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국제학석사학위논문

**FDI Motivation of Hyundai Motor
Company in the U.S. Automotive Market**

미국 자동차 시장에서 현대자동차의
외국인직접투자 동기

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Master's Thesis

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Company in the U.S. Automotive Market**

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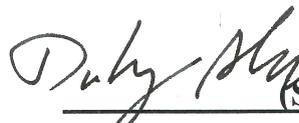
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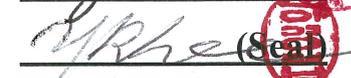
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ABSTRACT

Recent conventional literature on FDI, including the theories on international location of R&D activities and networking treat the foreign expansion as the outcome of competitive (ownership) advantage. However, they have not paid much attention to the investments based on firm-specific disadvantage by companies originating from developing or relatively less developed countries. This study, therefore, analyzes the motivations of the investments rising from the relative competitive disadvantage, with a specific focus on company's R&D globalization and their R&D alliance network rooted in an advanced region as a demonstration of "upward" trend of FDI flow. In doing so, by utilizing Dunning's eclectic (OLI) paradigm (Dunning, 1995, 2000, 2009), this study incorporates Moon and Roehl's (2001) imbalance theory in order to describe determinants of those "upward" FDI flows and its compatibility with chosen location. Research is based on empirical observations of increasing importance of the new global automobile players from South Korea. Hence, this paper uses the case study of Hyundai Motor Company (HMC) to trace company's main incentives for its foreign relocation of R&D activities and its R&D networking in the United States. Research comes with the conclusion that while cost cutting and R&D asset-exploiting is considered by the existing traditional theories as an initial reason for R&D globalization and networking; the case of HMC shows that the initial motivation for its FDI strategy was R&D resource- and asset-seeking and augmenting in order to overcome original technological ownership disadvantage. Even nowadays, HMC's R&D investments in the U.S. market have been driven mainly by the need to seek and access locally-bound specific resources and assets embedded in its R&D alliance networks which are nested in the region; and to benefit from the externalities and spillovers that the potential of the U.S. economy offers.

Keywords: Eclectic (OLI) Paradigm, Imbalance Theory, FDI, R&D Globalization, Hyundai Motor Company

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1. INTRODUCTION

A progressive globalization, liberalization and deregulation of international trade and foreign direct investment (FDI), the rapid technological development, increasing importance of knowledge, as well as an increase in the interconnectedness of activities, and emergence of multinational companies (MNCs) from Asian countries have essentially changed the global competitive dynamics. Allied to these trends, the rise of an alliance capitalism that binds together more closely inter-organizational networks has led to a geographical dispersion and restructuring of activities of MNCs' value chain such as research and development (R&D). While both market access and cost reductions remain important determinants; flexibility and access to external resources that are unavailable at home now drives the decisions for FDI (Slocum, 1992; Nieto & Rodriguez, 2011; Schmid & Grosche, 2013; UNCTAD, 2013). Therefore, it became clear that specifications such as location strategy and the acquisition of specialized capabilities need to be reconciled (Cantwell, 2009; Dicken, 2011).

The majority of studies (Kogut & Zander, 1993; Florida, 1997; Kuemmerle, 1999; Dunning, 1995, 2000, 2009; Porter, 2000; Cantwell, 2009; Nieto & Rodriguez, 2011) treat multinationalization as the outcome of competitive (ownership) advantages which are based on possession of unique assets. Hence, those theories can, however, only explain "downward" trend of FDI flow coming from advanced economies, not the opposite one originating from developing or relatively less developed countries that have ownership disadvantage. Moon and Roehl's (2001) imbalance theory, on the contrary, explains this unconventional phenomenon of "upward" FDI flow and states that in fact, MNCs possess both ownership advantages and disadvantages. It is the asymmetry among strategic assets of a company (whether it is caused by advantages or disadvantages) that makes a firm invest abroad since the firm cannot balance its strategic assets more effectively in its domestic market (Moon & Roehl, 2001). Partly because of that dynamic shift in the environment, the interaction between ownership advantages (or disadvantages) and locational attraction now occurs more often in a more complex and intertwined MNC

system (Dunning, 1995, 2000, 2009; Cantwell, 2009). In a more recent business setting, MNCs have been relying on the interrelatedness between their specialized value-added operations conducted in particular locations, each of which takes advantage of spatially specific resources through alliance network relationship with other local actors (Gulati *et al.*, 2000; Gress & Poon, 2008b; Cantwell, 2009; Dicken, 2011). Firms are engaged in deepening and broadening their capabilities which are crucial for their long-term existence, growth and competitiveness, by measures such as investing in own R&D and looking for network cooperative partnerships to its own in-house R&D, both abroad (Hagedoorn & Schakenraad, 1994; Lin & Wu & Chang & Wang & Lee, 2012). This strategy helps MNCs to get access to advanced technologies, high-quality human infrastructure and knowledge, and develop their innovative ability (Malmberg & Maskell, 1999; Dunning, 2000, 2009). R&D alliance networks can be then seen as a learning platform for globalizing firms (Porter, 2000; Lin *et al.*, 2012).

The aforementioned conventional approaches have investigated the reasons for MNCs to internalize their R&D centers abroad and advanced understanding of MNCs' R&D globalization; nevertheless, they regard the competitiveness of the firm as a precondition for foreign expansion. Therefore, building on above described, this study intends to address the opposite side of the coin, that is, the investment motivations rising from the relative ownership disadvantage (Moon & Roehl, 2001) with a specific focus on company's R&D alliance networks rooted in advanced region as a demonstration of "upward" trend of FDI flow. Research is based on empirical observations (Lansbury & Suh & Kwon, 2007; Dicken, 20011; Suh & Wang & Nam & Zhang, 2012) of increasing importance of the new global automobile players from South Korea. Thesis attempts to support reviewed theoretical approaches by using the case study of Hyundai Motor Company (HMC) in order to trace company's main incentives for its R&D globalization and alliance networking, specifically in the U.S. market. By utilizing Dunning's OLI paradigm (Dunning, 1995, 2000, 2009), this study incorporates Moon and Roehl's (2001) imbalance theory in order to describe determinants of those "upward" FDI flows and its compatibility with chosen location.

In the first step of this research, the analysis specifically focuses on Korean automotive industry and its characteristics. This Korean automotive market description is important for deriving of some HMC's motivations that have led to outward R&D investments and foreign expansion in recent years. Following section then concentrates on the U.S. automotive market analysis in order to explain its attractiveness and specifics that, in general, might shape foreign firms' capabilities. In the final step, the study centers its attention on the case of HMC and answers the research question: "What is HMC's main motivation for R&D globalization and its alliance networking in advanced high-cost market such as the United States?"

Study concludes that, overall, whereas efficiency-seeking and R&D asset-exploiting is considered by the existing traditional literature (Cantwell, 1995; Dunning, 1995, 2000, 2009; Florida, 1997; Kuemmerle, 1999; Nieto & Rodriguez, 2011) as an initial reason for R&D globalization and networking; the case study of HMC shows that limited or disadvantaged domestic technological and knowledge base was the motivation that drove HMC to seek and access foreign external resources in advanced U.S. market first in order to overcome own firm-specific disadvantages which could not be balanced out in its home market. In other words, HMC reversed the traditional path and started its R&D globalization and network expansion for the purpose of R&D resource and asset-seeking and augmenting due to the insufficient technological knowledge base and experience. Even though overtime HMC has advanced its technological capabilities and knowledge, it is still lagging behind the established automotive leaders in the field of hybrid and fuel-cell powered vehicles. Therefore, even recently HMC's R&D investments in the U.S. market have been driven by the need to access locally-bound specific resources and assets embedded in HMC's R&D alliance networks which are rooted in the region; and to benefit from the externalities and spillovers that the potential of the U. S. economy offers.

By using the case study of HMC, this thesis contributes, in comparison to classical approaches, by addressing the unconventional phenomenon; that is, the investment motivations rising from the relative ownership-specific disadvantage

described by the imbalance theory (Moon & Roehl, 2001). Furthermore, by focusing on HMC's R&D globalization and networking, it supports the literature on relocation of HMC's production subsidiaries overseas (Lansbury & Suh & Kwon, 2007; Wright & Suh & Leggett, 2009; Suh & Wang & Nam & Zhang, 2012) and globalization of the value chain activities.

2. LITERATURE REVIEW

In general, FDI theory distinguishes investment flow according to its direction. Investment coming from a more developed economy to developing or relatively less developed one is called “downward” FDI. On the contrary, investment originating in developing or relatively less developed country and heading to more advanced economy is termed “upward” FDI. In order to understand motivations that lead companies from developing and relatively less developed countries to invest in more advanced markets abroad, it is necessary to review some of the key state-of-the-art theories of FDI first.

2.1 The Conventional vs. the New Approach to FDI

It is typical to trace the origin of the modern classical theory of the FDI to Hymer (1976)¹. According to some scholars (Moon, 2004a: 4), until Hymer formulated the process of FDI as an international extension of the industrial organization theory, it was not possible to understand why the MNC transfer its products among its units across different nations. The major argument of Hymer was that MNC exists to overcome structural market imperfections, and to go abroad; firm is supposed to possess an ownership (monopolistic) advantage (Moon, 2004a). However, in spite of the aforementioned, as Dunning and Rugman (Moon, 2004a) pointed out later, Hymer’s theory had a few shortcomings; first, he missed the distinction between structural (endogenous) and transactional (exogenous or Williamson-type) market failures (Horaguchi & Toyne, 1990; Moon, 2004a), plus he failed to specifically identify internalization as a paradigm for the theory of FDI. Therefore, other scholars (e.g. Rugman, 1981) extended his original ideas into the formal theory of internalization (Dunning, 2000; Moon, 2004a). Conventional internalization theory avows that as long as the transaction and coordination costs of using external markets in the exchange of intermediate products, information, technology, marketing, techniques, etc. exceed those

¹ Moon and Roehl, 2001

incurred by internal hierarchies, then it will pay a firm to engage in FDI, rather than conclude a licensing or another market related agreement with a foreign competitor (Dunning, 2000: 179). It was Dunning who advanced the internalization theory further by incorporating two other variables such as ownership advantage and locational attraction (Moon, 2004a), and introduced his eclectic (OLI) paradigm (Dunning, 2000).

2.1.1 Eclectic (OLI) Paradigm

Initially, the paradigm primarily addressed static and efficiency related issues; however, later it was modified to reflect changing global trend of competition under the dynamics of emerging alliances and increasing importance of knowledge-based economy.

Generally, the original eclectic (OLI) paradigm, form in 1976, avers that the extent, geography and industrial composition of foreign production undertaken by MNCs is determined by the interaction of three sets of interdependent variables which themselves comprise the components of three sub-paradigms (Dunning, 2000: 163). The first sub-paradigm is the competitive (ownership) advantage (O). In order to compete with local firms, the MNC must possess firm-specific advantage relative to that (those) possessed by its foreign competitors (Moon, 2004a). Originally, Dunning classified three types of competitive advantage such as privileged position of specific income asset, branch plant advantage, and geographical diversification. In his latter typology, however, he made further distinction between the asset (Oa) and transaction (Ot) advantages of the MNC (Moon, 2004a: 7). The main idea of the initial theory then is that the most successful MNCs are those that are the best in exploiting both asset and transactional ownership advantages (Moon, 2004: 8). The second is the locational attraction (L) of different countries or regions for undertaking the value-adding activities of MNCs (Dunning, 2000: 164). The locational attractiveness includes, for instance, immobile factor endowments, intermediate products, or other incentives in foreign host countries. Depending on the form of market imperfection, government might or might not intervene and thus, encourage or discourage FDI (Moon, 2004a). Dunning (2009: 21) as well

showed that (O) advantages of investing firms may be influenced by the (L)-specific attributes of countries in which MNCs operate. Lastly, the third sub-paradigm of the OLI tripod offers a framework for evaluating alternative ways in which firms may organize the creation and exploitation of their core competencies, given the locational attractions of different countries or regions. Dunning's internalization (I) acknowledge that the greater the net benefits of internalizing cross-border intermediate product markets, the more likely a firm will prefer to engage in foreign production itself, rather than license the right to do so to a foreign firm (Dunning, 2000: 164). Regarding this last variable of internalization, Dunning (2000) points out four main types of foreign based MNC activity, such as market-seeking (or demand oriented FDI), resource-seeking (or supply oriented FDI), efficiency-seeking (promotion of more efficient division of labor or specialization of an existing portfolio of foreign and domestic assets) and finally, strategic asset-seeking (protection or augmenting the existing ownership advantages of investing firms and reduction those of their competitors).

All things considered, the eclectic (OLI) paradigm represents even nowadays the dominant analytical framework for accommodating a variety of FDI activities of MNCs. To be more specific, this thesis is going to center its attention on the first two sub-paradigms of the framework starting with analysis of variable of the competitive (ownership) advantage.

In general, conventional theories of FDI such as Hymer's internalization theory or Dunning's OLI paradigm treat multinationalization as the outcome of competitive advantage which is based on possession of unique assets. Those theories, however, can only explain form of "downward" investment, not the opposite one coming from developing or relatively less developed countries. Dunning admitted that the outward FDI by MNCs from developing or relatively less developed economies into developed countries has questioned the ability of traditional theories to explain such phenomenon, but he has not clearly explained this new type of FDI by his OLI paradigm yet (Dunning

2001: 183). In fact there exists a variety of FDI, much of which is not well explained by his advantage approach.

