a production stage in a country with lower factor prices, and after that they have to deal with a twofold decision: choosing the most suitable mean to seize this opportunity, where the two main alternatives are FDI and exports, and choosing the best location to do it (since it is common not only for countries, but also for regions and provinces to differ from one another) (Franco, Rentocchini, & Vittucci Marzetti, 2008). An analysis of this framework raises at least two questions: 1) instead of becoming multinational, would not it be much easier for firms to produce in their country of origin, and then to export their finished goods on the markets they want to compete in (Goldstein & Piscitello, 2007)? And then, even supposing that they deem it necessary to invest abroad, 2) why do firms choose FDI instead of, for instance, licensing? To answer this questions, it is possible to rely on the conceptual framework developed by economist John Dunning.

1.3.1 Dunning's taxonomy of FDI

Despite its limitations, the most influential framework for the investigation of the determinants of FDI is John Dunning's eclectic or OLI paradigm[1], where OLI stands for Ownership, Location and Internalization (see Figure 2). According to Dunning, there are three potential sources of advantage underpinning a firm's decision to become multinational: firm-specific advantages originating from resources owned by the firm (Ownership); the availability of resources, networks and institutional structures in the host

[1] For further information on the OLI paradigm, refer to: Dunning, Trade, Location of Economic Activity and the MNE: A Search for an Eclectic Approach, 1977.

country (Location), and the abatement of transaction costs arising from international market interactions (Internalization) (Crescenzi, Pietrobelli, & Rabellotti, 2014).

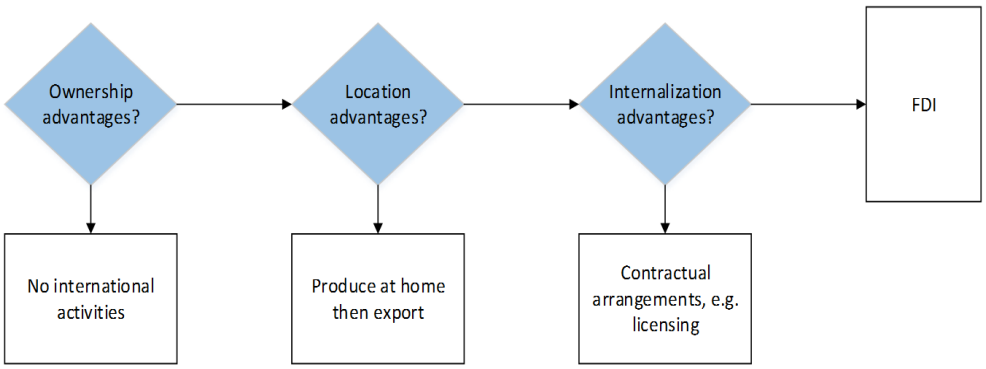

Figure 2 ***The OLI paradigm and the alternative activities available to an MNE.*** **Source: Grünig & Morschett, 2012**

Starting from his eclectic paradigm, Dunning[2] subsequently developed a taxonomy of the motives underlying FDIs, which is made of four categories:

1. *Market-seeking*. Firms may go to foreign countries to find new buyers for their goods and services, both because they have saturated their home market, or because they are convinced of the superiority of their product with respect to those of the potential competitors. In some cases, those investments can be a reaction to the introduction of protectionist measures, to increased difficulties in transportation that make it difficult to maintain already existing business relationships, or can result from the decision to follow suppliers or clients who have built production facilities in foreign countries. Besides, geographical proximity facilitates the process of adapting goods to the tastes and preferences of local customers, and allows saving the cost of serving a market from distance. Finally, being physically present in a market might have an impact on the decision of potential rivals to compete for it;
2. *Resource-seeking*. The objective of firms in this case is to acquire resources that are

[2] For further information on Dunning's taxonomy, refer to: Dunning, Multinational Enterprises and the Global Economy; 1993, Goldstein & Piscitello, 2007; The Levin Institute, 2017; Barba Navaretti & Venables, 2004; Franco, Rentocchini, & Vittucci Marzetti, 2008.

not available in their home-country, or to acquire them at a lower cost. These resources can be raw materials, labor, and capital, but also managerial, organizational and technological competencies;

3. *Efficiency-seeking.* Firms may directly invest abroad to take advantage of the different factor endowments that each country possesses, or as a response to broad economic changes such as the creation of a new free trade agreement among a group of countries;

These first three groups of motivations serve the primary objective of generating economic rents through the exploitation of some firm specific assets, and for these reasons they are identified as *asset exploiting* FDIs.

4. *Strategic asset-seeking* (also called *competence creating*). Firms may invest abroad to build strategic assets, such as distribution networks or new technologies, and to gain access to competences and resources considered crucial in terms of competitive positioning.

1.3.2 Other taxonomies

While important, Dunning's taxonomy by itself does not say it all about FDI. Depending on the point of view adopted, there are in fact at least two other classifications that are pivotal in understanding the behavior of an MNE.

The first possible taxonomy focuses on the structure of an FDI, and distinguishes between *horizontal* FDI (HFDI) and *vertical* (VFDI). According to the definition, HFDI is "a foreign direct investment involving the duplication of part of a firm's activities in a foreign country, that is normally made with the aim of having better and cheaper market access to the host-country" (note the similarity with the concept of market-seeking FDI) (Barba Navaretti & Venables, 2004). On the other hand, VFDI is "a foreign direct investment involving the transfer abroad of one or more of a firm's stages of production generally in order to access low-cost inputs and to use output to supply other parts of the multinational's operations

by means of intra-firm exports" (which is what happens for instance in the case of resource-seeking FDI) (Barba Navaretti & Venables, 2004).

When the focus shifts on the mode of entry of an MNE in a foreign country, it is possible to identify two other types of FDI, namely *greenfield* FDI and *brownfield* FDI. In simple terms, a greenfield investment entails the creation by the MNE of a new firm from scratch, which then generates new economic activity and jobs (Canton & Solera, 2016). A brownfield investment, on the contrary, consists in the acquisition of an already existing foreign firm, and can take the form of a cross-border M&A or of a joint venture.

Classification	Type of FDI
By motivation	Market-seeking
	Resource-seeking
	Efficiency-seeking
	Strategic asset-seeking
By structure	Horizontal
	Vertical
By mode of entry	Greenfield
	Brownfield

Figure 3 ***The types of FDI***

1.4 Impact of the multinational enterprise: the effects of FDI

At this point, the reasons why firms decide to undertake an FDI and to become multinational are clear: in simple terms, the MNE ultimately expects to witness an increase in profitability. But what are the consequences that these investments have on the economies of the countries involved? This is certainly not a trivial question to give an answer to. FDI, in fact, can have a positive impact on the development of the host countries' economies by bringing resources that are only imperfectly tradable on markets, like technology, management know-how, and skilled labor. At the same time, though, there are areas in which the effects of FDI can be negative, e.g. in cases where competition is reduced, restrictive business practices are used or transfer prices are manipulated (UNCTAD, 1999). Besides, positive and negative effects can also be found in home

countries' economies, for instance when FDI influences factor demand and factor prices through changes in the allocation of types of production within the firm (Lipsey, 2004).

1.4.1 Host-country effects of FDI

According to OECD, there are six main consequences of FDI that can positively or negatively impact the host-country (OECD, 2002):

1. *Integration into the world economy*. Inward FDI contributes to the integration of the host-country into the global economy, thus in principle supporting its economic growth. An MNE has by nature a great experience in the internationalization of operations, and thanks to geographical proximity local firms can try to copy its behavior and try to tap into its know-how; moreover, an MNE is part of an international network, and when it enters a new market, firms located in this latter have a much better chance of becoming part of this network too. Finally, local firms can turn into suppliers and subcontractors of MNEs, and use their channels to enter into international markets and get involved in global trade. Unfortunately, becoming more integrated also entails some negative consequences. These latter are mainly linked to the risks that every open economy has of being more subject to macroeconomic fluctuations, and to the possibility of incurring in a trade deficit, given that the actions of MNEs are in general more likely to have an impact on imports rather than on exports (e.g. every market-seeking investment) (Moura & Forte, 2010);
2. *Technology and knowledge transfers*. Technology transfers are perhaps the most important channel through which FDI can produce positive externalities in the host economy (OECD, 2002). MNEs are in fact among the most technologically advanced firms in the world, thanks to their huge investments in R&D, and have the potential

to generate significant technological spillovers [3] that can increase local firms' productivity and foster economic growth. (Borensztein, De Gregorio, & Lee, 1998). These transfers work through four interrelated channels: horizontal linkages between the MNE and its rivals and complementors, vertical linkages with its buyers and suppliers, migration of skilled labor and internationalization of R&D (OECD, 2002). As in the previous case, however, these transfers can also have negative effects. MNEs may in fact be tempted to transfer inappropriate technologies to maintain their superiority on local firms, or the latter might become too dependent on foreign technology and reduce their efforts to innovate (Moura & Forte, 2010);

3. *Human capital development*. In this case, FDI does not have any particularly relevant drawback, but just positive direct and an indirect effects. First of all, FDI can affect the growth rate of the host-country because it entails an improvement in the labor force quality thanks to training and on-the-job learning. Besides, when at least part of this more prepared workforce accepts employment in local firms, or decides to become an entrepreneur and start its own firm, the acquired knowledge brought by the MNE can spread to an even greater number of individuals (Lim, 2006). In addition to the activities performed by the MNEs, FDI is also indirectly responsible for the human capital enhancement resulting from government policies that seek to attract foreign investments through an improvement in the education system (OECD, 2002);
4. *New competitive landscape.* The entry of an MNE through a direct investment is expected to raise the level of competition in the host-country's market, thereby causing higher productivity, more efficient allocation of resources and lower prices (Pessoa, 2007). Because of this increased pressure, however, it is very likely that some of the less productive local firms will go out of business to be replaced by the MNE itself, and while this is in principle economically desirable, there might be some

[3] "By technological spillovers, we mean that (1) firms can acquire information created by others without paying for that information in a market transaction, and (2) the creators (or current owners) of the information have no effective recourse, under prevailing laws, if other firms utilize information so acquired" (Grossman & Helpman, 1991).

drawbacks too. Especially in those cases in which there are not policies aiming at maintaining a healthy degree of competition, or when the host-country's market is small or unconnected geographically, there is the tangible risk of an FDI causing higher market concentration and ultimately a reduction of the level of competition (OECD, 2002). An increase in concentration may also result from the decision of some local incumbents to merge, in order to better face the competition coming from the entry of the MNE (Moura & Forte, 2010);

5. *Local firms' development.* Just like with human capital development, FDI is directly and indirectly responsible for improvements in local firms' performance. The first firms that are positively affected by the FDI are those linked to the MNE, experiencing an increase in efficiency and a reduction costs thanks to new activities and procedures. In general, as time passes, and thanks to demonstration effects and other spillovers, these efficiency gains start occurring also in other local enterprises, ultimately benefitting the whole economy (OECD, 2002);
6. *Social and environmental impact.* Potentially, FDI can be beneficial also from a social and environmental point of view, contributing to the diffusion of cleaner and more modern technologies, to the adoption of better practices, and to the improvement of the human capital. Unfortunately, not every MNE behaves in an ethical manner, and it is not impossible to find FDI undertaken with the aim of exporting production that is no more approved in the home-country, especially in those countries in which adequate policies to contrast the phenomenon are missing (OECD, 2002).