2.1.2 The Imbalance Theory

Increasing variety of investments coming from developing or relatively less developed nations is a challenge for traditional theories of FDI that are based on ownership-specific dominance which give MNC the advantage abroad. Those “unconventional” investments (Moon & Roehl, 2001) are characterized as ones coming from a firm that has any significant ownership advantage in comparison to its more advanced competitors and invests in more advanced foreign markets in order to maintain or enhance its competitive position. This kind of nontraditional FDI is mainly about investment seeking new assets and is different from the conventional, ownership advantage asset-exploiting and enhancing FDI formerly illustrated by Dunning (Moon & Roehl, 2001: 199). Established FDI theories envision a MNC possessing a profiting resource (Wernerfelt, 1984; Barney, 1991). In accordance with Moon and Roehl (2001), the main idea in explaining the behavior of these conventional MNCs has been the internalization theory. Internalization theory is looking inside the firm rather than at market power. However, this approach is unsatisfactory in providing explanation for observed FDI activity coming from developing or less developed countries (Moon & Roehl, 2001). Therefore, generally, increase in unconventional FDI cannot be explained by classical theories such as ownership-advantage approaches (Dunning, 2009) or by a static resource-based view of the firm (Wernerfelt, 1984; Barney, 1991).

In fact, the MNC possess both ownership advantages and disadvantages. Company with advantages may invest abroad by exploiting those advantages or by internalizing the markets. Such example is a typical case of conventional FDI. On the contrary, the firm may be motivated by its own disadvantages in engaging in foreign markets (Moon & Roehl, 2001). Moon and Roehl (2001: 200) suggested in their

imbalance theory that both advantages and disadvantages, or their balance, should be considered in the FDI decision. Firms originating from developing or relatively less developed economy decide to invest abroad when they expect that the investment will lead to higher returns on their portfolio of firm-specific assets. It is just as likely that an asset in which the firm has a deficiency will drive the company to invest in foreign markets (Moon, 2004b). That is, the imbalance theory describes that the optimal level of scale for a firm is determined not by the surplus factor, but by the most deficient (critical) factor. Therefore, the surplus (unused) factor should collaborate with its complementary factors abroad, assuming that the gain which can be obtained by increasing the level of optimal output or growth of the firm from investment is larger than the cost which arises when the surplus factor moves (Moon, 2004b: 129). Then under this premise, as Moon (2004b) noted, the existence of any surplus factor can be used for investment motivation. It is a “disadvantage” in the sense that the marginal productivity of the surplus factor is small and that the cost to maintain it may not be negligible, assuming the company operates on the most efficient scale which requires optimal requirements for each factor (Moon, 2004b: 130). But when firm makes an investment decision, the surplus factor becomes an important ownership advantage and contributes to a greater level of optimal output than before by raising the productivity of each factor. MNCs seek complementary factors in foreign markets and increase the economic value of these as well as their own factors, by balancing the factor inputs to their optimum level (Moon, 2004b: 130). According to above described, disadvantage of deficient factor gives a rationale to the behavior of firms for the efficient allocation decision (Moon, 2004b).

Therefore, a firm with weaker set of firm-specific advantages (in other words with disadvantages) may choose to go abroad to, for example, seek complementary assets (Moon & Roehl, 2001: 202). Table 1, in general, classifies and compares conventional and unconventional FDI incentives that lead MNCs to invest abroad. The main FDI determinants based on ownership disadvantage of a firm from developing or relatively less developed economy mentioned in the table then are, for instance, small home market,

regulation bypassing, strategic location, market and technology learning, lack of key technology or resources, strategy of following the leader, competitive threat (catching-up), political reason and political instability, bad home image, or lastly insufficient infrastructure (Moon & Roehl, 2001; Moon, 2007).

Table 1: Typology of FDI

	Conventional FDI (ownership advantages)	Unconventional FDI (ownership disadvantages)
Market-seeking	Conventional advantages (e.g., technology, capital)	Small home market
Factor-seeking	Conventional advantages (e.g., technology, capital)	Lack of key technology or resources
Oligopolistic reaction	Leader Conventional advantages (e.g., technology, capital)	Follower Competitive threat
Risk diversification	Financial Reason Surplus capital	Political Reason Political instability
COO	Good home image	Bad home image

Source: Moon & Roehl (2001: 200);

* Country-of-origin and product image (COO)

In terms of market-seeking, for instance in Dunning's theory, the locational advantages are the same for all MNCs, but in the unconventional theory the relative importance of variables depends on the imbalance of the assets of the companies and its investment decisions. A MNC's activity to balance its asset-portfolio thus provides both economic value by raising productivity and strategic value of acquiring complementary and needed assets (Moon & Roehl, 2001). The FDI motivation of imbalance theory, according to Moon and Roehl (2001), is not just a search for complementary assets, but also to boost productivity of firm-specific assets, which will lead to strengthening the existing position and create a new advantage with an enhanced productivity. For that reason, the role of ownership disadvantages is as significant as that of ownership advantages in investment decision. Therefore, in the case of seeking new markets, one might argue that the main motivation for investments is the location factor, that is, for

example the U.S. market size. The conventional theory cannot explain the phenomenon which firm enter. As was mentioned before, locational factors are the same for all the firms in a host country (Moon & Roehl, 2001). But according to the imbalance approach, the fundamental motivation is neither ownership-specific advantage nor the factor of location, but rather the ownership disadvantage of the firm causing the imbalance of the firm's asset portfolio (Moon & Roehl, 2001: 205). Furthermore, the essential determinants for factor-seeking encompass sourcing aspects (Moon & Roehl, 2001). For this purpose, according to traditional theories, MNCs from developed countries utilizes its ownership advantage and often search for production factors as the labor and natural resources in less developed countries. However, Moon and Roehl (2001) mentioned that leading technology and know-how in advanced nations such as the USA, for example, are important factors that attract FDI from developing or relatively less developed economies. Hence, the major motivation for this unconventional FDI is not ownership advantage but the incentive to overcome the most significant shortcomings in access to strategic asset. About the last FDI motivation, Moon and Roehl (2001) mentioned country-of-origin and product image. Indeed, home country image of the firm coming from developing or relatively less developed region may be perceived as a disadvantage that can motivate companies to invest abroad in more developed markets in order to improve products brand awareness.

Generally, conventional approaches, whatever factor of production such as capital, technology, managerial skills or knowledge is stressed, the main interpretation of existing traditional theories is focused on the ownership-specific advantage in explaining the rationale behind the "downward" FDI. In the past, traditional theories were concentrated mainly on the explanation of the choice of FDI. They asked "how", rather than "why" because they already supposed that investing company possess ownership dominance that was regarded as the motivation. Nevertheless, unconventional Moon and Roehl's (2001) imbalance theory, which explains both "downward" and, by classical theories unexplained, "upward" investments, argues that an asymmetry among strategic assets of a company (whether it is caused by advantages or disadvantages) makes a firm invest

abroad since it cannot balance its strategic assets more effectively in its home market (Moon & Roehl, 2001). MNCs from developing or relatively less developed countries are disadvantaged in comparison to its more established rivals; therefore, they are motivated to invest in foreign advanced markets to overcome their disadvantages by technology learning (lack of key technology and resources), market learning (small home market, bad home image), searching for new strategic location and infrastructure, by catching-up, or by regulation bypassing (Moon, 2007).

Turning to the sub-paradigm of locational attraction (L) in OLI framework formerly described, since Dunning firstly introduced his eclectic (OLI) paradigm, global trend has changed towards more dynamic form of competition under the alliances formation. Dunning (1995) has called this phenomenon as an “alliance capitalism” (more appropriate description of the features of innovation-lead capitalism, according to his words).

2.2 The Emergence of Alliance Capitalism

This new trend brought together a new type a foreign based MNC activity defined as an asset-enhancing (augmenting) investments which differ from, until common, asset-exploiting FDI, even though it is still based on the concept of ownership advantage (Dunning, 1995). Given the rapid proliferation of alliances as a form of inter-organizational relationships, neglecting the business networks in which firms are embedded can lead to an incomplete understanding of the firm behavior (Gulati *et al.* 2000). Therefore, Gulati *et al.* (2000) linked business network theory and strategic alliances literature and came up with the term “alliance networks”.

Those collaborative arrangements usually involve only a part of the cooperating firm’s activities, and also might entail no change in the ownership structure of the participating firms (Dunning, 1995). The goal of such strategic partnerships is then to gain access to new and complementary technologies, to speed up innovatory or learning

processes and to upgrade the efficiency of particular activities (Dunning, 1995: 467). The pressure from shifting global environment leads firms to change their business strategy and reconsider both scope and organization of their value-added activities. In particular; for example, firms moves towards the disinternalization of activities both along and between value-chains, that is, both horizontally and vertically; and towards the specialization on those activities that require resources and capabilities in which MNCs already have (or can acquire) a perceived competitive advantage. Dunning (1995) termed this as a strategy of “*concentrate on critical competency*”. Build on these observations, Dunning (1995: 474) has identified some additional OLI variables (see appendix) that he has thought of need to be incorporated into the theorizing about MNC activity. For example, in the case of (L) sub-paradigm that affects MNC activities Dunning (1995) stressed the availability of specific resources and capabilities that investing firms believe are necessary to both upgrade and utilize their ownership-specific advantage and that lead firms to engage themselves in alliance networking. That is, the response of firms to economic geography may be different because of the impact that external alliance might have upon their competitive strength and global strategies (Dunning, 1995).

Overall, Dunning (1995) has acknowledged that the traditional assumption that the capabilities of the individual MNC are limited to its ownership boundaries is no longer valid. On the contrary, the MNC enters alliance networks not only in order to exploit their current advantage but also to augment new one. This concept can be combined with Moon and Roehl’s (2001) imbalance theory and applied on the case of MNCs coming from developing or less developed countries as well. In this sense, the importance of economic geography in which alliance networks are embedded is, in terms of specialization, increasing.

2.2.1 Rephrasing Locational Attraction (L) Sub-paradigm and the Significance of Knowledge

In his more recent work Dunning (2000) paid special attention to the local strategy of MNCs (Moon, 2004s) and rephrased (L) variable of OLI framework. He asserts that the more the immobile, natural or created endowments, which firm need to use jointly with its own competitive advantage, favor a presence in a foreign location, the more firm will choose to augment or exploit its (O)-specific advantages by engaging in FDI (Dunning, 2000: 164). In other words, the nature and composition of a country or region's comparative advantage is now more geared to its ability to offer a distinctive and non-imitable set of location bound created resources and assets, including the presence of indigenous firms and other actors with which foreign MNCs might form alliance networks to complement their own core competencies. Strategic alliance networks represent an important source of knowledge and innovation capabilities (Dunning, 2000). In accordance with knowledge-based theorists (Kogut & Zander, 1993; Maskell & Malmberg, 1999), the more tacit the knowledge is, the more likely it will be transferred to a firm's wholly owned subsidiary. In other words, to access such new or uneasily codifiable tacit knowledge might be driving force for firm's process of internalization and FDI expansion (Maskell & Malmberg, 1999; Dunning, 2000). Furthermore, the more easily codified knowledge is accessed by everyone, the more important tacit knowledge become in sustaining or enhancing the competitive position of the firm (Maskell & Malmberg, 1999). That is, firms exploit their current knowledge and expand into new markets motivated to capture tacit nature of a new know-how (Kogut & Zander, 1993). In today's knowledge driven economy, strategic alliance networks reflect this need by MNCs domiciled in one country to harness or tap into the resources and created assets of foreign actors abroad. Technological advances, more intensive cooperation and the increasing mobility of some kinds of firm-specific assets made all of this possible (Dunning, 2001: 183). Locational requirements of "alliance networks" resource and strategic asset-seeking FDI are attracted less by the need to reduce production costs,

overcome trade barriers, or exploit economies of scale, but more by the presence of high-quality physical and human infrastructure and a favorable political and commercial environment (Dunning, 2001). It is possible to conclude then that firm is better viewed as an organizer of a collection of created assets, some of which it generates internally and others which it accesses from other actors. Accepting this idea, the (O)-specific advantage of firm will depend not only upon those internally generated, but also upon their competence to search for and influence, for instance, knowledge and innovations of others with which it have and ongoing cooperative relationship. For example, non-equity form of cooperation, particularly this geared towards innovatory activities has become an increasingly important part of corporate strategy (Dunning, 2001, 2009). In sum, comparative advantage of certain location rests on the specifics that particular country or region can offer. Those distinctive and non-imitable set of location bound created resources and assets are embedded in the presence of alliance networks which are seen as an external source of uneasily codifiable tacit knowledge and innovative capabilities. Such knowledge then represents motivation for expansion into foreign markets. In other words, specific location is an external factor that influences firm's ownership advantage and determine a geographical direction of FDI flow.

In the next section, this study therefore further focuses on MNCs' global production network that includes formal and informal networking in advanced markets, mainly as a tool for accessing new markets, obtaining advanced and knowledge-based resources, and complementary strategic asset.

2.3 Network Theory and FDI

In conditions of today's globalized world, scholars (Ernst & Kim, 2002; Coe & Dicken & Hess, 2008; Dicken, 2011) describe networks as a virtual form of firm strategical organization which they term a "global production network" (GPN). This concept is understood as a broad horizontal and vertical relational dynamic circuit of

interconnected functions, operations and transactions through which a specific commodity, good or service is produced. The overall structure of a network then can be thought of in terms of interactions between networks of varying degrees of size (length and width) and complexity (Gress & Poon, 2008a). Term “global” does not automatically imply that such networks actually span the entire world; rather it proposes that they are highly geographically extensive and integrated across boundaries of one nation (Dicken, 2011: 56). Firm network theory, in general, has become a popular framework to analyze activities taking place between firms and the places in which they are located, as well as between firms and their partners (Gress & Poon, 2008b; Gress, 2011; Dicken, 2011).

2.3.1 *Importance of Location*

Following the recent dynamic trend of global competitive pressure on MNCs, the fragmentation of production processes and the international dispersion of activities have led to the emergence of borderless production systems. UNCTAD World Investment Report (WIR) 2013 states: “*These can be sequential chains or complex networks, their scope can be global or regional, and they are commonly referred to as global value-chains.*”² A value-chain can be thought of as a more static, sub-set of a production network, a simplified snapshot taken within the much more complex and dynamic package of activities encompassed by the GPN.

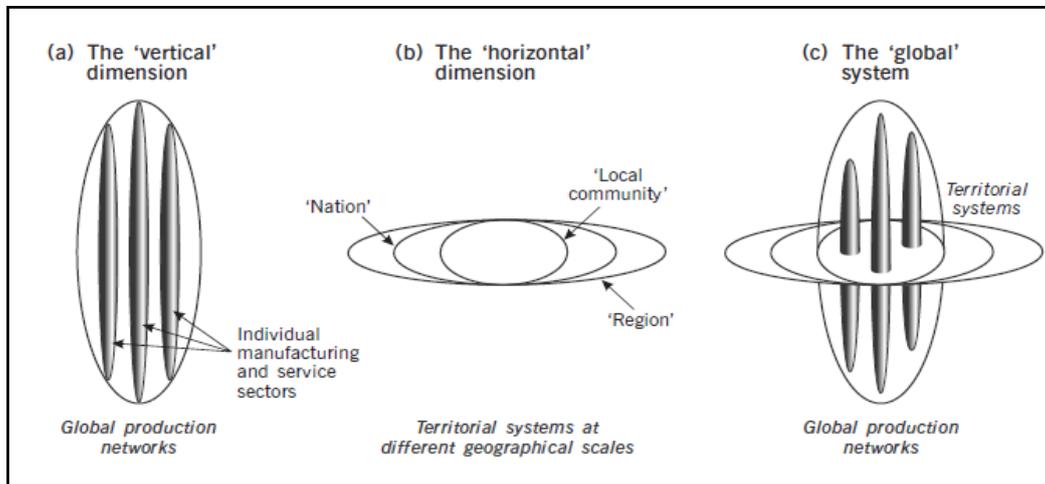
Viewing a firm as a value-chain, firm is broken up into the smaller units on the grounds of efficiency. Value-chain arrangement allows a firm to be more flexible, to engage in faster learning (Slocum, 1992) and to specialize in those activities that are essential to its competitive advantage (Jarillo, 1988), that is, as Dunning (1995) described, firm’s strategy “*concentrate on critical competency*”. In a current global business setting, MNCs’ strategy is to link organizational value-chain activities with different geographical networks in the form of localized “natural” or “created” clusters of which geographical

² UNCTAD, 2013: Overview xxi

scope might span from regional, state to city level (Porter, 2000; Dicken, 2011). Indeed, the MNC breaks down the value-chain activities into a variety of distinct functions and locates them wherever they can be carried out most effectively, in other words, where they improve the firm's access to resources and capabilities, and where they are needed to facilitate the penetration of important markets (Ernst, 2002). The essence of such FDI strategy is the combination of firm-specific asset with location-specific asset of foreign geographical area of certain economic activity. In that sense, according to Dicken (2011), geography and its characteristics matters a lot. Recalling Dunning's (2000) words again, the nature and composition of a country or region's comparative advantage is more geared to its ability to offer a special and non-imitable set of location bound created asset, including the presence of indigenous actors with which foreign MNC might form alliance networks to complement its own competencies. Dunning (2000) concluded as well, that location is important, it shapes firm ownership-specific advantage; in the case of MNC from developing or relatively less developed country then ownership-specific disadvantage (Dunning, 2000; Moon & Roehl, 2001).

Nowadays, a more complex, integrated and interactive MNC's value-chain activities for the generation of new skills relies on the interrelatedness between specialized activities conducted in particular location (regions that have become international centers of excellence for some specific field) each of which takes advantage of spatially specific asset, resources or capabilities (Dunning, 2009; Cantwell, 2009: 36). In other words, individual chosen locations are inevitably specialized and interlinked with MNC's tasks. Subsidiaries located in those clusters then put emphasize mainly on resource-seeking, asset-seeking or asset-augmenting motives. Figure 1 captures the main dimension of such relationship. MNC's individual production network (or part of its value-chain activity) can be regarded as vertically organized structures intertwined with geographical scale abroad (Dicken, 2011: 73).

Figure 1: Interconnecting Dimensions in Globalizing Economy



Source: Dicken (2011: 72)

Current accelerating pace of global dynamic change is forcing firms to create innovative knowledge and enhance their know-how in more efficient manner. Therefore, firms are engaged in deepening and broadening their capabilities, which are crucial for their long-term existence, growth and competitiveness, by measures such as investing resources in own R&D and looking for network cooperative alternatives to own in-house R&D, both abroad (Hagedoorn & Schakenraad, 1994; Lin *et al.*, 2012).

FDI in R&D has grown rapidly over the past few decades and resulted in building up of MNCs' global R&D networks (Florida, 1997; Nieto & Rodriguez, 2011). While cost cutting was the initial motivation, the need for flexibility and access to resources that are unavailable at domestic market now drives the decision to offshore more R&D activities (Florida, 1997; Nieto & Rodriguez, 2011; Lin *et al.*, 2012). In the past, MNCs' globalization of firms R&D activities has been largely triggered by internationalization of production or processes in order to adapt those to local conditions, or to create peripheral products adapted to local tastes or needs abroad. This trend is referred to as asset-exploiting R&D and takes place when firms try to use their firm-specific technological advantage for foreign-specific conditions. In other words, this strategy is associated with

demand-driven innovation activities. As a local demand grows increasingly sophisticated, local R&D facilities are useful in helping a firm to adapt existing products better to local needs. When firms establish manufacturing facilities abroad and assign increasingly complex products to them, R&D sites in close proximity to factories are necessary (Kuemmerle, 1999; Sachwald, 2008).

In contrast to this “local-demand” motive for FDI in R&D, a number of researchers (Florida, 1997; Sachwald, 2008; Nieto & Rodriguez, 2011) have pointed out more recently that the MNC’s main driver for FDI might be a need to seek new asset and to augment its current knowledge base (Kogut & Zander, 1993). Simply speaking firms intent to acquire knowledge and internalize technological spillovers that are host location specific (Nieto & Rodriguez, 2011). As it was described previously, tacit knowledge is based on experience which people can acquire through observation, imitation and practice. Hence, its diffusion requires face-to-face interactions (Ernst & Kim, 2002). Specific nations and specific regions within them might be particularly advantageous locations for R&D facilities because of potential spillovers. For this reason, numerous Asian R&D laboratories have been established in American advanced clusters and high R&D intensity states. The quality of the scientific, analytical and technological environment always has a positive impact on the location of foreign R&D investments (Sachwald, 2008). In general, the premise in this case is that MNCs undertake international R&D activities primarily to support its local production and also to gain access to complementary location-specific resources that are not as easily available in their home bases. Such R&D investments provide MNCs with an opportunity to gain a connection to highly skilled engineering, scientific and analytical talents and, then, may represent a means of obtaining or improving the inputs necessary for innovation (Nieto & Rodriguez, 2011).

Generally, when choosing a location, firms’ decision varies in particular on two dimensions such as institutional framework and resource endowments (Meyer & Mudambi & Narula, 2011). Those differences and its costs and benefits influence attractiveness of a location. Particularly, UNCTAD (2013) provides list of determinants

affecting company's choice. Those include economic characteristics (e.g. market size, growth potential, infrastructure, labor availability and skills), the policy framework (e.g. trade agreements and the intellectual property regime) and business facilitation policies (e.g. cost of doing business and investment incentives). As UNCTAD's report further states, locational determinants of MNC activity are increasingly specific to company's value-chain segments, for example, in the case of R&D activities, it lists a specificity of a presence of specialized clusters and suitability and characteristics of available labor force.

Recently, MNCs are becoming more and more knowledge driven, competition forces them to seek and develop knowledge advantages wherever they can find them. However, scholars (Meyer & Mudambi & Narula, 2011) have pointed out that clusters vary in terms of the sophistication of the local resources. Older and more established clusters tend to have deeper and more sophisticated pools of resources, meanwhile younger and emergent clusters tend to have shallower and less advanced ones (Porter, 2000; Meyer & Mudambi & Narula, 2011). Therefore, when deciding about location, level of local sophistication plays a significant role in terms of accessing those knowledge-based resources necessary for MNCs' strategic purpose as well. Furthermore, in order to entry required level of local knowledge, it is important for the MNC through its subsidiary to understand the nexus within which that knowledge resides. The subsidiary must tap into the alliance networks of local actors to learn about, for example, technologies and thus capture knowledge, or hire local specialist to improve its asset portfolio (Meyer & Mudambi & Narula, 2011). For this reason and also since knowledge is often experiential in nature (Kogut & Zander, 1993), MNC's physical presence and face-to-face contact is necessary because participants are exposed to more advanced insights into evolving technology, component and machinery availability, different concepts, and the like. Geographic area (cluster) then appears to be useful heuristic device for capturing local specifics embedded in firms' alliance network activities in space (Gress & Poon, 2007).

2.3.2 Alliance Networks

From the spatial perspective, strategic alliance networks have been historically seen by, for example, Jarillo (1988) as long-term, purposeful arrangements among distinct but related for-profit organizations that allow those firms in them to gain or sustain stronger competitive advantage. D’Cruz and Rugman (1994), and Dunning (1995, 2001, 2009) advanced this concept and described networks as a governance structure for organizing exchange through cooperative relationships among firms and also non-business actors. Generally, each of the major sets of actors in the global economy is involved in both collaboration and cooperation on the one hand and in conflict and competition on the other. So, for instance, MNCs in the automotive industry cannot be meaningfully analyzed without considering both collaborative and competitive side of the strategic alliance networks (Gulati *et al.*, 2000; Porter, 2000; Gress & Poon, 2008a: 288).

As it was mentioned above, essential to the general concept of alliance networks is presence of MNC’s local subsidiary which takes a pro-active attitude in foreign markets (Jarillo, 1988; Gress, 2011). Tapping into the resources and assets within a cluster requires “insider” status; therefore, company must participate actively and engage itself locally with established partners such as selected competitors, suppliers, customers, and governmental or non-governmental organizations including universities (Porter, 1998; D’Cruz & Rugman, 1994; Gress, 2011). Subsidiary is supposed to have the perspective and resources to lead the network in the crafting and successful execution of a MNC’s global strategy. It provides strategic direction and purpose to the network by orchestrating the relationship among its partners (D’Cruz & Rugman, 1993). Subsidiary itself, in general, might profit from cost efficiency and already discussed access to external capabilities. For instance, in regard to the relationship with educational institutions, it can benefit from accessed pool of knowledge, human resources, equipment, facilities, and institutional arrangements. Those institutions particularly provide a valuable forum for the alliance network’s partners to promote cooperation (Jarillo, 1988; D’Cruz & Rugman,

1994; Dunning, 2001; Ernst, 2002). MNC, on the other hand, provides leadership and vision in terms of resource allocation, competency exploitation, and the financial resources mobilization (D'Cruz & Rugman, 1994). Broadly speaking, in business strategy, alliance network relationships are pursued to help company build its resources and competencies (Gulati *et al.* 2000).

Namely, alliance networks in R&D are critical for the development of MNC's skills and its innovative ability. In other words, R&D alliance networks can be seen as a learning platform for MNCs (Porter, 2000; Lin *et al.*, 2012). In the field of new technologies where innovations are spatially sticky and where knowledge is tacit, typically embodied in highly skilled workers, the need to communicate this knowledge creates a high proximity requirement such as already mentioned face-to-face contact (Ernst, 2002; Storper & Venables, 2003). Communication between people with different information, skills and values might not only enhance firm's development, but also may increase the chance of unforeseen novel combinations of knowledge, which can lead to radical discoveries (Pittaway *et al.*, 2004). That is, progress is to a large extent a result of an interlinked process of knowledge creation through access of tacit knowledge and other advanced resources and assets. For example, a local branch of the MNC might be linked to other local partners in both formal and informal networks that provide the channels for dissemination of knowledge many kinds. Then, the more valuable and rare the localized capabilities are, the more attractive will that foreign milieu be to the external actors like MNCs (Maskell & Malmberg, 1999: 19). It is evident that local knowledge infrastructure and business infrastructure increase the upgrading potential of foreign MNCs.³ Location, generally, plays an important role in MNCs' innovation capabilities and growth (Porter, 2000). Equally, the advantages of a location can play a major role in supporting the flexibility and speeding up the process of innovations (Porter, 2000). Those arguments

³ UNCTAD, 2013

justify necessity of company to invest in foreign markets, establish its subsidiaries there and to promote R&D network collaboration.

To summarize, partly because of that dynamic shift in the global environment, the interaction between ownership advantages (or disadvantages) and locational attraction now occurs more often in a more complex and intertwined MNC system (Dunning, 1995, 2000, 2009; Cantwell, 2009). MNCs link its value-chain activities (or part of them) with different geographical resources and assets embedded in localized foreign markets. In this sense, choice of the location for its specifics matters a lot because it influences and shapes firm-specific asset. Such penetration of MNC's value-chain activities into specific local conditions gains MNC a quick access to foreign external capabilities that are necessary or complementary to its own competencies. There are various determinants that influence MNC's decision about location; however, especially nowadays in the era of knowledge-based economy, firms' investments are becoming increasingly technology-, high-skill labor- and knowledge-seeking driven, demanding face-to-face contact. In the firm R&D globalization context, R&D subsidiaries' linkages (both horizontal and vertical) with foreign local actors nested in foreign clusters include various formal and informal relationships which all potentialities are pursued through firm alliance networks. MNCs are motivated to enter R&D alliance networks mainly in order to enhance collaboration with actors rooted in foreign markets and thus get access to locally bound and specific resources and assets. This strategy helps firms to develop their skills and upgrade their overall innovative performance which can result in radical discoveries, growth and hence, overall increase in competitiveness. It is possible to conclude that nowadays collaboration can be seen as a competition in a different form (Hamel & Prahalad & Doz, 1989), and from the overall strategic stand-point, experience with alliance networks in R&D can be thought of in many ways as MNC's source of competitive strategic advantage (Gulati *et al.*, 2000).