The effects of FDI	Impact	
	Positive	Negative
Integration into the world economy	✓	✓
Technology and knowledge transfers	✓	✓
Human capital development	✓	
New competitive landscape	✓	✓
Local firms development	✓	
Social and environmental impact	✓	✓

Figure 4 ***Effect and impact of FDI on host-countries.*** **Source: Moura & Forte, 2010**

1.4.2 Home-country effects of FDI

Home-country is affected by FDI too, and this is particularly evident when looking at variations in the quantities of goods produced and exported, and at the demand for factors of production. These effects, however, are much more difficult to quantify than in the case of the host-country:

1. *Impact on production and export volumes*. FDI is expected to affect the production and the export performance of the home-country, but it is not possible to determine a priori if this impact is going to be positive or negative. On the one hand, in fact, FDI usually replaces at least part of the home-country production and exports, but on the other it tends to support the exports of intermediate goods from the parent company to the new subsidiary abroad. The parameter which determines the positivity or negativity of the impact is the variation in sales volumes resulting from the FDI. In case of HFDI, if foreign sales increase by a sufficient quantity, this will cause an increase in the exports of intermediate goods which will compensate for the loss in exports of finished goods. With VFDI instead, it is true that the relocation of part of the activities at first reduces the level of production. However, if this is followed by an improvement in the efficiency and in the competitiveness of the whole MNE, then this latter will be able to produce and sell more, thus increasing the volumes of production also in its home-country and compensating for the initial loss (Kokko, 2006).
2. *Fluctuations in factor demand.* FDI can influence the home-country factor demand in two ways. First of all, as explained in the previous point, an HFDI can reduce the need for workers in the home-country because of the decreased exports level, while a VFDI can have a positive effect thanks to its impact on sales and to the resulting necessity to produce more. Secondly, even in those cases in which FDI does not have an overall effect on exports, the simple reallocation of the activities within the firm can influence home-country factor demand and factor prices (e.g. an MNE moving its labor-intensive production to its subsidiary located in a less-developed country,

and concentrating its more skill-intensive activities at home) (Lipsey, 2004).

1.5 Alternatives to FDI

As hinted in the explanation of the OLI paradigm, FDI is not the only mean available to a firm that wants to operate at in international level. There are in fact two other channels through which an MNE is able to reach foreign markets, the suitability of which depends on the presence/absence of location and internalization advantages: *exports* and *contractual agreements* (mainly in the form of *licensing*).

Starting from FDI vs. exports decisions, they can be analyzed through the *proximity-concentration tradeoff*, which is the most used framework in this kind of analysis. Put simply, a firm chooses to export domestically-produced goods in those cases in which the gains stemming from avoiding transportation costs are outweighed by the diseconomies of scale that originate from splitting production across multiple subsidiaries (Ramondo, Rappoport, & Ruhl, 2013). In addition, as shown by Dunning, a firm looks for location advantages (other than transport costs) that make it profitable to produce in the host-country rather than producing at home and then exporting (Markusen, 1995). When there are no advantages of this kind, or when their impact is too low to make a difference, the firm finds it more profitable to avoid the significant sunk costs entailed by an FDI and to rely on exports (Helpman, Melitz, & Yeaple, 2004).

Even in those cases in which it is more profitable to choose FDI over exports, an MNE still has the possibility to license a foreign firm to produce its products or to use its production process. In this way, it would be able to reap the benefits of multinational production, without having to bear the costs and the risks of a direct investment. This is a decision on the optimal firm scope[4], which is determined by factors such as the cost of internal vs. arm's length transactions and the characteristics of the knowledge to be transferred, along

[4] "Scope refers to the number of different economic activities (industries, segments, product lines) a firm is engaged in" (Jones & Hill, 1988).

with the drawbacks that the contracting process usually entails (Markusen, 1995). As the bounded rationality[5] approach recognizes, in fact, the gathering and the processing of the information needed to prepare a contract is a complex and costly activity (Tirole, 2009). In addition to that, the contracting parties are in general far from being fully rational decision-makers (Korobkin, 2003) and therefore, unfortunately for the licensor[6], there is the possibility of ending up with an incomplete contract that could leave the door open to opportunistic behavior by the licensee. These elements together help in explaining the source of internalization advantages, which in some cases make it more profitable for firms to choose FDI over licensing (which, at first sight, would seem to always be the cheaper and more effective solution).

[5] The theory of bounded rationality discusses "about the limits upon the ability of human beings to adapt optimally, or even satisfactorily, to complex environments" (Simon, 1991)

[6] The licensor is the party which grants the license, while the licensee is the party which receives the license.

2 THE ENTRY MODES OF THE MULTINATIONAL ENTERPRISE

The decision-making process used by firms going multinational shown in the previous chapter was actually not complete. Firms choosing to establish a subsidiary through an FDI, in fact, have also to decide which is the most suitable entry mode between greenfield and brownfield investment[7] (as Figure 5 shows, both these types of FDI are characterized by a similar magnitude). Unsurprisingly, this is all but a trivial choice: these two types of FDI are profoundly different, and there are no clear-cut guidelines on which one is better to undertake depending on the context. Each firm, industry, and country has in fact its own idiosyncratic attributes, and each market entry decision requires to take into consideration at the same time several factors and their potential interplays.

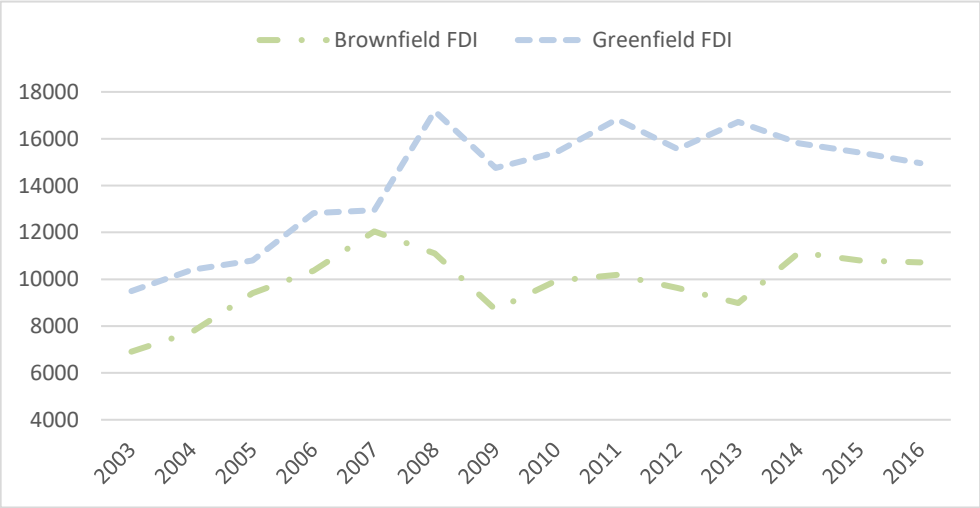

Figure 5 ***The number of cross-border M&As and of announced greenfield projects.*** **Source: UNCTAD, 2017**

[7] Sometimes, this type of FDI is also referred to as cross-border M&A or just as cross-border acquisition, given the negligible percentage of mergers on the total of M&As worldwide (Calderón, Loayza, & Servén, 2004).

2.1 Greenfield and brownfield FDI

Both greenfield and brownfield FDI are two types of investments which can supplement domestic resources and efforts, but that are completely opposite in terms of their characteristics, of the ease they can be handled with by MNEs, and of their effects on the host-countries. According to the United Nations, this is particularly true in the time immediately following the investment, since on a long-term basis many differences tend to diminish or disappear (UNCTAD, 2000).

First of all, a brownfield FDI is an investment which entails the acquisition of an already existing firm located abroad, so that there is not an initial increase in the productive capacity of the host-country, as opposed to what happens with the construction of a new facility from the ground up in greenfield FDI. This is one of the main reasons why local authorities, in general, prefer this former type of investment, even if they recognize the role played by cross-border acquisitions as life preservers of local firms on the verge of closure (UNCTAD, 2000).

The consequences of a change in the production capacity are reflected in the level of employment. In the eyes of the host-country, a greenfield FDI has the advantage of immediately increasing the demand for workers, while that is not guaranteed with a brownfield FDI. If this latter is followed by other investments aimed at enlarging the scale of operations and strengthening the links with local firms, though, then it may be able to generate employment over time, thus compensating for the initial lack of a positive impact. As usual, in addition to the intrinsic characteristics of these two modes of entry, there are other external factors such as the economic context of the host-country, or the drivers behind the MNE's decision to invest, which have to be considered in order to understand the long-term impact of the FDI on employment: a greenfield FDI may allow a very efficient enterprise to enter a market in which few incumbents are capable of sustaining the new level of competition, and this will inevitably lead many local firms to go out of business, thus laying-off their workers (UNCTAD, 2000).

Competition is another field in which greenfield and brownfield FDI have a different impact. With the former the local market gets crowded with one more firm, and this should lead to an increase in the level of competition with all the positive (and negative, as was shown in the previous chapter) effects that this entails. On the contrary, a cross-border M&A often leads to an increase in market concentration, which translates into a loss of welfare for the whole host-country's population, with the poorest regions being the most affected by this phenomenon (UNCTAD, 2000; Rodriguez-Castelán, 2015).

Finally, when an enterprise undertakes a greenfield FDI, it just brings its own capabilities abroad, and it is therefore more likely to transfer better technologies and skills to the host-country. The positive impact of cross-border M&A in this field tends to emerge, instead, on a long-term basis, particularly in those cases in which the local firm is acquired with the aim of restructuring it to improve its performance. There are other situations in which a brownfield FDI is undertaken to get access to the country-specific capabilities of a firm, thus entailing a weaker necessity to export technologies and procedures (Nocke & Yeaple, 2007; UNCTAD, 2000).

2.2 Determinants of the choice between greenfield and brownfield FDI

Establishing a foreign subsidiary is a time-consuming and costly activity, so it is of great importance for an MNE to understand which is the most efficient and effective way to do it. As mentioned in the introduction, the choice between a greenfield or a brownfield FDI is not an easy one, as there are three sets of factors to be simultaneously accounted for in the decision-making process: *firm-specific*, *industry-specific*, and *host-country-specific factors* (Haar & Marinescu, 2014).

2.2.1 Firm-specific factors

Firm-specific factors can be subdivided in two broad categories, with the first being composed by those factors that always come into play regardless of the objectives pursued (e.g. the cost of the investment), and the second encompassing the strategy adopted by the MNE and all of the aspects that come into consideration when they are consistent with it (such as the speed of implementation of the project).

Concerning the first category, the most obvious factor from which to start the discussion are the *costs* and the *expected post-entry profits* of the investment. Past experience shows that it is difficult to assess a priori which form of FDI performs better between greenfield and brownfield, because they differ in the type and in the timing of the costs incurred. A greenfield FDI requires a long term commitment, and the MNE has to bear significant sunk pre-establishment costs, with the result that profit margins in the early years of the investment are frequently lower when compared to those of a brownfield FDI. At the same time, while this former type of investment allows the MNE to leverage the existing assets and infrastructure of the acquired firm, it often entails other costs, in particular those generated by the operations performed to restructure the subsidiary, and to improve its efficiency. As shown by the history of many firms investing abroad, in fact, transferring organizational routines, technological capabilities, and incentives to the subsidiary is a challenging task, and it may also turn out to be very costly.

Another important firm-specific factor are the *resources and capabilities*[8] owned by the MNE. In general, when the MNE possesses resources and capabilities which can be fruitfully transferred to the newborn subsidiary, and which can facilitate the operations (especially in distant and risky markets), greenfield FDI is preferred. There are many possible examples, such as the availability of excess managerial resources redeployable abroad (Meyer & Estrin, 2001), but, of course, not all of them are equally important. Several

[8] Resources are the productive assets owned by the firm, while capabilities are what the firm can do (Grant, 2010).

scholars, in fact, argue that the key determinants of the optimal mode of entry are basically two: the technological level of the MNE and its R&D intensity. When the former is high, and the gap with the to-be competitors is significant, the enterprise is more likely to undertake a greenfield FDI to differentiate itself and to avoid the organizational burden of transferring superior capabilities to a less advanced foreign firm. The same conclusion can be drawn with regard to the latter determinant, with related literature suggesting that the higher the R&D intensity, the higher the probability that a greenfield will be chosen.

The last factors (belonging to the first category) coming into play, which are in reality linked to resources and capabilities, are the *size* of the MNE and its *degree of product diversification*. Organizational size affects the competitive behavior of all firms (Chen & Hambrick, 1995), and the choice between greenfield and brownfield FDI is no exception: larger and more diversified firms are in general more prone to acquire than their smaller rivals (even if this latter have shown in recent years an increased tendency towards acquisition) (UNCTAD, 2000)

As anticipated above, there is a second category of firm-specific factors revolving around the *strategic intent* adopted by the MNE. According to the aforementioned Dunning's taxonomy, there are several motivations behind the decision to invest in a foreign country, which in turn translate into a multitude of possible strategic objectives. Depending on these objectives, the specific features of greenfield and brownfield FDI acquire or lose importance in the eyes of the MNE, giving it a hint on which the most suitable choice might be. Look at what happens, for instance, when an enterprise is pursuing some first-mover advantage in an emerging market: a greenfield FDI is in general a slow mode of entry, with the MNE having to go through complex bureaucratic procedures such as the approval of the real estate acquisition. Since quickness is relevant from a strategic point of view, acquisition is often preferred. Another proof of the relevance of the strategic objectives of the MNE can be found with market-seeking FDI: the possibility to gain immediate access to distribution networks, market share and brand names might in fact induce the MNE to favor acquisition over greenfield FDI (Meyer, 2001).

2.2.2 Industry-specific factors

The choice between greenfield and brownfield is also influenced by industry-specific factors, which basically correspond to the characteristics of the market and to its structure.

A first important factor is the *presence*, in the host market, *of firms the MNE might be interested in acquiring*: without a relevant supply of suitable target companies, which is often the case in emerging economies, choosing a greenfield FDI becomes virtually unavoidable. The *degree of concentration* and the presence of *barriers to entry* matter as well. When both are relevant in a market, it is more likely that an MNE will opt for a cross-border M&A, in order to instantly gain a foothold in the foreign market and increase its chances of surviving the fierce competition (Marinescu, 2016). Brownfield FDI is also preferred when the objective is to enter in a sector characterized by slow growth (which generally translates in over-capacity and falling prices). Under such conditions, in fact, an MNE might be reluctant to add new capacity and take the risk of further deteriorating the situation (UNCTAD, 2000). On the contrary, a greenfield FDI is more often undertaken in sectors in which the pursuit of a differentiation strategy might result in the achievement of some form of competitive advantage, and when technological skills and production technology are key (UNCTAD, 2005).

2.2.3 Country-specific factors

Country-specific factors determine the MNE's entry mode as well, encompassing *features of the host-country's economy* such as the attitude towards takeovers, the adoption of liberalization policies, and the levels of privatization and of regional integration. These factors together shape the local environment, making it more or less conducive to private business, and ultimately affecting the level of risk associated to investments. When this level is high, an MNE generally prefers to enter in the foreign market through acquisition rather than through greenfield, and to act more cautiously at least during the initial stages of the investment (UNCTAD, 2005).

Particular attention needs to be paid also with regard to *cultural distance*. An MNE undertaking a brownfield FDI has in fact to deal with two levels of acculturation, that of the organization and that of the host-country, with all the difficulties in terms of integration that may arise. It is not surprising, therefore, that the biggest share of cross-border M&As concentrate in developed home- and host-countries with similar cultural and business practices (UNCTAD, 2000), and that when the differences between the home- and host-country are significant, greenfield FDI is often preferred to brownfield FDI (Kogut & Singh, 1988).

Category	Factor
Firm-specific	Costs and expected profits
	Resources and capabilities
	Size and diversification
	Strategic intent
Industry-specific	Market characteristics
	Market structure
Country-specific	Institutions' attitude
	Cultural distance

Figure 6 ***The factors affecting the decision between greenfield and brownfield FDI***

3 THE LOCATION BEHAVIOR OF THE MULTINATIONAL ENTERPRISE

After describing the motives behind the decision to go multinational through an FDI, and the alternative market-entry modes which are in that case available, what remains to be addressed is the issue of MNE's location decisions and of their determinants[9]. Depending on its resources and capabilities, and on how the strategic behavior of its rivals shapes the competitive landscape, an MNE has in general the possibility to choose the location in which to invest between multiple countries, and between multiple regions within the same country. Looking at how concentrated the worldwide distribution of FDI is (see Figure 7), however, it seems clear that firm's heterogeneity and dispersion forces exerted by competition cannot be the main driver of the spatial behavior of an MNE.

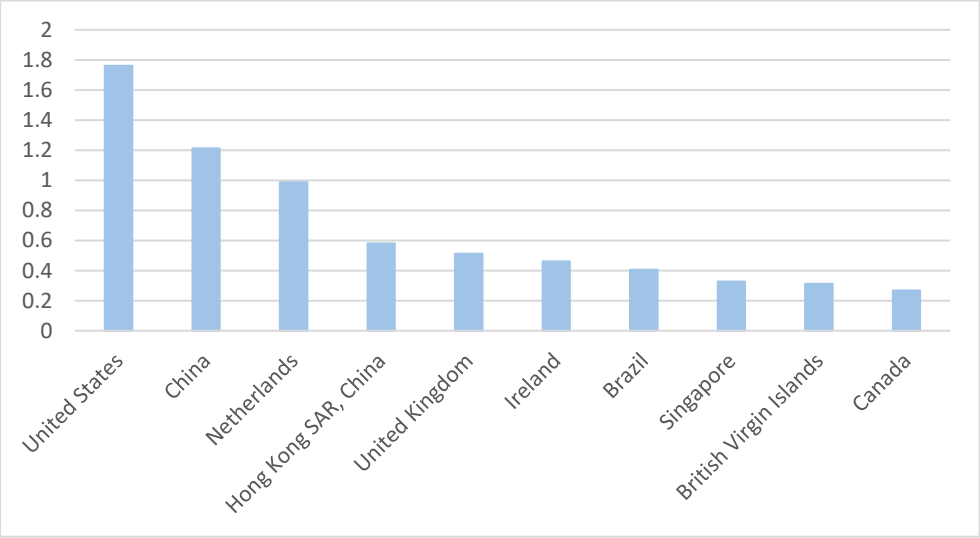

Figure 7 ***The top 10 countries in terms of the cumulative value (last five years) of net inward FDI (trillions of $).*** **Source: The World Bank, 2017**

[9] This chapter explores the location decisions of firms which are not constrained by anything other than their financial resources and their capabilities of transferring their technologies and routines to a foreign subsidiary. Therefore, the content presented in these pages ideally applies to a firm undertaking a greenfield FDI, or choosing between multiple alternatives as targets for a brownfield FDI.

The selection of the most suitable location among a set of alternatives must be interpreted through other factors capable of explaining at least part of the existing tendency towards geographical concentration: the *factor endowments* of each of these locations, and the presence/absence there of some form of *agglomeration economies*, along with the *type of activity* that is about to be relocated are the three determinants most suited for this task.

3.1 Location's factor endowments

Unsurprisingly, MNEs tend to locate their facilities within regions with appropriate factor endowments (in the broad sense of the term). In other words, their spatial choices are determined by the presence and the quality, or by the absence, of those specific characteristics[10] (either economic/physical or institutional/cultural) that have an impact on the relative expected profits of the available alternative locations (Fung, Iizaka, Lee, & Parker, 2000).

Starting from the economic/physical features, the first and most obvious factor playing a role in location decisions is *market size*. Regardless of the proxy used, whether it be per capita income or GDP, several studies have shown its (predictable) positive relation with FDI: the larger the size of a market, the more attractive the location becomes for an MNE.

The *characteristics of the labor market*, encompassing labor cost, unemployment rate, and the extent of unionized labor, are of course important factors as well. Labor cost is in principle expected to be negatively correlated with FDI, and to act as a deterrent to foreign investment, and while there is evidence of that, it is not always the case. When the high wages of a region reflect the productivity and the quality of the available workforce (which is in turn another location determinant), it is not certain that an MNE will lean towards other locations (Fung, Iizaka, Lee, & Parker, 2000). The unemployment rate, which is often

[10] For further information on the impact of the factor endowments on location decisions, refer to: Bartik, 1985; Coughlin, Terza, & Arromdee, 1987; Culem, 1988; Goerzen & Beamish, 2003; Henisz & Delios, 2001; Kogut & Singh, 1988; Wheeler & Mody, 1992.

used as a proxy for the size of the pool of potential workers, is positively related to FDI too, as an MNE should value the possibility of hiring without encountering difficulties. Finally, with regards to the extent of unionized labor, its impact has been shown to be negative: when union activity is scarce or non-existent, the management is able to pursue profit maximization without the restrictions imposed by union contracts, and this is clearly the situation it prefers (Coughlin, Terza, & Arromdee, 1987).

Another location trait that is always taken into consideration by an MNE choosing between alternative locations is the *quality of the physical infrastructure*, which is an "overarching construct that captures the availability and quality of infrastructure such as roads, ports, airports, telephone lines, and others" (Flores & Aguilera, 2007). Ceteris paribus, those regions endowed with more developed infrastructures are more attractive for foreign investors, especially for those which are unfamiliar with the regional production conditions (Fung, Iizaka, Lee, & Parker, 2000).

As for institutional/cultural features, there is consensus over the importance of *governance* in the form of laws, regulations, and public institutions (Globerman, Shapiro, & Tang, 2006), as a factor influencing the location choice of an MNE. As shown by the examples of political risk, which when high is proven to be a significant deterrent to FDI (Henisz & Delios, 2001), and of tax policies, with governments resorting to tax credits, deductions, and exemptions as a mean to attract foreign investments, the governance as a whole is strongly responsible for the creation of those favorable conditions that make a prospective location interesting in the eyes of an MNE.