The conventional theories (Kogut & Zander, 1993; Dunning, 1995, 2000, 2009, Porter, 1998, 2000) and, in particular, the literature on the globalization of R&D and

alliance networking (Cantwell, 1995; Florida, 1997; Kuemmerle, 1999; Sachwald, 2008; Nieto & Rodriguez, 2011) have investigated the reasons for firms' investments abroad; nevertheless, all those works regard the competitiveness of the firm as a pre-condition for foreign expansion. Hence, they cannot explain a phenomenon of "upward" trend of FDI flow and its motivations which are based on firm competitive disadvantage. Furthermore, albeit there is an extensive literature about relocation of production subsidiaries overseas by companies coming from developing or relatively less developed countries (e.g. Lansbury & Suh & Kwon, 2007; Wright & Suh & Leggett, 2009; Suh & Wang & Nam & Zhang, 2012), little attention has been paid to motivation of establishing a global R&D network and demonstration how this has contributed to the increasing competitiveness of those MNCs. Therefore, building on aforementioned, this study aims to address the opposite side of the coin, that is, the investment motivations rising from the relative ownership disadvantage (Moon & Roehl, 2001), with a specific focus on company's R&D globalization and its R&D alliance networks rooted in advanced region as a demonstration of "upward" trend of FDI flow; all in support of Dunning's (1995) words on alliance capitalism and of the fact that in today's globalized world specific locations play a significant role in shaping MNC's competitiveness.

3. METHOD

This research is based on empirical observations (Lansbury & Suh & Kwon, 2007; Dicken, 2011; Suh *et al.*, 2012) of increasing importance of the new global automobile players from South Korea. Thesis attempts to support reviewed theoretical approaches by using the case study of HMC in order to trace company's main motivations behind its R&D globalization and alliance networking, particularly, in connection with the local specifics of the U.S. market that shapes HMC's competencies.

Case study limits itself on analyzing HMC's outward R&D investment in the U.S. automotive market for a few main reasons. First, automotive industry is a sector in which,

after decades of dominance by firms from developed economies, new global players such as HMC have arrived on the scene (Dicken, 2011). Second, it was the U.S. market where HMC established its very first R&D center (Kim, 1998). Last, the intangible resources for generating and managing change still remain heavily concentrated in the U.S. market (Rugman & Collinson, 2004). By utilizing Dunning's eclectic (OLI) paradigm (Dunning, 1995, 2000, 2009), this study incorporates Moon and Roehl's (2001) imbalance theory in order to describe determinants of "upward" FDI flows coming from developing or relatively less developed country and its compatibility with chosen location.

Competitiveness, generally, is both a process of utilizing existing firm-specific capabilities and seeking and/or developing new ones (Teece & Pisano & Shuen, 1997). Following dynamic capabilities approach, this study centers on seeking and developing of external capabilities. As theory describes, capabilities cannot be bought, thus they must be built. Since the company has a relative disadvantage, it needs to seek and access resources outside and cooperate with external global actors. These collaborations and partnerships can be a vehicle for seeking a new advanced technology, high-skilled labor and information. Moreover, it can enhance learning, help firms to recognize dysfunctional routines, and prevent strategic blind spots. Scholars of dynamic capabilities approach (Teece & Pisano & Shuen, 1997) also came to the same conclusion as Dunning (1995, 2000) and Dicken (2011) about the fact that external resource availability and knowledge-creation tends to be locally-bound. Likewise Porter (1998) showed that differences in local markets, infrastructure and institutions play an important role in shaping competitive capabilities (Teece & Pisano & Shuen, 1997). From this perspective, MNC's R&D subsidiaries and its strategic alliance networks constitute sources that provide channels for resource and asset seeking and for dissemination of knowledge many kinds; in turn they enable the firm to improve its skills and create or strengthen its innovative competencies.

In the first step of this research, after the introduction of global automobile industry environment the analysis specifically focuses on Korean automotive industry and its characteristics. This Korean automotive market description is important for deriving

some of HMC's main motivations that lead to outward R&D investments and foreign expansion in recent years. Next section concentrates on the U.S. automotive market analysis in order to explain its attractiveness and local specifics that, in general, might influence foreign firms' capabilities. In the final step, the study centers its attention on the case of HMC and tries to answer the research question: "*What is HMC's main motivation for R&D globalization and its alliance networking in advanced high-cost market such as the United States?*"

In order to support the case study of HMC's R&D globalization and networking in the United States, this thesis aims to use sources such as well-recognized newspapers, journal articles, books, automotive industry outlooks, HMC's annual reports, newsroom articles and another related materials issued by the company itself.

4. THE AUTOMOBILE INDUSTRY

The global financial crisis in 2008 hit the automobile industry with catastrophic force. Some of the established actors of the industry faced bankruptcy; and extensive corporate restructuring began to occur. Governments injected huge financial assistance into the automobile industries within their territories to ride out the crisis, all of this to back up very significant industrial engine of national and global economy. The industry's importance is supported by the fact that it lies both in its scale and in its linkages to many other manufacturing industries and services (Dicken, 2011). For example, Dicken (2011: 332) states that products of auto sector are responsible for almost half of the world's oil consumption, and their manufacture uses up nearly half the world's output of rubber, 25 % of its glass and 15 % of its steel.

New technology and changing business models towards value-chain globalization (UNCTAD, 2013) have, furthermore, resulted in greater convergence with industries such as energy, electronics and information technology (IT), with borders becoming increasingly blurred (KPMG, 2011). Although, in one sense, the automotive sector is one

of the most globalized industries, it is also a sector in which the regionalization plays a crucial role (Lansbury & Suh & Kwon, 2007). According to UNCTAD (2013), regional value-chain links are often more important than the global ones. Geographically, the tendency of most of the leading automobile manufacturers (e.g. Toyota, GM, Volkswagen, Ford, and HMC) is towards the creation of general distinctive networks within each of the three major world regions such as North America, Europe and Asia. World's automobile sector has no companies producing globally; instead, most activities occur in sub-regional clusters. This claim is supported by the argument that there is no evidence of a global car (Rugman & Collinson, 2004). Not surprisingly the three major regions of North America, Europe, and Asia contain around 90 % (Dicken, 2011) of total world production. Particularly, almost two-thirds of global production is concentrated in just seven countries: Japan, China, Germany, the USA, South Korea, Brazil and France. However, in recent years new entrants have arrived on the global scene, those are Mexico, Brazil, India, Russia and market economies of Eastern Europe. Put together, today's global production map is the outcome of developments as new centers of production have emerged and as older centers have declined in importance (Dicken, 2011: 335). Specifically, the significance of emerging BRIC economies on the global automotive scene is rising and rivaling established "triad" markets.

Global automotive producers face complex challenges as well. Dicken (2011) gives an example of the drive for more efficient and flexible production processes on one hand, and of necessity to meet the pressures of environmental limits and regulations on the other. KPMG (2013) further states urbanization and overcapacity. But they together note one common factor, that is, the need to continue to develop the green technology that will produce efficient, affordable hybrid and electric vehicles (KPMG, 2013). Thus, the pace of R&D is accelerating as the race for technical leadership becomes stronger. In general, the preferred strategy to fund R&D activities is an alliance networking and cooperation. Manufacturers themselves believe that R&D alliance networks are the best way to access external resources and assets both through direct engagement or hiring experts in order to develop a new leading technology (KPMG, 2011).

Throughout the history of the automobile industry, the national or local states have always played a key role, notably in a few respects; firstly, determining the degree of access to its local market, including terms under which foreign firms are permitted to establish its subsidiaries; secondly, establishing the kind of support provided by the government to its domestic firms and the extent to which the local bodies discriminates against foreign firms; thirdly, by involving itself through environmental and safety policies (Dicken, 2011). Even though this study is not going to target government incentive policies in detail, it is important to mention them since they play a significant part in the automotive sector and its policy.

Overall, the global automobile industry nowadays is not only made up of large and for decades established MNCs, it is also an industry where after years of dominance by firms from developed economies such as the USA, Japan and Germany, new global players have showed their strength⁴ (Dicken, 2011). The following sub-section is going to spotlight one of such industry entrants, South Korea.

4.1 Korean Automotive Market

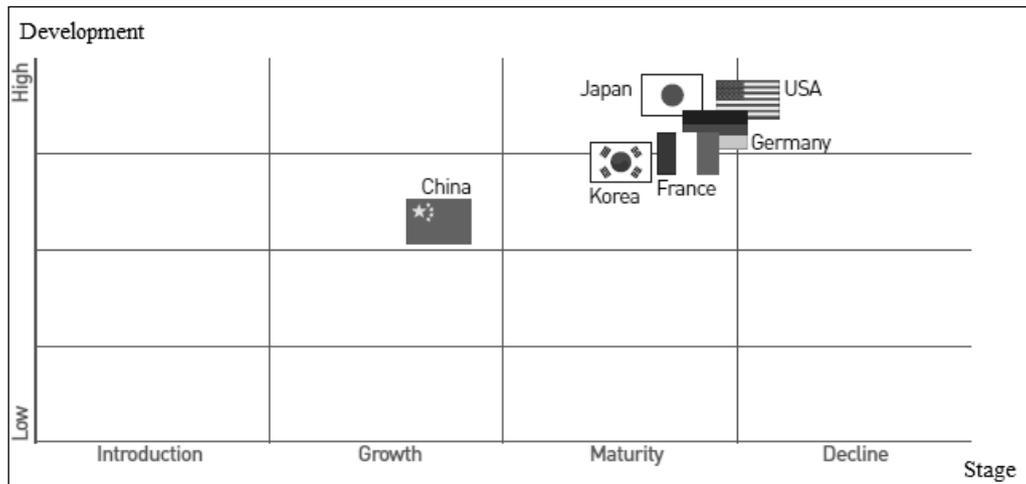
While initial operations of Korean automotive industry were merely centered on the assembling of parts imported from foreign companies during the 1970s, mass production and export during the 1980s, independent development of models during the 1990s, and a big leap and jump in the 2000s, Korea today is, after the global downturn in 2008, among the most advanced automobile-producing countries in the world, accounting for 5.8 % of global automobile production in 2011⁵ and showing its potential. The automotive industry is currently in its initial stage of maturity, as shown in the graph 3, and significantly contributes to the global automotive output. Among the domestic market

⁴ UNCTAD, 2006

⁵ InvestKorea, 2012

leaders belong Hyundai Motor Company, Kia Motors, GM Korea, Ssangyong, and Renault-Samsung (InvestKorea, 2012).

Figure 2: Development Stages of the Korean Automotive Industry



Source: InvestKorea: Overview of Korea's Industries – Auto Parts, 2010: 5

In relative terms, South Korea has a small market with limited capacity and absorption possibilities. Plus rise of Korean life level accompanied with increase in wages force Korean firms to restructure their production capacities and expand their investments abroad (InvestKorea, 2010). Korean automotive sector leaders have been targeting the overseas market for sustained growth. As the key motivations for such foreign expansion they particularly state meeting foreign demand and accessing large markets (including overcoming trade barriers, infiltrating foreign neighboring countries, supporting market channels and strengthening brand image), accessing foreign technology and R&D (Moon 2007, 2011).

SWOT Analysis in table 2 captures current strong and weak characteristics of Korean automotive industry together with opportunities and threats of external environment.

Table 2: SWOT Analysis of Korean Automotive Sector

Generalized Double Diamond Model	Strengths	Weaknesses	Opportunities	Threats
Factor Condition	<ul style="list-style-type: none"> - Relatively skilled labor - Over time, rapid advancement of quality and technology - Advanced IT and communication technology 	<ul style="list-style-type: none"> - Lack of natural resources - Cost disadvantage - Shortage of core technology, e.g. chassis parts 	<ul style="list-style-type: none"> - Low cost resources in developing countries - Foreign knowledge sourcing 	<ul style="list-style-type: none"> - Rise of price of resources - Relative technology gap in comparison with global leaders (e.g. green technology)
Demand Condition	<ul style="list-style-type: none"> - Market diversification - Initial stage of maturity 	<ul style="list-style-type: none"> - Market Saturation 	<ul style="list-style-type: none"> - Rise of neighboring (India, China) and developing countries - FTAs (e.g. with the USA) - Global brand awareness 	<ul style="list-style-type: none"> - Slower growth of population - Global/regional recession - High risk of overcapacity
Related and Supporting Industries	<ul style="list-style-type: none"> - Strong foundation of related industries and emerging SMEs - Infrastructure - Competitive advantage in mid-level auto-part products 	<ul style="list-style-type: none"> - Lack of large scale companies producing auto-parts - Labor unions 	<ul style="list-style-type: none"> - FTAs (e.g. with the USA and its possible positive impact on intra-industry trade) - Infrastructure in newly emerging developing countries - Foreign collaboration - Support of SMEs 	<ul style="list-style-type: none"> - Change in structure of world auto-part industry - Environmental concerns and other regulations
Firm Strategy, Structure, Rivalry	<ul style="list-style-type: none"> - World 5th largest producer - Willingness to learn and improve - Aggressive and flexible strategy - Strong support of Korean Government 	<ul style="list-style-type: none"> - Relatively low R&D expenditure - Production of green vehicles lags behind advanced countries 	<ul style="list-style-type: none"> - Weaker competitiveness of some Western rivals due to global crisis in 2008 - Expanding global share - Networking and R&D globalization 	<ul style="list-style-type: none"> - Increasing competitiveness of automakers in emerging countries (China, India) - Innovativeness - Dependency on overseas markets

Source: Based on author's analysis of InvestKorea (2010, 2012), UNCTAD (2006, 2013), Lansbury & Suh & Kwon (2007), Moon, (2011)

Strengths of the industry consist of, for example, skilled labor, market diversification, strong foundation of related industries and emerging small and medium enterprises (SMEs), willingness to learn and improve, aggressive and flexible strategy, strong support of Korean government, and overall global position. During the past three decades, Korean automotive industry has experienced huge development and step forward. Country positioned itself among world's five largest automotive producers and rapidly advanced its technological and qualitative background. Nevertheless, there are still some weaker characteristics which industry has to deal with. Those are, for instance, lack of natural resources, cost disadvantage, shortage of some core technology such as chassis parts, domestic market saturation, brand awareness, labor unions, relatively low and insufficient R&D expenditure, and lagging mass production of hybrid vehicles (InvestKorea, 2010, 2012; UNCTAD 2006, 2013; Lansbury & Suh & Kwon, 2007 Moon, 2011).