Finally, just like in the case of the choice between greenfield and brownfield FDI, the last feature to be accounted for is the *cultural distance* between the home-country and the prospective locations. Given the difficulties which MNEs encounter when operating in an environment with different norms and habits, it usually tends to prefer culturally proximate countries and regions as targets for its investments (Flores & Aguilera, 2007).

Endowment		FDI correlation
Market size		+
Labor market characteristics	Labor cost	+/-
	Unemployment rate	+
	Unionized labor	-
Physical infrastructure		+
Governance	Political risk	-
	Tax policy	+/-
Cultural distance		-

Figure 8 ***Location factor endowments and their correlation with FDI***

3.2 Agglomeration economies

MNEs are driven in their location behavior not only by the factors each prospective location is endowed with, but also by the pursuit of the cost reductions and the efficiency gains "that come when firms and people locate near one another together in cities and industrial clusters[11]" (Glaeser, 2010). These benefits are referred to as *agglomeration economies* and, depending on whether their source is the diversity of the clustered activities, or the achievement of a higher level of specialization, it is customary to subdivide them into *urbanization* and *localization* economies. In other words, the former correspond to the increasing returns generated by a large number of different industries being located in the same place, whereas the latter come from the spatial concentration of large groups of firms belonging to the same industry.

From the British automobile and the Mexican garment industry (Boschma & Wenting, 2007; Hanson, 1996), to the California wine cluster (Porter, 1998), several are the examples that history has provided of location choices influenced by the proximity to other similar firms. The same can of course be said with regard to the concentration of diverse industries, as testified by the increasing tendency towards urbanization (UN-Habitat, 2016). According

[11] "Clusters are geographic concentrations of interconnected companies and institutions in a particular field" (Porter, 1998).

to the literature, there are three basic mechanisms[12] that yield positive externalities to firms (and therefore MNEs) that geographically cluster:

1. *Labor market pooling*. By locating within an already existing industrial cluster, an MNE gains immediate access to a thick labor market in which the matching probability between the job requirements and the workers' skills is higher than elsewhere (Helsley & Strange, 1990), which in turn translates into significant productivity gains (Brown & Rigby, 2013);
2. *Input sharing.* Geographical concentration enables an MNE to share input suppliers, which is particularly relevant in the case of industries that are intensive in the use of manufacturing inputs (Jofre-Monseny, Marín-López, & Viladecans-Marsal, 2011);
3. *Knowledge spillovers*. By locating within a city or an industrial cluster, an MNE is in the best position to reap the benefits (in terms of innovation and growth) generated by intra- and inter- knowledge spillovers. More specifically, depending on whether the source of the knowledge diffusion process is the agglomeration of firms in the same industry, or the diversity of geographically proximate industries, the literature distinguishes, respectively, between *Marshall-Arrow-Romer (MAR) spillovers* and *Jacobs spillovers* (Glaeser, Kallal, Scheinkman, & Shleifer, 1992).

Economies of scale		Channel
Agglomeration economies	Localization (Marshallian)	Labor pooling
		Input sharing
		Marshall-Arrow-Romer intra-industry spillovers
	Urbanization (Jacobian)	Labor pooling
		Jacobs inter-industry spillovers

Figure 9 T*ypes of economies of agglomeration economies and channels through which they impact MNEs*.

[12] For further information on the sources of agglomeration economies, refer to: Andersson, Burgess, & Lane, 2007; Ellison, Glaeser, & Kerr, 2010; Glaeser & Kerr, 2009; Marshall, 1890; The World Bank, 2009.

3.3 Value chain fragmentation and co-location patterns

The MNE's resources and capabilities, the competitive landscape, the factor endowments of the prospective locations, and the impact of agglomeration economies together contribute, to a greater or lesser extent, to shape an MNE's spatial behavior. Yet, because of the tendency towards a fragmentation of the *value chains*[13], that's not all. In order to really understand the location dynamics of MNEs, it is necessary to take into account the fact that their location decisions are no more just concerned with production plants, but increasingly involve service functions such as R&D and marketing. Consequently, their preferences are also likely to vary in relation to the value chain stage that is about to be relocated abroad (Crescenzi, Pietrobelli, & Rabellotti, 2014).

Clearly, not every stage by itself is suited for relocation, and therefore accounting for every primary and support activity that the value chain framework encompasses would provide with an excessively fine-grained portrait of an MNE's location behavior. It becomes therefore necessary to look for an alternative classification, and among those available, the best fitting is the one that subdivides the MNEs' activities into *production, sales* and *R&D*. Keeping in mind what has been said in the previous paragraphs is better suited to explain the location of a production plant, and that sales activities fall outside the scope of this work, it becomes interesting to focus the attention on the location patterns of R&D.

By definition, R&D includes all the activities undertaken by a firm with the aim of creating new or improved products and processes (Hall, 2008). As complexity grows, especially in those industries characterized by high-cost products and systems, the interaction between R&D and manufacturing personnel becomes increasingly important (Ivarsson, Alvstam, & Vahlne, 2017), causing in turn the *co-location*[14] of research and production.

[13] "The value chain disaggregates a firm into its strategically relevant activities", which are "performed to design, produce and market, deliver and support its product" (Porter, 1985). More specifically, Porter distinguishes between primary activities, which create direct value, and support activities, which serve as support in the process of value creation.

[14] The term co-location is used to refer to activities that are placed in the same location.

By reducing the geographical distance between a plant and its R&D department[15], the firm aims at fostering feedback loops and face-to-face interactions, which translate into formal and non-formal knowledge transfers (Taylor & Andreosso-O'Callaghan, 2016), and reinforce the organization's internal linkages. As researchers have long recognized, the role played by intra-firm ties strongly affect the performance of a firm, since they facilitate the accumulation and integration of knowledge (Kogut & Zander, 1992), they affect innovation quality (Alcácer & Zhao, 2012), and allow for the creation of knowledge which is highly interdependent and therefore hard to replicate by competitors.

Clearly, beside to co-location and internal linkages, both the factor endowments and the degree of agglomeration a prospective location is characterized by maintain their importance in a sector that hinges on human capital and on the existing stock of knowledge to produce new knowledge (Romer, 1990). More precisely, according to the literature, the location of R&D activities in the advanced economies seems to be more strongly influenced by the quality of R&D personnel, the quality of intellectual property protection, and the ease of collaborating with universities, while the growth of market potential, the quality of R&D personnel, and the cost of research are the most important motivations for the location of R&D activities in developing economies (Siedschlag, Smith, Turcu, & Zhang, 2013).

[15] Co-location can be interpreted therefore as a form of intra-firm agglomeration.

4 THE CASE OF CNH INDUSTRIAL

The theoretical foundations have been laid. From what an MNE is, to how it can expand, to how it spatially behaves, the framework should at this be point clear enough to allow to move from theory to practice, and to delve into the dynamics of a real-world enterprise: CNH Industrial. After a brief description of the company's structure, therefore, the discussion will be centered around the analysis of the evolution of CNH Industrial through time and space, with the aim of shedding some light on the location choices of what can be considered an epitome of the MNE.

4.1 Structure of the company

As explained in the previous chapter, location decisions depend upon the strategic objectives that are being pursued, and these objectives depend in turn from the type of product or service the MNE provides. Before discussing in depth about the location behavior of CNH Industrial, therefore, it is useful to synthetically give a description of the company and of its structure. CNH portrays itself as a global leader in the capital goods sector "that, through its various businesses, designs, produces and sells agricultural and construction equipment, trucks, commercial vehicles, buses and specialty vehicles, in addition to a broad portfolio of powertrain applications" (CNH Industrial, 2017).

As of December 31, 2017, the company is present in four main different market segments (Agriculture, Construction, Commercial Vehicles and Powertrain[16]) with twelve brands[17]:

[16] The powertrain corresponds to the driveline and engine together, with the former including all the assemblies between the output of the engine and the road wheel hubs (Happian-Smith, 2009).

[17] The following descriptions of the twelve CNH Industrial's brands are in part taken from their corporate websites and from corporate presentations.

- *Case IH*. Case IH is a global provider of high performance agricultural equipment designed for contractors, specialty crop producers, and large grain and cash-crop[18] producers;
- *Steyr*. Steyr is a leader in the local 'premium' agricultural machinery market, for which it manufactures tractors designed for agricultural, municipal, forestry, lawn and industrial applications;
- *New Holland Agriculture*. New Holland Agriculture produces industry-leading equipment for livestock[19] farmers, cash-crop producers, vineyards and groundcare professionals, with a particular focus on clean energy and on sustainable agriculture;
- *Case Construction Equipment*. Among the most important players in the business of earth moving, Case sells and supports construction equipment both to the construction industry and to the military;
- *New Holland Construction*. New Holland Construction is a global construction brand providing construction machinery designed for the residential and the agriculture/landscaping sectors;
- *Iveco*. A global manufacturer of commercial vehicles, Iveco provides a series of light, medium, and heavy transport for urban, intercity and off-road use, with an eye to sustainable mobility;
- *Iveco Astra*. Iveco Astra is a manufacturer of highly customizable construction vehicles employed in mines, quarries, large construction sites, and heavy off road missions;

[18] A cash crop is a crop that is grown to be sold.

[19] Livestock farming refers to the rearing of animals for use.

- *Iveco Bus*. Among the leading bus manufacturers in Europe, and a major player in the public transport sector, Iveco Bus provides a broad range of vehicles for both public and private operators;
- *Heuliez Bus*. Heuliez Bus started off by manufacturing coaches, and is now an important player in the premium segment of the European urban bus market and at the forefront in alternative powertrain development;
- *Magirus*. Known for its active collaboration with firefighters around the world, Magirus is today among the leading manifacturers of firefighting and rescue vehicles;
- *Iveco Defence Vehicles.* Iveco Defence Vehicles is a manufacturer of logistic, multirole and armored vehicles for defense and civil protection application;
- *FPT Industrial*. FPT Industrial is the CNH Industrial's brand dedicated to the design, production and sale of powertrains for on and off-road vehicles, marine and power generation applications, along with axles and transmissions.

4.2 CNH Industrial's evolution

4.2.1 1842-1999

November 12, 1999. With the approval of European and U.S. regulatory authorities, Fiat Group finalizes the acquisition of Case Corporation ("Case") and merges it with New Holland, creating *CNH Global*. While representing the starting point for the analysis of CNH Industrial's location behavior, this moment was at the same time the conclusion of a process started 150 years earlier, that is interesting to examine in order to better understand the features of the set of facilities that CNH owned and leased in 1999.

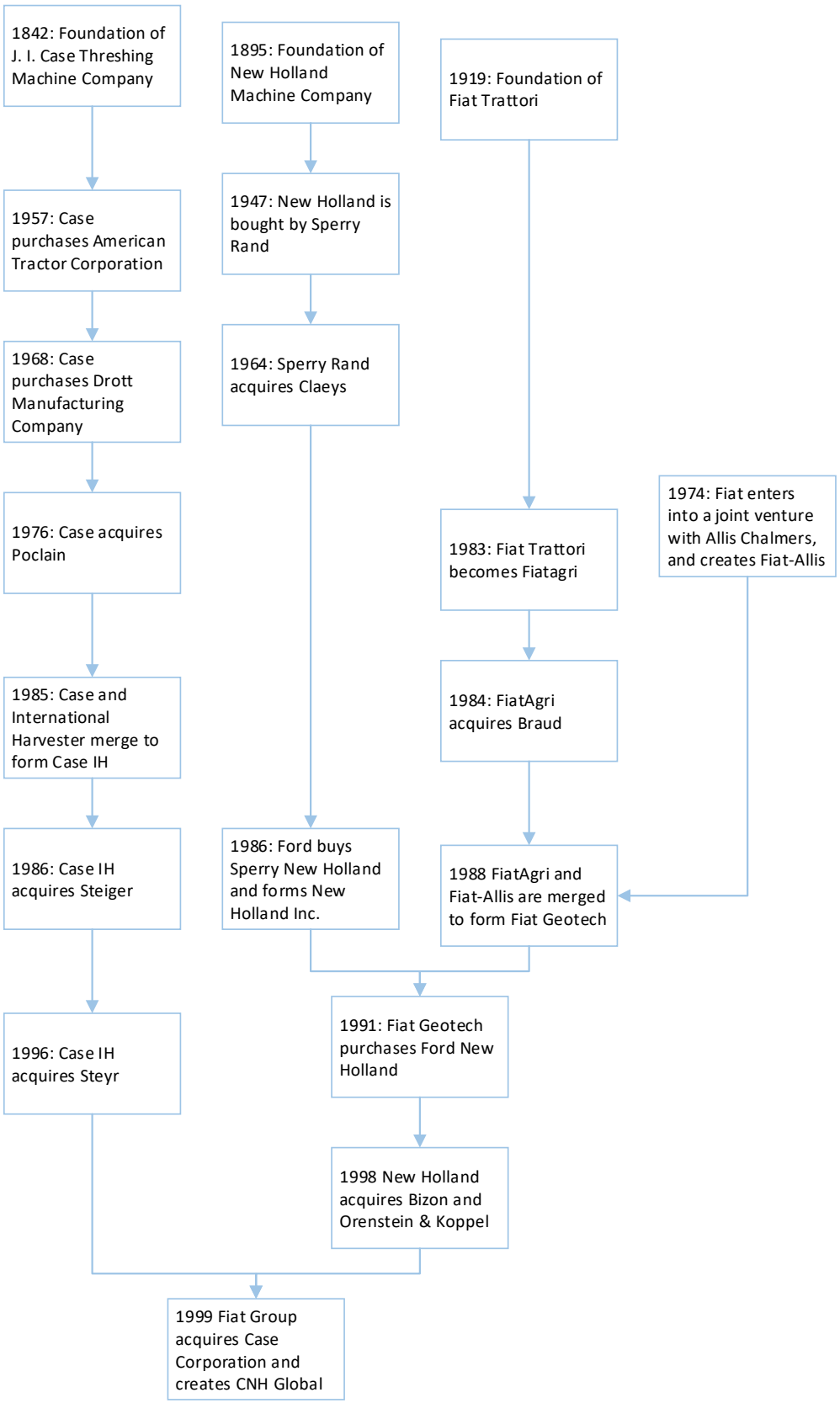

Figure 10 ***The sequence of the most important events that led to the creation of CNH Global***

Nation	City	Owned by	Business	Function
United States	Belleville, PA	New Holland	AG/CE	M
	Benson, MN	Case Corp.	AG	M
	Burlington, IA	Case Corp.	CE	M
	Burr Ridge, IL	Case Corp.	-	R
	Dublin, GA	New Holland	AG	M
	East Moline, IL	Case Corp.	AG	M
	Fargo, ND	Case Corp.	AG/CE	M
	Goodfield, IL	Case Corp.	AG	M
	Grand Island, NE	New Holland	AG	M
	New Holland, PA	New Holland	AG	M, R
	Racine, WI	Case Corp.	AG	M
	Wichita, KS	Case Corp.	CE	M
Italy	Breganze	New Holland	AG	M, R
	Imola	New Holland	CE	M, R
	Iesi	New Holland	AG	M
	Lecce	New Holland	CE	M, R
	Modena	New Holland	Comp.	M, R
	San Matteo della Decima	New Holland	-	R
	San Mauro Torinese	New Holland	CE	M, R
France	Coëx	New Holland	AG	M, R
	Crépy-en-Valois	Case Corp.	CE	M
	Croix	Case Corp.	Comp.	M
	St.-Dizier	Case Corp.	Comp.	M
	Tracy-le-Mont	Case Corp.	Comp.	M
United Kingdom	Basildon	New Holland	AG	M, R
	Doncaster / Carr Hill	Case Corp.	AG	M
	Manchester	Case Corp.	CE	M
Germany	Berlin	New Holland	CE	M
	Dortmund	New Holland	Comp.	M
	Hattingen	New Holland	Comp.	M
	Kissing	New Holland	Comp.	M
	Neustadt	Case Corp.	AG	M
Brazil	Curitiba	New Holland	AG	M, R
	Belo Horizonte	New Holland	CE	M, R
	Piracicaba	Case Corp.	AG	M
	Sorocaba	Case Corp.	CE	M
Canada	Saskatoon	New Holland	Comp.	M
	Winnipeg	New Holland	AG	M, R
Belgium	Antwerp	New Holland	Comp.	M
	Zedelgem	New Holland	AG	M, R
Mexico	Querétaro	New Holland	AG	M
India	Noida	New Holland	AG	M, R
Others	Bundaberg, Australia	Case Corp.	AG	M
	Sankt Valentin, Austria	Case Corp.	AG	M
	Płock, Poland	New Holland	AG	M

Figure 11 ***CNH's main facilities at December 31, 1999. The Business lines were Agriculture (AG), Construction (CE) and Components (Comp.), with these last operating as internal suppliers for the other plants. The main functions, instead, were Manufacturing (M) and R&D (R).*** **Source: CNH Global, 1999**

As the reconstruction in Figure 10 hints, CNH's initial international presence was the result of a combination of external (mergers, acquisitions) and internal growth of the players involved. The list of the main facilities owned and leased by the company at December 31, 1999 (see Figure 11), therefore, included plants whose histories were extremely different one from the other: there were plants whose ties with Case, New Holland and Fiat went back to the foundation of those firms, like those in Racine and New Holland; plants built with the aim of increasing the available capacity, like those is Burlington, Lecce, and Belo Horizonte; and finally, plants acquired through the multitude of transactions that took place from 1842 to 1999, like those in Berlin, Dortmund, Hattingen and Kissing, which were originally owned by Orenstein & Koppel, or Poclain's facilities in Crépy-en-Valois and Tracy-le-Mont.

Such a dynamic and successful evolution by Case, New Holland and Fiat Group allowed CNH to be from the beginning the largest manufacturer of agricultural equipment in the world, and the third largest manufacturer of construction equipment, with a multinational network of 45 manufacturing and research facilities spread through Europe, North and South America.

Looking at the plants' geographical location on a map (see Figure 12, 13, and 14), the first thing that stands out is the agglomeration in the Central and Eastern United States, and in Central Europe (along with Italy and the United Kingdom), with 78% of the facilities located within the boundaries of those regions. Such an unevenness in the post-merger distribution, however, is easily explainable. Founded in Wisconsin and Pennsylvania, respectively, Case and New Holland first concentrated, as competitors, in those central and eastern American lands that are still today major crop and livestock areas (USDA, 2012), and in which therefore demand was high and the market size was significant. By the mid-1900s then, both through internal growth and as part of larger corporations, they expanded their operations into South America and, most importantly, into Europe, in which the Fiat Group was already established. Locations like Brazil and Mexico were chosen for the

availability of low cost manpower[20], while Germany, England, and France were among the most advanced countries in the world with significant competences in the manufacturing sector, which made their firms the ideal targets for mergers and acquisitions. Given that external growth in the Eastern part of the world remained extremely difficult for decades because of blockades, protectionist measures, and geographical distance, CNH's plants distribution in 1999 was not puzzling at all.

Agglomeration in those regions, however, did not imply complete absence from the rest of the world. In addition to the facilities it already owned, in fact, CNH was gradually starting to explore riskier[21] and more distant[22] markets through several joint ventures. In particular, by 1999 the company had majority and minority interests in manufacturers and distributors located in Turkey (T*urk Traktor Ve Ziraat Makineleri A.S*), Japan (*New Holland HFT Japan Inc.*), Pakistan (*Al-Ghazi Tractors Ltd.*), Uzbekistan (*UzCaseTractor LLC*), China (*Harbin New Holland Beidahuant Tractors, Ltd.*) and India (*L&T-Case Equipment Limited*). With regard to Pakistan, Uzbekistan, China and India the situation was quite clear: they were among the booming Asian economies (Asian Development Bank, 2000), and CNH used the brownfield FDI as a mean to enter in new markets in which the growth opportunities were enormous, while at the same time limiting its exposure. Japan, at the time an established world leader in the manufacturing sector (Lee, 1997), was instead chosen because of the strategic importance that being physically present there had (just think at the chance of technological spillovers), and it is interesting to note that a joint venture was basically the only kind of investment CNH could undertake. Still nowadays, in fact, inward greenfield FDI in Japan are almost non-existent (Bebenroth, 2015). Finally, Turkey was presumably chosen

[20] For comparison, in 1975 the hourly compensation costs in Mexico were nearly 71% lower than in the United States. (U.S. Bureau of Labor Statistics, 2011).

[21]For instance, with regard to governance, Turkey, India, Pakistan and Uzbekistan were ranked respectively 146th, 153rd, 156th, and 163rd out of 185 countries in terms of political stability (The World Bank, 2000).

[22]Not necessarily from a geographical standpoint, but also from a cultural one. As the Inglehart-Welzel cultural map of the world (Inglehart & Welzel, 2005) shows, none of the countries in which CNH was present through joint ventures belonged to the American or the central European cultural clusters.

because of its proximity to the European cluster of CNH's facilities and its availability of low-cost manpower (therefore, a resource/efficiency-seeking brownfield FDI).

Focusing on the spatial distribution of the activities performed, it stands out that CNH's R&D centers were almost evenly spread between small, medium and large cities, and that the 87% of them was co-located with manufacturing, with the only exceptions of Burr Ridge and San Matteo della Decima. The presence of R&D departments in medium and large cities is completely consistent with the theory explained in the previous chapter, since it is the location in a urban area that maximizes the chances of reaping the benefits of inter- and intra- industry spillovers. Small towns as Basildon, instead, were attractive because of their strong ties with Case's, New Holland's and Fiat's history, since they entailed the accumulation of an unreplaceable knowledge capital in terms of tradition and expertise.

Theory is consistent with reality also when it comes to the high percentage of CNH'S co-located facilities: given the importance of intra-firm knowledge spillovers, and that their occurrence increases when the manufacturing and the R&D functions are geographically proximate, it made sense for the company to resort to co-location as much as it could.