Considering the external conditions, as opportunities can be seen low cost resources and rise of demand in developing countries such as China, India, Malaysia or Vietnam, free trade agreements (FTAs), for example between South Korea and the USA, emerging infrastructure (clusters) in raising markets, collaboration with foreign partners, support of SMEs, weaker competitiveness of some Western rivals after the global crisis in 2008 and lastly and importantly, R&D globalization, networking, and knowledge sourcing. On the other hand, industry is threaten by the rise of prices of resources, relative green technology gap in comparison with established rivals, slower growth of population, another possibility of a global or regional recession, environment concerns and regulations, increased competitiveness of automakers from emerging markets (e.g. India and China), speed of innovation process, and by dependency on overseas markets (InvestKorea, 2010, 2012; UNCTAD 2005, 2006, 2013; Moon, 2011).

In sum, analysis provides bigger picture of the Korean automotive sector and its status. The overall performance and image of Korean automotive sector has improved significantly in the global market in recent years. Depending on the strategy, in order to

continue in further expansion Korean automakers have targeted different market opportunities across borders. Since this paper limited itself on FDI flowing into more developed economy, the next section is going to analyze conditions of the U.S. automotive industry market..

4.2 Automotive Market in the USA

Despite American automotive industry's fall on tough times in 2008, the U.S. market is still one of the largest motor vehicle markets in the world; therefore, many domestic and foreign automakers research, manufacture and sell there. In fact, thanks to the NAFTA, many producers make the lion's share of their profits in North American region (CAR, 2010).

Prior 1980s, the U.S. market was totally dominated by domestic automotive producers GM, Ford and Chrysler.⁶ But from the mid-1980s onwards the position changed dramatically. By the early 2000s, a various foreign automakers invested in the U.S. economy and very different regional production network had evolved in North America compared with that existing before the 1980s. Firstly, the establishment of Japanese production facilities in the USA and arrival of European and Korean manufacturers created a new geography of production away from the old-established automobile concentration in the U.S. market. Consequently, domestic firms have slowly lost market share to international firms such as Toyota, Honda and HMC operating in the region. In other words, over the more than past two decades, the U.S. industry has been transformed by more than 25 billion USD in FDI from Asia and Europe (CAR, 2010). Regarding the market share of individual producers, in 2013 the highest U.S. market proportion was represented by GM (17.9 %), Ford (15.9 %), Toyota (14.4 %), Fiat-Chrysler (11.5 %), Honda (9.8 %), Nisan (8.0 %) and HMC (4.6 %).⁷ Secondly, likewise, the NAFTA (the successor to CUSFTA), together with earlier reforms within Mexico,

⁶ Detroit Three

⁷ Business Monitor International, 2013

transformed that system by incorporating into the North American regional production network a production location with very low costs and a potentially fast-growing domestic market (Dicken, 2011). Furthermore, the automotive actors invest heavily in R&D. Unlike other sectors, automotive R&D efforts are largely funded by the industry itself, rather than through public sources. The need to constantly innovate and remain competitive drives both domestic and international automotive manufacturers in the region to focus on R&D. In recent years, the suppliers' and other actors' responsibility to add technology and value to the automobile has grown. Some parts of the R&D activities have been integrated with or shifted onto suppliers, universities or other institutes (CAR, 2010).

According to the U.S. Department of Commerce (2013), the United States has been the world's biggest recipient of FDI since 2006. South Korea was ranked as a 14th investing country with fastest growing amount of FDI flowing into the USA (U.S. Department of Commerce, 2013). What makes its location then so attractive for foreign direct investors? As it is shown in table 3, this part reviews the general factors that individually and collectively make the United States a sought-after automotive destination for R&D FDI.

Speaking about the strengths of the U.S. market and the automotive sector in general (U.S. Department of Commerce, 2013; KPMG, 2013; Business Monitor International, 2013), in the long-term, firms around the world invest in the United States to benefit from its advanced technology, and highly-skilled, productive and innovative labor force. Having a strong educational system is a key component for innovation; the United States is home to 15 of the world's top 20 universities and other R&D centers. In addition, the United States' strong community college system increasingly emphasizes industry-focused training for high-demanded occupations. Based on this, World Economic Forum's (WEF) Global Competitiveness Index ranks the USA in the top ten for innovation capacity, with a particular strength in R&D collaboration among universities and businesses. Innovative and R&D driven environment, in general, is

boosted by high U.S. R&D spending⁸ and put the USA among the five most innovative nations in the world in terms of investment in knowledge as a share of GDP and innovation. The U.S. market might, furthermore, take pride in its advanced established local clusters. For example, among the most innovative states in general belong Vermont, California and Washington.⁹ On the other hand, in terms of specialization, states with the highest concentration of automotive activity are Michigan, Indiana, Ohio, Kentucky, or Tennessee.¹⁰ The U.S. economy is the largest in the world with a stable democratic regime and international currency, and offers low energy prices and a large demand for variety of products. Turning to the policy determinants, the significance of the industry encouraged the government to take pro-active attitude, for example, the U.S. investment regime has upheld by government's open investment policy, which affords companies national treatment regardless of country of origin. Business regulations are among the most transparent and least cumbersome, including appropriate intellectual property protections. Foreign investors might further benefit from the world's best intellectual property protection regime which supports stable and predictable regulatory environment that the United States has on offer. Also government fees for obtaining U.S. patents are among the lowest in the industrialized world, this makes doing business easier. On the other hand, previously mentioned strengths of U.S. markets might be overshadowed by relatively high cost of workforce, high U.S. corporate tax, necessary improvement of physical infrastructure, the U.S. 3rd position in motor vehicle R&D leadership (after Germany and Japan), or by slower recovery from the economic recession (U.S. Department of Commerce, 2013; KPMG, 2013).

⁸ As a share of U.S. GDP

⁹ Patents per Employee, 2000 - 2010

¹⁰ Institute for Strategy and Competitiveness, 2010

Table 3: SWOT Analysis of the U.S. Market

Generalized Double Diamond Model	Strengths	Weaknesses	Opportunities	Threats
Factor Condition	<ul style="list-style-type: none"> - Increase in new energy availability and decrease in energy costs - Technology - Highly-skilled, productive and innovative labor force 	<ul style="list-style-type: none"> - Relatively high costs of workforce 	<ul style="list-style-type: none"> - New sources of energy - To access high-quality supply chain 	<ul style="list-style-type: none"> - Increase in price of resources
Demand Condition	<ul style="list-style-type: none"> - The largest consumer market 	<ul style="list-style-type: none"> - A low savings rate by U.S. households 	<ul style="list-style-type: none"> - Growth of sales due to relatively robust predicted consumption 	<ul style="list-style-type: none"> - High risk of overcapacity - Young generation is moving away from car ownership - Urbanization and growing use of public transportation
Related and Supporting Industries	<ul style="list-style-type: none"> - NAFTA - The world's top research universities and development centers (in general, leader in high-quality research output) - Community colleges, incorporating skill-development missions - Advanced and established clusters - Adequately capacitated and comprehensive communication and technology infrastructure 	<ul style="list-style-type: none"> - Excessive U.S. debt - U.S. corporate tax among the highest in the OECD - Physical infrastructure is in need of improvement - 3rd position in motor vehicle R&D leadership 	<ul style="list-style-type: none"> - Commitment to improving the infrastructure - Access to worldwide markets through U.S. FTAs, TTIPs and TTPs - Competition with established regional domestic and foreign automotive leaders - Expected increasing inflow of FDI 	<ul style="list-style-type: none"> - Government's intervention to support domestic carmakers - Growth in car loans - Globalization of R&D activities is maturing and regional differences are narrowing
Firm Strategy, Structure, Rivalry	<ul style="list-style-type: none"> - The world's largest economy with stable democratic regime - Strength of USD as an international currency - Friendly legal system - The 5th most innovative nation in 	<ul style="list-style-type: none"> - Due to the economic recession, slower recovery of automotive industry 	<ul style="list-style-type: none"> - Rising fuel prices and environmental concerns have acted as a catalyst for R&D of alternative fuel 	<ul style="list-style-type: none"> - Intensified competition from emerging economies such as China and others (e.g. R&D)

	the world - The biggest FDI recipient - High R&D spending - Strength in R&D Collaboration - 10 th position in terms innovation capacity - An open investment regime (4 th out of 185 countries in terms of the “ease of doing business”) - Active role of U.S. Government - Stable regulatory regime and appropriate IP protection		green technology vehicles (particularly, hybrid and electric models) - Public-private initiative - Increase in U.S. R&D investments - “Made in the USA”	leadership shifting from west to east)
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Source: Based on author’s analysis of literature review (Dicken, 2011; KPMG, 2011; U.S. Department of Commerce, 2013; Battelle Memorial Institute, 2013; Business Monitor International, 2013)

Similarly, the opportunities may be seen in discovery of new sources of energy and boosting R&D of alternative fuel vehicles; further in possibility to access high-quality supply chain of world markets through U.S. FTAs, TTIPs, and TTPs, Obama Administration’s commitment to improve the nation’s infrastructure, predicted growth in sales, closer distance and competition to established regional domestic and foreign automotive leaders (Toyota, GM, Volkswagen, Ford), public-private initiative, in an increase in R&D investments, or in improving the brand name “made in the USA”. The U.S. location competitiveness is; on the contrary, threaten by increasing strength of emerging economies (e.g. R&D leadership shifting from west to east to China, Japan and Korea), by inefficient governmental interventions to support domestic carmakers, high risk of automotive overcapacity, urbanization, increase in private automotive loans, globalization of R&D activities that are maturing and differences among regions that are thus narrowing, and lastly by younger generation’s move away from owning car (KPMG, 2013; Battelle Memorial Institute, 2013; Business Monitor International, 2013).

To summarize, the United States represents global leader in high-quality research output boosted by highest R&D spending as a share of GDP (Ernst, 2002; Battelle Memorial Institute, 2013). The motor vehicle sector's breadth and depth of operations extends into every state economy in the nation. However, the highest concentration of manufacturing and technical facilities is established throughout most of the states east of the Mississippi. The entire Midwest is connected by a strong and efficient network which provides intra-state and inter-state options for sourcing resources that companies need (CAR, 2010). For most global value chain segments, however, there are some specific locational determinants which are particularly significant for MNC activity. For instance, at the knowledge seeking and creation stage (which includes innovation, R&D, design and branding); it is the existence of appropriate availability of educated and highly-skilled labor (UNCATD, 2013).

5. CASE STUDY OF HYUNDAI MOTOR COMPANY

HMC was founded in 1967 as a subsidiary of Hyundai Business Group, the biggest Korean chaebol¹¹ until the end of 1990s when it separated (Lansbury & Kwon & Suh, 2007). After the Asian financial crisis in 1997, Korean automobile industry underwent large structural changes. At that time independent Kia Motors declared bankruptcy and was overtaken by HMC. The purpose of this acquisition was to achieve economies of scale and scope, construct a global network, and to strengthen HMC's position on global scene (Chung & Park, 2009). Although those two Korean companies represent one Hyundai-Kia Automotive Group, they continue to operate separately. Overtime, HMC increased its production and has been steadily ascended from being 16th largest producer in the world in 1991 (Kim, 1998) to the 5th largest since 2007.¹² Overall, the process of globalization of HMC can be characterized by relocation of R&D centers

¹¹ Large and diversified family-owned and managed Korean conglomerate (Gress & Poon, 2007)

¹² Hyundai Motor Company, 2014a, News: Hyundai Motor in Brief 2011

and complete production systems overseas (Florida 1997; Suh *et al.*, 2012). Since the purpose of this thesis is to explain the motivations to transfer HMC's R&D subsidiaries to the United States and the establishment of local R&D alliance networks, following section will focus mainly on analyzing the former one, rather than the establishment of company's production facilities abroad.

An examination of the R&D globalization strategy of HMC in the United States reveals three themes: 1) motivations for such FDI expansion; 2) the specifics of the U.S. location in terms of alliance network cooperation; and 3) Region's compatibility that shapes HMC's competencies.

5.1 HMC's Motivations for R&D Globalization

Thanks to the setting ambitious goals, technology transfer, organizational learning, and government protection, HMC transformed itself from a mere assembler of Ford models in the 1970s to a developer of its own cars in the 1990s. To understand the motivations that have lead HMC to globalize its R&D centers in the mid-1980s, it is necessary to reveal HMC's strategy of accessing external resources until that time.

Lacking experience and technology, HMC entered into an Overseas Assembler Agreement with Ford in 1968 (Kim, 1998). HMC benefited from transferred "packaged" technology and set of codified knowledge such as blueprints, technical specification, and production manuals. The agreement also included the training of HMC's engineers and transfer of Ford's tacit knowledge (Lansbury & Suh & Kwon, 2007). In other words, the agreement with Ford gave HMC beneficial migratory knowledge with which it could upgrade its experience related to auto assembly. In general, a joint venture with a leading established company can, however, often lead to a passive attitude on the part of the recipient in the learning process, as technical assistance and transferred technology is guaranteed by the supplying firm. To avoid this and also due to the ending partnership with Ford, HMC started pursuing a strategy of independency, in the sense that in the 1970s it began "unpacking" technology transfers. In this aspect (as in many others), HMC

followed the Japanese model of relying on purchased technology and then reverse engineering (Lansbury & Suh & Kwon, 2007).

Following this strategy, HMC independently took the responsibility of organizing imported technologies and component systems. To assimilate imported foreign technology, HMC needed to refill inadequate knowledge necessary for the new task. For that reason, HMC, for example, approached 26 firms in five advanced countries such as Japan, Italy, the United States, Germany and the United Kingdom to acquire different technologies (Kim, 1998). Those companies gave HMC engineers observation tours not only of their own sites but also of the leading automobile production plants enabling HMC engineers to get an insight to large-scale, modern manufacturing systems and to link for them already known codified knowledge with the new tacit one.