Figure 12 ***CNH's main plants in Europe at December 31, 1999.*** **Source: CNH Global, 1999**

Figure 13 ***CNH's main plants in the United States at December 31, 1999.*** **Source: CNH Global, 1999**

Figure 14 ***CNH's main plants in the rest of the world at December 31, 1999.*** **Source: CNH Global, 1999**

4.2.2 2000-2002

Given the size of the companies involved in the merger, the approval granted by the Commission of the European Communities and by U.S. Department of Justice in 1999 came at a cost. Even if both Case and New Holland were operating in segments in which competition between incumbents (e.g. John Deere and Caterpillar) was fierce, in fact, because of a market structure in which entry was extremely difficult[23] it was not unlikely that a merger between the two entities would have resulted in the creation of a dominant player. In order to preserve the market balance and a healthy level of competition, therefore, CNH was required to commit to a number of actions, including the divestiture of some of its facilities. Consequently, Case's plants in *Doncaster / Carr Hill* (sold respectively to Landini S.p.A and Graziano Trasmissioni S.p.A. in 2001), *Winnipeg* (sold to Buhler Versatile Inc. in 2000), and *Manchester* (sold to Terex Corporation in 2000), and New Holland's plant in *Breganze* (sold to ARGO S.p.A in 2000) were divested. Furthermore, along with the plant in Doncaster, CNH sold to Landini S.p.A. the related component plant located in *St. Dizier*.

In the three-year interval between 2000 and 2002, however, those were not the only divestitures (and closures) that CNH completed. With the goal of improving its profits, in fact, the company was putting in place several cost-containment initiatives, and the reduction of manufacturing costs was one of them. In particular, CNH saw the necessity to better integrate the operations of Case and New Holland and to cut the excess capacity and the duplicate facilities. Consequently, in line with this consolidation plan, in 2000 Case's plant in *Sorocaba* and New Holland's plant in *Kissing* were closed, and New Holland's plant in *Hattingen* was sold to Carraro Group.

[23] As noted by the Commission of European Communities, for instance, distribution networks played a key role in the sale of agricultural products, and the degree of brand/dealer loyalty was high. Having a well-developed after-sales network was crucial, and it was impossible for a new entrant to build it in a short time (Commission of the European Communities, 1999).

In addition to an overall reduction of costs, CNH's other main strategic goal was to further expand in selected developing markets, and by 2002 it finalized two new joint ventures with *Shanghai Tractor and Internal Combustion Engine Corporation* (China) and *Kobelco Construction Machinery Co., Ltd.* (Japan). At that time, Shanghai Tractor was leading tractor sales in China, and had the reputation and the distribution channels which CNH needed to rapidly strengthen its position and broaden its market access in the APAC region; hence the choice a market/strategic asset-seeking brownfield FDI. The same observations apply in reality also to the joint venture with Kobelco, which was one of Japan's top developers and the fourth largest producer of hydraulic excavators in the world. Under the terms of the agreement, CNH acquired a 20% stake in Kobelco Construction Machinery and a 65% interest in Kobelco North America, and as a result of these operations, by the end of 2002 CNH's list of plants included two new entries: *Shanghai* and *Calhoun*.

In terms of the geographical spread of the activities performed in each plant, the reduction of the overall number of facilities owned, combined with the management's plan to cut the level of R&D expenditure[24], produced an interesting redistribution of R&D centers. Italy went from having six R&D departments to just three, in Canada research was moved from Winnipeg to Saskatoon, and finally in Germany a new R&D center was opened in Berlin. As the map (see Figure 16, 17, and 18) shows, the result of these operations was a more balanced network of R&D departments.

Divested			
Nation	**City**	**Business**	**Function**
Italy	Breganze	AG	M
France	St. Dizier	Comp.	M
United Kingdom	Doncaster	AG	M
	Manchester	CE	M
Germany	Hattingen	Comp.	M
	Kissing	Comp.	M
Brazil	Sorocaba	CE	M
Canada	Winnipeg	AG	M, R

Acquired			
Nation	**City**	**Business**	**Function**
United States	Calhoun, GA	CE	M
China	Shanghai	AG	M

Converted			
Nation	**City**	**Business**	**Function**
Italy	Modena	Comp.	M
	San Mauro	CE	M
Germany	Berlin	CE	M,R
Canada	Saskatoon	Comp.	M,R

Figure 15 ***Divested, acquired and converted facilities from 2000 to 2002.*** **Source: CNH Global N.V., 2002**

[24] R&D expenditure steadily decreased, going from $357 million in 1999, to $338 million in 2000, to $306 million in 2001, to finally reach $283 million in 2002.

Figure 16 C*NH's main plants in Europe at December 31, 2002.* Source: CNH Global, 2002

Figure 17 *CNH's main plants in the United States at December 31, 2002.* Source: CNH Global, 2002

Figure 18 ***CNH's main plants in the rest of the world at December 31, 2002.*** **Source: CNH Global, 2002**

4.2.3 2003-2005

From 2003 to 2005, CNH did not make any strategic significant move in terms of expansion or relocation, but instead focused even more on its effort to rationalize its set of facilities (which meant covering the same geographical areas with a smaller number of plants).

First, the company closed its plant in *East Moline* and moved the production to Grand Island, leaving in the region just an R&D facility in *Mt. Joy*. East Moline and Mt. Joy were in fact located in the Quad Cities area, in which both John Deere and Caterpillar were (and used to be, respectively) physically present with their facilities: even if the company's strategy called for a closure of the plant, it was still reasonable to keep performing R&D in a region in which the agglomeration of competitors increased the chance of spillovers.

In France, the facility in *Crépy-en-Valois* was closed, and production was concentrated in Berlin in order to cut the excess capacity in a segment (excavators) in which, at the time, demand was low. Interestingly, this move was accompanied by the closure of two other

facilities in Germany, i.e. those in *Neustadt* and *Dortmund*. The former was a manufacturing plant whose disposal was already foreseeable in 2000, when a part of its production lines was sold to Landini S.p.A., while the latter was a component facility whose functions, looking at the map(see Figure 20, 21, and 22) were probably deemed duplicate.

Finally, following a deep crisis in the Australian sugarcane industry, which in turn entailed a collapse in the demand for sugarcane harvesters, CNH decided to close its facility in *Bundaberg* and to move all operations to Piracicaba. With macroeconomic stability, an increasingly deregulated domestic market (OECD, 2005), and a strong domestic demand (USDA, 2001), Brazil was offering at the time much more than just low-cost manpower, thus making the choice to relocate production there understandable.

Divested			
Nation	**City**	**Business**	**Function**
United States	East Moline, IL	AG	M
France	Crépy-en-Valois	CE	M
Germany	Dortmund	Comp.	M
	Neustadt	AG	M
Australia	Bundaberg	AG	M

Acquired			
Nation	**City**	**Business**	**Function**
United States	Mt. Joy, IL	-	R

Figure 19 ***Divested and acquired facilities from 2003 to 2005.*** **Source: CNH Global, 2005.**

Figure 20 ***CNH's main plants in Europe at December 31, 2005.*** **Source: CNH Global, 2005.**

Figure 21 ***CNH's main plants in the United States at December 31, 2005.*** **Source: CNH Global, 2005.**

Figure 22 ***CNH Global's main plants in the rest of the world at December 31, 2005.*** **Source: CNH Global, 2005.**

4.2.4 2006-2008

The three-year interval from 2006 to 2008 was a quiet one for CNH, mainly because of the negative worldwide business conditions produced by the 2008 economic crisis. Slowed global economic growth, credit market crisis, and fluctuating commodity prices were just few among the many factors which were discouraging any company to make any significant investment and, as predictable, CNH did not enlarge its geographical scope.

Even during such a severe economic crisis and its prelude, however, the company did not stay completely put, and it decided to strengthen its presence in Brazil by reopening its plant in *Sorocaba* in 2008 (Case IH, 2008). This was once more a market-seeking FDI, in this case mainly determined by the boom of the Brazilian agricultural sector (Barrionuevo, 2008), and by the impressive pace at which the construction sector was growing (Walsh, 2008), combined with the profound knowledge of the domestic market that CNH possessed. Subsequently, with a series of resource-seeking FDI, the company completed the closure of its plant in *Belleville*, and relocated production in Mexico, Poland and Canada.

Figure 23 ***CNH's main plants in the United States at December 31, 2008.*** **Source: CNH Global, 2008.**

Figure 24 ***CNH's main plants in the rest of the world at December 31, 2008.*** **Source: CNH Global, 2008.**

4.2.5 2009-2011

Confirming its propensity towards brownfield FDI as a mean to expand into developing countries, CNH finalized in 2010 a joint venture agreement with *OJSC KAMAZ* (Russia), creating CNH-KAMAZ Industrial BV (CNH Global, 2010). With this market/strategic asset-seeking brownfield FDI the company aimed at strengthening its presence in a country in which it already possessed a widespread distribution network, without however owning any manufacturing facility. Similarly to Brazil, the domestic economy was experiencing an impressive growth, and with a strong internal demand spurred by the modernization of the agricultural sector (Liefert, Liefert, & Serova, 2009), Russia was a market CNH needed to focus its attention on. Furthermore, by locating production in *Naberežnye Čelny*, the company moved closer to the markets of the other CIS countries, thus potentially reducing transportation costs.

In line with its expansion strategy, the company also undertook another investment in India by acquiring the full ownership of its 1999 unconsolidated joint venture with *Larsen & Toubro Limited*, thus creating Case New Holland Construction Equipment India Private Limited (CNH Global, 2011). CNH obtained in this way the complete control of a plant in *Pithampur*, the 'Detroit of India', and displayed its intent to further develop its Indian manufacturing base to both serve the domestic market, and to be present as an importer in the neighboring countries thanks to the low production and transportation costs.

Finally, as it was foreseeable given the company's past behavior, the growth in developing countries was counterbalanced by a reduction in the company's manufacturing footprint in Europe and North America, which implied the closure of the plants in *Dublin* and *Imola*.

Figure 25 ***CNH's main plants in the rest of the world at December 31, 2011.*** **Source: CNH Global, 2011.**

4.2.6 2012-2014

The triennium 2012-2014 was a pivotal one for CNH, not just for the investments it undertook, but also because in 2013 it was merged with Fiat Industrial to form CNH

Industrial (Fiat Industrial, 2013). As a result of this operation, CNH entered into the commercial vehicles and powertrain applications business segments through seven new brands (*Iveco*, *Iveco Astra*, *Iveco Bus*, *Heuliez Bus*, *Magirus*, *Iveco Defence Vehicles* and *FPT*) and, more importantly for this analysis, it instantly broadened its geographical scope thanks to the facilities these brands owned (see Figure 26).