After this experience, HMC further entered into a licensing agreement with, for example, Italdesign for body styling and design, and with Mitsubishi for gasoline engine transmission and access to other technology (Kim, 1998). For instance, in the case of Italdesign, HMC formed a team of five design engineers, made them study literature related to auto styling and then sent them to Italy to participate closely with foreign design engineers in the design process. Moreover, to get more tacit knowledge, company hired for limited period of time managing director and engineers from Britain. After they left, company approached Japanese experts and invited them to home base (Kim, 1998). Overtime, HMC was acquiring more and more foreign technology and knowledge from variety of sources. The assimilation of know-how took place largely through “learning by doing” and led to additional improvements not only in imported technology but more importantly in HMC’s skills. At the beginning of 1980s, HMC approached several major car producers such as Volkswagen, Ford, Renault and Alfa Romeo as a way to diversify its sources of technology (Kim, 1998). Nevertheless, those big rivals viewed HMC as a local assembly subsidiary of their cars and required equity and management participation. HMC did not accept those conditions and eventually approached Mitsubishi again. As a result, not only did HMC retain all managerial control, but also obtained the right to

import parts and technology from Mitsubishi's competitors and compete directly in markets where Mitsubishi was presented (Kim, 1998).

In sum, for almost two decades until the mid-1980s, the HMC's strategy to access foreign external resources was mainly about extensive literature search, transfer of knowledge and technology from well-established companies of automotive sector, sending own team members abroad to observe facilities in operation in advanced countries, and temporary hiring of foreign experienced experts. Those personnel from abroad significantly increased the tacit knowledge base not only by the knowledge embodied in them, but also through knowledge socialization. Whenever HMC's level of tacit knowledge base was judged to be insufficient, company hired foreign specialists to augment their know-how (Kim, 1998: 513). Through acquiring foreign technologies, HMC significantly increased its prior knowledge base and strengthened its position which helped company to increase its confidence and enhance its bargaining power. HMC first relied on "packaged" technology transfer but soon started "unpacking" it and stand on its own feet.

Nevertheless strategy of HMC changed in mid-1980s when company faced a critical technological dilemma. Mitsubishi, HMC's key source of important technology, and other foreign suppliers were unwilling to share their newest inventions. HMC lacked the knowledge to keep upgrading its car quality to match that of its competitors in the North American region and consequently, its cars ended at the bottom of the ranking, which greatly tarnished company's image in the USA. That experience prompted HMC to develop an extensive R&D network and add to its small home R&D center established in 1978 others that were located overseas in foreign advanced markets (Kim, 1998). That was the beginning of HMC's R&D network globalization which resulted mainly from the lack of technology and knowledge (Lansbury & Suh & Kwon, 2007). In other words, HMC was motivated to invest abroad by its ownership-specific disadvantage that could not balance out in Korean home market.

Except the technology learning and knowledge augmenting FDI motivation in R&D there were, however, other determinants that are necessary to mention and that

forced HMC to expand its investments abroad in order to overcome ownership disadvantage, for instance, strengthening brand image awareness in foreign markets, domestic market saturation, meeting foreign demand, breaking market-entry barriers, infiltrating neighboring countries and their channels, or following the strategy of Japanese competitors.¹³ But, for the purpose of the analysis, this study focuses only on the part of technology learning and know-how augmenting in relation with strategic location of the U.S. region.

Company established its very first R&D subsidiary in 1985 when opened Hyundai American Technical Center in Chino, California in the USA. As was mentioned previously, the main intention was to acquire lacking technology and knowledge. Therefore, for instance, HMC recruited research engineers from the U.S. universities, and U.S. firms such as GM or Chrysler (Kim, 1998). After this, HMC continued in R&D network globalization and built other branches in Germany (1995, 2003), Japan (1996, 2003), China (2008), and India (2009).¹⁴ Aforementioned indicates that HMC has expanded to the developed countries first before it set up R&D subsidiaries in developing regions. In fact, this is the opposite trend in comparison to establishment company's global production facilities. HMC's first attempt at relocation of production system overseas was in Canada which had been a focus of exports since the early 1980s. However, this strategical move showed to be unsuccessful due to the lack of experience and knowledge about technology and market in general. After this struggle, the factory in Canada was closed and HMC moved to developing countries to acquire some experience before it returned to the North American market again and successfully started running its plant in Alabama in the United States since 2005 (Wright & Suh & Leggett, 2009). Overall, HMC has built its competitive advantage through its experiences in international markets. As company upgraded, it began to build U.S. nationwide operations and networks. In 2003, HMC established Hyundai Design and Research Center in Irvine,

¹³ Kim, 1998; Lansbury & Suh & Kwon, 2007; Suh *et al.*, 2012

¹⁴ Lansbury & Suh & Kwon, 2007

California, which gathers designers, engineers, model makers and technicians. Another important milestone in U.S. network building was moving the original Hyundai American Technical Center from California to Township in the state of Michigan in 2005 (Hyundai Motor America, 2014).

Recalling formerly mentioned, a considerable share of the conventional FDI literature argues that at the beginning the investments occur when firms seek to exploit firm-specific capabilities in foreign environments. Researchers (Florida, 1997; Kuemmerle, 1999; Sachwald, 2008; Nieto & Rodriguez, 2011) state that firms will then establish R&D sites in close proximity to plants in foreign markets in order to help to adapt existing products better to local needs. In other words, firms co-locate R&D effort with manufacturing operations and growing local demand. However, more recently firms start being motivated more by its need of R&D augmenting. As a result, MNCs often carry out both types of R&D activities at the same time and in the same place or region (Kuemmerle, 1999). Following the case of HMC's R&D globalization strategy, nevertheless, the trend was reverse. HMC started with establishment of augmenting R&D subsidiaries first before it built its knowledge base and then it opened exploiting R&D facilities. This indicates that HMC's overall globalization strategy began before acquiring substantial competitive (ownership-specific) advantage which cannot be explained by traditional theories such as Dunning's eclectic (OLI) paradigm as it regards the accumulated firm-specific know-how as the base of the FDI. For that reason, Moon and Roehl's imbalance theory needs to be used to explain the motivations for foreign expansion of HMC that originates from ownership disadvantages, namely the lack of technology, knowledge and experience.

During the 2000s, the ownership-specific advantage of HMC began to appear; company has advanced technology and quality of its products with a help of the access to foreign external resources (Lansbury & Suh & Kwon, 2007). While improvements can be made in the conventional engines in use today, manufacturers are looking ahead to information technology, hybrid vehicle technology, and ultimately to a hydrogen-based fuel-cell vehicles (Lansbury & Suh & Kwon, 2007). In 2011, HMC entered the U.S.

hybrid market long after many of its competitors have done (U.S. Department of Commerce, 2013). In this field, HMC is still lagging behind the global automotive leaders (InvestKorea, 2012). Hence, there are significant gains to be made from alliance networks that share R&D and knowledge. In this aspect, the location decision of the company's R&D subsidiaries then is a vital consideration (Lansbury & Suh & Kwon, 2007). Company's R&D centers in the USA are thought of by HMC to be an advanced base for its expansion. The United States is not only the most competitive market in the world, but it is also the birth-place of the world's first commercial vehicles. HMC's R&D network spreads from California to Michigan linking HMC's design and research center, Mojave Desert testing ground and its technical center. According to the HMC's Chairman Chung Mong-Koo: *"Auto industry stands ahead of all other industries in terms of developing and adopting the latest, most cutting-edge technology... HMC has thus been expanding the investments it makes into R&D for two purposes: to secure innovation technologies and to achieve quality innovation"* (Hyundai Motor Group, 2014). Having created the U.S. R&D facilities, this strategy intends to take HMC to the next level of global production by tapping into the advanced technological know-how and innovation available in the USA to improve company's technical expertise (Suh *et al.*, 2012). Therefore, since places are inevitably specialized in their activities offering location-bound created asset, what are the contributions of the U.S. market that shapes HMC's firm-specific asset and R&D intentions?

5.2 The U.S. Market and HMC's R&D Alliance Networks

The United States retains the high-end, knowledge intensive stage of the firm's value-chain activities (Ernst, 2002); it is a home to the largest concentration of foreign-affiliated R&D centers (Florida, 1997). The U.S. market is not only attractive for its market-oriented R&D, but more recently with an increasing global competition in technological advancement firms are seeking to obtain access to new ideas, information on scientific and technological developments, high-quality scientists, engineers and

designers, and to develop links with local community. R&D centers are increasingly adopting a technology-oriented posture in their activities (Florida, 1997; Nieto & Rodriguez, 2011). Particularly, HMC's firm-specific asset is shaped by its location in the established and highly inventive clusters in California and Michigan. California is ranked as the 2nd most innovative state within the U.S. region in terms of patents per employee, 2000–2010, with the leading industries in Information Technology, Distribution Services, and Analytical Instruments (Porter, 2012a). On the other hand, in the same ranking Michigan occupies 12th position with the leading sectors in Automotive, Metal Manufacturing, Plastics, and Metal Technology. Both clusters are significant by their technological and scientific infrastructure and high-skill labor-force (Porter, 2012b). Overall strength of the U.S. economy is then based on its innovation-driven environment; highly-skilled, productive and innovative work force, number of top universities and development centers; and lastly but importantly, on R&D collaboration.

HMC's R&D network is among the most expansive and innovative in the industry (HMC Annual Report, 2005). Starting in 1990s, HMC has entered into several short-term and long-term R&D contracts and joint development agreements with its U.S. partners; this study is going to mention a few of them.

5.2.1 R&D Partnership with Enova Systems, Inc. for Hybrid and Fuel-Cell Digital Power Vehicles

Since mid-1990s, HMC has been repeatedly cooperating with Enova Systems Inc., the U.S. developer and manufacturer of electric, hybrid and fuel-cell digital power drive systems from California in order to produce many leading edge technologies in the field of fuel-cell powered vehicles. In regards to passenger vehicle programs, they had been putting their efforts to develop a commercially producible parallel hybrid motor and controller for HMC's new hybrid vehicle Tucson to be introduced in 2004 (U.S. Securities and Exchange Commission, 2001). Relating to this, in 2004 HMC got a grant from the U.S. government to research fuel-cell technology. According to HMC's Annual Report in

2004, this five-year program was supposed to enable HMC to demonstrate a fleet fueling site, developing important safety and legal codes and standards for hydrogen refueling technologies, and educating key audiences about hydrogen as a potential vehicle fuel source. In this project HMC had been collaborating not only with Enova Systems but also with others, for example UTC Fuel Cells of Harford in Connecticut, to bring consumers extraordinary level of fuel-cell technology.

5.2.2 Joint Development Agreement with Broadcom Corporation on the Cooperation in Wireless Communication

Furthermore, HMC inked a joint development agreement with Broadcom Corporation in 2012 to power the next-generation connected car. Broadcom Corporation is a global innovation leader in semiconductor solutions for wired and wireless communications. The partnership will integrate infotainment, telematics and advanced driver assistance systems (ADAS) features like surround view parking and lane departure warning into Hyundai vehicles. Jointly, the companies aim to offer faster connectivity to a broader number of drivers. Based on Broadcom's BroadR-Reach Ethernet technology, the single high-bandwidth in-vehicle network will deliver cost-effective, lightweight 100 Mbps connectivity to advance integration of safety applications in vehicle. Broadcom and HMC have partnered since 2011 to drive wide-scale adoption of Ethernet-based automotive connectivity. Ethernet enables an open, scalable network for powering in-vehicle infotainment and ADAS, while supporting faster implementation of next-generation technologies and multiple networks, improving the ability to share data from a common source to the entire network (Broadcom, 2012).

5.2.3 Establishment of “Center of Excellence” with U.C. Davis and U.C. Berkeley

In 2012, HMC established the “Hyundai Center of Excellence” by signing a memorandum of understanding (MOU) with two of the world’s preeminent research universities in the United States, the University of California (UC), Berkeley and University of California (UC), Davis (Hyundai Motor America, 2012). The MOU ceremony launched the first collaboration project in HMC’s larger R&D joint research and professional development program called “Hyundai R&D Global Frontier”. This long-term program, in general, is designed to strengthen HMC’s fundamental R&D competency by working with the world’s leading universities and companies. HMC has been choosing its partners in R&D very carefully based on the criteria of deep experience enhancing the performance of leading premium automakers. In the case of Californian universities, they both enjoy close ties to Silicon Valley and have a rich history of developing a cutting-edge technology (Hyundai Motor America, 2012). Through this initiative, selected engineers from HMC will join top researchers at both universities to work on vehicle dynamics and integrated vehicle safety systems. The concept of the “Center of Excellence” aims to make Hyundai’s vehicles safer, better-handling, and more enjoyable to drive. Vice Chairman Woongchul Yang, head of Hyundai Motor R&D Division, stated (Hyundai Motor America, 2012) that collaboration with such top-tier partners will accelerate HMC’s technology development to go beyond the level of global premium carmakers. He also added that based on such advanced technologies, company will develop top-class vehicles of the first-class quality. Furthermore, HMC R&D program intends to raise R&D competitiveness at an organizational level by immersing its best engineers in the world’s best research institutions for six months to two years to conduct advanced R&D. According to HMC statement each R&D engineer will be given research assignment to produce technological innovations that will be incorporated into the future HMC’s vehicles (Hyundai Motor America, 2012).