Nation	City	Brand	Business	Function
Italy	Torino	Iveco, FPT	CV, PT	M,R
	Piacenza	Iveco DV	CV, PT	M,R
	Brescia	Magirus	CV	M,R
	Suzzara	Iveco	CV	M,R
	Bolzano	Iveco DV	CV	M,R
	Pregnana Milanese	FPT	PT	M
	Foggia	FPT	PT	M
France	Annonay	Iveco Bus	CV	M,R
	Vénissieux	Iveco Bus	-	R
	Rorthais	Heuliez Bus	CV	M,R
	Fourchambault	FPT	PT	M
	Bourbon Lancy	FPT	PT	M,R
	Fécamp	FPT	PT	M
Germany	Ulm	Magirus	CV	M
Brazil	Sete Lagoas	Iveco, Iveco DV, FPT	CV, PT	M,R
Spain	Madrid	Iveco	CV	M,R
	Valladolid	Iveco	CV	M
China	Chongqing	FPT	PT	M,R
Australia	Dandenong	Iveco	CV	M,R
Venezuela	La Victoria	Iveco	CV	M
South Africa	Rosslyn	Iveco	CV	M
Switzerland	Arbon	FPT	-	R
Czech Republic	Vysoké Mýto	Iveco Bus	CV	M,R

Figure 26 ***CNH Industrial's new facilities acquired through the merger with Fiat Industrial. The business lines were Commercial Vehicles (CV) and Powertrain (PT).*** **Source: CNH Industrial, 2013.**

Additionally, CNH got involved in two new joint ventures with *Nanjing Iveco Motor Co.* (China), and with *SAIC Iveco Hongyan Commercial Vehicle* (China), which were at the time well-established players in the light and medium, and heavy, respectively, commercial vehicle market.

As the maps show (see Figure 28 and 29), the newly added facilities together presented a number of interesting features when compared to the pre-merger CNH's global footprint. The first thing that stands out is again the strong agglomeration in Europe, and the growing

presence in South America and China (i.e. developing economies with low labor and resource costs and increasing market demand), accompanied this time by a new entry: South Africa. Driven by the cost advantage that Africa enjoyed over Eastern Europe and Latin America (Iarossi, 2009), Iveco invested there through a resource/efficiency seeking FDI[25] and entered into a joint venture with *Larimar Group* for the construction of a new vehicle assembly plant in *Rosslyn* (SiVEST, 2013). Furthermore, the site chosen was located in an area in which the automotive industry was significantly developed (BMW, Nissan and Ford to name the most important manufacturers present in the province), an aspect that once more confirms the importance of agglomeration as location behavior determinant.

Looking at the functions of the newly added facilities, the other element that catches the attention is, similarly to 1999, the high-percentage of co-located R&D facilities, which reveals the somehow similar evolution that characterized CNH Global and the other brands of the Fiat Group. Even if in different business segments, in fact, each of the 12 brands spatially evolved within the sphere of influence of the Fiat Group, which surely transmitted (both directly and indirectly) its own modus operandi when it came to location and colocation decisions.

Additionally, it has to be noted that according to the company's classification of the main activities of each of its pre-existing facilities, after the merger the number of plants performing R&D went from 13 to 24, thus reflecting CNH's growing efforts in research. Not much can be drawn however in terms of features of the locations chosen, aside from a clear tendency of the company towards the creation of an evenly distributed network of R&D facilities overlapping the network of plants.

In addition to the exogenous increase in the number of facilities owned due to the merger, CNH's spatial distribution was altered in those years, for the first time, by a series of greenfield FDI. First of all, leveraging a much deeper knowledge of the Chinese agricultural

[25] In this particular case, Iveco undertook what can be classified as a "mixed" FDI. The investment in Rosslyn presented in fact elements of the greenfield investment (the construction of a new facility from the ground up) and of the brownfield FDI (the joint venture agreement with a local enterprise).

sector, the company steered away from brownfield FDI, and invested in the construction of three new facilities in *Foshan*, *Ürümqi* and *Harbin*. China was at the time already a leading producer of crops for food, feed and industrial use, but it still had a relative low degree of mechanization in several crops, which made its potential market size enormous. It was therefore strategically important to be as close to the demand as possible both with manufacturing (Foshan, Ürümqi) and with research and development (Harbin), and in fact each of the three new facilities exclusively focused on the production of machines tailored for the needs of the Chinese market (CNH Industrial, 2014). Furthermore, in light of the increased capacity within the APAC region, CNH terminated its joint venture with Shanghai Tractor and with Kobelco, and to consequently move production away from Shanghai.

With another greenfield FDI CNH then funded the construction of a new facility in *Cordoba* (CNH Industrial, 2013), the Argentinian region chosen by the Fiat Group almost 60 years before to concentrate its production activities, and the location at the time of several important players in the automotive industry (ECLAC, 2009). Differently from the investments in China, however, this was not at FDI aimed at increasing the company's market share in a foreign country, but rather a fully-fledged efficiency-seeking FDI determined by the search for lower production costs.

Finally, CNH completed in the United States the acquisition of a leading innovator in the segment of front boom sprayers, *Miller-St. Nazianz Inc.* (CNH Industrial, 2014), and of its facility in *St. Nazianz* through a strategic asset-seeking FDI. This was the first investment in North America in a long time, and it was motivated by the prospect of integrating the superior competences of the target company into CNH's global network of AG plants.

Acquired			
Nation	**City**	**Business**	**Function**
United States	St. Nazianz, WI	AG	M
Argentina	Cordoba	AG/CE/FPT	M
South Africa	Rosslyn	CV	M
China	Harbin	AG	M,R
	Foshan	AG	M
	Ürümqi	AG	M

Divested			
Nation	**City**	**Business**	**Function**
China	Shanghai	AG	M

Figure 27 ***Divested and acquired facilities from to 2012 to 2014.*** **Source: CNH Industrial, 2014.**

Figure 28 ***CNH's main plants in Europe at December 31, 2014*****. Source: CNH Industrial, 2014.**

Figure 29 ***CNH's main plants in the United States at December 31, 2014.*** **Source: CNH Industrial, 2014.**

Figure 30 ***CNH's main plants in the rest of the world at December 31, 2014.*** **Source: CNH Industrial, 2014.**

4.2.7 2015-2017

In the last triennium to be examined CNH's number of facilities and geographical scope did not vary significantly, simply because closures and acquisitions took place in the same number and in regions in which the company maintained its presence through other facilities.

First of all, the company decided to suspend production in its plant in *La Victoria* (Venezuela) as a reaction to the currency crisis which was, and is still today, hitting the Venezuelan economy. Even importing raw materials and components in the country was in fact becoming for the company an increasingly difficult task, and shutting down operations was therefore unavoidable. Subsequently, driven by a contraction in the demand for construction equipment, CNH decided to close its assembly plant in *Calhoun*, which was suffering a remarkable cost disadvantage with respect to other similar facilities (such as the one Rosslyn) due to its location in a developed country. Finally, motivated again by the

pursuit of increased efficiency and lower costs, the company moved production away from *Berlin* (CNH Industrial, 2015) and consolidated its operations in Lecce, which was its largest center of excellence for manufacturing construction in the EMEA region. In this way, CNH managed to further cut both fixed costs and excess capacity.

As mentioned before, these three closures were immediately counterbalanced by the acquisition/construction of three new facilities. First, as already happened in the case of the investments in China, CNH undertook in those years another market/efficiency-seeking greenfield FDI in a developing country in which its presence was by then consolidated, namely India. Through its new assembly plant in *Pune*, the company increased its presence in the Indian agricultural equipment market, which was at the time witnessing a growth of around 5% annually (MCG, 2015), and at the same time increased its capacity to serve other foreign markets through exports[26]. For the first time since its foundation, then, the company invested in Europe with a strategic asset-seeking brownfield FDI and acquired the full ownership of *Kongskilde Agriculture* (CNH Industrial, 2017), and of its two facilities in *Överum* and *Kutno*. As a result of the investment, the company further consolidated its presence Northern and Central Eastern Europe, and, more importantly, it broadened its product portfolio offering in the agricultural sector through the resources and (more importantly) the competences that Kongskilde possessed.

Acquired			
Nation	**City**	**Business**	**Function**
India	Pune	AG	M
Poland	Kutno	AG	M
Sweden	Överum	AG	M

Divested			
Nation	**City**	**Business**	**Function**
United States	Calhoun	CE	M,R
Germany	Berlin	CE	M,R
Venezuela	La Victoria	CV	M,R

Figure 31 ***Divested and acquired facilities from 2015 to 2017.*** **Source: CNH Industrial, 2017.**

[26] Similarly to the facilities in Naberežnye Čelny and in Pithampur, the facility in Pune can be therefore considered the result of an export platform FDI.

Figure 32 ***CNH's main plants in Europe at December 31, 2017.*** **Source: CNH Industrial, 2017.**

Figure 33 ***CNH's main plants in the United States at December 31, 2017.*** **Source: CNH Industrial, 2017.**

Figure 34 ***CNH's main plants in the rest of the world at December 31, 2017.*** **Source: CNH Industrial, 2017.**

Year	Nation	City	Type of FDI	Motivation	Function
2002	China	Shanghai	Brownfield	Market/Strategic-asset seeking	M
2002	United States	Calhoun, GA	Brownfield	Market/Strategic-asset seeking	M
2004	United States	Mt. Joy, IL	Greenfield	Strategic-asset seeking	R
2008	Brazil	Sorocaba	Brownfield	Market seeking	M
2010	Russia	Čelny	Brownfield	Market/Strategic-asset seeking	M
2011	India	Pithampur	Brownfield	Market/Strategic-asset seeking	M
2013	Argentina	Cordoba	Greenfield	Efficiency seeking	M
2013	South Africa	Rosslyn	Greenfield*	Resource/Efficiency seeking	M
2013	China	Foshan	Greenfield	Market/Strategic-asset seeking	M
2013	China	Ürümqi	Greenfield	Market/Strategic-asset seeking	M
2014	United States	St. Nazianz	Brownfield	Strategic-asset seeking	M
2014	China	Harbin	Greenfield	Market/Strategic-asset seeking	M,R
2015	India	Pune	Greenfield	Market/Resource seeking	M
2017	Poland	Kutno	Brownfield	Strategic-asset seeking	M
2017	Sweden	Överum	Brownfield	Strategic-asset seeking	M

Figure 35 ***Summary of CNH's greenfield and brownfield FDI from 1999 to 2017.***

4.3 Location behavior: theory vs. practice

In light of a deeper knowledge of CNH's location choices through its two decades of existence, it is at this point possible to go a step further by looking at the company's spatial distribution under a more quantitative perspective. Before performing an analysis of this kind, however, it is necessary to find at least one proxy for each one of the main location determinants previously identified:

- *Market size.* Given the lack of disaggregated data on the agricultural, construction, and commercial vehicles sectors, it is necessary to utilize *Per Capita GDP*, *population size*, and *GDP growth* as measures of the attractiveness of a country in terms of number of potential customers and ability to pay for the products supplied;
- *Labor market characteristics.* Labor market characteristics can be proxied through *hourly compensation costs in manufacturing*, *unemployment rate*, and *union density rate*, therefore perfectly matching the sub-determinants identified in the previous chapter;
- *Physical infrastructure.* The quality of the trade and transport infrastructure of a country can be measured through the *Logistic Performance Index(LPI)*[27], which is a benchmarking tool developed by the World Bank with the aim of assessing the trade logistics performance of 160 countries;
- *Governance.* The three main aspects which relate to governance, and in which any MNE is interested, are a country's conduciveness to private business, its tax policies, and its political and economic stability. Among the many indexes that could be chosen to describe the quality of the governance of a country, therefore, the *Ease of doing business index (EDBI)*, which ranks economies on the quality of their business regulations, the *Tax Attractiveness Index (TAI)*, which measures the attractiveness of the tax environment for corporations, and the *Euromoney Country*

[27] For further information on the Logistic Performance Index, refer to: The World Bank, 2014.