5.3 Compatibility of HMC's R&D Motivations and the U.S. Market

As HMC's case shows, at the initial stage of its development company relied on resource transfer from abroad in order to build up its skills and technology. However, after more than one decade since its establishment, HMC faced a critical technological dilemma; company's key sources of important technology and know-how from abroad were unwilling to share their newest inventions anymore. Since the information stopped flowing into its home base, HMC was forced to found its R&D network and globalize its R&D centers in order to get access to foreign external technology, high-skilled labor and knowledge embedded in advanced strategical locations. The main motivation for this FDI strategy thus was R&D resource and asset-seeking or augmenting, rather than R&D asset-exploiting as it is described by conventional theoretical approaches build on competitive ownership advantage (Cantwell, 1995; Dunning, 1995, 2000, 2009; Florida, 1997; Kuemmerle, 1999; Nieto & Rodriguez, 2011). In other words, HMC's goal was to overcome technological disadvantage and lack of experience by R&D globalization and to enter into R&D alliance networks with local actors such as, for example, in the 1990s with Enova Systems, Inc. in the United States where HMC located its very first R&D subsidiary. This strategical behavior is explained by Moon and Roehl's (2001) imbalance theory which states that firm invests abroad since it cannot balance its strategic assets more effectively in its home market. As an alternative, in-imitable value-generating resources lie in a firm's external networks (Gulati et al., 2000). Tapping into those sources requires "insider" status; therefore, company must participate actively and engage itself locally with established partners such as, for instance, selected suppliers or universities. Even though HMC has overtime advanced its skills and started utilizing its competitive advantage; still, more recently in the hybrid vehicle market HMC is lagging behind the global automotive leaders (InvestKorea, 2012; U.S. Department of Commerce, 2013). There are significant gains to be made from alliance networks that share R&D. Recent joint development agreements and R&D cooperation with its U.S. partners such as universities U.C. Davis and U.C. Berkeley; and Broadcom Corporation, or renewed

partnership with Enova Systems not only enables HMC to develop those capabilities in the field of hybrid and fuel-cell powered vehicles or information technology, but also to access advanced technological facilities or benefit from channels used by its partners. For example, through cooperation with U.C. Davis and U.C. Berkeley HMC can profit both from pool of knowledge, human resources and equipment, as well as their close ties to Silicon Valley. It was not the coincidence that HMC established its R&D centers in California, which is the second most innovative cluster in the USA, and in Michigan that is significant for its high automotive specialization. Innovations are highly immobile and spatially sticky, thus the need to communicate this knowledge requires face-to-face contact (Ernst, 2002; Storper & Venables, 2003). It is possible to conclude that HMC benefits from the U.S. innovation-driven environment, its externalities and spillovers; and from a support of the U.S. government as it is shown by the example of the partnership with Enova Systems, Inc. It prospers from the high-quality technological and scientific infrastructure and high-skill labor-force as well. HMC is actively hiring U.S. experts and qualified local managers from U.S. competitors and U.S. firms or institutions with which they had a previous relationship (Kim, 1998; Gress, 2011). By investing in the U.S. region, HMC has combined its firm-specific asset with specific asset of U.S. market and clusters both in California and Michigan. Those geographical areas take pride in their reputation for being considered as centers of excellence in IT and automotive field. As Dunning (2009) and Moon and Roehl (2001) pointed out, competitive (ownership) advantage or disadvantage might be influenced by the locational specifics of the country in which MNC operate. Indeed, HMC R&D alliance networks with its U.S. partners and a potential of the U.S. innovation-led economy might improve HMC's skills and upgrade its innovative performance which might contribute to an increase in company's overall competitiveness, all in support of Moon and Roehl's (2001) imbalance theory.

6. CONCLUSION

While cost cutting and asset-exploiting is considered by the existing conventional literature (Cantwell, 1995; Dunning, 1995, 2000, 2009; Florida, 1997; Kuemmerle, 1999; Nieto & Rodriguez, 2011) to be an initial reason for globalization and networking; historical evidence of HMC shows that limited or disadvantaged domestic technological and knowledge base implies that firm from developing or relatively less developed country must access and use foreign external resources first to complement its competencies since it cannot balance this asymmetry out in its home market (Moon & Roehl, 2001). Indeed, after cutting of the transfer of technology and knowledge from its established automotive partners from overseas in the mid-1980s, HMC took the initiative and started globalizing its R&D activities and networking in the advanced market of the United States to get an access to a leading technology, high-skill labor and tacit knowledge. Therefore, this study concludes that fundamental motivation for HMC's R&D investment expansion was R&D resource and asset-seeking and augmenting due to the insufficient technological knowledge and experience, rather than by traditional theories suggested R&D asset-exploiting that relies on a firm-specific technological advantage used for foreign-specific conditions to support a production process abroad.

HMC expanded its R&D centers in the U.S. region, it also tried to build its very first production subsidiary in the North America, specifically in Canada; but it failed mainly due to the lack of technological experience and knowledge about the market in general. For that reason, regarding the globalization of its production subsidiaries, HMC started investing in developing countries before it built sufficient knowledge and experience to come back to the advanced North American region, this time, however, to the Alabama in the USA. The experience of HMC does not fit neatly into the classical theories; company did not have any substantial firm-specific advantage when it started investing in the North American region. Hence, company had to enhance its technological development through its R&D laboratories in advanced markets first and not to follow the traditional path. In terms of technology; overtime, HMC has developed its

competitiveness and advanced its skills and quality of products. However, in the field of hybrid and fuel-cell powered vehicles, which recently challenge the global automotive world, it is lagging behind established leaders (InvestKorea, 2012; U.S. Department of Commerce, 2013). Thus, there has been and still are significant benefits to be made from locally bound innovative resources and assets embedded in the U.S. region and its nested networks. The United States is the most competitive market with stable political, business and legal environment and governmental support; likewise, it takes a pride in innovative and R&D driven climate, high-quality technological, scientific and educational background, advanced established clusters such as California and Michigan where HMC located its R&D centers, or in a strong R&D collaboration. It has been a joint R&D cooperation with its U.S. partners such as, for example, Enova Systems, Inc., Broadcom Corporation or universities U.C. Davis and U.C. Berkeley that enabled HMC to tap into the value-generating facilities and high-quality resources. In current competitive environment HMC needs to improve its proficiency in leading green technology and hybrid and fuel-cell powered vehicles by engaging itself in cooperation with companies that are specialized in this field of expertise. Furthermore, long-term cooperation with IT companies or research universities enhance development of novel skills and stimulate HMC's competitive strength. HMC is not only active in R&D cooperation but also in, for instance, hiring qualified local specialists and managers from its U.S. competitors and other U.S. firms or institutions (Kim, 1998; Gress, 2011). Nevertheless, it is not only the active effort of HMC to utilize a potential of the U.S. economy, but externalities and spillovers as well that enable the company to upgrade its competencies. In this sense, U.S. region, in general, has played an important role in R&D resource and asset-seeking and acquiring technological capabilities of HMC, and thus might have contributed to generation of its new competitive (ownership) advantages and innovative competencies. In other words, not only that HMC began to globalize before it has developed own significant competitive advantage but it also built its competitiveness through its network experience in international markets such as the USA.

This study illustrates the importance of external resources in MNC's technological capabilities building, and in its knowledge and skills development by using case study of HMC. However, it treats company itself as a "black box". In fact, unless a firm can utilize what it has assimilated from external sources, it cannot benefit from foreign location-specific asset and local cooperation. Company's investment in R&D globalization and networking is, generally, seen as an input of knowledge necessary for the seeking and augmenting process, which in turn facilitates the identification, assimilation, and exploitation of information generated both outside and within the firm (Gupta & Govindarajan, 2000). Some scholars (Lin *et al.*, 2012) have emphasized that significance of knowledge transfer from the partner will depend on the MNC's capability to learn from this external source. Cohen and Levinthal (1990) referred to this capability of learning from external sources as an "absorptive capacity". Hence, to better understand the process of upgrading and building up innovative capabilities of HMC, this thesis suggests further analysis of company's internal processes that are related to its external resources assimilation in the U.S. market. Moreover, in order to illustrate the impact of R&D alliance networks on HMC performance, the further quantitative examination is necessary. Lastly, as Dunning (2009) and Moon and Roehl (2001) have pointed out, competitive (ownership) specific advantages and disadvantages might be influenced by the locational specific attributes of countries in which MNC operates. Therefore, for in-depth understanding of linkages between HMC's firm-specific assets and location-specific assets (Dicken, 2011), this thesis propose to conduct more detailed qualitative or quantitative research to advance the conclusion of this study.

REFERENCES

- BARNEY, J. 1991. Firm Resources and Sustained Competitive Advantage. *Journal of Management*, 17(1): 99 – 120.
- CANTWELL, J. 2009. Location and the Multinational Enterprise. *Journal of International Business Studies*, 40: 35 – 41.
- CHUNG, S. & PARK S. 2009. The Acquisition and Restructuring of Kia Motor by Hyundai Motor, Richard Ivey School of Business Foundation. *Harvard Business Review Case*
- COE, M., DICKEN, P. & HESS, M. 2008. Global Production Networks: Realizing the Potential. *Journal of Economic Geography*, 8: 271 – 295.
- COHEN, W. M. & LEVINTHAL, D. A. 1990. Absorptive Capacity: A New Perspective on Learning and Innovation. *Administrative Science Quarterly*, 35(1): 128-152.
- D'CRUZ, J. R. & RUGMAN, A. M. 1993. Developing International Competitiveness: The Five Partners Model. *Business Quarterly*, 58(2): 60-72.
- D'CRUZ, J. R. & RUGMAN, A. M. 1994. Business Network Theory and the Canadian Telecommunications Industry. *International Business Review*, 3(3): 275-288.
- DICKEN, P. 2011. Global Shift – Mapping the Changing Contours of the World Economy, 6th Edition, The Guilford Press, New York
- DUNNING, J. H. 1995. Reappraising the Eclectic Paradigm in an Age of Alliance Capitalism. *Journal of International Business Studies*, 26(3): 461- 493.
- DUNNING, J. H. 2000. The Eclectic Paradigm as an Envelope for Economic and Business Theories of MNE Activity, *International Business Review*, 9: 163-190.
- DUNNING, J. H. 2001. The Eclectic (OLI) Paradigm of International Production: Past, Present and Future. *International Journal of the Economics of Business*, 8(2): 173-190.
- DUNNING, J. H. 2009. Location and the Multinational Enterprise: John Dunning's Thoughts on Receiving the Journal of International Business Studies 2008 Decade Award. *Journal of International Business Studies*, 40: 20 – 34.
- EISENHARDT, K. & MARTIN, J. A. 2000. Dynamic Capabilities: What Are They? *Strategic Management Journal*, 21: 1105 – 1121.

- ERNST, D. 2002. Global Production Networks and the Changing Geography of Innovation Systems: Implications for Developing Countries. *Economics of Innovation and New Technology*, 11(6): 497 – 523.
- ERNST, D. & KIM, L. 2002. Global Production Networks, Knowledge Diffusion, and Local Capability Formation. *Research Policy*, 31: 1417 -1429.
- FLORIDA, R. 1997. The Globalization of R&D: Results of a Survey of Foreign-affiliated R&D Laboratories in the USA. *Research Policy*, 26: 85 – 103.
- GRANT, M. R. & BADEN-FULLER, C. 1995. A Knowledge-Based Theory of the Firm Collaboration, Best Paper Proceedings 1995, *Academy of Management*: 17-21.
- GRANT, M. R. 1996. Toward a Knowledge-Based Theory of the Firm. *Strategic Management Journal*, 17(1): 109-122.
- GRESS, D. R. & POON, J. 2007. Firm Networks and Korean Subsidiaries in the United States. *Growth and Change*, 38(3): 396 – 418.
- GRESS, D. R. & POON, J. 2008a. Global Production Networks: Realizing the Potential. *Journal of Economic Geography*, 8: 271 – 295.
- GRESS, D. R. & POON, J. 2008b. Extra-Firm Networks and Korean Investment in the United States. *Tijdschrift voor Economische en Sociale Geografie*, 99(3): 269 – 280.
- GRESS, D. R. 2011. Cluster Consideration and Korean Subsidiaries in the US. *GeoJournal*, 76(6): 661 – 673.
- GULATI, R., NOHRIA, N. & ZAHEER, A. 2000. Strategic Networks. *Strategic Management Journal*, 21: 203-215.
- GUPTA, A. K. & GOVINDARAJAN, V. 2000. Knowledge Flows within Multinational Corporations. *Strategic Management Journal*, 21: 473-496.
- HAGEDOORN, J. & SCHAKENRAAD, J. 1990. Inter-firm Partnerships and Co-operative Strategies in Core Technologies, In “C. Freeman and L. Soete (Eds.). *New Explorations in the Economics of Technical Change*, Frances Pinter, London: 3-37.
- HAGEDOORN, J. & SCHAKENRAAD, J. 1994. The Effect of Strategic Technology Alliances on Company Performance. *Strategic Management Journal*, 15: 291-309.
- HAMEL, G., PRAHALAD, C. K. & DOZ, Y. L. 1989. Collaborate with Your Competitors and Win. *Harvard Business Review*, 67(1): 133– 139.

HORAGUCHI, H. & TOYNE, B. 1990. Setting the Record Straight: Hymer, Internalization Theory and Transaction Cost Economics. *Journal of International Business Studies*, 21(3): 487-494.

JARILLO, J. C. 1988. On Strategic Networks. *Strategic Management Journal*, 9:31-41.

KIM, L. 1998. Crisis Construction and Organizational Learning: Capability Building in Catching-up at Hyundai Motor. *Organization Science*, 9(4): 506 – 521.

KOGUT, B. & ZANDER U. 1993. Knowledge of the Firm and the Evolutionary Theory of the Multinational Corporation. *Journal of International Business Studies*, 4: 487 – 494.

KUEMMERLE, W. 1999. The Drivers of Foreign Direct Investment into Research and Development: An Empirical Investigation. *Journal of International Business Studies*, 30(1): 1-24.

LANSBURY, R. D., SUH, Ch. S. & KWON, S. H. 2007. The Globalization of Korean Motor Industry: The Hyundai Motor Company's Global Strategy, Routhledge Taylor & Francis Group

LIN, Ch., WU, Y. J., CHANG, Ch. Ch., WANG, W. & LEE, Ch. Y. 2012. The Alliance Innovation Performance of R&D Alliances – The Absorptive Capacity Perspective. *Technovation*, 32: 282 – 292.

MASKELL, P. & MALMBERG A. 1999. The Competitiveness of Firms and Regions: “Ubiquitification” and the Importance of Localized Learning. *European Urban and Regional Studies*, 6(1): 9 – 25.

MEYER, K. E., MUDAMBI, R. & NARULA, R. 2011. Multinational Enterprises and Local Context: The Opportunities and Challenges of Multiple Embeddedness. *Journal of Management Studies*, 48(2): 235 – 252.

MOON, H. C., RUGMAN, A. M. & VERBEKE A. 1998. The Generalized Double Diamond Approach to the Global Competitiveness of Korea and Singapore. *International Business Review*, 7(2): 135 – 150.

MOON, H. C. & ROEHL, T. W. 2001. Unconventional Foreign Direct Investment and the Imbalance Theory. *International Business Review*, 10(2): 197 – 215.

MOON, H. C. 2004a. The Evolution of Theories of Foreign Direct Investment, *Review of Business History*, 19(1): 1-17.

MOON, H. C. 2004b. A Formal Modeling of the Imbalance Theory to Explain Two Directions of Foreign Direct Investment. *Journal of International Business and Economy*, 5(1): 117 – 132.

MOON, H. C. 2007. Outward Foreign Direct Investment by Enterprises from the Republic of Korea. In *Global Players from Emerging Markets: Strengthen Enterprise Competitiveness through Outward Investment*, New York and Geneva: UNCTAD

MOON, H. Ch. 2011. The Republic of Korea's Global Players MNE's Show Solid Recovery in 2009 after the Global Crisis, in Sauvant, K. P., Govitrikar, V. P. & Davis, K. (Eds.). *MNEs from Emerging Markets: New Players in the World FDI Market*: 197 – 239, Vale Columbia Center on Sustainable International Investment, New York

MOWERY, D. C., OXLEY, J. E. & SILVERMAN, B. S. 1996. Strategic Alliances and Inter-Firm Knowledge Transfer. *Strategic Management Journal*, 17: 77 – 91.

NIETO, M. J. & RODRIGUEZ, A. 2011. Offshoring of R&D: Looking Abroad to Improve Innovation Performance. *Journal of International Business Studies*, 42: 345 – 361.

PITTAWAY, L., ROBERTSON, M., MUNIR, K., DENYER, D. & NEELY, A. 2004. Networking and Innovation: A Systematic Review of the Evidence. *International Journal of Management Reviews*, 5/6(3&4): 137-168.

PORTER, M. 1998. Clusters and the New Economics of Competition. *Harvard Business Review*, 76(6): 77-90.

PORTER, M. 2000. Locations, Clusters, and Company Strategy. In Clark, G. L., Feldman M. P. & Gertler M. S. "The Oxford Handbook of Economic Geography", Oxford University Press: 253-274.

RUGMAN, A. M. & COLLINSON, S. 2004. The Regional Nature of the World's Automotive Sector. *European Management Journal*, 22(5): 471 – 482.

SACHWALD, F. 2008. Location Choices within Global Innovation Networks: The Case of Europe. *Journal of Technology Transfer*, 33: 364 – 378.

SCHMID, S. & GROSCHE, P. 2013. Managing the International Value Chain in the Automotive Industry, *Gutersloh: Bertelsmann Stiftung*

SHAN, W., WALKER, G. & KOGUT, B. 1994. Inter-Firm Cooperation and Startup Innovation in the Biotechnology Industry. *Strategic Management Journal*, 15(5): 387-394.

SLOCUM, J. W. 1992. Global Strategy, Competence-Building and Strategic Alliances. *California Management Review*, 35(1): 81-97.

STORPER, M. & VENABLES, A. J. 2003. Buzz: Face-To-Face Contact and the Urban Economy, Working Paper, Centre of Economic Performance, London School of Economics and Political Science, 1 – 33.

SUH, Ch. S., WANG, Y., NAM, M. H. & ZHANG, X. 2012. Sequential Internalization, Heterogeneous Process and Subsidiary Roles: The Case of Hyundai Motor Company. *Asia Pacific Business Review*: 1-25.

TEECE, D. J., PISANO, G. & SHUEN, A. 1997. Dynamic Capabilities and Strategic Management. *Strategic Management Journal*, 18(7): 509-533.

WERNERFELT, B. 1984. A Resource-Based View of the Firm. *Strategic Management Journal*, 5: 171 – 180.

WRIGHT, Ch., SUH, Ch. S. & LEGGETT Ch. 2009. If at First You Don't Succeed: Globalized Production and Organizational Learning at the Hyundai Motor Company. *Asia Pacific Business Review*, 15(2): 163-180.

Online References

Battelle Memorial Institute. 2013. Global R&D Funding Forecast 2014. <http://www.battelle.org>. Accessed 9 April 2014

Broadcom Corporation. 2012. Press Release: Broadcom and Hyundai Motor Power Next-Generation Connected Car. <https://www.broadcom.com>. Accessed 4 December 2013

Business Monitor International. 2013. United States Autos Report Q1 2014. <http://www.businessmonitor.com>. Accessed 9 April 2014

CAR Center for Automotive Research. 2010. Contribution of the Automotive Industry to the Economies of All Fifty States and the United States. <http://www.cargroup.org>. Accessed 23 April 2014

CAR Center for Automotive Research. 2013. The North American Automobile Industry. <http://www.cargroup.org>. Accessed 23 April 2014

Hyundai Motor America. 2014. U.S. History. <http://hyundaiamerica.us> Accessed 17 November 2013

Hyundai Motor America. 2012. News - Hyundai Research Agreement with U.C. Davis, U.C. Berkeley Kick Off Long-Term Partnership with Leading Universities and Companies, <https://www.hyundaiusa.com>. Accessed 4 December 2013

Hyundai Motor Company. 2014a. News: Hyundai Motor in Brief 2011. <http://www.hyundaiglobalnews.com/>. Accessed 26 April 2014

Hyundai Motor Company. 2014b. Annual Reports 2000, 2004, 2005, 2012. <http://worldwide.hyundai.com>. Accessed 17 November 2013

Hyundai Motor Group. 2014. History of Global Growth. <http://m.hyundaimotorgroup.com>. Accessed 26 April 2014
Institute for Strategy and Competitiveness. 2010. Automotive Cluster: Cluster Specialization by Economic Area, 2010. <http://www.clustermapping.us>. Accessed 17 November 2013

InvestKorea Korean Trade-Investment Promotion Agency. 2010. Overviews of Korea's Industries 2010 - Auto-Parts, <http://www.investkorea.org/>. Accessed 16 March 2014

InvestKorea Korean Trade-Investment Promotion Agency. 2013. Promising Investment Opportunities: Auto-Parts. <http://www.investkorea.org/>. Accessed 16 March 2014

KPMG International. 2011. KPMG's Global Automotive Executive Survey 2011. <https://www.kpmg.com/global/en/>. Accessed 8 March 2014

KPMG International. 2013. KPMG's Global Automotive Executive Survey 2013. <https://www.kpmg.com/global/en/>. Accessed 21 April 2014

Porter, M. 2012a. California Competitiveness: Creating a State Economic Strategy. <http://www.clustermapping.us>. Accessed 30 March 2014

Porter, M. 2012b. Michigan Competitiveness: Creating a State Economic Strategy. <http://clustermapping.us>. Accessed 30 March 2014

UNCTAD United Nations Conference on Trade and Development. 2005. World Investment Report. <http://unctad.org/en/>. Accessed 4 April 2014

UNCTAD United Nations Conference on Trade and Development. 2006. World Investment Report: FDI from Developing and Transition Economies – Implications for Development. <http://unctad.org/en/>. Accessed 4 April 2014

UNCTAD United Nations Conference on Trade and Development. 2013. World Investment Report: Global Value Chains – Investment for Trade and Development. <http://unctad.org/en/>, Accessed 20 April 2014

U.S. Department of Commerce. 2013. Foreign Direct Investment in the United States. <http://www.whitehouse.gov>. Accessed 9 April 2014

U.S. Securities and Exchange Commission. 2001. Annual Report – Enova Systems, Inc. <http://www.sec.gov>. Accessed 22 April 2014

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APPENDIX

Table 1.A: A Reconfiguration of the OLI Paradigm of International Production in Alliance Capitalism

Alliance or Network Related Advantages
1. Ownership-Specific Advantages (of enterprise over those of another)
<p>A: Vertical Alliances</p> <p>(1) Backward access to R&D, design engineering and training facilities of suppliers. Regular input by them on problem solving and product innovation on the consequences of projected new production processes for component design and manufacturing. New insights into, and monitoring of, developments in materials, and how they might impact on existing products and production processes.</p>

<p>(2) Forward access to industrial customers, new markets, marketing techniques and distribution channels, particularly in unfamiliar locations or where products need to be adapted to meet local supply capabilities and markets.</p>
<p>B: Horizontal Alliances Access to complementary technologies and innovatory capacity. Access to additional capabilities to capture benefits of technology fusion, and to identify new uses for related technologies. Encapsulation of learning and development times. Such inter-firm interaction often generates its own knowledge feedback mechanisms and path dependencies.</p>
<p>C: Networks (1) of similar firms: Reduced transaction and coordination costs arising from better dissemination and interpretation of knowledge and information, and from mutual support and cooperation between members of network. Improved knowledge about process and product development and markets. Multiple, yet complementary inputs into innovatory developments and exploitation of new markets. Access to embedded knowledge of members of networks. Opportunities to develop R&D strategies; shared learning and training experiences, e.g., as in the case of cooperative research associations. Networks may also help promote uniform product standards and other collective advantages. (2) of business districts: As per (1) plus spatial agglomerative economies, e.g., labor market pooling. Access to clusters of specialized intermediate inputs, and linkages with knowledge-based institutions, e.g., universities, technological spill-overs.</p>
<p>2. Location-Specific Variables (may favor home or host countries)</p>
<p>The L-specific advantages of alliances arise essentially from the presence of a portfolio of immobile local complementary assets, which, when organized within a framework of alliances and networks, produce a stimulating and productive industrial atmosphere. The extent and type of business districts, industrial or science parks and the external economies they offer participating firms are examples of these advantages which over time may allow foreign affiliates and cross-border alliances and network relationships to better tap into, and exploit, the comparative technological and organizational advantages of host countries. Networks may also help reduce the information asymmetries and likelihood of opportunism in imperfect markets. They may also create local institutional thickness, intelligent regions and social embeddedness.</p>
<p>3. Internalization Incentive Advantage (to circumvent or exploit market failure)</p>
<p>While, in some cases, time limited inter-firm cooperative relationships may be a substitute for FDI, in others, they may add to the I incentive advantages of the participating hierarchies, R&D alliances and networking which may help strengthen the overall competitiveness of the participating firms. Moreover, the growing structural integration of the world economy is requiring firms to go outside their immediate boundaries to capture the complex realities of know-how trading and knowledge exchange in innovation, particularly where intangible assets are tacit and need to speedily adapt competitive enhancing strategies to structural change. Alliances or network related advantages are those which prompt a “voice” rather than an “exit” response to market failure, they also allow many of the advantages of internalization without the inflexibility, bureaucratic or risk-related costs associated with it. Such quasi-I is likely to be most successful in cultures in which trust, forbearances, reciprocity and consensus politics are at a premium. It suggests that firms are more appropriately likened to archipelagos linked by causeways rather than self-contained “islands” of conscious power. At the same time, lead flagship, by orchestrating the use of mobile O advantages and immobile adv., enhance their role as arbitragers of complementary cross-border value added-activities.</p>

Source: Dunning (1995: 475 – 476).

국문초록

근래의 연구·개발(R&D) 활동 및 네트워크의 이론을 포함한 해외직접투자(FDI)에 대한 이론들은 대부분 외국인 확대가 경쟁적인 기업 소유 특유의 우위(ownership-specific advantage)의 결과임을 다루고 있다. 그러나 기존 이론들은 개발도상국이나 비교적 선진화가 덜 진행된 국가의 기업들이 행하는 특정 열위(firm-specific disadvantage)에 기반한 투자는 설명해주지 못한다. 이에 본 연구는 경쟁열위로부터 야기되는 투자동기에 대하여 분석하되, 기업의 연구개발 사업의 세계화와 기업들의 연구개발 네트워크에 특히 초점을 두었다. 이와 함께 본 연구는 Dunning 의 OLI 패러다임(Dunning, 1995, 2000, 2009)을 활용하여, 상방(upward) 투자 흐름의 결정 요인과 그 선정 지역의 적합성을 설명하기 위해 Moon & Roehl 의 불균형 이론을 포함하였다. 이 논문은 한국에서의 세계적인 자동차 회사의 실증적 연구를 기반으로 하였다. 미국에서 기업의 해외 연구개발 재(再)정착화와 기업의 연구개발 네트워킹에 대한 기업의 주요 인센티브를 추적하기 위해 현대 자동차 회사의 사례연구를 하였다. 본 연구는 비용절감과 연구개발 자산의 활용이 연구개발의 세계화 및 네트워킹을 위한 최초의 동기로서 현존하는 전통적 이론에 의해 고려되어 짐을 보여준다. 현대자동차의 사례는 이 기업의 해외직접투자 전략을 위한 동기가 기존의 기술을 획득 또는 비교열위를 극복하기 위해 자원 및 자산을 강화시키는 투자였음을 보여준다. 근래까지도 미국 시장 내

현대자동차의 연구개발 투자가 이루어지는 주요 동기는 지역 기반의 연구개발 동맹 네트워크가 내제 된 지역기반의 자원 및 자산을 찾기 위함이며, 그 외 미국 경제 기반으로 오는 유출 효과 (spillover effects)를 꼽을 수 있다.

Keywords: Eclectic (OLI) Paradigm, Imbalance Theory, FDI, R&D Globalization, Hyundai Motor Company

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