Risk (CRI)[28],which is an evaluation of investment risk based on the political and economic stability of a country, appear to be some of the most suitable;

- *Cultural distance.* As globalization is a process of interaction and integration among governments, companies and people, which ultimately reduces distances (in a broad sense) between nations, it is presumable that the more globalized two countries are, the more similar they will be. The *KOF Globalisation Index (GI)*[29] quantifies the economic, social, and political globalization of a country, and can therefore be considered as a suitable measure of cultural distance;
- *Agglomeration.* Just like in the case of market size, agglomeration is another determinant which is difficult to proxy because of the scarce availability of data. Given CNH's wide scope of business, however, the amount of *FDI net inflows*, the *FDI confidence index (FDICI)* [30] , and the *value added in manufacturing* as a percentage of GDP can be adequate indicators of the capacity of a foreign country to attract foreign enterprises and of the relevancy (also in terms of number of producers) of its manufacturing sector;

Furthermore, in order to better understand the dynamics of R&D departments location decisions, it is necessary to include two additional indicators of a country's propensity towards research and innovation, i.e. the level of *R&D expenditure* (expressed as a percentage of GDP) and the *Global Innovation Index (GII)*[31]*.*

4.3.1 Manufacturing activities

When it comes to the location of manufacturing activities, given the company's wide business and geographical scope, a single determinant whose relevance remains the same

[28] For further information on the Ease of doing business index, the Tax Attractiveness Index, and the Euromoney Country Risk, refer respectively to: The World Bank, 2018; Schanz, Keller, Dinkel, Fritz, & Grosselfinger, 2017; Euromoney, 2018.
[29] For further information on the KOF Globalisation Index, refer to: Gygli, Hagli, & Sturm, 2018.
[30] For further information on the FDI Confidence Index, refer to: A.T. Kearney, 2017.
[31] For further information on the Global Innovation Index, refer to Cornell SC Johnson College of Business, 2017.

for each location decision does not emerge. Rather, it seems to be confirmed that determinants acquire or lose importance in the eyes of an MNE depending upon the strategic intent underlying an investment. With regard to developing countries (i.e. Argentina, Brazil, China, India, Mexico, Russia, Pakistan, South Africa, and Turkey), market size and labor cost seems to play the most important role, and this is consistent with what has emerged from the analysis of CNH's historical evolution: the majority of the company's investments in those nations where in fact market-seeking and resource/efficiency-seeking FDI, motivated by the availability of low-cost manpower and by the combined presence of large populations and underdevelopment both in the agricultural and the construction sectors. Looking at the other indicators, it seems clear that the company does not give great importance neither to the infrastructure endowment of the locations chosen, nor to their tax attractiveness (they are all positioned well below the average, which is 0.5), nor to the ease of doing business there. The low degree of globalization is not too strong of a deterrent as well, while the presence of five of these countries among the top 25 FDI destinations suggests that imitative behaviors and agglomeration of international producers may play a role in influencing CNH's behavior.

Moving on to developed countries, the first thing that stands out is their remarkable heterogeneity in terms of size, wealth, and features of their labor markets. Czech Republic and Poland, in particular, appear to be fairly different from their peers, since their attractiveness is determined by their combination of low labor costs and relatively developed infrastructure, low country risk, and cultural proximity. The importance of the company's historical footprint as a spatial behavior determinant justifies instead CNH's presence in countries such as Austria and Belgium, which, aside from outstanding results in logistics performance, do not seem to possess any factor endowment capable of outweighing their small market size and their high labor costs. Finally, with regard to the remaining developed countries, the size of their markets, coupled with their well-developed infrastructures, their business-friendly regulatory environment, and their high attractiveness in terms of FDI (they are all within the top 25 FDI destinations) seem to make up for the cost-disadvantages these locations are characterized by.

Additionally, the distinction between developing and developed countries allows to identify those determinants whose importance remains low, no matter the motives underlying the investment decision. In particular, the unemployment rate and degree of unionization, along with the value added by manufacturing in the country, appear to be extremely varied even within clusters of similar countries, which leads to think that they are not factors capable of influencing CNH's locations decisions.

4.3.2 Research activities

Looking at the countries' different levels of R&D expenditure, and at their success in terms of innovation, it is of course unsurprising to find research departments located in those nations which perform well according to both of these indicators, such as Switzerland (in which, by the way, CNH does not own any manufacturing facility) and Germany. What strikes the most is instead the diffused presence of co-located R&D facilities in countries (e.g. Brazil and India) which do not invest large sums in research and do not appear to be particularly successful in innovation. Even if CNH is engaged in an industry characterized by an increasing degree of modularity in production processes (Baldwin & Clark, 1997), which should therefore require a lower degree of co-location, the spatial distribution of its R&D departments reveals how the benefits of geographical proximity between research and manufacturing can, in some cases, outweighing the unfavorable conditions of the surrounding environment. Of course, as data shows (CNH, for instance, does not perform R&D activities in neither in Argentina, nor Pakistan, nor South Africa) this is not a general rule, and it would be therefore a mistake to underestimate the importance of investments in research and innovation, which directly foster knowledge creation and act as catalyst for the location of R&D departments in a given region.

Nation	Market size			Labor market characteristics			Infrastructure	Governance			Culture	Agglomeration			R&D	
	GDP per capita	GDP growth	Population	Labor cost	Unemp.	Unionization	LPI	EDBI	TAI	CRI	GI	FDI inflows	FDICI	Man. VA	R&D exp.	GII
	2016	2016	2018	2016	2017	2012	2016	2017	2018	2017	2017	2016	2017	2016	2017	2015
	$	%	Mln.	$/h	%	%	-	-	-	-	-	$ Bln.	-	%	%	-
Argentina	12440	-2.25	45	11.2	8.1	30	2.96	58.11	0.17	4	58.54	3.26	-	16.43	0.59	32
Australia	49755	2.77	25	38.2	5.7	19	3.79	80.14	0.36	1	82.97	42.05	1.67	6.57	2.20	51.83
Austria	44758	1.48	9	39.5	5.7	27	4.1	78.54	0.53	1	90.05	-29.95	1.43	18.20	3.07	53.1
Belgium	41271	1.47	11	47.3	7.4	55	4.11	71.69	0.42	2	91.75	37.01	1.44	14.26	2.46	49.85
Brazil	8650	-3.59	211	8.0	13.4	25	3.09	56.45	0.27	3	61.4	78.17	1.52	11.71	1.17	33.1
Canada	42183	1.47	37	30.1	6.6	29	3.93	79.29	0.36	1	86.51	32.11	1.78	10.62	1.62	53.65
China	8123	6.69	1415	4.1	4.6	41	3.66	65.29	0.26	3	62.02	170.56	1.83	29.38	2.07	52.54
Czech Republic	18484	2.59	11	10.7	3.4	14	3.67	76.27	0.48	2	84.88	6.50	-	27.08	1.95	50.98
France	36857	1.19	65	37.7	9.9	8	3.9	76.13	0.48	2	87.19	35.41	1.71	11.38	2.23	54.18
Germany	42161	1.94	82	43.2	3.8	18	4.23	79.00	0.47	1	84.57	52.47	1.86	22.91	2.88	58.39
India	1710	7.11	1354	1.69	3.6	13	3.42	60.76	0.37	3	52.38	44.46	1.68	16.51	0.63	35.47
Italy	30661	0.94	59	32.5	11.6	37	3.76	72.70	0.47	3	82.19	18.35	1.56	16.27	1.33	46.96
Mexico	8209	2.29	131	3.9	3.8	14	3.11	72.27	0.24	3	62.29	33.93	1.51	19.11	0.55	35.79
Pakistan	1444	5.47	201	-	6.0	-	2.92	51.65	0.33	5	52.53	2.32	-	12.80	0.25	23.8
Poland	12414	2.86	38	8.5	5.1	13	3.43	77.30	0.35	2	81.32	16.76	-	20.42	1.00	41.99
Russia	8748	-0.22	144	-	5.3	28	2.57	75.50	0.38	4	68.25	32.54	-	13.72	1.13	38.76
South Africa	5275	0.28	57	-	27.3	-	3.78	64.89	0.41	3	66.72	2.25	1.42	13.34	0.72	35.8
Spain	26616	3.27	46	23.4	17.4	17	3.73	77.02	0.49	3	84.56	32.12	1.6	14.19	1.22	48.81
Sweden	51845	3.23	10	41.7	7.2	67	4.2	81.27	0.49	1	87.96	15.33	1.53	15.28	3.26	63.82
Switzerland	79888	1.38	9	60.4	4.5	16	3.99	75.92	0.46	1	88.79	-17.72	1.58	18.36	2.97	67.69
Turkey	10863	3.18	82	6.1	11.4	31	3.42	69.14	0.35	3	70.87	12.31	-	18.83	1.01	38.9
United Kingdom	40367	1.79	67	28.4	4.7	26	4.07	82.22	0.54	2	87.26	292.99	1.8	10.13	1.70	60.89
USA	57638	1.49	327	39.0	4.9	11	3.99	82.54	0.21	2	79.73	479.42	2.03	12.27	2.79	61.4

Figure 36 ***CNH's main locations, along with their most important characteristics (in terms of geographical behavior).***

5 CONCLUSIONS

In conclusion, the analysis of CNH's spatial behavior throughout its course of existence allows to draw some important conclusions with regard to the ways in which greenfield and brownfield FDI are used as instruments to enter into and to strengthen its position in foreign markets, on the importance that the different location determinants have in the decision-making process of an MNE, and on the relevance that co-location patterns still seem to maintain.

First of all, CNH clearly showed its preference toward brownfield FDI (joint ventures, in particular) as a mean to gain a foothold in emerging markets in which its presence was weak or null, and to mitigate the risks generated by economic and political instability thus partly contrasting what theory would have forecasted. According to the literature, in fact, in case of significant cultural distances, an MNE would be expected in principle to undertake a greenfield FDI in order to minimize the integration problems that stem from an acquisition or a joint venture.

With regard to the role played by the different location determinants, it has been confirmed that their relative importance varies in relation to the strategic objectives which an MNE pursues when it undertakes an FDI. In particular, in case of investments directed towards developing countries, CNH generally sought for large markets and low labor costs, while disregarding infrastructure quality, tax attractiveness, ease of doing business and cultural distance. In developed countries, instead, while a rationalization of the network of manufacturing facilities is undeniable, CNH maintained its presence in those nations which were more strongly tied to the history of Case, New Holland, and Fiat Group, or in which the market size and the factor endowments (in terms of infrastructure and conduciveness to private business, for instance) were significant enough to outweigh the cost disadvantages.

Finally, the spatial distribution of R&D activities confirmed at the same the importance of the role played by investments in research and by knowledge spillovers as location determinants, and the resilience of co-location patterns as means to preserve the innovation capabilities of the firm.

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